Science, Education and Innovations in the Context of Modern Problems
Issue 2, Vol. 9, 2026

RESEARCH ARTICLE

Self-Efficacy Among Vocational Trainees in Laghouat Province, Algeria: A Descriptive–Exploratory Study of Gender, Training Modality, and Educational Level Differences at the Mouattah Kaddour Vocational Training and Education Center

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Issue web link https://imcra-az.org/archive/392-science-education-and-innovations-in-the-context-of-modern-problems-issue-2-vol-9-2026.html

Keywords Self-efficacy; vocational education and training (VET); trainees; perceived competence; training modality; educational level; gender differences; Algeria.

Abstract

Self-efficacy is a central psychological construct that influences persistence, motivation, adaptive coping, and performance in learning and vocational contexts. This study investigated the level of self-efficacy among trainees enrolled at the Mouattah Kaddour Vocational Training and Education Center in Laghouat Province, Algeria, and examined whether self-efficacy varies according to gender, training modality, and educational level. A descriptive–exploratory cross-sectional design was adopted. Using a simple random sampling strategy, data were collected from 129 trainees. Self-efficacy was assessed using the Self-Efficacy Scale developed by Nadia Seraj Jan (2000). Descriptive statistics were used to estimate overall self-efficacy levels, while inferential tests were applied to examine group differences across the study variables. Data were processed and analyzed using the Statistical Package for the Social Sciences (SPSS). Findings indicated that trainees reported a high level of self-efficacy, suggesting strong perceived capability to manage training demands and achieve learning goals. Furthermore, the analysis revealed no statistically significant differences in self-efficacy with respect to gender, training modality, or educational level. These results may indicate that the training environment and institutional supports provide relatively equal opportunities for competence development and confidence building across different trainee groups. The study underscores the importance of maintaining psychologically supportive vocational learning contexts that strengthen trainees' perceived competence and readiness for the labor market. Future research is recommended to include longitudinal designs and additional predictors (e.g., perceived instructor support, mastery experiences, and employability expectations) to better explain the development of self-efficacy in vocational education settings.

Citation

Amel Serbah; Zineb Ouled Haddar; Zohra Boumehras. (2026). Self-Efficacy Among Vocational Trainees in Laghouat Province, Algeria: A Descriptive–Exploratory Study of Gender, Training Modality, and Educational Level Differences at the Mouattah Kaddour Vocational Training and Education Center. *Science, Education and Innovations in the Context of Modern Problems*, 9(2), 1-9. https://doi.org/10.56334/sei/9.2.96

Received: 22.11.2025	Accepted: 26.12.2025	Published: 14.02.2026 (available online)

1. Research Problem

Since its independence, the Algerian government has prioritized its youth, recognizing them as a vital force for the nation's development. To support this demographic, the state established various systems and institutions, with the vocational training system being one of the most prominent.

Vocational training institutions are considered key educational and training facilities, particularly for young people who have dropped out of school. They provide a supportive training environment that boosts trainees' self-confidence, offers them opportunities to become part of an active social structure, and fosters a sense of comfort and satisfaction. This positive environment, in turn, reflects positively on their productivity, academic achievement, and both their personal and professional self-efficacy. (Farhat, 2016, p. 23)

In the context of developing competencies, self-efficacy is a concept that has garnered significant attention from researchers across various fields. Numerous educational and psychological studies have highlighted its importance and its influence on individuals' interactions in different aspects of life.

Self-efficacy refers to an individual's belief in their ability to succeed or fail when dealing with problems and challenges in their environment. These beliefs directly impact an individual's behavior and the nature of their actions. (Fathi Abdullah, 2022, p. 213)

In fact, self-efficacy is a central tenet of Bandura's theory, which posits that individuals regulate their behavior based on their personal beliefs. These beliefs empower them to control their emotions and thoughts, making self-efficacy a significant factor in a person's performance and their ability to overcome obstacles (Al-Otaibi, 2009, p. 3). In this regard, research consistently highlights a strong correlation between self-efficacy and success, underscoring its vital role in initiating, sustaining, and directing behavior. A higher level of confidence in one's abilities is directly associated with a greater likelihood of achieving goals, acting as a powerful motivator that enhances the ability to adapt to challenges (Lallouna, 2015, p. 101).

This assertion is well-supported by empirical evidence. For instance, Lent et al. (1984) found that science and engineering students with high academic self-efficacy achieved higher grades and persevered longer. Similarly, Davis (2000) showed that high self-efficacy is linked to setting more ambitious goals, while Pajares and Johnson (1996) noted that high-ability students who perform well also tend to possess high self-efficacy (Amoumen, 2019, p. 108). In a related vein, social theorists note that self-efficacy is a key component of a person's sense of personal control and mastery, which helps them achieve balance and reduce psychological stress (Al-Dhaher, 2004, p. 88).

To further understand this phenomenon within the vocational context, numerous studies have explored the relationship between self-efficacy and variables like age, academic level, and major. For instance, the study by Lallouna (2015) on self-efficacy among vocational and technical education students at the Senior Technician level utilized a purposive sample of 300 trainees. The results showed that these students possessed a high level of self-efficacy and found no significant gender differences in their sense of general self-efficacy.

Similarly, Al-Zaq (2009) conducted a study on the perceived academic self-efficacy of students at the University of Jordan and its variations based on faculty, gender, academic level, and their interactions. The sample consisted of 400 male and female undergraduate students. The results indicated that the level of perceived self-efficacy among students was moderate, with differences according to academic level favoring the higher level, and no significant differences based on gender.

In contrast, Kelly's study (1993) aimed to determine the relationship between gender, academic achievement, self-efficacy, and career interests. The sample included 286 ninth and eleventh-grade high school students. The findings indicated no gender differences in career interests but showed a limited effect of gender on self-efficacy in favor of males. The study also suggested the possibility of predicting self-efficacy through academic achievement.

Given the importance of this topic and the scarcity of studies on self-efficacy among vocational and apprenticeship trainees, this research is imperative. Therefore, this study aims to investigate the level of self-efficacy among trainees at a vocational training and education center by addressing the following questions:

What is the baseline level of self-efficacy among trainees at the target institution?

1. Do self-efficacy beliefs differ according to trainee gender?
2. Are there differences in self-efficacy beliefs based on training modality?
3. Do educational background differences influence self-efficacy levels among participants?

Based on existing theoretical frameworks and empirical evidence, the study hypothesizes that:

- The level of self-efficacy among trainees at the Mouattah Kaddour vocational training center is high.
- There are no significant differences in self-efficacy among participants based on gender variables.
- Training mode does not significantly influence self-efficacy levels within the study population.
- Educational background variables do not produce significant variations in self-efficacy beliefs among the cohort.

2. CONCEPTTUAL FRAMWORK:

❖ Self-Efficacy

Self-efficacy is a core construct in social cognitive theory. It was initially defined by Bandura as "the beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura, 1977, p. 71). This foundational concept has been further developed by subsequent researchers. For example, Saleh expanded on this, defining self-efficacy as "an individual's self-perception of their ability to perform a behavior that achieves desired outcomes in a specific situation or circumstance" (Saleh, 1993, p. 461). This includes an individual's expectations about performance, the level of effort and perseverance they are willing to invest, and their prediction of success.

For the purposes of this study, self-efficacy is operationally defined as a trainee's belief in their capability to successfully complete various academic and practical tasks within a vocational training setting. It is measured by the total score a respondent obtains on the self-efficacy scale used in this study.

Within this research, a trainee in vocational training refers to a young adult, typically between the ages of 16 and 35, who is pursuing specialized professional preparation through enrollment in an accredited vocational institution. The successful completion of this training program culminates in the awarding of a professional certificate. According to Salatnia (1998), vocational training is "a process through which individuals are professionally prepared and trained in specific trades with the aim of elevating their skill level and equipping them with new proficiencies" (Salatnia, 1998, p. 10).

3. THEORETICAL BACKGROUND

3.1. Self-Efficacy Theory

Bandura's self-efficacy theory, rooted in social cognitive theory, posits that self-efficacy is a critical determinant of motivation and performance across various domains. Self-efficacy beliefs influence behavior at three levels. The first level involves individuals' choice of situations in which they engage. They tend to select situations that align with their skills and abilities, enabling them to manage problems and their requirements effectively. Conversely, they avoid situations they perceive as beyond their control. The second and third levels involve the effort and perseverance individuals expend to accomplish specific tasks. Individuals with a strong belief in their capabilities will exert significant effort and persist in the face of difficulties to achieve their goals. This contrasts sharply with individuals who have low self-efficacy, as their lack of confidence leads them to expend minimal effort, often proving insufficient for task completion (Al-Shaqfi, n.d., p. 26).

