

T2155E8273B2B5-1589-Basri.pdf



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Designing Vocational Life Skills Integrated Project Based Learning for Paket C Equivalency Education

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DOI: <https://doi.org/10.46245/ijorer.v7i5.1589>

Sections Info

Article history:

Submitted: August 06, 2026

Final Revised: Sept. 09, 2026

Accepted: September 09, 2026

Published: September 27, 2026

Keywords:

Employability Skills;
Equivalency Education; Life
Skills; Nonformal Education;
Project-Based Learning



ABSTRACT

Objective: This study developed and preliminarily evaluated a vocational-life-skills-integrated project-based learning model for Paket C equivalency education. **Method:** Using the Define, Design, Develop, and limited Disseminate stages of the 4-D framework, data were collected at two Indonesian community learning centers through observations, interviews, expert and tutor appraisals, learner questionnaires, and archived pretest-posttest summaries. **Results:** The six-phase model integrated academic learning, vocational practice, and employability skills across 17 meetings. Expert validation averaged 4.51 of 5; learner response and practicality scores were 83.2% and 81.9%. Archived aggregate scores at one center rose descriptively from 54.37 to 82.87, while teamwork was rated most strongly at the second center. **Novelty:** The model offers a stable project cycle with locally adaptable products for flexible nonformal education. Findings indicate initial validity, practicality, and contextual relevance, but causal effectiveness remains unestablished because participant-level scores, reliability data, a comparison group, and complete fidelity records were unavailable.

INTRODUCTION

Paket C is Indonesia's upper-secondary equivalency program delivered through nonformal community learning centers (PKBM). Its learners often combine study with employment and family responsibilities, resulting in fluctuating attendance, heterogeneous prior knowledge, and reliance on flexible or blended participation. Because access alone does not ensure meaningful learning, provision must remain relevant to learners' social and economic contexts (Vaculíková et al., 2024). Tutor readiness for flexible and digital delivery is therefore especially important in equivalency education (Saleha & Shofwan, 2025).

Beyond certification, Paket C should strengthen employability: communication, teamwork, problem solving, adaptability, self-management, and the application of knowledge in changing work contexts. These competencies combine cognitive, interpersonal, and task-performance dimensions (Rausch et al., 2024) and develop more effectively when they are explicitly taught, practiced in authentic activities, and assessed through observable performance (Orih et al., 2024).

Vocational education can support employment-related and socio-emotional outcomes when participation and learning quality are meaningful (Shi & Bangpan, 2022). Authentic learning environments likewise strengthen learners' perceived employability (Martínez-Argüelles et al., 2023). Project- and production-oriented approaches have improved work-readiness outcomes in formal vocational settings (Sudarsono et al., 2022) and teaching-factory experience has been linked to stronger job perspectives (Imran et al., 2024). However, these full-time school models do not directly address the variable attendance, learner ages, community venues, and equipment access characteristic of PKBM.



Project-Based Learning (PjBL) can bridge academic learning and vocational practice through meaningful problems, collaborative production, feedback, and presentation. Its outcomes depend on project duration, scaffolding, instructional design, and assessment (Zhang & Ma, 2023), while blended support and progressive peer assessment can sustain participation and make revision visible (Li & Zhu, 2023) (Wang, 2023). Recent IJORER evidence also indicates that contextualized PjBL tools can support creativity and learning outcomes (Solichatin et al., 2022) (Fawaas et al., 2024).

Indonesian studies support project-based work-readiness development (Sudarsono et al., 2022), practical skill formation (Jeumpa & Harahap, 2023), and locally aligned entrepreneurship education (Hasdiansyah et al., 2024) (Yudiana et al., 2024). Nevertheless, the literature does not yet provide a standardized yet adaptable framework that integrates Paket C academic content, locally selectable vocational projects, blended participation, and explicit employability assessment across contrasting PKBM contexts. The present study addresses this gap through a common project syntax, modular local project options, operational learning materials, and process-and-product rubrics. The design also applies authentic interdisciplinary practice (González-Cespón et al., 2024) and performance-based vocational assessment (Villarroel et al., 2024) to the flexible ecology of equivalency education.

Accordingly, the study addressed three questions: (1) What attributes should characterize a vocational-life-skills-integrated PjBL model for Paket C across diverse community learning settings? (2) To what extent were the model and its accompanying materials judged valid and practical? and (3) What preliminary patterns emerged in learners' employability-related outcomes?.

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RESEARCH METHOD

Research Design

The study employed a Research and Development approach structured around the four-phase sequence of Define, Design, