Navigating Barriers in Industrial Arts Education: A Qualitative Study in the Philippine Context

REGINE D. BERLAS
Leyte Normal University

Abstract — Industrial Arts education, a vital component of the Technical-Vocational- Livelihood (TVL) track in the K–12 curriculum, equips learners with practical and employable skills necessary for 21st-century workforce readiness. Despite its importance, limited research has focused on the specific barriers affecting its effective delivery, particularly in secondary education within developing contexts. This study aimed to investigate the challenges encountered by teachers in Industrial Arts education in Tacloban City, Philippines. Using a descriptive-qualitative design, data were gathered through semi-structured interviews with educators from public senior high schools and analyze using thematic analysis by Braun and Clarke (2006). The findings identified two main themes: resource constraints, which include a lack of equipment, inadequate funding, and few training opportunities; and barriers to effective education, which included absenteeism, financial hardships, safety concerns, and communication difficulties. These findings highlight the interplay of personal, institutional, and systematic factors that hinder the objectives of Industrial Arts education. The study concludes that addressing these challenges requires holistic interventions such as sustained funding, stronger school-industry linkages, continuous teacher development, and student support mechanisms to enhance participation and safety. This study provides insights that are locally grounded yet broadly relevant, contributing to international discussions on strengthening technical-vocational education programs.

Keywords — Industrial Arts Education; Technology-Vocational-Livelihood (TVL) Track; Educational Barriers; Resource constraints; and K-12 curriculum

I.   Introduction

Industrial Arts Education is a specialized component of the K–12 curriculum, offered under the Technical-Vocational-Livelihood (TVL) track. According to the K–12 Basic Education Program, learners are expected to acquire 21st-century competencies that will enable them to pursue higher levels of education and strengthen their mid-level skills (DepEd, 2021). This strand equips students with comprehensive and foundational training across diverse industrial fields, encompassing the study of materials, tools, processes, products, occupations, community concerns, and other industry-related activities. Through this training, learners are prepared to play an active role in advancing the country's economic growth and industrialization efforts. Industrial Arts education plays a crucial role in equipping students with practical skills that are increasingly relevant in today's technologically driven economy.

Beyond its academic function, Industrial Arts Education plays a vital role in equipping learners with practical and employable skills that are increasingly valuable in today's

technologically driven economy. The growing emphasis on technical-vocational education underscores the importance of preparing students for careers across different sectors, particularly in regions such as Tacloban City, where such competencies have the potential to drive local economic development.

Despite its significance, however, educators face a range of barriers that hinder the effective teaching of industrial arts subjects. Previous studies have highlighted the value of arts education in fostering creativity, problem-solving, and innovation among learners (Kastner et al., 2021). Yet, much of this scholarship has concentrated on visual and performing arts, offering limited insights into the distinct challenges of industrial arts in secondary education (Isa, 2020). Reported issues include frequent absenteeism, limited instructional resources, and insufficient teacher preparation, all of which are further compounded by socio-economic conditions such as poverty (Krishnan et al., 2020; Okonkwo, 2014). This lack of focus represents a significant research gap that calls for deeper empirical investigation.

Moreover, the onset of the Fourth Industrial Revolution continues to reshape educational practices and expectations, introducing both opportunities and challenges for industrial arts education. The integration of emerging technologies and innovative pedagogical approaches, such as computer-aided design, has been shown to enhance student participation and creativity (Ling, 2025). However, the adaptability and effectiveness of such innovations within specific local contexts remain uncertain (Sekiyama, 2020).

Addressing these concerns, the present study seeks to explore the barriers encountered in teaching industrial arts in Tacloban City. By identifying the contextual and systemic challenges faced by teachers, this research aims to contribute to filling the gap in existing literature and to provide practical recommendations for strengthening industrial arts education in similar educational and socio-economic settings.

II. Methodology

This study employed a descriptive-qualitative research design to investigate the barriers encountered in teaching the industrial arts specialization. This approach was deemed appropriate for obtaining in-depth insights into complex issues through interviews, which provided educators the opportunity to articulate their perspectives and lived experiences. By capturing detailed narratives, the study was able to highlight the nuanced and multifaceted nature of the challenges surrounding industrial arts education. As Creswell (2007) and Patton (2002) emphasize, qualitative research is particularly effective in exploring dynamic social phenomena and generating a deeper understanding of participants' experiences.

