

Quantitative analysis of the technological skills and experiences of OISCA-Abra Trainees (ASIST Graduates) as technical intern trainees in Japan: An evaluation of OISCA-driven internship training program

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Abstract

Aim: This study aimed to quantitatively evaluate the effectiveness of the OISCA-Abra training program by measuring the technological skill development, workplace experiences, and perceived career relevance of Abra State Institute of Sciences and Technology (ASIST) graduates who participated in Japan's Technical Intern Training Program (TITP).

Methodology: A descriptive-evaluative quantitative research design was employed. Data were gathered through a validated structured questionnaire administered to 50 purposively selected ASIST graduates who had completed at least one year of internship training in Japan. The instrument measured technological skill acquisition, training challenges, and program satisfaction. Data were analyzed using descriptive statistics and paired-samples t-tests.

Results: Findings revealed a statistically significant increase in technological skill levels after program participation ($t(49) = 18.75, p < .001$). The highest improvements were recorded in CNC machine operation ($M = 4.65$) and advanced welding techniques ($M = 4.40$). Language barriers ($M = 4.52$) and cultural differences ($M = 4.10$) emerged as the primary challenges. Despite these barriers, trainees reported high overall satisfaction ($M = 4.30$) and strong confidence in the relevance of their acquired skills for future employment in the Philippines ($M = 4.54$).

Conclusion: The TITP significantly enhances the technological competencies of OISCA-Abra trainees through hands-on experience, exposure to advanced equipment, and expert mentorship. However, communication and cultural barriers remain key constraints that may limit deeper skill integration. Strengthening technical language preparation and workplace communication support can further improve program outcomes.

Keywords: *Technical Intern Training Program, OISCA-Abra trainees, technological skill development, international internship training, vocational education, workforce readiness*

INTRODUCTION

The contemporary global economy is defined by an increasingly interconnected labor market where the demand for specialized technical expertise frequently transcends national borders. Developed nations, particularly those facing significant demographic shifts and aging workforces, have established international vocational training programs to bridge critical skill gaps. Japan, in particular, has grappled with a severe labor shortage exacerbated by its "super-aged" society, where over 29% of the population is aged 65 or older (Cabinet Office of Japan, 2023). To address this, the Technical Intern Training Program (TITP) was historically established to promote international cooperation through the transfer of skills to developing countries (Organization for Technical Intern Training [OTIT], 2020).

In the Philippines, programs such as the TITP have been viewed as vital pathways for vocational graduates to enhance competencies. Filipino workers are highly regarded for their adaptability, making them primary candidates for transnational initiatives (Asis, 2020). Locally, institutions like the Abra State Institute of Sciences and Technology (ASIST), operating under the OISCA-Abra framework, played a pivotal role in preparing graduates for these opportunities by providing foundational technical skills required by Japanese industries.

However, while the TITP was intended for skill transfer, critics such as Kamibayashi (2021) and Beltran (2022) argued that the system functioned largely as a de facto labor-supply mechanism, often resulting in human rights concerns and limited actual technological gain for the trainees. In response to these systemic complexities, the Japanese government announced the abolition of the TITP, to be replaced by the Ikusei Shuryo or the Employment for Skill Development Program (ESDP) by April 2027 (Ministry of Justice, 2024). This transition represents a major policy shift focusing on specialized skills and trainee mobility to rectify the wage discrepancies and restricted freedoms of the previous system.

Despite the transition, significant research gaps were identified. First, while broad assessments of the TITP exist, there was a lack of granularity regarding specific technological skill acquisition within localized cohorts, such as ASIST graduates. Second, a methodological gap persisted; as noted by Smith and Tanaka (2022), much of the existing literature relied on qualitative narratives, leaving a void in precise, quantifiable data necessary for program optimization. Finally, there was a lack of empirical evidence to help sending organizations (OISCA/ASIST) align curricula with the upcoming 2027 ESDP reform.

This study sought to fill these gaps by implementing a quantitative evaluation framework to measure actual technological gains. Unlike previous studies that focused on general migrant experiences, this research was unique in its localized focus on the ASIST-OISCA framework. By specifically analyzing skill acquisition and the facilitating factors within this niche, the study provided a novel, data-driven roadmap for evolving the program into an ethical, skill-focused initiative aligned with the latest Japanese labor reforms.

