Online ISSN: 3082-5121
Aloysian Interdisciplinary Journal of Social Sciences, Education, and Allied Fields
https://journals.aloysianpublications.com
Volume 2 Issue 7 (2026)

Smaw Instructional Strategies On Skill Mastery Of Grade 9 Students At Gov. Feliciano Leviste Mnhs, Sy 2025-2026

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Publication Date: July 23, 2026 DOI: **10.5281/zenodo.21503323**

Abstract

This action research aimed to determine effective instructional strategies to enhance the skill mastery of Grade 9 students in Shielded Metal Arc Welding (SMAW) at Gov. Feliciano Leviste MNHS for the School Year 2025–2026. The study focused on three instructional strategies such as demonstration, peer teaching, and hands-on practice and assessed students' mastery in key welding areas such as safety, setting parameters, striking an arc, and welding position. Using a researcher-made questionnaire and descriptive method, data were collected from 70 respondents and analyzed through weighted mean and frequency distribution. Findings revealed that safety obtained the highest weighted mean among skill mastery indicators, while hands-on practice emerged as the most effective instructional strategy. Conversely, striking an arc and peer teaching recorded the lowest means, indicating the need for improvement in these areas. Based on the results, enhancement activities such as Demonstration-Based Skill Clinics, Arc Striking Practice Drills, and Structured Peer Mentorship Programs were proposed to strengthen students' performance and confidence in SMAW. The study concludes that integrating guided hands-on practice and safety-focused instruction significantly improves welding proficiency and student engagement in technical vocational education. Based on the findings of the study, it can be concluded that the most effective instructional strategy in teaching SMAW is the Hands-on Practice, as it provides students with clear, visual, and practical understanding of welding tasks. Students gain confidence and accuracy when they can observe and allowed to discover their skills and learn by doing and imitate the correct procedures demonstrated by their instructor.

Keywords: *Improves instructional strategies on skill mastery, TVL-SHIELDED METAL ARC WELDING NC II, competency*

Online ISSN: 3082-5121
Aloysian Interdisciplinary Journal
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Volume 2 Issue 7 (2026)

Introduction

Welding is a fabrication process that joins materials, usually metals or thermoplastics, by using high heat to melt the parts together and allowing them to cool, causing fusion. It is a crucial process in construction, manufacturing, automotive, aerospace, and many other industries. It is also a vital technical skill in various industrial and vocational fields, requiring both theoretical understanding and hands-on competence. In many junior high school settings, especially those offering Technology and Livelihood Education (TLE), welding is introduced as part of practical vocational training to prepare students for future technical careers or higher education in industrial arts. However, a persistent challenge in these programs is the gap between theoretical knowledge and the students' ability to effectively apply welding techniques in real-world contexts.

Shielded Metal Arc Welding (SMAW) is one of the most essential competencies in the Technical-Vocational-Livelihood (TVL) track, particularly under the Industrial Arts specialization in junior high school. As part of the Technology and Livelihood Education (TLE) curriculum, SMAW equips students with practical skills that are directly applicable to industry and future employment opportunities. However, many students experience difficulties in mastering welding techniques such as striking an arc, maintaining proper welding position, and setting correct parameters due to limited practice time, lack of exposure, and varied instructional approaches.

Shielded Metal Arc Welding (SMAW) is taught in the Philippine K–12 TVET pathway as a competency-based technical-vocational subject with clearly defined performance standards. National qualification frameworks (TESDA NC I/NC II) and DepEd curriculum guides specify the competencies, safety standards, tools/equipment, and accepted assessment rubrics that programs must use to certify learners' welding skills. These documents emphasize hands-on practice, progressive skill sequencing, and alignment with industry codes (e.g., AWS, ASME).

This study aims to fill these gaps by exploring different approaches that can be designed and implemented to improve smaw instructional strategies on skill mastery among junior high school students. It will examine not only the technical proficiency gained through this method but also the broader educational benefits such as student motivation, engagement, and collaborative learning—areas that have received limited attention in previous research on welding education at this level.

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Volume 2 Issue 7 (2026)

Specifically, the study sought to answer the following questions:

1. What is the level of skill mastery in SMAW (Shielded Metal Arc Welding) among Grade 9 students after the implementation of enhanced instructional strategies in terms of?
    1.1 safety
    1.2 setting of welding parameters
    1.3 striking an arc
2. How effective are the implemented SMAW instructional strategies in improving students' practical welding skills?
    2.1 actual demonstration
    2.2 peer teaching
    2.3 hands on practice
3. What challenges are encountered by the students regarding the use of different instructional strategies?

Materials and Methods

- Research Design

This study utilized a quantitative descriptive research design to assess instructional strategies on skill mastery of grade 9 students

- Participants

The participants were 70 Grade 9 SMAW students enrolled at Gov. Feliciano Leviste Memorial National High School. A total population sampling technique was used to ensure that all students in the class were included in the study.

- Research Instrument

A validated researcher-made questionnaire was used to collect data. The instrument consisted of three parts:

- **Part I**: Level of Skill Mastery in SMAW among three practices, safety, setting of welding parameters and striking an arc
- **Part II**: Effectiveness of Instructional Strategies.
  Among the three teaching approaches, hands-on practice, actual demonstration and peer teaching.

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- **Part III:** Several Challenges Encountered by Students Regarding the Use of Different Instructional Strategies in SMAW

- Data Collection Procedure

Data were collected by submitting a letter to the school administrator requesting approval to conduct survey as well as to implement teaching strategies to improve students' welding skills. Upon receiving approval, the researcher secured formal validation and endorsement from the administrator. The strategies in teaching will be conducted over a period of 6–8 weeks, aligned with the TLE curriculum schedule at Governor Feliciano Leviste MNHS and will include project planning, implementation, and evaluation phases. SMAW students will observe their performance and monitor engagement during application of welding project, and any challenges of the students face during the research.