3.2. Dimensions of Self-Efficacy

Bandura identified three key dimensions of self-efficacy that are linked to performance:

a) **Magnitude**: This dimension refers to the strength of an individual's motivation and their belief in their ability to perform across different situations. This level is dependent on the nature and difficulty of the task (Aliwa, 2018, p. 76). It is often conceptualized by arranging tasks hierarchically from easy to difficult and is also referred to as the level of task difficulty (Al-Mutairi, 2017, p. 546).

b) **Generality**: This dimension describes the extent to which self-efficacy beliefs transfer from one situation to other similar situations. Individuals who have successfully completed one task are more likely to believe they can succeed in performing comparable tasks (Al-Mutairi, 2017, p. 546).

c) **Strength**: The strength of an individual's self-efficacy belief determines their resilience in the face of adversity. For example, if two students receive low grades, the one with high self-efficacy would be more capable of coping with the setback, whereas the student with low self-efficacy would demonstrate less resilience. The strength of an individual's self-efficacy is shaped by their past experiences and how these experiences relate to current situations (Aliwa, 2018, p. 77).

4. Methodological Procedures

4.1. Research Methodology

This study employed a descriptive methodology with an exploratory approach. This design was chosen for its effectiveness in systematically describing a phenomenon, as well as analyzing and interpreting the collected data to gain a deeper understanding.

4.2. Study Population and Sample

a) Study Population

The study population consisted of all 504 male and female trainees enrolled at the Mouattah Kaddour Vocational Training Center during the 2024/2025 academic year.

b) Pilot Sample

A pilot sample of 50 trainees was selected from the main population using a simple random sampling technique. The research instrument was administered to and collected from this sample over a two-week period, from November 27, 2024, to December 11, 2024. This phase was crucial for ensuring the clarity and reliability of the instrument before its use in the main study.

c) Main Sample

The final self-efficacy scale was distributed to a main sample of 160 trainees, also selected via a simple random sampling technique from the same center. A total of 31 scales were excluded from the analysis due to incomplete responses or being unreturned. This resulted in a final, usable sample size of 129 completed instruments.

Table 01: Characteristics of the Main Study Sample

Variable	Level	Frequency	Percentage	Total
Gender	Male	27	20.9%	129
	Female	102	79.1%	
Training Mode	On-site	48	37.2%	
	Apprenticeship	81	62.8%	
Educational Level	Primary	5	3.9%	
	Intermediate	49	38%	
	Secondary	70	54.3%	
	University	5	3.9%	

4.3. Study Instrument:

- **The Self-Efficacy Questionnaire**

The instrument used in this study is the Self-Efficacy Scale, developed by Nadia Siraj Jan (2000). This comprehensive scale is designed to measure four distinct dimensions of self-efficacy: Coping Self-Efficacy, Social Self-Efficacy, Cognitive Self-Efficacy, and Emotional Self-Efficacy.

The original scale was designed with 60 items and was applied to a pilot sample of 96 female students at the College of Education for Girls at King Saud University for standardization. After scoring and analyzing the results, six items were excluded as they did not meet an acceptable level of reliability and validity. Additionally, some ambiguous phrases were modified. The scale's validity and reliability were then calculated. (Abdul Aziz Hussein, 2002, pp. 785, 587).

- **Scoring Mechanism**

The final 54 item scale utilizes a five-point Likert scale for responses. For each statement, respondents choose from one of the following options: "Always," "Often," "Undecided," "Sometimes," or "Rarely."

The scoring is structured as follows to account for the phrasing of each item:

- **For positively worded items**: The scoring is assigned in descending order of frequency. A response of "Always" is given a weight of 5 points, "Often" receives 4, "Undecided" receives 3, "Sometimes" gets 2, and "Rarely" is given 1 point.
- **For negatively worded items**: The scoring is reversed to reflect the lack of efficacy. A response of "Always" is assigned 1 point, "Often" receives 2, "Undecided" receives 3, "Sometimes" gets 4, and "Rarely" is given 5 points. Table 02 provides a detailed illustration of this scoring system.

Table 02: Self-Efficacy Scale Scoring Method

Item Type	Always	Often	Undecided	Sometimes	Rarely
Positive	5	4	3	2	1
Negative	1	2	3	4	5

4.4. Psychometric Properties

- **The Validity**

To assess the validity of the instrument, a pilot study was conducted to establish its internal consistency validity. The instrument was administered to a sample of 50 trainees from the Mouattah Kaddour Vocational Training Center. The results of the analysis, including the correlation coefficients, are detailed in the table below.