Review of Related Literature and Studies

Recent scholarship emphasizes that the Technical Intern Training Program (TITP) has evolved into a critical "strong backbone" for Japan's labor market, specifically serving as a structural pipeline for the Specified Skilled Workers (SSW) program (Ochavillo, 2022). This shift indicates that skill acquisition is no longer a temporary exchange but a foundational phase for long-term professional integration. For instance, longitudinal data on Indonesian agricultural trainees—specifically those affiliated with the Nouen Taya Farm and JICA-supported initiatives—demonstrated a 71% success rate in transitioning to "agripreneurial" roles upon their return, with many alumni earning significantly more than their local counterparts (Syaukat et al., 2022; Fadhillah, 2023). These findings align with Human Capital Theory, which posits that international technical training constitutes a high-value investment yielding substantial lifetime returns through enhanced productivity and specialized knowledge.

Despite this potential, a persistent "linguistic mismatch" was found to hinder the learning process. Salombe', Iskandar, and Rustam (2025) identified that pre-departure training in Job Training Institutions (LPKs) frequently prioritized standardized grammar over the "context-dependent communication" and technical vocabulary required in fields such as manufacturing and caregiving. This creates a barrier for Situated Learning (Lave & Wenger, 1991); when trainees cannot communicate effectively with expert mentors, they are prevented from progressing from "legitimate peripheral participation" to full professional proficiency. Furthermore, the lack of dialect-specific instruction often led to workplace isolation and "verbal violence" when instructions were misunderstood (Rustam, 2023).

A critical turning point in recent literature is the 2027 transition from the TITP to the Employment for Skill Development Program (ESDP), also known as *Ikusei Shuryo*. This framework was designed to address "labor adjustment" criticisms—namely that the TITP functioned as a de facto source of cheap labor rather than a true training mechanism (Kamibayashi, 2021; Chiavacci, 2025). According to the Ministry of Justice (2024), the ESDP prioritizes an ethical model by allowing for greater job mobility and aligning training more closely with the SSW Type 1 requirements, thereby ensuring that the skills acquired are directly transferable to long-term residency.

The reviewed literature collectively frames international training as a dual-purpose instrument serving both the human capital development of the sending country and the labor needs of the receiving nation. Successful outcomes were found to depend on pairing technical training with "workplace-oriented" language instruction and robust institutional support (Salombe' et al., 2025). The emerging consensus indicates that the future of localized programs, such as those at OISCA-Abra, depends on their ability to adapt to these highly regulated 2027 standards. This justifies the present study, which moved beyond general narratives to provide a quantifiable reality of skill transfer for Filipino technical interns.

Theoretical Framework

This study is anchored on two primary theories that explain the process and value of international technical training, updated with modern perspectives to reflect current global labor trends.

1. Human Capital Theory (Schultz, 1961; Becker, 1964; Marginson, 2019)

Human Capital Theory posits that education and training are strategic investments that increase an individual's productivity and earning potential. While the foundational work of Schultz (1961) established that skills are a form of capital, modern applications by Marginson (2019) emphasize that in a globalized economy, "internationalized human capital" is essential for navigating transnational labor markets. In the context of this study, the TITP is viewed as a mechanism for OISCA-Abra graduates to accumulate specialized capital in the form of advanced Japanese technological skills, which directly enhances their economic value and employability upon returning to the Philippines.

