

Automotive Student's Technological Competence And Work Attitude During Work Immersion In The Division Of Northern Samar

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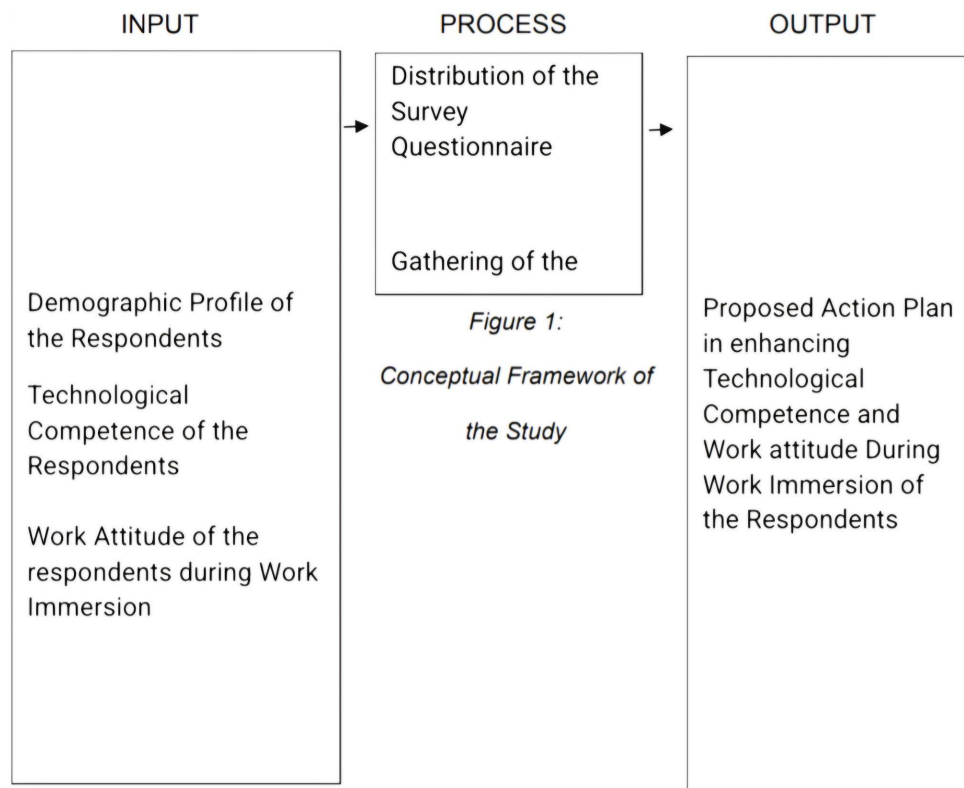
Abstract

This study investigated the technological competence and work attitude of Grade twelve Automotive Senior High School students during their work immersion in the Division of Northern Samar. Utilizing a descriptive-correlational design, data were gathered from one hundred five selected students from Basilio B. Chan Memorial Agricultural and Industrial School and Rawis National High School. Results indicated that learners are predominantly male adolescents from economically modest, self-employed households with limited formal parental education. Students demonstrated a competent level of foundational and entrepreneurial skills, particularly excelling in workplace safety protocols and ethical service. However, their technical and servicing competence remained only moderately competent, revealing specific deficiencies in executing complex diagnostic and hands-on servicing tasks. In terms of work attitude, respondents consistently exhibited high levels of professionalism, teamwork, and positive workplace values, which were not significantly influenced by any of their demographic profiles. Significant differences in technological competence were found based on age, sex, and parental educational attainment. A significant positive correlation was established between the students' technological competence and their work attitudes across all dimensions. These findings validate that hands-on technical proficiency and positive professional behaviors are mutually reinforcing in technical-vocational environments. The study concludes that while the automotive learners possess strong foundational abilities and commendable workplace attitudes, their preparation requires enriched, industry-aligned practical training to elevate advanced diagnostic capabilities. To address these gaps, a contextualized action plan is highly recommended, focusing on the enhancement of workshop facilities, the implementation of simulation-based training, and the strengthening of school-industry partnerships. These targeted interventions are essential to bridge the existing competency gaps and ultimately ensure that graduates are fully equipped with the holistic skills required for successful integration into the modern automotive labor market and diverse professional workplace environments locally and globally, securing a sustainable, highly dependable, resilient, and incredibly prolific.