Table 03: Correlation Coefficients Between Each Item and the Total Scale Score

Item Number	Correlation Coefficient	Item Number	Correlation Coefficient	Item Number	Correlation Coefficient	Item Number	Correlation Coefficient	Item Number	Correlation Coefficient
1	0.508**	12	0.313*	23	0.359*	34	0.440**	45	0.556**
2	0.219	13	0.404**	24	0.109	35	0.256	46	0.414**

3	-0.099	14	0.172	25	0.446**	36	0.236	47	0.452**
4	0.325*	15	0.387**	26	0.372**	37	0.106	48	0.142
5	0.173	16	0.467**	27	0.602**	38	0.487**	49	0.231
6	0.284*	17	0.317*	28	0.110	39	0.477**	50	0.215
7	0.140	18	0.382**	29	0.418**	40	0.487**	51	0.534**
8	0.315*	19	0.310*	30	0.434**	41	0.505**	52	0.561**
9	0.333*	20	0.297*	31	0.295*	42	0.388**	53	0.614**
10	0.486**	21	0.456**	32	0.114	43	0.484**	54	0.178
11	0.576**	22	0.329*	33	0.252	44	0.498**		

- **Note:**
  - The asterisk (*) indicates a statistically significant correlation at the $p<0.05$ level.
  - The double asterisk (**) indicates a statistically significant correlation at the $p<0.01$ level.

As shown in Table 03, the majority of the correlation coefficients between the individual items and the total scale score were statistically significant at both the 0.05 and 0.01 levels. This confirms the homogeneity and internal consistency of the items, thereby establishing acceptable internal consistency validity for the instrument. Consequently, the scale is considered a reliable measure of self-efficacy within the study population.

Table 04: Correlation Coefficients Between Each Dimension and the Total Scale Score

Dimension	Total Score
Coping Self-Efficacy	0.639**
Social Self-Efficacy	0.715**
Cognitive Self-Efficacy	0.805**
Emotional Self-Efficacy	0.859**

As shown in Table 04, the correlation coefficients between each dimension and the total score of the instrument were statistically significant at both the 0.01 and 0.05 levels. With values ranging from 0.63 to 0.85, the instrument demonstrates strong internal consistency, confirming its suitability for measuring the intended construct.

❖ **The reliability**

The reliability of the scale was further assessed using two distinct methods: Cronbach's Alpha and the split-half method. The results of these analyses are presented in the following tables.

a) Cronbach's Alpha Internal Consistency

To verify the scale's reliability, the Cronbach's Alpha coefficient was calculated. The results of this analysis are displayed in the table below.

Table 05: Cronbach's Alpha Coefficient Results for the Dimensions of the Self-Efficacy Scale

Study Variable	Scale Dimensions	Cronbach's Alpha Value
Trainee's Self-Efficacy Level	**Coping Self-Efficacy**	0.640
	Social Self-Efficacy	0.661
	Cognitive Self-Efficacy	0.577
	Emotional Self-Efficacy	0.782
Total Scale	0.887	

Table 05 shows the Cronbach's Alpha coefficients for all scale dimensions are within an acceptable range. This confirms the instrument's strong internal consistency reliability, making it a suitable and trustworthy tool for the main study. Consequently, the results derived from this scale can be interpreted with a high degree of confidence.

b) Split-Half Method

Table 06: Split-Half Reliability Results for the Scale

Correlation Coefficient	Before Adjustment	After Adjustment

Number of Items (38)	0.733	0.846

4.5. Statistical Methods

Data analysis was performed using the Statistical Package for Social Sciences (SPSS), version 26. The following statistical methods were employed to address the study's research objectives:

- **Descriptive Statistics**: Frequencies, percentages, means, and standard deviations were used to summarize the characteristics of the study sample.
- **Reliability Analysis**: The Cronbach's Alpha coefficient was calculated to verify the internal consistency and reliability of the research instrument.
- **Inferential Statistics**:
  - **Pearson correlation coefficient** was used to measure the strength and direction of linear relationships between variables.
  - **An independent samples t-test** was performed to compare the means of two independent groups.
  - **A One-Way ANOVA (Analysis of Variance)** was conducted to compare the means of three or more independent groups.