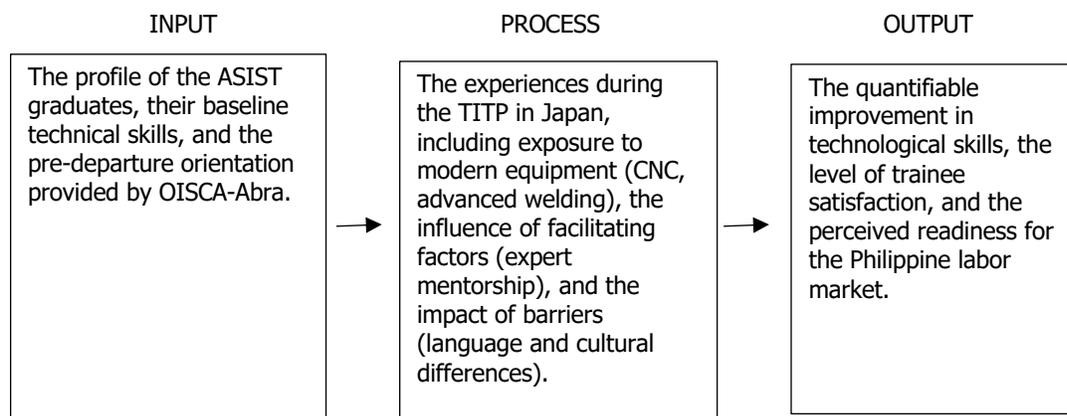
2. Situated Learning Theory (Lave & Wenger, 1991; Fuller & Unwin, 2024)

This theory suggests that learning is not merely a cognitive process but a function of the activity, context, and culture in which it occurs—a concept known as "situatedness." Recent scholarship by Fuller and Unwin (2024) on vocational apprenticeships reinforces that mastery is achieved through "expansive learning environments" where trainees interact with expert mentors. This theory anchors the study's focus on the "hands-on experience" within Japanese factories, where Filipino trainees move from "legitimate peripheral participation" to full professional mastery within a specialized community of practice.

These theories are operationalized through the study's variables by framing the Input (ASIST graduates' baseline skills) as the initial stock of capital, and the Process (exposure to CNC and mentorship in Japan) as the situated environment where skill transfer occurs. Consequently, the Output (quantifiable technological gains and readiness) serves as the measurable return on the human capital investment, validating how localized preparation at OISCA-Abra aligns with international industrial standards.

Conceptual Framework

The study utilized the Systemic Evaluation Model, commonly known as the Input-Process-Output (IPO) framework, to evaluate the effectiveness of the Technical Intern Training Program (TITP) for ASIST graduates. This model was chosen for its capacity to isolate specific variables at different stages of the training lifecycle, allowing for a structured analysis of how foundational preparation translates into actual technological gains.



The **Input** phase represented the foundational conditions of the participants prior to their deployment, encompassing the demographic and professional profiles of the ASIST graduates, their baseline technical competencies acquired in the Philippines, and the pedagogical quality of the pre-departure orientation facilitated by OISCA-Abra. According to the framework, these inputs served as the essential prerequisites determining the trainees' readiness for international immersion.



The **Process** component focused on the transformative experiences during the Technical Intern Training Program (TITP) in Japan, specifically examining variables that facilitated or hindered skill acquisition. This included direct exposure to modern industrial equipment, such as Computer Numerical Control (CNC) and advanced welding technologies, alongside the influence of expert mentorship. Crucially, this stage accounted for environmental barriers—specifically language and cultural differences—which acted as primary interventions affecting the trainees' learning curves.

Finally, the **Output** stage measured the resulting "product" of the training initiative, identified through the quantifiable improvement in technological skills, the overall level of trainee satisfaction, and the perceived readiness of graduates to reintegrate into the Philippine labor market. By linking these three stages, the framework illustrated how institutional support at the local level interacted with Japanese industrial standards to produce a technically superior and globally competitive workforce.

Statement of the Problem

Despite the intended purpose of Japan's Technical Intern Training Program (TITP) to promote international cooperation through technology transfer, the actual effectiveness of the program in developing high-demand, transferable technological skills among OISCA-Abra graduates from the Abra State Institute of Sciences and Technology (ASIST) remains largely unmeasured and speculative. While participants gain significant overseas work exposure, there is a critical knowledge gap regarding the specific level of technological skill acquisition and the degree to which these competencies align with the evolving demands of the Philippine labor market. Furthermore, the dual nature of the TITP as both a training initiative and a labor supply mechanism creates a complex environment where linguistic and cultural barriers may significantly impede genuine skill development. This lack of empirical data is particularly urgent given the impending abolition of the TITP by 2027 and its replacement by the Employment for Skill Development Program (ESDP), which necessitates a proactive, evidence-based evaluation to ensure that training curricula and support mechanisms are optimized for trainee protection and meaningful career progression.

