

The Teaching Style in Welding Education and the Learner's Proficiency in Welding Courses

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Abstract. This study examined the relationship between teaching styles and student proficiency in welding courses among Technical-Vocational-Livelihood (TVL) teachers in the Secondary School District, Division of Digos City. Proficiency in welding is critical for meeting industry demands, yet challenges persist due to teachers' reliance on traditional lecture-based methods and insufficient training in effective pedagogical approaches such as demonstrative, collaborative, hands-on, and application-based teaching styles. A non-experimental quantitative design using a descriptive correlation approach was employed, with data collected from 120 TVL teachers aged 30–50, averaging 10–20 years of experience. Purposive sampling was used, and validated, reliable survey questionnaires were analyzed using mean, Pearson R correlation, and Multiple Linear Regression. Results revealed that teaching styles and student proficiency in welding were highly evident. A strong positive correlation was found between teaching styles and proficiency, with application-based and demonstrative styles showing the strongest impact. The study highlights the importance of integrating diverse teaching methods to enhance student proficiency, suggesting that a balanced, complex instructional approach significantly improves welding education outcomes.

KEY WORDS

1. Teaching Style, 2. Welding Education, 3. Learner's Proficiency

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1. Introduction

The proficiency of learners in welding courses is a critical aspect of vocational education, directly impacting their ability to succeed in the welding industry. Achieving proficiency in welding courses is essential for learners to meet the demands of the industry, where skilled welders are sought after for various construction, manufacturing, and maintenance projects. With this, the effectiveness of welding education programs depends not only on the curriculum and resources but also on the teaching style employed by the teachers for they encompass

the methods, strategies, and approaches to deliver welding instruction to learners. However, several issues that affects negatively the proficiency of the learners sue to how the teachers handle welding related courses. Some teachers rely primarily on traditional lecture-based methods, neglecting hands-on experiential learning opportunities and some teachers also are lacking pedagogical training on some teaching style such as demonstrative teaching style, collaborative learning style, hands-on practical approach, and application-based teaching style

which give them struggles to effectively engage learners and deliver instruction that fosters skill development. Consequently, the effectiveness of learners in welding courses is greatly affected by the instructional methods used by teachers. These methods include demonstrative teaching, collaborative learning, practical hands-on training, and application-oriented instruction. Demonstrative teaching provides visual aids and showcases welding techniques, but learners often find it challenging to grasp the concepts fully without adequate practical experience to reinforce what they've learned (Marsh et al., 2020). Collaborative learning fosters interaction among peers; however, if not facilitated correctly, it may result in uneven participation and the reinforcement of incorrect practices. While hands-on training and application-based teaching are crucial for skill development, learners may struggle to apply techniques effectively if they lack a solid theoretical background (Tilley Al-Hunaiyyan, 2019). Therefore, a well-rounded combination of these teaching strategies is necessary to meet the varied learning needs of learners and improve their welding skills (Roberts Wood, 2021). In countries within ASEAN regions, issues with learner proficiency in welding courses can arise when teachers fail to employ appropriate teaching styles tailored to the needs of diverse learners. Demonstrative teaching, while effective in providing visual guidance and showcasing complex techniques, often fails to accommodate diverse learning styles. In many cases, learners may find it challenging to translate observation into practice, particularly if they lack opportunities for hands-on experience (Ratanawong et al., 2020). For instance, a study conducted in Thailand highlighted that learners who primarily engaged with demonstrative instruction reported difficulties in applying techniques independently, suggesting that without sufficient practical reinforcement, their skill acquisition was hindered (Wang Lin, 2019). An-

other, collaborative learning presents another set of challenges in welding education. While peer interaction can enhance learning outcomes, it may also lead to inconsistent engagement among learners. Research has shown that when group work is not effectively managed, some learners may dominate discussions, while others become passive participants, resulting in uneven skill development (Tilley Al-Hunaiyyan, 2019). In Malaysia, for example, learners in welding programs expressed concerns over unequal participation in group projects, which often left less confident individuals struggling to master techniques. Without proper guidance, collaborative environments can perpetuate the spread of incorrect techniques among peers, ultimately undermining the quality of education (Khalid et al., 2021). Lastly, hands-on practical approach is indispensable in welding education, yet it must be complemented by a solid theoretical foundation to maximize learner proficiency. In Taiwan, studies reveal that while learners benefit from extensive hands-on training, many lack the theoretical knowledge required to understand the underlying principles of welding processes (Lee Chen, 2020). This gap in understanding can lead to mistakes in practical applications, limiting the effectiveness of training programs. In addition, there are issues also in the misalignment between practical activities and theoretical content, learners may struggle to apply their skills effectively in real-world situations (Roberts Wood, 2021). In the Philippine Technical-Vocational-Livelihood (TVL) track education, issues with learner proficiency in welding courses can arise when teachers fail to employ appropriate teaching styles tailored to the needs of diverse learners. For example, some teachers often fall short in addressing diverse learning styles. Research indicates that learners may struggle to translate what they observe into practical skills without sufficient hands-on practice to reinforce their learning (López et al., 2020). A study con-

ducted among vocational learners in the Philippines highlighted that reliance on demonstration alone resulted in difficulties for learners when they attempted to perform tasks independently. The lack of direct engagement in practical exercises limited their ability to master essential techniques, emphasizing the need for a more balanced approach that incorporates both demonstration and practical training (De Leon et al., 2021). Another, while promoting peer interaction can enhance the learning experience, it may lead to unequal participation among learners. In some instances, dominant learners can overshadow their peers, leading to uneven skill development and a lack of confidence among less assertive individuals (Bautista et al., 2021). Moreover, if collaborative groups are not structured effectively, there is a risk of reinforcing incorrect techniques as learners learn from one another without adequate guidance from instructors. This issue has been documented in various studies, indicating that learners in welding programs often report concerns about their peers' lack of skill and knowledge, which ultimately affects their own learning (Santos et al., 2020). Finally, many learners benefit from hands-on training but often lack the theoretical knowledge necessary to understand the principles underlying welding processes (Riviera et al., 2021). This gap can lead to misconceptions and errors during practical applications, limiting learners' ability to execute tasks effectively. Application-based teaching can serve to bridge this gap by linking theory to real-world scenarios; however, without proper alignment between theoretical content and practical activities, learners may find it challenging to apply their knowledge effectively (Fernandez et al., 2022). In Digos City, several problems also were encountered that affects the effectiveness of welding education. There were various learners who were struggling to apply techniques due to adequate hands-on practice, as indicated by a study highlighting the difficulties faced by learners who rely heav-

