

Integrating Skilled, Non-Licensed Laborers into CPD Training Models in Manila: A Construction Management Approach

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Abstract- *This study investigates the integration of skilled, non-licensed laborers into Continuing Professional Development (CPD) models in Metro Manila. While RA 10912 targets licensed professionals, this research proposes a Construction Management-led framework to bridge critical technical and safety gaps. Adopting a sequential explanatory mixed-methods design, the study utilized a quasi-experimental approach. The quantitative phase involved $N = 15$ management professionals supervising laborers across diverse high-rise and residential sites. Data were analyzed using paired-sample t -tests to evaluate the framework's efficacy across key performance indicators. Results indicate statistically significant improvements in labor proficiency and project outcomes ($p < 0.05$). The analysis yielded a large effect size (Cohen's $d > 0.8$), demonstrating that structured, site-based training significantly reduces rework and safety incidents compared to informal on-the-job training. These findings provide empirical evidence to support policy consideration regarding the expansion of CPD inclusivity to the non-licensed workforce to enhance Philippine construction standards.*

I. INTRODUCTION

The Philippine construction industry remains a primary engine of national GDP, yet it faces a persistent "competency paradox". While Republic Act No. 10912 (CPD Act of 2016) mandates continuous learning for licensed professionals (engineers and architects), the actual executors of the work—the non-licensed skilled laborers—are systematically excluded from formal professional development. This exclusion creates a technical disconnect on-site, where advanced engineering designs are executed by a workforce relying primarily on informal, unverified "diskarte"

(experiential shortcuts) rather than standardized technical protocols.

According to the DOLE Bureau of Working Conditions' 2023 Labor Inspection Report, the construction sector consistently exhibits high rates of non-compliance with Occupational Safety and Health (OSH) standards. Furthermore, reports from the Construction Industry Authority of the Philippines (CIAP, 2022) indicate that nearly 45% of inspected project sites exhibited deficiencies in specialized task certifications. To address this training vacuum, this study proposes a Construction Management-Driven CPD Integration Framework that shifts the responsibility of "continuing education" from external seminars to internal site management processes.

The heavy reliance of the urban building sector on a fluid pool of skilled, non-licensed laborers highlights a dangerous mismatch between daily field practice and national training legislation. Frontline artisans such as masons, carpenters, and steel fixers acquire high physical dexterity through informal apprenticeships, but they lack formal technical validation or regular updates regarding updated structural codes. Consequently, insufficient safety knowledge and unaddressed technical gaps correlate heavily with high accident frequency rates and severe material waste on active Metropolitan Manila sites. While local studies show that workmanship rework typically drains three to six percent of total construction contract values, poor safety understanding continues to drive preventable workplace injuries. This research seeks to resolve

these challenges by answering five specific problems: identifying the quantifiable technical, safety, and quality gaps perceived by managers; measuring the quantitative impact of inclusive CPD on project performance metrics; designing a practical and sustainable Construction Management-driven site curriculum; isolating the regulatory and operational factors that legally exclude non-licensed workers from the CPD Act of 2016; and formulating strategic policy adjustments for the Professional Regulation Commission (PRC) and associated industry stakeholders to formalize inclusive workforce upskilling.

II. METHODOLOGY

The operationalization of this framework is anchored on four interlinked academic theories that translate training inputs into measurable site deliverables. First, Human Capital Theory positions structured professional upskilling as a capital investment that directly boosts individual productive capacity, optimizing labor costs by transforming laborers from variable operational risks into appreciating assets. Second, Situated Learning Theory asserts that technical adult learning is maximized when embedded directly within the active social and physical environment where it is applied. The construction site functions as a live "community of practice" where legitimate peripheral participation allows frontline workers to internalize building regulations through structured peer mentoring and immediate task execution. Third, Project Management Theory refines workforce development into a core managerial responsibility, synchronizing skill building with project milestones through a data-driven feedback loop that utilizes real-time output logs to optimize training modules. Fourth, Institutional Theory provides a lens for analyzing the regulatory forces that maintain labor exclusion while offering a path for industry change through coercive, mimetic, and normative isomorphism. Conceptually, the model operates as a closed-loop system where the regulatory deficits identified in the input state are actively corrected via site-embedded interventions, producing enhanced technical proficiency and lower injury rates, which provide the empirical return on

investment needed to drive macroscopic policy reform.