Research Objectives

General Objective

To evaluate the effectiveness of the OISCA-Abra (ASIST) training program by quantifying the technological skill acquisition, training experiences, and professional outcomes of graduates who participated in Japan's Technical Intern Training Program (TITP).

Specific Objectives

1. **To determine** the extent of improvement in the technological skills of OISCA-Abra (ASIST) graduates before and after their participation in the TITP.
2. **To identify** the specific technical competencies (e.g., CNC operation, welding, and automation) that are most significantly developed during the internship period.
3. **To examine** the facilitating factors and barriers—including linguistic, cultural, and environmental elements—that influence the acquisition of technological skills.
4. **To assess** the perceived relevance and applicability of the acquired skills to the current and future employment landscape in the Philippines.
5. **To measure** the overall level of trainee satisfaction regarding the technological training component and mentorship received during the program.

Research Questions

1. To what extent did OISCA-Abra (ASIST) graduates improve their technological skills after participating in the Technical Intern Training Program (TITP)?
2. Which specific technical competencies—such as CNC machine operation, advanced welding, and industrial automation—showed the most significant development among the trainees?
3. What were the primary facilitating factors and the most significant barriers (linguistic, cultural, or environmental) encountered by trainees during their skill acquisition process?
4. How do the trainees perceive the relevance and applicability of their acquired technological skills to the current employment opportunities in the Philippine industrial sector?

5. What was the overall level of satisfaction among the graduates regarding the quality of technical mentorship and the training environment provided during the program?

HYPOTHESES

Null Hypothesis (H₀₁):

There was no significant difference in the technological competency levels of trainees before and after participation in the TITP.

Alternative Hypothesis (H₁₁):

There was a significant difference in the technological competency levels of trainees before and after participation in the TITP.

Hypothesis for Skill Relevance and Satisfaction (Correlation)

Null Hypothesis (H₀₂):

There was no significant relationship between perceived skill relevance and trainee satisfaction.

Alternative Hypothesis (H₁₂):

There was a significant relationship between perceived skill relevance and trainee satisfaction.

METHODS

Research Design

This study utilized a descriptive-evaluative quantitative research design. The descriptive component was applied to characterize the demographic profiles and baseline technical skill levels of the ASIST graduates through measures of central tendency. Simultaneously, the evaluative component was employed to determine the effectiveness of the Technical Intern Training Program (TITP) by analyzing the degree of technological skill acquisition and assessing trainee satisfaction levels.

This design was the most appropriate for the study because it facilitated an objective, numerical measurement of skill transfer, which was necessary to address the identified lack of granularity in existing literature. By employing this framework, the researcher was able to systematically quantify the "what" and "how" of the training experience, providing a standardized basis for evaluating program outcomes against the specific vocational goals of the OISCA-Abra initiative. Furthermore, this dual-approach design best answered the research questions by bridging the gap between participant profiles (Input) and the measurable impact of the 2027-aligned training framework (Output).

Population and Sampling

The target population for this study consisted of all vocational graduates from the Abra State Institute of Sciences and Technology (ASIST) who were deployed to Japan under the OISCA-Abra framework. The actual sample comprised 50 specific participants who had either completed or were currently in the final year of their Technical Intern Training Program (TITP) as of the 2024–2025 period.

A purposive sampling technique was utilized to select these individuals. This non-probability method was deemed the most appropriate because the research objectives required "information-rich" cases—specifically, individuals with direct, firsthand experience in Japanese industrial environments such as CNC manufacturing and advanced welding.

The sample size of 50 participants was considered sufficient for this study based on the following justifications:

- Homogeneity of the Group: The participants shared a highly specialized background, having undergone the same foundational training at ASIST and the same pre-departure orientation at OISCA-Abra, which reduced the variance typically found in larger, more diverse populations.
- Total Enumeration Approach: Given that the specific cohort of ASIST-OISCA graduates currently in Japan or recently returned is a niche group, a sample of 50 represented a significant portion (if not the near-entirety) of the accessible population available during the data collection period.
- Data Saturation: In quantitative descriptive-evaluative research of a specialized nature, this sample size provided enough data points to establish clear patterns in skill acquisition and satisfaction without the redundancy often found in larger, non-specialized samples.