ily on demonstrations (De Leon et al., 2021). Another, there were also issues on unequal participation, where dominant learners overshadow others, thereby perpetuating skill gaps and reinforcing incorrect techniques (Bautista et al., 2021). Furthermore, many learners in Digos City reported that their practical training lacked sufficient context, making it challenging to apply skills effectively in real-world scenarios (Riviera et al., 2021). Moreover, the issue on misalignment between practical and theoretical skills produce learners that experienced difficulties in translating knowledge into proficiency (Fernandez et al., 2022). While there is recognition of the importance of teaching methods in facilitating learner learning outcomes, the existing literature primarily focuses only on individual teaching styles such as demonstrative teaching, collaborative learning, hands-on practical approaches, application-based teaching and others. Hence, such existing studies display lack of specific focus on the correlation between different teaching styles in welding education and their direct impact on learners' proficiency levels in welding courses. In addition, there is also a scarcity of comprehensive studies that systematically analyze how the integration of various teaching styles within welding education programs influences learners' proficiency in welding techniques. Addressing this gap would provide valuable insights to design more effective welding education programs tailored to the diverse needs of learners, ultimately enhancing their proficiency levels in welding.

1.1. Theoretical/Conceptual Framework—

Understanding the relationship between teaching styles in welding education and learner proficiency in this study involves exploring several educational theories. One prominent theory is the Constructivist Learning Theory, which posits that learners construct knowledge through experiences and reflection. In the context of welding education, this theory emphasizes hands-on training, where learners learn by ac-

tively engaging in welding practices rather than through passive absorption of information. A study by Barlow and Barlow (2021) highlights that when instructors adopt a constructivist approach, such as facilitating group projects and providing real-world problem-solving scenarios, learners demonstrate higher levels of engagement and skill acquisition. Moreover, constructivist teaching encourages collaborative learning, which can lead to increased motivation and a deeper understanding of welding techniques (Liu et al., 2020). Another relevant theory is the Bandura's Social Learning Theory, which emphasizes the role of observation and modeling in the learning process. In welding education, learners often learn by observing their instructors and peers, making it crucial for teaching styles to include demonstration and mentorship. According to the study of Taylor and Green (2021), when instructors effectively model welding techniques and behaviors, learners are more likely to replicate these practices and develop proficiency. Furthermore, a study by Grey et al. (2019) found that peer-assisted learning in vocational training settings can enhance learner outcomes, as learners benefit from observing and interacting with their classmates. This theory suggests that incorporating collaborative learning environments and peer feedback can significantly impact learners' skills and confidence in welding. Lastly, the Experiential Learning Theory, developed by Kolb (1984) as cited by Martin and Harris (2020), is particularly pertinent to

vocational education, including welding. This theory asserts that learning is a process where knowledge is created through the transformation of experience. In welding courses, experiential learning can occur through simulations, lab work, and real-world projects, allowing learners to apply theoretical concepts in practical settings. A recent study by Smith and Johnson (2022) indicates that learners who engage in experiential learning through hands-on activities show improved proficiency in technical skills and a greater understanding of safety practices in welding. Additionally, implementing reflective practices within experiential learning can enhance learners' ability to assess their performance and identify areas for improvement. Thus, aligning teaching styles with experiential learning principles can foster learner development and success in welding education. On the other hand, the conceptual framework of the study is shown in Figure 1. The independent variable is the teaching style in welding education by TVL secondary teachers in terms of demonstrative teaching style, collaborative learning style, hands-on practical approach, and application-based teaching style. On the other hand, the dependent variable is the learner's proficiency in welding courses in Secondary School District, Division of Digos City in terms of practical skills and technique mastery, understanding of welding and materials, and quality and precision of work.

2. Methodology

This chapter discusses the research methods in conducting the study which are considered strategies or techniques utilized in the collection of data evidence for analysis in order to uncover new information or create better understanding of a topic. Contents of this chapter include the research design, research respondents of the study, research instrument and the data gathering procedures.

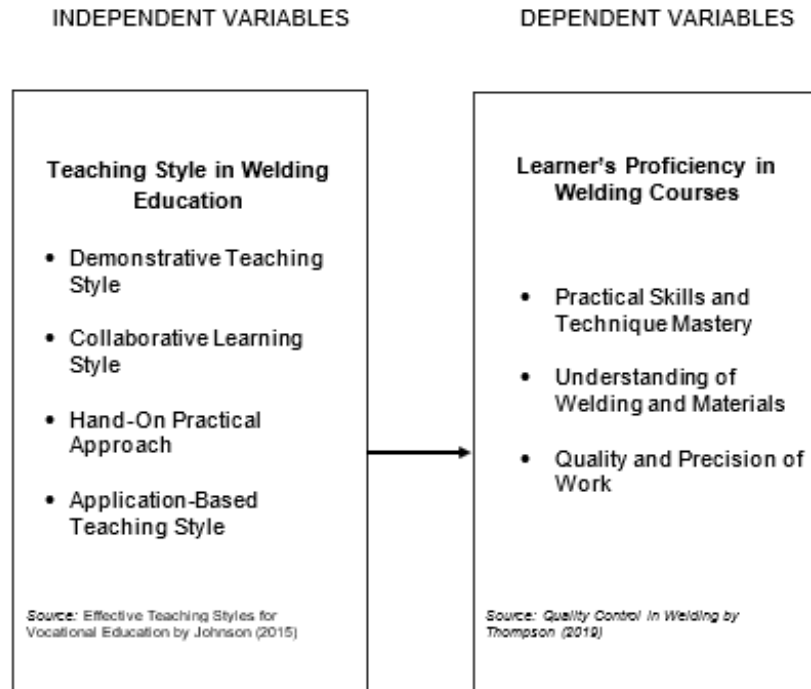


Fig. 1. Conceptual Paradigm Showing the Variables of the Study

2.1. Research Design—This study employed a descriptive-correlational research design. This design involves describing the relationship between variables without manipulating them, making it suitable for investigating the association between teaching styles and learners' proficiency in welding. Firstly, a descriptive-correlational research design would enable researchers to describe the prevalence and characteristics of different teaching styles utilized in welding education programs. Through surveys, the researcher gathered data on the teaching styles employed by secondary TVL teachers as well as the learner's proficiency in welding courses. This descriptive aspect provides valuable insights into the current landscape of welding education, setting the foundation for exploring its impact on learner proficiency (De Vaus, 2019). Secondly, correlational analysis will allow the researcher to examine the relationship between teaching styles and learners' proficiency in welding courses. By collecting data on learners' proficiency levels and their exposure to different teaching styles, re-

searchers can determine whether certain instructional methods are associated with higher levels of proficiency. This correlational aspect elucidates the potential influence of teaching styles on learner's proficiency in welding courses, offering practical implications for instructional practices in welding education (Leedy Ormrod, 2018).