Keywords: *automotive, competence, work attitude, work immersion*

1. Introduction

Technical-vocational education is globally prioritized to meet the demands of modern industries, requiring graduates to possess both technological competence and solid work values (ILO, 2021). In the Philippines, the Technical-Vocational-Livelihood (TVL) track, particularly the Automotive Servicing strand, employs work immersion to transition learners from theoretical instruction to authentic workplace applications (DepEd Order No. 30, s. 2017). Despite these initiatives, schools in the Division of Northern Samar face resource constraints, challenging the optimization of immersion programs. This study is anchored on Human Capital Theory (viewing training as productivity investment), Experiential Learning Theory (learning via cycles of hands-on application), and Social Learning Theory (adopting professional habits via workplace modeling).



This research was guided by the Input-Process-Output (IPO) model. The input referred to the most important element considered in the study, which included the profile of automotive students in the Division of Northern Samar, their technological competence before and during work immersion, and their work attitudes as they engaged in workplace activities.

Statement of the Problem

Specifically, this study aimed to answer the following:

1. What is the demographic profile of the Automotive students in terms of:

- 1.1 Age
- 1.2 Sex
- 1.3 Parent's Occupation
- 1.4 Type of job, if working students
2. What is the level of Technological Competence of the Automotive students in terms of:
 - 2.1 Foundational / Core Competence
 - 2.2 Technical and Servicing Competence
 - 2.3 Entrepreneurial and Marketing Competence
3. What is the work attitude of the Automotive students during work immersion in terms of:
 - 3.1 Professionalism and Habits
 - 3.2 Respect and Teamwork
 - 3.3 Values
4. Is there a significant relationship between the level of technological competence when grouped according to their profile?
5. Is there a significant relationship between the work attitude during work immersion when grouped according to their profile?
6. Is there a significant difference between the level of technological competence and work attitude during work immersion?
7. Based on the research findings, what action plan may be recommended?

Hypotheses

The study aims to examine the relationship between students' demographic profiles, their technological competence, and their work attitudes during work immersion. To empirically test these relationships, the following hypotheses are proposed:

Null Hypotheses (H_0)

- H_{01} : There is no significant relationship between the technological competence of Automotive Senior High School students and their demographic profiles (age, sex, parents' occupation, and type of job of the students if working).
- H_{02} : There is no significant relationship between the work attitude of Automotive Senior High School students during work immersion and their demographic profiles (age, sex, parents' occupation, parents' educational attainment, and type of job).

- H_{03} : There is no significant difference between the level of technological competence and the work attitude of Automotive Senior High School students during work immersion.

2. Materials and Methods

This study employed a descriptive-correlational research design to examine the technological competence and work attitude of Automotive strand students during their work immersion in the Division of Northern Samar. The participants consisted of a purposive sample of 105 Grade 12 Automotive Technical-Vocational-Livelihood (TVL) students from Basilio B. Chan Memorial Agricultural and Industrial School in Lavezares, Northern Samar, and Rawis National High School in Laoang, Northern Samar, during the School Year 2025–2026, who had completed their required work immersion program. The primary data collection instrument was a researcher-made questionnaire utilizing a 4-point Likert scale, which was constructed based on a thorough review of local and international literature on technological competence, work attitude, and work immersion performance.

The instrument underwent expert validation by Senior High School TVL teachers specializing in Automotive and a research coordinator to ensure clarity, relevance, and alignment with the study's objectives, and subsequently pilot-tested with 30 former Automotive strand students from the same schools, yielding a Cronbach's Alpha reliability coefficient of 0.975, indicating high internal consistency.

The data gathering procedure began with the researcher securing the necessary permits from the Department of Education Region VIII and the Division Office of Northern Samar, followed by obtaining approval from the school heads of the participating institutions. Prior to survey administration, respondents were oriented about the purpose of the study, emphasizing that participation was entirely voluntary and that their responses would remain confidential, and informed consent was obtained from all participants.

The validated questionnaire was then administered to the 105 selected respondents, who were given adequate time to complete the items carefully and accurately, after which the researcher personally collected the completed questionnaires to ensure completeness.

For data analysis, frequency and percentage distributions were used to summarize the demographic profile of the respondents, weighted means were applied to determine the levels of technological competence and work attitude, Independent T-tests were employed for variables with only two categories such as sex, One-Way Analysis of Variance (ANOVA) was used for demographic variables with more than two categories such as age, and Pearson's r correlation coefficient was utilized to determine the strength and direction of the relationship between technological competence and work attitude, with all statistical procedures conducted using established standards and interpreted objectively to ensure the reliability and validity of the study's findings.