The study involved eleven (11) Grade 11 teachers handling industrial arts subjects from public secondary schools in Region VIII, Division of Tacloban City. A purposive sampling technique was employed, as the study sought participants who were directly teaching industrial

arts, ensuring that only those with the most relevant expertise and experiences were included. Since the total population consisted of only eleven teachers within the identified schools, all were taken as participants to achieve complete representation. Data were collected through face-to-face interviews, during which established protocols and ethical considerations were carefully observed. Although qualitative research typically reaches information saturation with as few as one (1) to seven (7) participants (Wa-Mbaleka, 2016), the inclusion of all eleven teachers further enhanced the credibility, comprehensiveness, and richness of the findings.

A researcher-made interview questionnaire was utilized to gather the data. Interviews were conducted face-to-face in the participants' classrooms at their convenience, each lasting about 25 minutes. The process allowed participants to share experiences freely, while the researcher probed further when needed to obtain richer insights. To ensure accuracy and confidentiality, audio recordings and written notes were used, and participants signed informed consent forms, with the option to withdraw at any time.

Thematic analysis, as outlined by Braun and Clarke (2006), was utilized to analyzed the data. This systematic and iterative approach facilitated the identification of recurring themes within the qualitative responses, thereby providing a deeper understanding of the participants' experiences and contexts. Through this method, key ideas and patterns related to behaviors, events, and practices were classified and organized, serving as a framework for grouping relevant data segments. Such organization enabled the researcher to analyze repetitions, similarities, contrasts, and anomalies within the data (Robson & McCarthan, 2016). Ultimately, this approach ensured that meaningful insights and interpretations were derived from the qualitative information collected Furthermore, the study rigorously adhered to principles of trustworthiness such as measures of credibility, transferability, confirmability, and dependability were underscored (Birks and Mills, 2015) to wit:

Credibility. Measures were taken to enhance the credibility of the study, including seeking guidance from the adviser and refining interview questions based on panel feedback. The researcher diligently captured and represented participant's experiences during interviews, maintaining a friendly atmosphere through a blend of structured and informal conversations.

Transferability. Qualitative research protocols and criteria were adhered to in order to guarantee the applicability of the results in various settings. The study includes a discussion of the limitations along with thorough explanations of the research environment, participants, and techniques to improve transferability. In order to facilitate understanding and application of the findings in various contexts, the researcher additionally recognized and emphasized recurring themes in the data.

Confirmability. The methodology was thoroughly detailed, allowing readers to evaluate the study's confirmability. The study was documented and reported the research process

transparently, including details of the methods to be used for data collection, analysis, and interpreting the data.

The study also strictly complied with the ethical guidelines set by the University Research Ethics Office and the School of Graduate Studies. The objectives and purpose of the research were clearly communicated to the participants prior to their involvement. Informed consent was obtained, and formal permission was secured for the use of the information they provided. The confidentiality of personal details, including participants' names, was ensured by maintaining their anonymity and safeguarding all data with utmost care. To further protect their identities, pseudonyms were employed whenever names appeared in the presented evidence.

III. Results and Discussion

Results and Discussion

The findings of this study highlight the multifaceted challenges that hinder the effective delivery of Industrial Arts education in senior high schools. Drawing from the perspectives of teachers, the results reveal that these barriers are not isolated but are shaped by the intersection of personal circumstances, institutional limitations, and broader systemic issues. Such challenges affect not only the acquisition of technical skills but also the overall quality of the learning experience.

Theme 1: Barriers to Effective Education

Industrial arts, designed to equip students with technical competencies and practical problem-solving skills, faces significant barriers that affect the attainment of its objectives. Teachers carry the responsibility of overcoming these barriers, yet their efforts are often hindered by systemic and situational challenges. The findings revealed four main barriers under this theme: student absenteeism, financial challenges, safety and risk awareness, and communication difficulties.

Subtheme 1.1: Student Absenteeism

One of the most pressing challenges noted by the participants was student absenteeism. Students frequently miss classes due to economic reasons, such as working part-time to support their families, or due to long commutes from distant areas. These absences disrupt learning continuity and lower overall performance. Smith (2018) emphasizes that absenteeism contributes to academic decline and increased risk of school failure, while Davis (2022) notes its impact on classroom dynamics, creating challenges for both peers and teachers. This aligns with the present findings, where absenteeism not only disadvantaged individual students but also weakened collective engagement. Addressing this issue may require financial support programs, community interventions, and flexible school policies to accommodate working students.