2.2. Research Ethics—This study adhered strictly to the established protocols and standard guidelines required for conducting research, particularly in managing respondents' data. The survey questionnaire, along with supporting documentation from authors, will be submitted for thorough evaluation. Following approval from the Ethics Committee, the researcher advanced in the prosecution with the study. Social Value. Exploring the teaching style in welding education and the learner's proficiency in welding courses within the Secondary School District of Digos City carries significant social value, particularly in enhancing the employability and technical skills of learners in a region committed to advancing vocational train-

ing. Effective teaching methodologies, such as co-teaching and project-based learning, have been shown to improve learners' practical abilities and teamwork skills in metalwork disciplines. By identifying and implementing effective teaching styles in welding education, teachers can better align their instruction with industry standards, thereby enhancing learners' proficiency and readiness for the workforce. This alignment not only benefits individual learners but also contributes to the local economy by supplying skilled professionals who meet the demands of industries in Digos City and beyond. Moreover, fostering such competencies supports the ethical imperative of education to empower individuals with the skills necessary for personal and community advancement, promoting social equity and economic development.

Informed Consent. Informed consent is a fundamental ethical principle that requires researchers to provide clear and comprehensive information about the study to participants before they agree to participate. This process ensures that learners understand the nature of the research, including its purpose, methodologies, potential risks, and benefits. According to McLaughlin et al. (2020), it is vital that consent is obtained voluntarily, without any coercion, enabling learners to make informed choices about their involvement. In a vocational setting, where learners may feel pressure to participate due to perceived power dynamics, researcher will emphasize their autonomy and right to withdraw from the study at any time.

Vulnerability of Research Participants. The vulnerability of research participants, particularly in technical education like welding, must be carefully considered. Respondents may be more susceptible to coercion or pressure. The researcher will recognize these dynamics and create a supportive environment where the respondents will feel safe to express their thoughts and experiences. Vulnerable populations, such as with limited educational backgrounds, may lack the confidence

to voice their concerns regarding participation. To address this vulnerability, researchers should implement safeguards, such as anonymous surveys or focus groups, to ensure that learners can share their insights without fear of judgment or repercussions (Beauchamp Childress, 2019).

Privacy and Confidentiality. Privacy and confidentiality are paramount in protecting participants' personal information and responses. In studies involving educational settings, safeguarding respondents' identities and data is essential to maintaining trust and ethical integrity. The researcher will anonymize data collected during the study and ensure that any identifying information is securely stored and accessible only to the research team. According to the American Educational Research Association (2020), ethical guidelines dictate that researchers take proactive measures to protect participant confidentiality, especially when dealing with sensitive information that could impact learners' academic and professional futures. By ensuring robust data protection practices, researchers can create a safe space for participants to share their experiences openly.

The Risk, Benefits Safety. While the primary aim of this study is to improve teaching styles and learner proficiency in welding, potential risks must be carefully assessed. These may include psychological distress from discussing educational experiences or concerns about academic performance. The researcher will communicate potential risks clearly to participants and implement strategies to minimize them, such as providing access to support resources or counseling services. Conversely, the benefits of the research—improved educational practices, enhanced learner outcomes, and greater insight into effective teaching methods—should also be clearly articulated. Engaging participants in discussions about these benefits can help justify their involvement and reinforce the value of their contributions to the research (Fletcher et al., 2021). Ultimately, balancing these eth-

ical considerations ensures that the research is conducted with respect and integrity. Justice. The principle of justice emphasizes the fair treatment of all participants, ensuring equitable access to the research benefits and the avoidance of exploitation. In this study, it is essential that the selection of teachers as respondents is representative and does not disproportionately burden any particular group. The researcher must ensure that all teachers, regardless of their experience or teaching style, have an equal opportunity to contribute to the study. This approach not only enhances the validity of the findings but also fosters a sense of inclusivity and respect among participants (Beauchamp Childress, 2019). Transparency. Transparency is another cornerstone of ethical research, requiring the researcher to be open about their methods, intentions, and potential conflicts of interest. In the context of this study, transparency entails clearly communicating the research objectives to participating teachers and providing detailed information about how their insights will be used. This can involve sharing the research design, data collection methods, and how the findings will be disseminated. As highlighted by Koocher and Keith-Spiegel (2019), transparency builds trust between researchers and participants, allowing teachers to feel secure in their contributions. When teachers understand the purpose and potential impact of the research, they are more likely to engage actively and provide honest feedback, ultimately enriching the data collected. Qualification of the Researcher. The researcher conducting this study possesses a comprehensive set of skills, knowledge, and experience that are essential for executing the research effectively and ethically, which includes a strong grasp of various research methodologies and ethical guidelines pertinent to the field of elementary home economics education. Moreover, the researcher is committed to ongoing professional development, actively seeking guid-

ance from more seasoned colleagues and ethics boards whenever necessary to ensure adherence to ethical standards. This level of preparedness not only safeguards the well-being of participants but also contributes significantly to the validity and reliability of the findings obtained in the study (Flick, 2019). Furthermore, the researcher is currently enrolled in a thesis development course, indicating that all prerequisite courses and requirements have already been successfully completed, thereby reinforcing the researcher's qualifications and readiness to undertake this investigation (Reiter, 2019). Adequacy of Facilities. The adequacy of facilities is a critical ethical consideration that ensures participants' comfort and safety during the research process. For a study focused on teaching styles in welding education, it is essential to provide suitable environments for interviews, focus groups, or surveys that facilitate open discussion. The researcher should ensure that locations are free from distractions and adequately equipped for any necessary demonstrations or discussions related to welding practices. Furthermore, access to resources, such as teaching materials or professional development opportunities, should be considered to enhance the research environment. The American Educational Research Association (2020) underscores the importance of creating supportive settings that encourage participant engagement and expression, which is particularly vital in vocational education settings. Community Involvement. Community involvement is a significant ethical aspect that enriches the research process and ensures its relevance. Engaging with the educational community, including welding instructors, learners, and industry professionals, can provide valuable insights into the practical implications of different teaching styles. This participatory approach not only enhances the quality of the research but also fosters a sense of ownership among community members regarding the study's outcomes. By involving

stakeholders in the research process, including feedback sessions or collaborative discussions, researchers can ensure that their work addresses real-world challenges and promotes best practices in welding education. According to Minkler and Wallerstein (2019), community involvement is not just beneficial for data collection but also strengthens the ethical foundation of research by prioritizing the voices and experiences of those most affected by the study.