3. Results

The demographic profile of the respondents revealed that the overwhelming majority were 17–19 years old, comprising 94.3 percent of the total sample, while only a small percentage fell within the 20–22 years old group (3.8%) and the 23–25 years old category (1.9%). The respondents were predominantly male, accounting for 95.2 percent, with only 4.8 percent identifying as female. In terms of family background, most parents were self-employed (57.1%), followed by a substantial proportion who were not employed (41.9%), and only one respondent reported having a parent employed in government service. The educational attainment of parents showed that the majority were high school graduates (57.1%), while a substantial portion reached only the elementary level (41.9%), and very few completed college (1.0%). Regarding work experience, a large majority of respondents were not working students (68.6%), while smaller proportions held service positions (12.4%), fell under other job categories (17.1%), or occupied skilled roles (1.9%).

In terms of technological competence, Automotive students demonstrated an overall competent level of foundational skills, with a grand mean of 2.74. The highest rating was recorded in observance of proper safety procedures ($M = 3.2762$), which fell under the highly competent category, while competencies related to reading manuals, using measuring instruments, interpreting drawings, and performing basic calculations all fell within the competent range. However, technical and servicing competence yielded a grand mean of 2.36, interpreted as moderately competent, with the majority of indicators including engine tune-up, electrical servicing, drivetrain servicing, system maintenance, and troubleshooting falling within the moderately competent range, and the lowest scores observed in maintaining cooling, lubrication, and fuel systems ($M = 2.14$), servicing drivetrain components ($M = 2.14$), servicing suspension and steering systems ($M = 2.16$), and servicing electrical wiring and lighting systems ($M = 2.21$). Entrepreneurial and marketing competence achieved a grand mean of 2.57, interpreted as competent, with the highest rating observed in practicing honesty and fairness in services ($M = 3.02$), followed by maintaining good customer relations ($M = 2.90$) and developing ideas for small automotive-related business ($M = 2.61$), while the lowest rated entrepreneurial competencies were demonstrating creativity in solving work-related problems ($M = 2.39$) and interacting well with customers and explaining automotive problems clearly ($M = 2.32$), both of which fell under the moderately competent category.

Regarding work attitude during work immersion, respondents demonstrated consistent levels across all three dimensions. Professionalism and Habits achieved a grand mean of 2.95, interpreted as consistent, with the highest ratings recorded for following workplace rules and safety procedures ($M = 3.47$, exemplary) and wearing proper uniform and meeting grooming standards ($M = 3.36$, exemplary), while slightly lower but still consistent means were observed for task responsibility ($M = 2.71$), initiative ($M = 2.72$), on-time task completion ($M = 2.52$), seeking clarification ($M = 2.79$), and eagerness to learn ($M = 2.53$). Respect and Teamwork yielded a grand mean of 2.96, interpreted as consistent, with the highest-rated indicators being showing respect to supervisors, co-workers, and clients ($M = 3.60$, exemplary), cooperating

effectively with others ($M = 3.32$, exemplary), and communicating politely and courteously ($M = 3.25$, exemplary), while relatively lower means were observed in contributing to a positive work environment ($M = 2.66$) and resolving conflicts calmly and professionally ($M = 2.53$). Values achieved a grand mean of 2.94, interpreted as consistent, with the highest-rated indicators being honesty and trustworthiness in all tasks ($M = 3.45$, exemplary) and respect for workplace policies and ethical standards ($M = 3.43$, exemplary), while relatively lower ratings were observed in adapting during difficulties ($M = 2.57$), avoiding shortcuts that reduce work quality ($M = 2.67$), and demonstrating commitment to continuous improvement ($M = 2.76$ – 2.79).

The comparative analysis of technological competence when grouped according to profile variables revealed several significant differences. Age yielded a significant difference in foundational competence ($F = 3.497$, $p = .034$), with 17–19-year-olds scoring higher than older groups, while no significant differences were found for technical servicing ($F = 1.892$, $p = .156$) or entrepreneurial and marketing competence ($F = 2.550$, $p = .083$) when grouped by age. Sex showed significant differences favoring females in technical servicing competence ($F = 9.073$, $p = .003$) and entrepreneurial and marketing competence ($F = 6.775$, $p = .011$), while no significant difference was found in foundational/core competence ($F = 3.446$, $p = .066$). Parental educational attainment significantly impacted technical servicing competence ($F = 4.842$, $p = .010$), but no significant differences were found in foundational/core competence ($F = 1.788$, $p = .172$) or entrepreneurial and marketing competence ($F = 2.062$, $p = .132$) when grouped according to parents' educational attainment. Parents' occupation and work status as a student had no significant impact on any of the three competence domains, as all computed F-values yielded nonsignificant results with p-values greater than .05.