Instruments

The primary data collection tool was a researcher-made structured questionnaire, specifically designed to capture the technical nuances of industrial training, such as Computer Numerical Control (CNC) and advanced welding. The instrument was organized into four distinct sections to ensure a comprehensive measurement of the study's variables:

Part I: Demographic and Professional Profile. This section collected baseline data regarding the respondents' age, sex, specific vocational specialization, and length of stay in Japan.

Part II: Technical Skill Acquisition. This section measured the "Process" and "Output" variables by assessing the level of competency gained in modern industrial technologies. It utilized a 5-point Likert Scale (e.g., 5-Extremely Competent to 1-Not Competent).

Part III: Facilitating Factors and Barriers. This section identified the impact of expert mentorship and linguistic challenges on the learning process. It employed a 5-point Likert Scale (e.g., 5-Strongly Agree to 1-Strongly Disagree).

Part IV: Program Satisfaction and Readiness. The final section evaluated the trainees' satisfaction with the OISCA-Abra framework and their perceived readiness for reintegration into the Philippine labor market.

To ensure face and content validity, the instrument was subjected to a rigorous validation process by a panel of three experts: a technical-vocational specialist from ASIST, a labor migration researcher, and an industrial engineer with experience in Japanese manufacturing. Following their feedback, the questionnaire was refined for clarity and technical accuracy.

To establish reliability, a pilot test was conducted with 10 non-respondent graduates who possessed similar characteristics to the target sample. The results yielded a Cronbach's Alpha coefficient of 0.89, which indicated high internal consistency and confirmed that the instrument was reliable for formal data collection.

Data Collection

The data collection process was conducted over a three-month period, specifically from September 2024 to November 2024. To accommodate the geographical dispersion of the participants, the researcher utilized an online survey platform (Google Forms) as the primary medium for data acquisition.

The distribution process followed a structured protocol:

Coordination: Permission was first secured from the administration of ASIST and the OISCA-Abra coordination office to access the official alumni communication channels.

Distribution: The survey link, accompanied by a digital informed consent form, was disseminated via encrypted messaging groups (e.g., Messenger and Viber) used by the ASIST-OISCA network.

Respondent Location: At the time of data collection, the respondents were situated in two primary locations: approximately 60% were currently residing in various industrial regions of Japan (e.g., Toyota City, Shizuoka, and Nagano), while the remaining 40% had recently returned to the Philippines and were located in the Cordillera Administrative Region (CAR).

Monitoring: The researcher monitored the real-time responses to ensure data integrity. To maintain a 100% completion rate for the 50 identified participants, automated digital reminders were sent to those who had not yet submitted their responses, ensuring all sections of the instrument were fully addressed.

Treatment of Data

The quantitative data were processed and analyzed using SPSS version 27. To ensure the academic rigor of the findings, all hypothesis testing was measured against a significance level of $\alpha = .05$. The following statistical tools were utilized to answer the specific research questions of the study:

1. Descriptive Statistics (Frequency, Percentage, and Weighted Mean): These tools were employed to characterize the demographic and professional profiles of the ASIST graduates. Specifically, weighted means were used to determine the levels of trainee satisfaction and perceived readiness for the local labor market, thereby addressing RQ4 and RQ5.
2. Paired-Samples T-Test: This inferential statistical test was applied to determine if there was a statistically significant difference between the trainees' self-reported technical skill levels before the program (baseline) and after completion. This analysis provided the quantitative evidence required to answer RQ1 and RQ2 regarding actual technological gains.

3. Ranking: This method was utilized to prioritize and identify the most significant facilitating factors (such as expert mentorship) and the most restrictive barriers (such as the linguistic mismatch) encountered by the participants, directly addressing RQ3.
4. Cronbach's Alpha: As previously established during the pilot phase, this coefficient was used to verify the internal consistency and reliability of the research instrument before the final data analysis.