2.3. Research Respondents—The conduct of this study were the selected secondary TVL teachers in Secondary School District, Division of Digos City. There will be one hundred and twenty (120) TVL teachers that who served as the responders in this research. The respondents were the selected using a purposive sampling method to select respondents, meaning participants will be intentionally chosen based on specific characteristics or criteria that are relevant to the research as presented in the above statements. This approach enables the researcher to gather samples from respondents that align closely with the study's objectives (Johnson Davis, 2021). Utilizing purposive sampling ensures that the chosen respondents are ideally positioned to offer valuable insights and detailed information regarding the teaching style in welding education and the learner's proficiency in welding courses.

2.4. Research Instrument—The creation of research instruments is a crucial phase in the

research process, as these tools are essential for collecting data and information from participants, ultimately playing a vital role in ensuring the quality and validity of the research findings. These instruments not only enhance the standardization of data collection procedures but also facilitate the replication of studies and comparison of results across various contexts (De Vaus, 2019). In the current investigation, the researcher utilized a survey questionnaire as the primary tool for data collection, which will be organized into two separate sections, each specifically tailored to address one of the variables being examined. By employing this structured methodology, the researcher intends to gather comprehensive data that accurately reflects the key aspects of the research variables, thereby enriching the overall analysis and interpretation of the findings (Bryman, 2019). For the first part of the survey instrument, this would provide data on the level of teaching style in welding education by TVL secondary teachers in terms of demonstrative teaching style, collaborative learning style, hands-on practical approach, and application-based teaching style. Questions from this part of the instrument were adopted from the Effective Teaching Styles for Vocational Education by Johnson (2015). In the process of interpreting its data, a five-point Likert Scale of the survey having five (5) as the highest and one (1) as the lowest. The scale with description and interpretation is shown below.

For the second part of the questionnaire, this determined the level of learner's proficiency in welding courses in Secondary School District, Division of Digos City in terms of practical skills and technique mastery, understanding of welding and materials, and quality and precision of work. Questions from this part of the instrument were adopted from the the Quality Control in Welding by Thompson (2019). The

same with the first part of the survey questionnaire, a five-point Likert Scale of the survey having five (5) as the highest and one (1) as the lowest in interpreting its data. The scale with description and interpretation is shown below. The following five order gradations with their respective range of means and description were considered:

Descriptive Rating and Interpretation for Teaching Styles in Welding of Secondary TVL Teachers

Range	Descriptive Equivalent	Interpretation
4.20–5.00	Very High	This means that the teaching styles in welding of secondary TVL teachers are always evident.
3.40–4.19	High	This means that the teaching styles in welding of secondary TVL teachers are often evident.
2.60–3.39	Moderate	This means that the teaching styles in welding of secondary TVL teachers are sometimes evident.
1.80–2.59	Low	This means that the teaching styles in welding of secondary TVL teachers are seldom evident.
1.00–1.79	Very Low	This means that the teaching styles in welding of secondary TVL teachers are not evident.

Relatively, meticulous development of research instruments plays a significant role in promoting construct validity by ensuring that the items or questions included are closely aligned with the specific constructs or concepts being studied. Furthermore, well-designed research instruments that are clear and concise enhance participants' understanding and cooperation, which is vital for collecting high-quality data (Tavakol Dennick, 2019). Ultimately, the

careful crafting of these instruments bolsters the credibility and rigor of the research findings, making it an indispensable element of the research process. To ensure the validity of the instrument, it undergone review by research experts and members of the panel committee. Additionally, the survey instrument was subjected to pilot testing to evaluate its reliability, which was assessed using the Cronbach's Alpha coefficient (Cohen et al., 2019).

2.5. Data Gathering Procedure—At the outset of the data gathering procedure, the researcher wrote a letter seeking permission from the Dean of the Graduate School so that this research study will be conducted. Next, the researcher secured a letter asking for permission to the Schools Division Superintendent, Divi-

sion of Digos City through the channels of the Office of Public Schools District Supervisors (PSDS) of the selected different schools. Upon approval of the permit, the survey questionnaire will be ready for the conduct of the study. During the conduct of the study, the researcher personally hand-in the survey questionnaire to the

Descriptive Rating and Interpretation for Learner's Proficiency in Welding Courses as Perceived by Secondary TVL Teachers

Range	Descriptive Level	Interpretation
4.20–5.00	Very High	This means that the learner's proficiency in welding courses as perceived by secondary TVL teachers are always evident.
3.40–4.19	High	This means that the learner's proficiency in welding courses as perceived by secondary TVL teachers are often evident.
2.60–3.39	Moderate	This means that the learner's proficiency in welding courses as perceived by secondary TVL teachers are sometimes evident.
1.80–2.59	Low	This means that the learner's proficiency in welding courses as perceived by secondary TVL teachers are seldom evident.
1.00–1.79	Very Low	This means that the learner's proficiency in welding courses as perceived by secondary TVL teachers are not evident.

selected respondents. The questionnaire was retrieved right after the respondents will be done answering the survey questions. Lastly, the collected data was analyzed by a statistician using

the different measures of treating the data as presented this chapter. The results in the treatment of the data were interpreted for further information of the study.

2.6. Data Analysis—The study will use the respondents' collected data for analysis. The following statistical tools will be used in the analysis and interpretation of the responses in this study to uncover meaningful insights from collected data. Mean. Utilizing mean calculation in data analysis serves as a valuable tool in determining the level of teaching style employed by TVL (Technical-Vocational-Livelihood) secondary teachers in welding education, as well as evaluating the perceived proficiency levels of learners in welding courses by these teachers. By computing the mean ratings provided by TVL teachers regarding their teach-

ing styles and the perceived proficiency of their learners, researchers can gain insights into the overall effectiveness of instructional methods and learner outcomes (Sullivan, 2018). Mean calculation provides a concise summary of the central tendencies in teacher-reported teaching styles and learner proficiency levels, offering a foundational understanding for further analysis and interpretation. Pearson R Correlation. Pearson R correlation analysis allows researchers to quantitatively assess the strength and direction of the relationship between teaching styles and learner proficiency levels. By computing Pearson correlation coefficients between vari-

ables such as teaching style effectiveness ratings and learner proficiency scores, researchers can determine whether a significant association exists (McHugh, 2019). For example, a positive correlation coefficient would indicate that higher ratings of a specific teaching style are associated with higher learner proficiency levels, while a negative correlation would suggest the opposite. Pearson r correlation analysis provides a robust statistical framework for identifying potential links between instructional approaches and learner learning outcomes in welding education courses. Multiple Linear Regression (MLR). The Multiple Linear Regression (MLR) enables the researcher to assess how

multiple teaching style variables collectively predict learner proficiency levels. By including various teaching style factors as predictor variables in the regression model, the researcher can evaluate the unique contribution of each instructional approach (Tabachnick Fidell, 2019). This allows for a more specific understanding of which teaching styles have the most significant impact on learner proficiency in welding education courses. Multiple linear regression analysis offers a comprehensive approach to exploring the complex interplay between teaching styles and learner learning outcomes, facilitating evidence-based recommendations for instructional practice.