The comparative analysis of work attitude when grouped according to profile variables revealed no statistically significant differences across all demographic categories. For age, ANOVA results for professionalism and habits ($F = 0.247$, $p = .782$), respect and teamwork ($F = 0.039$, $p = .961$), and values ($F = 1.353$, $p = .263$) all yielded nonsignificant results. For sex, professionalism and habits ($F = 2.71$, $p = .604$), respect and teamwork ($F = 3.301$, $p = .072$), and values ($F = 1.033$, $p = .312$) all showed no significant differences. For parents' occupation, professionalism and habits ($F = 0.670$, $p = .514$), respect and teamwork ($F = 0.112$, $p = .895$), and values ($F = 0.933$, $p = .397$) all yielded nonsignificant results. For parents' educational attainment, professionalism and habits ($F = 2.673$, $p = .074$), respect and teamwork ($F = 2.935$, $p = .058$), and values ($F = 0.933$, $p = .397$) all showed no significant differences. For work status as a student, professionalism and habits ($F = 0.368$, $p = .776$), respect and teamwork ($F = 0.424$, $p = .736$), and values ($F = 0.600$, $p = .617$) all yielded nonsignificant results, indicating that students demonstrated uniform levels of work attitude regardless of their profile category.

The correlational analysis between technological competence and work attitude revealed positive and statistically significant relationships with all three work attitude domains. For professionalism and habits, the Pearson correlation coefficient was 0.313 with a p-value of 0.001, indicating a positive and statistically significant relationship. For respect and teamwork, the correlation coefficient was 0.485 with a p-value of less than 0.001, demonstrating a stronger

positive and significant relationship. For values, the correlation coefficient was 0.513 with a p-value of less than 0.001, indicating a strong positive and significant correlation.

4. Discussion

The predominance of male students within the appropriate Senior High School age range and the socio-economically modest family backgrounds in the Division of Northern Samar explain why the Automotive TVL program attracts learners seeking practical skills that enhance employability and potential economic mobility. This aligns with Human Capital Theory, which posits that individuals pursue education as an investment to improve future labor market outcomes, especially in contexts where formal employment opportunities are limited.

The low incidence of formally employed students reflects the socioeconomic structure of rural Northern Samar and underscores the role of TVET programs as accessible pathways to skill acquisition and livelihood enhancement. The findings of the study affirm Kolb's Experiential Learning Theory, as the students' high competence in foundational automotive skills and their moderate performance in advanced servicing tasks reflect the quality and depth of the concrete experiences available to them during training and immersion. Their strong mastery of basic, repeatedly practiced competencies indicates that they have undergone sufficient cycles of experience, reflection, and application in these areas, while their limited proficiency in complex diagnostic and system-based procedures suggests that they have not been consistently exposed to authentic, real-world tasks that would allow them to complete the full experiential learning cycle.

This discrepancy demonstrates that while the current program effectively supports experiential learning at the foundational level, it offers fewer opportunities for students to engage with higher-level, industry-aligned automotive challenges necessary to develop deeper technical integration and practical expertise. The consistent demonstration of discipline, respect, cooperation, and ethical behavior across all student groups aligns with Social Learning Theory, which emphasizes that attitudes and behaviors are shaped primarily through observation, modeling, and reinforcement rather than personal demographic factors, suggesting that the structured values formation in schools, the standardized nature of the work immersion program, and the modeling provided by teachers and workplace mentors exert a stronger influence on behavior than age, sex, or family background.

The significant relationships between technological competence and students' age, sex, and parents' educational attainment align with Human Capital Theory, which asserts that individual characteristics and family educational background influence skill development, while the absence of significant relationships between students' work attitudes and their profile variables aligns with Social Learning Theory.

The positive and statistically significant relationship between technological competence and work attitude aligns with Experiential Learning Theory, which posits that hands-on engagement in authentic tasks strengthens not only technical learning but also the development

of professional behaviors, suggesting that the experiential nature of work immersion allows skills and attitudes to develop in a mutually reinforcing manner.

5. Conclusion

This study determined that Automotive Senior High School students in the Division of Northern Samar are predominantly male adolescents within the 17–19 age range, coming from socio-economically modest households with parents who are largely self-employed or not formally employed and possess relatively low educational attainment, and most are not working students.