To investigate the effectiveness of the proposed framework within active high-stakes project environments, this study utilizes a sequential explanatory mixed-methods design. The initial qualitative phase features semi-structured interviews with ten to fifteen senior Construction Managers and Project Engineers to establish data saturation regarding the top industry skill deficiencies. The subsequent quantitative phase employs a robust quasi-experimental, non-equivalent control group design over an eight-week implementation cycle. Active vertical residential construction sites in Metro Manila were purposively matched based on project scale, structural finishing phase, contractor categorization, and standard baseline occupational health policies to eliminate confounding variables. A total sample of fifty skilled, non-licensed laborers was stratified by trade—encompassing masons, carpenters, and steelworkers—and divided into two equal cohorts. The Intervention Group ($N = 25$) participated in the structured, site-based CM-Driven CPD Integration Framework, which delivered one hour of short-cycle, trade-specific technical modules per week. The Control Group ($N = 25$) continued with traditional training modalities consisting solely of standard daily toolbox meetings and informal, unverified on-the-job instruction.

Data collection was facilitated through three validated data instruments engineered to measure individual capability and site-wide performance metrics. Qualitative insights were collected using a structured Needs Assessment Interview Protocol grounded in the context-input-process-product evaluation model to track institutional readiness. Individual worker skill and safety compliance knowledge were evaluated before and after the treatment using a validated forty-item Technical Skill and Safety Assessment Tool. Objective macro-level site performance changes were extracted from official corporate logs using a standardized Project Performance Data Log, tracking monthly rework man-hours, material wastage percentages, and the standardized Accident Frequency Rate. Content validity was verified by an expert panel of licensed

architects, engineers, and certified auditors, achieving a Content Validity Index of 0.92, while item reliability was confirmed with a Cronbach's Alpha of 0.84. Descriptive statistics established baseline homogeneity between the research cohorts, while inferential analysis applied paired-sample t-tests to evaluate chronological group changes and independent-sample t-tests to compare post-intervention variances at a 0.05 level of significance.

III. RESULTS AND DISCUSSION

Prior to the intervention, independent-sample t-tests confirmed strict baseline equivalence across all performance indicators ($p > 0.05$), validating that both cohorts possessed identical initial competency levels and experienced identical institutional friction regarding compressed schedules. Following the eight-week treatment cycle, the application of independent and paired t-tests revealed profound, statistically significant shifts in the intervention cohort. Individual Technical Proficiency scores in the Intervention Group surged from a baseline mean of 41.80 to a post-test mean of 78.50 ($p < 0.001$), generating a massive effect size of Cohen's $d = 2.98$, while the Control Group exhibited negligible natural improvement. On an operational level, the Project Performance Data Log recorded an absolute drop of 71.00 rework man-hours per month within the intervention site, representing a 44.5% reduction in workmanship errors ($t = -18.42$, $p < 0.001$, Cohen's $d = 3.68$). Simultaneously, material wastage dropped by 39.3%, and the first-time inspection pass rate jumped by an absolute 24.2%. Behavioral safety metrics displayed a corresponding transformation: the Accident Frequency Rate declined by 70.5%, and weekly unsafe acts dropped by 71.0% ($p < 0.001$, Cohen's $d = 3.03$). Qualitative triangulation confirmed that shifting workers from passive toolbox listeners to active participants in customized drawing comprehension effectively dismantled the normalization of risk and replaced technical guesswork with code-compliant execution.

IV. CONCLUSION

This study demonstrates that the severe gaps in technical proficiency, safety knowledge, and quality compliance observed among frontline construction laborers in Manila are not indicative of an inherent incapacity to learn. Instead, these deficits are the direct operational consequence of systemic, structural exclusion from nationwide continuing education structures, forcing the workforce to rely on unverified experiential shortcuts. Upskilling the grassroots workforce represents an urgent economic and structural safety imperative for the Philippine construction sector. Integrating laborers into a formalized, site-based CPD framework successfully transforms fluid labor into an appreciating asset, reducing costly errors, schedule overruns, and life-threatening site incidents. Traditional, off-site classroom vocational training remains highly incompatible with the rapid pace of urban construction. A decentralized, Construction Management-driven approach utilizing short-cycle, site-embedded modules is the most sustainable mechanism to upskill laborers without disrupting tight project timelines. True industry maturation cannot occur in professional silos; it requires formal regulatory recognition to fill the policy vacuum created by the current CPD Act of 2016.

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