3. Results and Discussion

This chapter presents the results and discussions based on the data collected during the study, offering a thorough analysis and interpretation of the findings. It includes an in-depth examination of the data, highlighting the implications and outcomes of the results obtained. The discussions are meticulously aligned with the research questions and the statement of the problem articulated in the preceding chapters. Consequently, the deliberations in this chapter provide a comprehensive understanding of how the findings address the core issues investigated in this study.

3.1. Level of Teaching Style in Welding Education by TVL Secondary Teachers—Summary of the Level of Teaching Style in Welding Education. The data in Table 1 presents a summary of the level of teaching styles in welding education by TVL secondary teachers in the Secondary School District, Division of Digos City. The overall mean of 3.93, interpreted as "High," means that the teaching styles in welding of secondary TVL teachers in the Division of Digos City are often evident. This further reflects the effective use of varied teaching strategies to sup-

port learner learning. This summary analysis also emphasizes the importance of incorporating multiple teaching styles to address diverse learner needs and ensure alignment with the competencies required in vocational education (Miller Davis, 2020). For TVL teachers in the Secondary School District, Division of Digos City, this finding suggests the need to maintain high standards in instructional practices, particularly in technical and vocational subjects, to enhance learners' skill acquisition and employability.

Precisely, the highest-rated teaching style, "Demonstrative Teaching Style," achieved a mean of 4.21, classified as "Very High." This means that the teaching styles in welding in terms of demonstrative teaching style of secondary TVL teachers in the Division of Digos

City are always evident. This further indicates that TVL teachers in Secondary School District, Division of Digos City excel in demonstrating welding techniques and safety practices, which are crucial in skill-based education. The emphasis on clear, step-by-step demonstrations and the

Table 1. Summary of the Level of Teaching Style in Welding Education

Indicators	Mean	Descriptive Level
Demonstrative Teaching Style	4.21	Very High
Collaborative Learning Style	3.74	High
Hands-On Practical Approach	3.70	High
Application-Based Teaching Style	4.08	High
Overall	3.93	High

use of visual aids enhances learners' understanding and retention of technical skills (Martinez Young, 2021). In Secondary School District, Division of Digos City, replicating such practices, particularly in workshops and laboratory settings, can foster an environment where learners develop confidence in applying their learning to practical scenarios. Relatively, the second-highest rated style, "Application-Based Teaching Style," garnered a mean of 4.08, also interpreted as "High." This means that the teaching styles in welding in terms of application-based teaching style of secondary TVL teachers in the Division of Digos City are often evident. This analysis also highlights the significant effort made by TVL teachers in Secondary School District, Division of Digos City to connect lessons to real-world applications and industry needs. The integration of case studies, projects, and contextual discussions allows learners to bridge theoretical knowledge with practical challenges (Robinson Perez, 2021). For public TVL high school teachers in the in the Secondary School District, Division of Digos City, reinforcing this approach through partnerships with local industries and incorporating emerging technologies can further enhance its impact. Consequently, the "Collaborative Learning Style," with a mean of 3.74, classified as "High", means that the teaching styles in welding in terms of collaborative learning style of secondary TVL teach-

ers in the Division of Digos City are often evident. The analysis also emphasizes the value of teamwork and peer learning in welding education. Encouraging group projects, peer discussions, and collaborative problem-solving fosters a supportive learning environment where learners can share ideas and develop communication skills (Thompson Garcia, 2019). In Secondary School District, Division of Digos City, providing professional development for TVL teachers to design effective collaborative activities and assess team performance could improve this teaching style's implementation. Closely following, the "Hands-On Practical Approach" received a mean of 3.70, still classified as "High." This result reflects the TVL teachers' efforts in Secondary School District, Division of Digos City to provide learners with ample opportunities to practice welding techniques in workshop settings. However, the relatively lower rating suggests potential challenges such as limited resources, time constraints, or workshop capacity (Jones et al., 2019). Addressing these issues in the Secondary School District, Division of Digos City, such as by enhancing workshop facilities and ensuring the availability of diverse tools and materials, would further strengthen hands-on learning.

3.2. Level of Learner's Proficiency in Welding Courses—Summary of the Level of Learner's Proficiency in Welding Courses. The

data in Table 2 summarizes the level of learner proficiency in welding education, as perceived by TVL secondary teachers in the Secondary School District, Division of Digos City. With an overall mean of 4.00, described as "High," the table means that the learner's proficiency in welding courses as perceived by secondary TVL teachers in the Division of Digos City are often evident. The analysis also implies that learners have generally developed strong foundational competencies across the key dimensions of welding education: practical skills and technique mastery, understanding of welding and materials, and quality and precision of work as perceived by secondary TVL teachers in the Division of Digos City. This finding further suggests that the welding education curriculum in this division is effectively preparing learners for technical demands and industry expectations. For TVL teachers in Secondary School

District, Division of Digos City, the insights from this table emphasize the need to continuously refine teaching practices to achieve similar levels of proficiency among their learners (Baartman de Bruijn, 2019). Relatively, the overall "High" proficiency level of learner's proficiency in welding courses demonstrates that the welding education program in the Secondary School District of Digos City is meeting its objective of preparing learners for industry-aligned careers. The balance across the three indicators—practical skills, theoretical understanding, and quality assurance—suggests that the curriculum provides a holistic approach to skill development. For the Secondary School District, Division of Digos City, adopting a similar balanced approach in their instructional strategies can ensure that learners graduate with well-rounded competencies that meet diverse industry demands (Springer et al., 2021).