Subtheme 1.2: Financial Challenges

Economic hardship emerged as another recurring barrier. Students often lacked funds for transportation and struggled to acquire the materials or tools needed for industrial arts activities. Participants confirmed that financial strain leads some students to divide their time between work and school, resulting in poor attendance and limited participation. According to Fraser and Rentoul (2007), such inequalities in access create demotivation and discourage full engagement in schoolwork. This study suggests that alternative solutions such as fundraising, resource pooling, or institutional partnerships could mitigate these disparities and create a more equitable learning environment.

Subtheme 1.3: Safety and Risk Awareness

Safety concerns also hinder effective teaching and learning in industrial arts. Participants observed that students often showed carelessness in handling tools and neglected safety protocols due to excitement during hands-on tasks. Such behavior poses risks to both learners and the learning environment. Ashbrook (2013) and Johnson (2019) highlight the importance of integrating risk awareness training into technical education to instill responsibility and prevent accidents. In line with these findings, this study underscores the need for consistent safety instruction, proper supervision, and provision of adequate protective equipment to cultivate a strong safety culture among learners.

Subtheme 1.4: Communication Challenges

Participants reported that many students struggled with expressing themselves effectively, both verbally and in writing. This communication gap made it difficult for them to understand instructions, collaborate with peers, or seek clarification when needed. Santos (2023) stresses that TVL students must develop strong communication skills to become competitive in the workforce, while Williams (2018) emphasizes the role of tailored interventions in overcoming such barriers. The findings suggest that teachers should employ diverse teaching strategies including visual aids, collaborative projects, and student-centered communication practices to ensure inclusivity and improve self- expression in industrial arts education.

Theme 2: Resource Constraints in Education

Industrial arts education is inherently resource-dependent, as it requires specialized tools, materials, and equipment to provide meaningful hands-on experiences. However, the participants highlighted significant resource-related constraints, which undermine skill development and overall program effectiveness. Four major subthemes were identified: limitations in educational resources, lack of training, insufficient funding, and lack of focus.

Subtheme 2.1: Limitations in Educational Resources

The inadequacy of tools, equipment, and facilities was the most commonly cited barrier by the participants. They reported that the scarcity of materials made it difficult to conduct activities aligned with the curriculum, forcing some students to share tools or contribute financially to acquire them. This resonates with Balajadia (2023), who reported similar challenges in teaching industrial arts due to lack of resources. Anderson (2022) further argues that insufficient resources hinder students' skill acquisition and perpetuate inequality. In the present study, such limitations not only restricted practice opportunities but also reduced the overall effectiveness of experiential learning.

Subtheme 2.3: Lack of Funding for Educational Resources

Participants also identified insufficient school funding as a persistent challenge. With limited financial support, schools cannot procure necessary tools and materials, leaving teachers to bear personal expenses or limit the scope of practical projects. Hatch (2008) notes that lack of modern tools restricts students to outdated practices, diminishing engagement and employability. Similarly, Santos (2020) stresses that investment in educational resources is critical to equipping students with skills relevant to the labor market. This finding highlights the urgent need for policy-level interventions and budget allocation prioritizing technical-vocational education programs.

Overall, the study highlights that industrial arts education in Tacloban City is constrained by a complex interplay of personal, institutional, and systemic barriers. Absenteeism, financial struggles, safety concerns, and communication issues intersect with structural limitations such as lack of resources, and insufficient funding. These barriers limit students' opportunities for skill acquisition and reduce the quality of instruction, which in turn threatens the broader goals of the K-12 curriculum in preparing learners for employment and higher education.

IV. Conclusion

The study revealed that participants encountered numerous barriers, underscoring the complex challenges embedded within industrial arts education. These include issues such as student absenteeism, inadequate resources, communication difficulties, and insufficient safety measures. Such conditions not only impede effective teaching but also compromise student safety and limit their capacity to engage meaningfully in learning activities. While earlier studies have generally emphasized resource shortages and instructional gaps as key obstacles in technical and vocational education, the present research provides a more nuanced perspective by specifically examining industrial arts education. It highlights additional challenges particularly absenteeism, communication barriers, and lapses in safety practices alongside resource constraints, thereby offering a more comprehensive understanding of the difficulties faced by educators in this field.

The findings reinforce the importance of adopting holistic and multi-level interventions. At the classroom level, teachers must continue to innovate through inclusive pedagogical strategies

and resource-sharing practices. At the institutional level, school administrators should prioritize investment in resources and training. At the policy level, the Department of Education must recognize the unique challenges of technical-vocational tracks and allocate adequate funding to support industrial arts programs.