The students demonstrated competent foundational skills in workshop safety, tool organization, and routine procedures, but exhibited relative weaknesses in analytical tasks such as manual interpretation, measurements, and complex system understanding; their technical servicing competence was moderate, with stronger performance in simpler tasks but limitations in advanced operations such as engine tuning, electrical servicing, drivetrain servicing, and troubleshooting; and their entrepreneurial and marketing skills were generally adequate, though innovation, communication, and problem-solving skills require further enhancement.

In terms of work attitude, students consistently exhibited positive work behaviors, including professionalism, teamwork, and ethical values, with strengths evident in adherence to workplace rules, respect for peers and supervisors, and integrity, while areas needing improvement included time management, conflict resolution, adaptability, and sustained task commitment.

The study found that age affected only foundational competence, while sex influenced technical servicing and entrepreneurial skills with female students performing slightly better, and parents' educational attainment influenced only technical servicing competence, while parents' occupation generally had no significant effect; furthermore, no significant differences were found in work attitude across all profile variables, indicating that the work immersion program and school-based values formation are the primary factors shaping students' professionalism, teamwork, and ethical behavior.

The correlational analysis revealed a meaningful and consistent association between technological competence and work attitude, indicating that students who exhibit stronger technological skills are also more likely to demonstrate positive professional habits, effective collaboration, and core workplace values, highlighting that technological readiness is a vital factor shaping students' behavioral orientation in authentic work settings, and strengthening technological competence serves as a strategic means of fostering both industry-relevant skills and the professional dispositions needed for successful immersion experiences and eventual employment in the local sector.



Based on these findings, the study recommends the implementation of a contextualized action plan emphasizing enhanced hands-on and industry-aligned training, strengthened school-industry partnerships with local automotive shops and service centers, continuous teacher upskilling through industry immersion and skills upgrading, and the deliberate integration of values and entrepreneurship education, as these interventions are essential in improving students' technical readiness, work attitude, and overall employability, thereby strengthening the effectiveness of the work immersion program for Automotive students in the Division of Northern Samar and ensuring that graduates are not only technically competent but also equipped with the work values, entrepreneurial mindset, and adaptability necessary to contribute meaningfully to local economic development.

References

- Aguilar, M. (2022). Effects of simulation-based automotive training on work immersion readiness. *Philippine Journal of Technological Education*, 10(1), 25-37.
- International Labour Organization. (2021). Skills development and lifelong learning for the future of work. ILO.
- Johnson, L. (2021). Employability skills and workplace readiness of interns in Australia. *Australian Journal of Education Studies*, 31(2), 120-132.
- Kumar, A., & Singh, R. (2020). Technological competence of automotive students in hybrid vehicle repair. *Journal of Technical Skills*, 15(1), 55-63.
- Lee, H. (2021). Duration of immersion and workplace adaptability of vocational students. *Asian Journal of Training and Development*, 12(3), 112-125.
- Mendoza, L. (2024). Student confidence and competence post-immersion in automotive servicing. *International Journal of Vocational Education*, 15(3), 100-112.
- Navarro, R. (2021). Discipline and values as predictors of immersion success. *Journal of Philippine Education Research*, 13(4), 90-101.
- Philippine News Agency. (2025, January 4). 2025 budget to boost SHS-TVL learners' employability. Philippine News Agency.
- Putri, N., & Rahman, A. (2022). Industry-based training and competence of vocational students. *Indonesian Journal of TVET*, 14(3), 150-163.
- Rahim, M. (2021). Updating automotive competence through modern training. *Malaysian Journal of Technical Education*, 11(2), 130-145.
- Ramos, J. (2022). Monitoring in immersion and its effect on student performance. *Philippine Education Today*, 14(1), 56-70.
- Santos, J. (2022). Values education and work behavior of SHS students. *Philippine Journal of School Research*, 10(2), 100-112.
- Thompson, K. (2021). Mentorship in Canadian technical immersion programs. *Canadian Journal of Vocational Studies*, 19(2), 135-147.
- Torres, A., & Villanueva, G. (2023). Consistency of work ethics among TVL students in immersion. *Journal of Philippine Social Education*, 17(1), 50-62.
- Villanueva, T. (2021). Risks of neglecting work values in immersion programs. *Philippine Journal of Technical Research*, 8(2), 200-212.
- Yoshida, Y. M. (2025). Work readiness of Senior High School students in the TVL track (Doctoral thesis, Department of Education, Region 02, Philippines).



Zhang, L. (2020). Work immersion and identity formation in Chinese vocational schools.
Chinese Journal of Technical Learning, 13(1), 90-105.