Table 2. Summary of the Level of Learner's Proficiency in Welding Courses

Indicators	Mean	Descriptive Level
Practical Skills and Technique Mastery	4.14	High
Understanding of Welding and Materials	3.96	High
Quality and Precision of Work	3.91	High
Overall	4.00	High

The highest-rated indicator, "Practical Skills and Technique Mastery," with a mean score of 4.14, categorized as "High", means that the learner's proficiency in welding courses in terms of practical skills and technique mastery as perceived by secondary TVL teachers in the Division of Digos City are often evident. The analysis also signifies that learners possess commendable competence in executing essential welding techniques, including the ability to safely operate equipment and troubleshoot common prob-

lems as perceived by secondary TVL teachers in the Division of Digos City. This outcome highlights the effectiveness of hands-on training as a critical component of welding education. TVL teachers in Secondary School District, Division of Digos City can draw from this finding to prioritize experiential learning activities, ensuring that learners have ample opportunities to engage in real-world tasks. This approach will enable learners to gain confidence and fluency in applying their skills to meet the standards of

entry-level positions in the industry (Sawyer et al., 2022). The second-highest indicator, “Understanding of Welding and Materials,” with a mean score of 3.96, categorized as “High”, means that the learner’s proficiency in welding courses in terms of understanding of welding and materials as perceived by secondary TVL teachers in the Division of Digos City are often evident. The analysis also reflects learners’ ability to grasp theoretical concepts and material properties, which are foundational to effective welding practices. This high rating indicates that learners are not only performing tasks but also comprehending the scientific and technical principles that underlie their work as perceived by secondary TVL teachers in the Division of Digos City. For TVL teachers in Secondary School District, Division of Digos City, integrating comprehensive lessons on metallurgy, welding techniques, and material behavior into the curriculum can further enhance learners’ theoretical understanding. Additionally, fostering interdisciplinary learning, where learners connect welding concepts to broader engineering and manufacturing principles, could strengthen their knowledge base (Gunderson Moore, 2020). The “Quality and Precision of Work,” with a mean score of 3.91, categorized as “High”, means that the learner’s proficiency in welding courses in terms of quality and precision of work as perceived by secondary TVL teachers in the Division of Digos City are often evident. The analysis also highlights the learners’ capacity to produce outputs that align with industry standards. This indicator emphasizes

Relatively, the overall significance of teaching styles collectively highlights the importance of a balanced and integrated approach to instruction. It is evident that combining multiple teaching styles can have a synergistic effect on learner proficiency. For TVL teachers in Secondary School District, Division

the importance of instilling an attention to detail and emphasizing quality control in every welding task as perceived by secondary TVL teachers in the Division of Digos City. While the score is commendable, it also points to an area where slight improvements can elevate learner outcomes to even higher levels. TVL teachers in Secondary School District, Division of Digos City should emphasize structured feedback mechanisms and quality assurance protocols, encouraging learners to critically evaluate their work for defects and continuously improve their precision and craftsmanship (Johnson Johnson, 2021).

3.3. Significant Relationship Between the Teaching Style by TVL Secondary Teachers and Learner’s Proficiency in Welding Education—The results presented in Table 3 highlight the significant relationship between the teaching styles employed in welding education by TVL secondary teachers and the proficiency of learners in welding education in the Secondary School District, Division of Digos City. With an overall correlation coefficient (r) value of 0.679, the findings indicate a strong and positive relationship, suggesting that variations in teaching styles have a substantial impact on learner proficiency. The p -value of 0.000 confirms the statistical significance of this relationship, leading to the rejection of the null hypothesis. For TVL teachers in Secondary School District, Division of Digos City, these results emphasize the critical role of teaching methodologies in enhancing learner outcomes in technical-vocational education (Kolb, 2019).

of Digos City, adopting a diversified instructional approach—blending application-based tasks, hands-on activities, demonstrations, and collaborative learning—can yield optimal results in welding education. This holistic strategy ensures that learners are well-equipped with the technical, theoretical, and interper-

Table 3. Significant Relationship Between the Teaching Style by TVL Secondary Teachers and Learner's Proficiency in Welding Education

Teaching Style	r	p-value	Decision on H ₀
Demonstrative Teaching Style	0.535	0.000	Reject
Collaborative Learning Style	0.433	0.000	Reject
Hands-On Practical Approach	0.419	0.000	Reject
Application-Based Teaching Style	0.588	0.000	Reject
Overall	0.679	0.000	Reject

sonal competencies required for the industry (Crosby, 2017). Among the individual teaching styles, the Application-Based Teaching Style recorded the highest correlation with learner proficiency having a correlation coefficient (r) value of 0.588, and a p-value of 0.000. This finding emphasizes that learners' ability to connect theoretical knowledge to practical, real-world applications significantly enhances their proficiency in welding education as perceived by TVL teachers in Secondary School District, Division of Digos City. Such teaching methods foster problem-solving skills and a deeper understanding of industry-relevant practices. For TVL teachers in Secondary School District, Division of Digos City, prioritizing application-based projects, such as case studies and simulations, can prepare learners to meet the demands of the welding industry more effectively (Hicks, 2020). Consequently, the Demonstrative Teaching Style follows closely with a correlation coefficient value of 0.535, with a p-value of 0.000. This indicates that clear and effective demonstrations of welding techniques are instrumental in building learners' foundational skills and confidence in practical tasks. Demonstrative teaching ensures that learners understand both the correct and incorrect methods, emphasizing safety and precision as perceived by TVL teach-

ers in Secondary School District, Division of Digos City. In addition, the high correlation suggests that TVL teachers in Secondary School District, Division of Digos City should integrate detailed demonstrations into their instructional strategies, ensuring that learners are exposed to the nuanced aspects of welding processes (Hernandez McKenzie, 2021). The Collaborative Learning Style exhibits a moderate correlation with learner proficiency having a correlational coefficient (r) value of 0.433. This analysis highlights its role in fostering teamwork and shared learning experiences. Although not as strongly correlated as application-based and demonstrative styles, collaborative learning still plays a crucial role in enabling learners to exchange knowledge, solve problems collectively, and develop interpersonal skills. For TVL teachers in Secondary School District, Division of Digos City, integrating structured group activities, such as peer teaching sessions and collaborative welding projects, could enhance not only technical skills but also soft skills essential for workplace success (Foster et al., 2020). Lastly, the Hands-On Practical Approach demonstrates a slightly lower but still significant correlation with learner proficiency having a correlational coefficient (r) value of 0.419, and a p-value of 0.000. This finding highlights the importance

of providing learners with ample opportunities to practice and refine their skills through direct engagement with tools and materials. While this teaching style may not have the strongest correlation compared to others, it remains significant for reinforcing theoretical concepts and ensuring skill retention. TVL teachers in Secondary School District, Division of Digos City should allocate sufficient workshop time and individualized support to maximize the benefits of hands-on learning (Roberts et al., 2022).