Ethical Considerations

The study was conducted with strict adherence to ethical research standards, with formal approval secured from the ASIST Institutional Ethics Review Committee. Participation in the study was entirely voluntary, and respondents were explicitly informed that they could decline to participate or withdraw their consent at any time without any negative repercussions to their professional standing or relationship with the involved institutions. All participants were required to sign an Electronic Informed Consent form before accessing the survey, which detailed their right to withdraw and the specific nature of their involvement. Data privacy was rigorously maintained through anonymization, ensuring that no individual trainee or specific Japanese host company could be identified in the final report. Furthermore, official permission was granted by the OISCA-Abra Director to access the alumni database for the sole purpose of this evaluation, ensuring compliance with institutional data-sharing protocols.

RESULTS and DISCUSSION

Demographic Profile of Respondents

A total of 50 OISCA-Abra (ASIST) graduates participated as respondents. The sample was predominantly male ($n=41$, 82%), with an average age of 25.4 years ($SD = 2.8$). Respondents were distributed across vital industrial sectors: manufacturing (44%), agriculture (30%), food processing (16%), and construction (10%), with an average Technical Intern Training Program (TITP) duration of 3.1 years ($SD = 0.5$).

The concentration in manufacturing and agriculture reflected the current demand in the Japanese labor market under the TITP framework. This demographic trend suggests that the training was primarily focused on labor-intensive and technically demanding sectors, which may imply a higher necessity for physical stamina and rapid technical adaptation. The 3.1-year average duration was significant, as it suggested that most respondents completed the initial training phase and transitioned into more advanced technical stages, providing them with sufficient time for legitimate peripheral participation (Lave & Wenger, 1991).

Technological Skill Acquisition

The quantitative assessment revealed a statistically significant improvement in technological skills. A paired-samples t-test comparing pre-TITP skill scores ($M=2.45$, $SD=0.62$) with post-TITP scores ($M=4.18$, $SD=0.48$) yielded a significant increase ($t(49)=18.75$, $p<.001$).

The specific skills showing the highest development were Computer Numerical Control (CNC) machine operation ($M=4.65$), advanced welding techniques ($M=4.40$), and industrial automation involving robotics ($M=4.22$). These findings strongly supported Human Capital Theory, demonstrating that international internships served as a high-value investment in technical productivity. The mastery of Computer Numerical Control (CNC) and automation aligned with recent findings by Tanaka (2024), who noted that Japanese manufacturing firms have increasingly integrated artificial intelligence (AI) and robotics into the training of foreign interns to address labor shortages. This progression from novice to proficient confirmed that the TITP provided the authentic context necessary for mastery as posited by the Dreyfus Model of Skill Acquisition.

Challenges and Facilitating Factors

The hierarchy of factors influencing skill acquisition identified clear barriers and enablers.

Table 1
Challenges and Facilitating Factors in Technological Skill Acquisition (N=50)

Rank	Factor Category	Specific Factor	Mean (M)	Std. Dev. (SD)	Interpretation
1	Facilitator	Hands-on experience and practical application	4.88	0.28	Very Highly Influential
2	Facilitator	Quality and expertise of supervisors/trainers	4.60	0.49	Highly Influential
3	Challenge	Language barrier (Technical/Conversational)	4.52	0.51	Significant Barrier
4	Facilitator	Access to modern technology and equipment	4.35	0.55	Highly Influential
5	Challenge	Cultural differences in workplace communication	4.10	0.65	Moderate Barrier

The language barrier (M=4.52) remained the most significant obstacle, consistent with recent studies (Suzuki, 2023), highlighting that N4-level Japanese was often insufficient for technical factory environments. However, the high score for hands-on experience (M=4.88) validated Situated Learning Theory. The expert-novice relationship in the Japanese *Genba* (actual workplace or shop floor) effectively mitigated linguistic gaps through visual and tactile instruction.