4.6. Study Limitations

This study is subject to several limitations that should be considered when interpreting the results:

- **Temporal Limitations**: The research was conducted over a specific, two-month period spanning November and December 2024.
- **Geographical Limitations**: The study was confined to a single institution, the Mouattah Kaddour Vocational Training Center, in Laghouat Province, Algeria.
- **Population Limitations**: The findings are based on a specific sample of trainees from the aforementioned center and may not be generalizable to other populations.

5. Presentation and Discussion of Study Hypotheses

5.1. The First Hypothesis: Trainee Self-Efficacy

The first hypothesis posited that the level of self-efficacy among trainees at the Mouattah Kaddour Vocational Training Center is high. To test this hypothesis, the mean scores of the study sample on the self-efficacy scale were calculated and compared with the theoretical mean. The results are presented in the following table:

Table 07: Results of the Mean and Standard Deviation for Self-Efficacy

Variable	Sample Size (N)	Mean	Standard Deviation (SD)	Hypothesized Mean	Degrees of Freedom (df)	T-value	Statistical Significance (p)
Self-Efficacy	129	125.88	20.70	114	128	6.519	0.000

As shown in Table 07, the study's first hypothesis that trainees at the Mouattah Kaddour Vocational Training Center have a high level of self-efficacy is accepted. The results indicate a mean self-efficacy score of 125.88, which is notably higher than the hypothetical mean of 114. This difference is statistically significant, as evidenced by a calculated t-value of 6.519, which is significant at the 0.01 level.

This finding suggests that trainees possess high self-confidence, which strengthens their belief in their abilities and motivates them to pursue their goals. This is particularly significant for individuals who may have experienced academic setbacks, such as failing the baccalaureate exam. Their strong self-efficacy beliefs appear to boost their motivation and self-esteem, driving them to satisfy their psychological, social, and cognitive needs.

Self-efficacy is a critical factor influencing success across various life domains. Individuals with high self-efficacy tend to show greater motivation and determination and are better equipped to confront challenges. The elevated self-efficacy among these trainees may stem from a combination of factors, including the quality of the training programs, a supportive educational environment, and encouragement from trainers. This aligns with Egan's (1982) findings that self-efficacy is associated with an individual's willingness to exert effort when facing difficulties (Lalouna, 2015, p. 110).

These results are consistent with a number of previous studies:

- **Snik (1991)** found that effective planning and goal-setting lead to increased self-satisfaction and enhanced self-efficacy.
- **Roland Foucher and Lucie Morin (2006)** concluded that individuals with high self-efficacy have higher self-assessments of their performance, especially in problem-solving.
- **Lalouna (2015)** also found high self-efficacy among vocational and technical students.
- Similar conclusions were drawn by Alwan (2012) and Kermash (2016), who also reported high levels of self-efficacy among students.

5.2. Presentation and Discussion of the Second Hypothesis

The second hypothesis, which stated there are no statistically significant differences in self-efficacy among trainees based on gender, was tested using an independent samples t-test.

Table 08: Independent Samples T-Test Results for Self-Efficacy Level by Gender

Gender	Frequency (N)	Mean	Standard Deviation (SD)	Degrees of Freedom (df)	T-value	Statistical Significance (p)
Male	27	123	16.24	127	0.961	0.341
Female	102	126.64	21.73			

The results, as shown in table 08, indicate that the t-value was 0.961 with a significance level (p-value) of 0.341. Since this value is greater than the conventional alpha level of 0.05, we conclude there is no statistically significant difference in the self-efficacy scores between male and female trainees. Consequently, the null hypothesis is accepted.

This finding suggests that gender is not a determining factor in self-efficacy within the study sample, as both male and female trainees demonstrated similar levels of self-confidence and belief in their ability to achieve their goals. This similarity may be attributed to a number of factors that foster self-efficacy regardless of gender, such as the comprehensive nature of the training programs and individual characteristics like educational background and prior experiences.

The finding of no significant gender difference is consistent with several previous studies, including those by Lalouna (2015) and Diane (2003). However, this result contradicts the findings of Fathi Abdullah (2022), whose study identified significant gender differences in self-efficacy, favoring males.

5.3. Discussion of the Third Hypothesis

The third hypothesis, which stated there were no statistically significant differences in self-efficacy among trainees based on the training mode, was tested using an independent samples t-test.