3.4. Regression Analysis of Teaching Style on Learner's Proficiency in Welding Education— The results presented in Table 4 provide a detailed regression analysis of the relationship between various teaching styles and learner proficiency in welding education within the Secondary School District of Digos City. The overall analysis has an R-value equal to 0.707, indicating a strong positive relationship between the teaching styles and learner proficiency. The R^2 of 0.500 suggests that approximately 50 percent of the variance in learner proficiency can be explained by the teaching styles employed by the teachers. While the remaining 50 percent of the variance may be attributed to other factors, the substantial effect of teaching styles in this model emphasizes the importance of pedagogical strategies in shaping learner outcomes. Furthermore, the F-value of 28.732, with a corresponding p-value of 0.000, indi-

cates that the overall regression analysis is statistically significant leading to the rejection of the null hypothesis. This implies that all four teaching styles—demonstrative, collaborative, hands-on, and application-based—are crucial in influencing learner proficiency in welding education. Among the individual teaching styles, the Application-Based Teaching Style demonstrates the highest unstandardized coefficient ($B = 0.356$) and standardized coefficient ($Beta = 0.359$), making it the most significant predictor of learner proficiency. The positive and significant relationship ($t = 4.619$, $p < 0.001$) highlights that when teachers link classroom learning to real-world applications and challenges, learners' proficiency increases significantly. By engaging learners in projects that simulate real-world welding tasks, learners not only learn the theoretical aspects but also gain practical, hands-on experience that prepares them for the demands of the industry as perceived by TVL teachers in Secondary School District, Division of Digos City. The findings also suggest that TVL teachers in in Secondary School District, Division of Digos City should focus on enhancing application-based learning strategies, such as case studies, real-life scenarios, and industry collaborations, to increase learner readiness for professional welding environments (Kolb, 2019).

Following closely is the Demonstrative Teaching Style with an unstandardized coefficient ($B = 0.314$) and a standardized coefficient ($Beta = 0.326$), indicating a strong and positive relationship with learner proficiency ($t = 4.407$, $p < 0.001$). This style emphasizes the importance of teachers providing clear and effective demonstrations of welding techniques, which has a profound impact on learners' ability to understand and perform welding tasks. The significant influence of demonstrative teaching

reflects the value of seeing and practicing correct techniques in the presence of skilled instructors. TVL teachers in Secondary School District, Division of Digos City are encouraged to continue utilizing demonstrations to clarify complex procedures, ensuring that learners have a solid foundation before engaging in independent practice. As Grant and Houghton (2021) suggests, modeling behaviors not only enhances learning but also reinforces correct practices in vocational education. The Hands-On Practical

Table 4. Regression Analysis of Teaching Style on Learner's Proficiency in Welding Education

Teaching Style	B	Std. Error	Beta	t	Sig.
(Constant)	0.315	0.064	–	3.807	0.001
Demonstrative Teaching Style	0.314	0.071	0.326	4.407	0.000
Collaborative Learning Style	0.233	0.069	0.232	2.990	0.005
Hands-On Practical Approach	0.251	0.075	0.258	3.423	0.000
Application-Based Teaching Style	0.356	0.077	0.359	4.619	0.000

Decision on H_0 : All predictors have significant effects; therefore, reject the null hypotheses.

Approach also shows a meaningful relationship with learner proficiency, with an unstandardized coefficient ($B = 0.251$) and a standardized coefficient ($Beta = 0.258$). This teaching style encourages direct engagement with materials and tools, fostering learners' development of technical skills. The statistically significant relationship ($t = 3.423$, $p < 0.001$) underlines the necessity of providing learners with sufficient workshop time to practice welding techniques in real-life settings. Hands-on learning is critical in vocational education, as it enables learners to refine their skills and internalize technical procedures. For TVL teachers in Secondary School District, Division of Digos City, it is essential to incorporate more practical sessions where learners can apply theoretical knowledge in a supportive, controlled environment. As Patel Williams, (2023) emphasizes, learning by doing is integral to vocational education, making it a key component of effective teaching. The Collaborative Learning Style, although slightly less impactful than the other styles, still demonstrates a positive relationship with learner proficiency, with an unstandardized coefficient ($B = 0.233$) and a standardized coefficient of ($Beta = 0.232$). The statistically significant result ($t = 2.990$, $p = 0.005$) indicates that when learners work together on welding tasks, they can learn from each other, share problem-solving techniques, and improve their overall performance. While collaboration may not have the same direct impact as hands-on practice or application-based methods, it still plays a crucial role in fostering teamwork and communication skills that are essential in the workplace. TVL teachers in Secondary School District, Division of Digos City should aim to integrate more group projects and peer teaching activities in welding instruction to further enhance the social learning aspects of the classroom. White O'Connor (2022) argues that collaborative learning provides opportunities for learners to develop cognitive and social skills that are critical for success in vocational careers. Furthermore, the findings from this regression analysis have significant implications for professional development and instructional practice in Secondary School District, Division of Digos City. Given the strong impact of all four teaching styles, TVL teachers should be encouraged to adopt a more varied approach, integrating demonstrations, hands-on learning, collaborative tasks, and real-world applications into their curriculum. Providing teachers with the resources and training necessary to implement these strategies effectively will likely re-

sult in improved learner outcomes. Additionally, the school district should consider fostering a culture of ongoing professional development that emphasizes reflective practice and peer collaboration, as such initiatives can further enhance teaching effectiveness and, ultimately, learner proficiency in welding education (Foster et al., 2020).

4. Conclusions and Recommendations

Presented in this chapter are the findings of the study based on the outcome of the gathered data. The conclusions drawn from the findings of the study are likewise outlined in this section. To maximize the significant contribution of this study, the researcher laid down recommendations in this chapter.

4.1. Findings—Achieving proficiency in welding courses is essential for learners to meet the demands of the industry, where skilled welders are sought after for various construction, manufacturing, and maintenance projects. However, several issues that affects negatively the proficiency of the learners due to how the teachers handle welding related courses. Some teachers rely primarily on traditional lecture-based methods, neglecting hands-on experiential learning opportunities and some teachers also are lacking pedagogical training on some teaching style such as demonstrative teaching style, collaborative learning style, hands-on practical approach, and application-based teaching style which give them struggles to effectively engage learners and deliver instruction that fosters skill development. In this study, a non-experimental quantitative research methodology using a descriptive correlation approach was applied. Statistical analyses such as the mean, Pearson R correlation, and Multiple Linear Regression were utilized. The participants in the research were the one hundred and twenty (120) Technical-Vocational-Livelihood (TVL) teachers from public high schools located in Secondary School District, Division of Digos City. The respondents were male and female, aged between 30 to 50 years, with an average teaching experience of 10 to 20 years. Most held bachelor's degrees in education, with a significant number possessing additional certifications in TVL and Welding Education specializations. These respondents were chosen via a sample process known as purposive sampling. Data were analyzed based on the survey questionnaires that were used by the researcher after they had been modified to conform to the parameters of the study, which had been subjected to validation by experts and had its reliability examined. Descriptive results of the study there is a level of teaching style in welding education by TVL secondary teachers in Secondary School District, Division of Digos City. This means that the teaching styles in welding of secondary TVL teachers in the said district of Digos City are often evident. Likewise, there is also a high level of learner's proficiency in welding courses as perceived by TVL teachers in Secondary School District, Division of Digos City. This means that the learner's proficiency in welding courses as perceived by secondary TVL teachers are often evident. Consequently, there is a significant strong positive relationship between the teaching style in welding education by TVL secondary teachers and learner's proficiency in welding courses in Secondary School District, Division of Digos City. The strongest relationship is found in Application-Based Teaching Style, followed by Demonstrative Teaching Style, Collaborative Learning Style and Hands-On Practical Approach. Moreover, the teaching style in welding education by TVL secondary teachers has a significant in-

fluence on the learner's proficiency in welding courses in Secondary School District, Division of Digos City. The findings highlight the importance of a balanced and integrated approach to instruction. It is evident that combining multiple teaching styles can have a synergistic effect on learner proficiency.