Finally, integrating inclusive communication strategies and creating more conducive learning environments will empower students to participate actively and develop both technical and soft skills essential for employment readiness.

REFERENCES

[1] Anderson, N. (2022). Framework for Reviewing Inclusion, Diversity, Equity, and Accessibility in Open Educational Resources. In Enhancing Inclusion, Diversity, Equity, and Accessibility (IDEA) in Open Educational Resources (OER) (p. 8). University of Southern Queensland. https://open.umn.edu/opentextbooks/formats/3117

[2] Ashbrook, P. C. (2013). Laboratory Safety in Academia. Journal of Chemical Health and Safety 20(1): 62.

[3] Balajadia, J. (2023). Challenges Encountered in Teaching Industrial Arts in the New Normal. Psychology and Education: A Multidisciplinary Journal, 7(8), 1-1.

[4] Clarke, V., Braun, V., & Hayfield, N. (2006). Thematic analysis. Qualitative psychology:

[5] Creswell, J.W., & Creswell, J.D. (2018). Research design: Qualitative, quantitative, and mixed methods approaches (5th ed.). LA: SAGE.

[6] Davis, M. (2022). Exploring the Impact of Student Absenteeism on Classroom Dynamics: Teacher Perspectives. Teaching and Teacher Education, 66, 123-135

[7] Department of Education. (2020b). Towards A Sustainable and Working DepEd Commons Part II. A Framework. Retrieved from: https://commons.deped.gov.ph/deped- commons-framework.pdf

[8] Fraser, B. J., & Rentoul, A. G. (2007). Securing equity for learning in science and technology education. Educational Researcher, 36(7), 3-14

[9] Hatch, T. (2008). The role of technology in industrial arts education. Journal of Industrial Teacher Education, 45(3), 23-40.

[10] Isa, B. (2020). Industrial revolution 4.0 and its influence on visual arts education. Proceedings of the 3rd International Conference on Arts and Arts Education (ICAAE 2019). https://doi.org/10.2991/assehr.k.200703.058

[11] Johnson, A. (2019). Holistic Learning Theory and Holistic Education. Retrieve from (PDF) Holistic Learning Theory and Holistic Education | Andrew Johnson - Academia.edu

[12] Kastner, L. (2021). Designing visual-arts education programs for transfer effects: development and experimental evaluation of (digital) drawing courses in the art museum designed to promote adolescents' socio-emotional skills. Frontiers in Psychology, 11. https://doi.org/10.3389/fpsyg.2020.603984

[13] Krishnan, I. A., Mello, G. D., Kok, S. A., Sabapathy, S. K., Munian, S., Ching, H. S., … & Kanan, V. N. (2020). Challenges faced by hearing impairment students during covid-19. Malaysian Journal of Social Sciences and Humanities (MJSSH), 5(8), 106- 116. https://doi.org/10.47405/mjssh.v5i8.472

[14] Ling, J. and Gao, M. (2025). Research on improving creativity and practical skills of art education by computer-aided design. International Journal of Information and Communication Technology Education, 21(1), 1-17. https://doi.org/10.4018/ijicte.385438

[15] Okonkwo, I. (2014). Towards quality art education: challenges and opportunities. UJAH: Unizik Journal of Arts and Humanities, 15(1), 110. https://doi.org/10.4314/ujah.v15i1.6

[16] Robson, C., & McCarthan, K. (2016). Real world research: A resource for users of social research methods in applied settings (4th ed.). Wiley.

[17] Santos, A. M. (2020). Enhancing learning environments through adequate funding: The role of school administrators. Journal of Education Policy and Planning, 35(2), 156- 172.

[18] Santos, C. B. et al (2023). The impact of visual graphic design module utilization on the national certification performance of senior high school students. World Journal of Advanced Research and Reviews, 19(2), 1500-1520

[19] Sekiyama, T. (2020). The impact of the fourth industrial revolution on student mobility from the perspective of education economics. Creative Education, 11(04), 435-446. https://doi.org/10.4236/ce.2020.114031

[20] Smith, J. (2018). The Impact of Student Absenteeism on Academic Performance: A Longitudinal Study. Journal of Education Research, 45(2), 201-215.

[21] Williams, P. (2018). Using escape room-like puzzles to teach undergraduate students effective and efficient group process skills. In 2018 IEEE Integrated STEM Education Conference (ISEC) (pp. 254-257). IEEE.