Descriptive statistics, particularly weighted mean and ranking, were used to analyze and interpret the data.

Results

Section 1: Level on Skill Mastery in SMAW

The table presents the level of skill mastery among Grade 9 students in Shielded Metal Arc Welding (SMAW) based on three main areas: safety, welding parameters, and striking an arc. The overall results reveal that students were “Skilled” in all areas, with composite means ranging from 3.51 to 3.66.

Table 3.3 Level of mastery skills in SMAW

Effectiveness of Instructional Strategy in SMAW	COMPOSITE MEAN	V.I.	RANK
1.1 SAFETY	3.66	Skilled	**1**
1.2 WELDING PARAMETERS	3.53	Skilled	**2**
1.3. STRIKING AN ARC	3.51	Skilled	**3**

Section 2: Effectiveness of Different Instructional Strategies in SMAW

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https://journals.aloysianpublications.com
Volume 2 Issue 7 (2026)

The data in Table 6.3 present the effectiveness of various instructional strategies used in teaching Shielded Metal Arc Welding (SMAW). The results reveal that all three strategies—Hands-On Practice, Demonstration, and Peer Teaching—were rated *Effective* by the respondents, with composite means ranging from 3.65 to 3.75

Table 6.3 Effectiveness of Instructional Strategy in SMAW

Effectiveness of Instructional Strategy in SMAW	COMPOSITE MEAN	V.I.	RANK
2.3 HANDS ON PRACTICE	3.75	Effective	**1**
2.1 DEMONSTRATION	3.73	Effective	**2**
2.2 PEER TEACHING	3.65	Effective	**3**

Section 3: Challenges Encountered

Students reported minimal challenges during the implementation of different strategies in every skill. The most common concern identified was time pressure during implementation, particularly when collaboration approach was applied. This section discusses the challenges encountered by high school students that may affect their skill mastery levels. The respondents' answers on the questionnaire were tallied then the frequencies for each item were found, as provided by the statistician. Each item is ranked according to their frequency. Interpretation and analysis are then drawn from the table

Table 7. Challenges Encountered by Students Regarding the Use of Different Instructional Strategies in SMAW

Indicators	Frequency (f)	Percentage (%)	Rank
1. I find it difficult to follow the steps shown during actual demonstrations due to the fast pacing of the lesson.	57	81.43%	**6**
2. I struggle with peer tutoring because I feel I am unsafe without the guidance of the instructor.	61	87.14%	**3**
3. I sometimes feel uncomfortable or shy when participating in peer teaching activities.	54	77.14%	**8**

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https://journals.aloysianpublications.com
Volume 2 Issue 7 (2026)

4. Some of my classmates are not cooperative during peer learning, making it hard to learn effectively.	59	84.29%	**5**
5. I struggle with hands-on practice because of limited time or access to welding equipment.	58	82.86%	**7**
6. Lack of available materials and tools prevents me from fully practicing the skills taught in class.	63	90.00%	**2**
7. I find it hard to understand lessons when only visual or verbal explanations are used without demonstrations.	60	85.71%	**4**
8. Receiving limited feedback from the teacher after performing a welding task makes it difficult to improve.	56	80.00%	**9**
9. Balancing theory and practice during lessons is challenging, especially when there is not enough time for both.	55	78.57%	**10**
10. Safety concerns and fear of making mistakes during welding practice affect my confidence in performing tasks.	64	91.43%	**1**

Section 4: Summary of Findings

Overall, the results indicate the effective strategies and the mastered skill:

- Enhances practical skills
- Improve knowledge by collaboration
- Builds student confidence to master every skill
- Prepares learners for hands-on practice.

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Discussion

Overall, the results indicate that the instructional strategies employed by teachers effectively developed students' skills in SMAW, especially in the areas of safety and parameter setting.

However,three instructional strategies positively impact SMAW skill mastery, but hands-on practice remains the most effective. Combining hands-on training with teacher-led demonstrations and guided peer collaboration can provide a balanced and comprehensive learning approach, leading to higher student engagement, confidence, and competence in welding performance.

However some challenges among students is "Safety concerns and fear of making mistakes during welding practice affect my confidence in performing tasks" This finding underscores that safety apprehension remains a significant barrier to students' confidence and engagement during actual welding practice.

These findings are consistent with existing learning by experience is key factor in skill acquisition and competency development in vocational education, especially in Shielded Metal Arc Welding.

Conclusion

Based on the findings of the study, it can be concluded that the most effective instructional strategy in teaching SMAW is the Hands-on Practice, as it provides students with clear, visual, and practical understanding of welding tasks. Students gain confidence and accuracy when they can observe and allowed to discover their skills and learn by doing and imitate the correct procedures demonstrated by their instructor.

Recommendations

Based on the findings, the study recommends the following:

1. Enhance Safety Training and Evaluation
2. Implement Demonstration-Based Learning Modules
3. Safety Logbook and Reflection Activity
4. Allocate More Time for Hands-On Practice
5. Continuous Teacher Development

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Aloysian Interdisciplinary Journal of Social Sciences, Education, and Allied Fields
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Volume 2 Issue 7 (2026)

Proposed Intervention

An enhancement activity is proposed, which includes:

- Demonstration-Based Skill Clinics
- Safety consciousness and demonstration-based instruction

  Peer Demonstration and Mentoring Program.

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