4.2. Conclusions—Based on the findings of this study, the following conclusions were offered: The overall level of teaching style in welding education by TVL secondary teachers in Secondary School District, Division of Digos City is high, with demonstrative teaching emerging as the most prominent approach. This means that the teaching styles in welding of secondary TVL teachers in Secondary School District, Division of Digos City are often evident. This suggests that instructors prioritize visual and step-by-step demonstrations to enhance learner comprehension of technical concepts. While collaborative learning, hands-on practical activities, and application-based teaching are also widely implemented, there is room for further enhancement to optimize learner engagement and skill acquisition. Relatively, the overall level of learner proficiency in welding courses, as perceived by TVL teachers in Secondary School District, Division of Digos City is high, demonstrating competence across key skill areas. This means that the learner's proficiency in welding courses as perceived by secondary TVL teachers are often evident. Practical skills and technique mastery are particularly strong, indicating that learners can effectively apply welding techniques in practical settings. Similarly, their understanding of welding principles and materials, along with the quality and precision of their work, reflects a solid foundation for industry readiness. While these results highlight the effectiveness of current instructional methods, further refinements in training strategies could enhance precision and theoretical comprehension. Furthermore, there is a significant strong positive relationship

between the teaching style employed by TVL secondary teachers and learners' proficiency in welding education in Secondary School District, Division of Digos City. Among the different teaching styles, application-based and demonstrative approaches show the strongest correlations, suggesting that practical, hands-on instruction plays a crucial role in developing TVL learner competencies. The results highlight the importance of integrating diverse teaching methods, including collaborative learning and hands-on practical activities, to enhance learner proficiency. These findings reinforce the need for instructional strategies that bridge theoretical knowledge with real-world applications to strengthen skill mastery. Moreover, all teaching style indicators by TVL secondary teachers in Secondary School District, Division of Digos City significantly influence learners' proficiency in welding education, with application-based and demonstrative teaching styles having the strongest impact. This implies that instruction emphasizing real-world applications and step-by-step demonstrations plays a critical role in enhancing learner learning outcomes in welding education. Additionally, collaborative learning and hands-on practical approaches contribute meaningfully to skill development, reinforcing the value of interactive and experiential teaching methods. This highlights the need for a well-balanced instructional approach that integrates various teaching styles to optimize learner proficiency.

4.3. Recommendations—The following interventions were offered based on the conclusions of the study: To further enhance the quality of welding education in the Secondary School District, Division of Digos City, the Department of Education officials should prioritize continuous professional development programs for TVL secondary teachers, focusing on advanced pedagogical strategies, emerging welding technologies, and industry-aligned competencies to ensure that instructional meth-

ods remain relevant and effective. Additionally, strengthening partnerships with local industries, vocational training centers, and technical experts can provide teachers and learners with real-world exposure, hands-on apprenticeships, and updated training resources that bridge the gap between theoretical instruction and industry demands. Lastly, increasing investment in modern welding facilities, equipment, and safety gear, along with the integration of competency-based assessment models, will not only enhance the learning experience but also ensure that TVL learners acquire the necessary skills, precision, and technical expertise required for seamless workforce integration and national certification compliance. Likewise, school administrators should ensure that TVL secondary teachers in the Secondary School District, Division of Digos City have access to continuous professional development programs, specialized training workshops, and industry certifications that will strengthen their proficiency in demonstrative and application-based teaching methodologies while keeping them updated with the latest welding technologies and safety protocols. Another, administrators should allocate sufficient funding and resources to upgrade welding laboratories with modern equipment, high-quality materials, and appropriate safety gear to create an environment conducive to skill mastery and industry-standard training, thereby bridging the gap between theoretical knowledge and hands-on application. Lastly, fostering strong linkages with local industries, technical-vocational institutions, and apprenticeship programs will provide learners with real-world exposure, practical experience, and career opportunities, ensuring that welding education aligns with workforce demands and enhances employment readiness for TVL graduates. Relatively, TVL secondary teachers in the Secondary School District, Division of Digos City should continuously refine their instructional methods by integrating advanced demon-

strative techniques, application-based learning strategies, and industry-aligned practices that emphasize real-world applications, precision, and technical mastery to better prepare learners for future employment. Additionally, fostering strong collaboration with industry partners, local businesses, and technical institutions through internships, on-the-job training, and apprenticeship programs will provide learners with hands-on exposure to real workplace environments, enabling them to bridge theoretical concepts with practical applications and further enhance their career readiness in the welding profession. In relation, TVL learners in welding education in Secondary School District, Division of Digos City are encouraged to take full advantage of the diverse and comprehensive teaching strategies provided by their instructors, particularly the hands-on and demonstrative learning approaches, which play a critical role in the mastery of welding techniques and skills essential for industry readiness. Learners should also actively engage in collaborative learning opportunities, seek continuous improvement in their practical skills through additional practice, and ensure they fully grasp both theoretical concepts and real-world applications to enhance their precision and expertise in welding tasks. Furthermore, taking proactive steps such as participating in internships, workshops, and industry-related experiences will not only complement their learning but also significantly improve their employability and ability to apply welding principles effectively in professional settings. Lastly, Future researchers in the field of TVL education, particularly in welding, should consider investigating the impact of integrating emerging technological tools and simulations to complement the demonstrative and application-based teaching strategies currently employed in secondary schools, as this could offer innovative ways to enhance skill acquisition and learner engagement. Additionally, further studies could explore the long-term effects of

different teaching styles on learner performance and career readiness, especially by comparing the outcomes of hands-on, collaborative, and application-driven approaches across diverse learner populations and educational settings. It is also recommended that future research delve into the development and assessment of tailored professional development programs for TVL instructors, to refine and diversify instructional methods that could address gaps in theoretical understanding while maintaining strong practical training foundations.

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