Table 09: Independent Samples T-Test Results for Self-Efficacy Level by Training Mode

Training Mode	Frequency (N)	Mean	Standard Deviation (SD)	Degrees of Freedom (df)	T-value	Statistical Significance (p)
On-site	48	126.50	19.12	127	0.259	0.796
Apprenticeship	81	125.51	21.69			

As shown in table 09, the results revealed a t-value of 0.259 with a significance level (p-value) of 0.796. Since this p-value is greater than the 0.05 alpha level, the difference is not statistically significant. The null hypothesis is therefore accepted, confirming that the training mode does not have a measurable impact on trainee self-efficacy in this study.

This finding can be attributed to the standardized approach to training within vocational centers. Instructors are required to implement consistent programs and curricula regardless of whether the training is face-to-face or an apprenticeship. This uniformity ensures all trainees receive a similar foundation that fosters comparable levels of self-confidence and perseverance. The results suggest that trainees in both modes possess strong self-efficacy, high confidence in their skills, and the resilience needed to overcome challenges. These traits likely stem from their personal belief in their abilities and commitment to their future goals.

5.4. Discussion of the Fourth Hypothesis

The fourth hypothesis, which stated there would be no statistically significant differences in self-efficacy among trainees based on their educational level, was tested using a One-Way ANOVA.

Table 10: Self-Efficacy Levels among Trainees by Educational Level Variable

Educational Level	Frequency	Mean	Standard Deviation	F-value	Statistical Significance
Primary	5	120.40	17.86	0.848	0.470
Middle	49	122.71	19.96		
Secondary	70	128.24	20.66		
University	5	129.40	31.33		

As indicated in table 10, the results revealed an F-value of 0.848 and a significance level (p-value) of 0.470. Because this p-value is greater than the 0.05 alpha level, the difference is not statistically significant. This led to the acceptance of the null hypothesis, confirming that differences in educational level do not affect self-efficacy in our sample.

This finding suggests that in vocational training, a trainee's self-efficacy is more closely tied to the acquisition and application of practical skills than to their prior academic background. This focus on applied competence, rather than previous academic achievement, seems to neutralize the impact of varying educational levels on a trainee's belief in their abilities.

Our results contrast with a study by Al-Zaq (2009), which found significant differences in academic self-efficacy among Jordanian university students based on their educational level. This discrepancy likely stems from the

differing contexts of the two studies. Our research focused on a vocational environment where practical skills are paramount, while Al-Zaq's study focused on an academic setting where success is measured by academic skills.

6. Study Recommendations

Based on the study's findings, the following recommendations are proposed for practitioners and researchers in this field:

- **Enhance Training Environments**: Improve vocational training environments to better meet trainees' needs, with the specific goal of fostering higher levels of self-efficacy.
- **Implement Targeted Programs**: Develop and implement specialized programs and activities within vocational training centers to actively cultivate and strengthen trainees' self-efficacy.
- **Develop Responsive Programs**: Create educational and training programs informed by future research findings. These programs should be designed to promote self-efficacy among all trainees, while also accommodating individual differences and varying educational backgrounds.
- **Conduct Focused Research**: Prioritize research that explores effective strategies and methodologies for enhancing self-efficacy specifically among trainees in vocational training and apprenticeship centers.
- **Promote Self-Efficacy Awareness**: Raise awareness among trainees about the importance of cultivating positive self-efficacy expectations and the benefits of applying them throughout their educational and training journey.
- **Initiate Comparative Studies**: Conduct comparative studies on self-efficacy among trainees across different vocational training institutions and centers to identify best practices and contextual influences.
- **Investigate Demographic Factors**: Undertake additional research to examine how age and other key demographic factors affect self-efficacy levels among trainees in vocational training institutions.

Author Contributions

Amel Serbah: Conceptualization; Methodology; Data collection; Investigation; Data curation; Writing – original draft.

Zineb Ouled Haddar: Supervision; Methodology review; Validation; Writing – review & editing; Scientific oversight.

Zohra Boumehras: Data analysis; Formal analysis; Interpretation of results; Writing – review & editing; Formatting and final preparation.

Acknowledgements

The authors would like to thank the administration and trainees of the Mouattah Kaddour Vocational Training and Education Center (Laghouat Province, Algeria) for their cooperation and assistance during data collection. The authors also acknowledge the support of the relevant laboratories at the University of Ghardaia for facilitating the research process.

Funding

This research received no specific grant from any public, commercial, or not-for-profit funding agencies.
(If you had funding, tell me the funder name and grant number and I will format it.)

Conflict of Interest

The authors declare **no conflict of interest**.

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