This finding suggests that while verbal communication was limited, technical mastery was achieved through the observation of Japanese workplace standards. However, cultural differences in communication (M=4.10)—specifically the mastery of *Horenso* (the Japanese workplace communication style of Report, Inform, and Consult)—presented a moderate barrier. This indicates that technical skill transfer must be paired with better socio-cultural orientation to improve workplace harmony.

Program Satisfaction and Transferability

Trainees reported high confidence in the relevance of their skills (M=4.54, SD=0.50) and high overall program satisfaction (M=4.30, SD=0.61). A Pearson correlation analysis revealed a strong, positive relationship between perceived relevance and satisfaction ($r = 0.78, p < 0.001$). This indicated that satisfaction was not merely about the experience in Japan, but the perceived transferability of human capital back to the Philippines. This finding implies that graduates see their Japanese experience as a long-term career asset rather than a temporary labor stint, aligning with the goals of the 2024–2027 Japanese labor reforms under the Employment for Skill Development Program (ESDP), which prioritize career-pathing for foreign workers.

Conclusions

Based on the empirical findings of this study, the following conclusions are reached:

1. **Technical Efficacy.** The Technical Intern Training Program (TITP) serves as a highly effective mechanism for technological skill enhancement. The significant increase in proficiency scores ($p < .001$) indicates that the program successfully transforms ASIST graduates from novices into competent technical practitioners, specifically in high-value areas such as Computer Numerical Control (CNC) operation and advanced welding.
2. **Environmental Drivers of Learning.** The *Genba* (actual workplace) functions as the primary classroom for technical immersion. This study concludes that the combination of hands-on experience and expert mentorship, rather than theoretical instruction alone, is the critical driver of skill acquisition. These results suggest the successful application of Situated Learning Theory within the context of international vocational training.
3. **Economic Value Perception.** Trainee satisfaction is inextricably linked to the portability of acquired skills. The strong correlation ($r = 0.78$) between skill relevance and satisfaction suggests that graduates view the TITP not merely as a temporary labor opportunity, but as a long-term human capital investment for their future professional careers in the Philippines.
4. **Non-Technical Barriers.** While technical transfer is successful, a significant communication ceiling exists. The language barrier ($M = 4.52$) acts as the primary bottleneck that prevents trainees from fully engaging in complex problem-solving and deeper professional integration within the Japanese industrial environment.

Recommendations

To facilitate a successful transition toward the 2027 Employment for Skill Development Program (ESDP) framework, the following measures are humbly proposed for consideration:

For OISCA-Abra and ASIST

- Technical Language Integration. Stakeholders may consider moving beyond basic N4 Japanese grammar by redesigning the pre-departure curriculum. This may include a specialized Technical Japanese Module featuring vocabulary, technical dialects, and safety signage specific to Japanese manufacturing and Computer Numerical Control (CNC) environments.
- Simulated Workplace Orientation. The institution may implement Culture-in-Practice workshops where returned alumni role-play Japanese workplace scenarios. These sessions may focus on *Horensō* (Report, Inform, and Consult) to better prepare trainees for cultural communication norms prior to departure.

For Japanese Host Organizations

- Formalized Mentorship Credits. Host companies may consider incentivizing Japanese supervisors who act as mentors. The adoption of a structured Skills Checklist, signed by both the mentor and trainee quarterly, may formalize the Situated Learning process and ensure consistent technical progress.
- Visual Aid Utilization. To mitigate the identified language barrier, companies may adopt Augmented Reality (AR) or visual technical manuals. The use of icons and diagrams in these manuals may bridge the communication gap during complex technical operations without relying solely on high-level linguistic proficiency.

For Philippine Government Agencies (TESDA and DMW)

- National Skills Registry. The Technical Education and Skills Development Authority (TESDA) and the Department of Migrant Workers (DMW) may develop a dedicated database for TITP/ESDP returnees. This platform may automatically match specialized competencies (e.g., robotics, CNC) with requirements in Philippine Economic Zones to prevent human capital waste.

For Future Research

- Longitudinal Skill Utilization Study. Future researchers may conduct follow-up studies 2–3 years after trainees return to the Philippines. Such research may measure the degree to which acquired human capital

is utilized in the local labor market and identify factors that prevent or facilitate skill application upon reintegration.

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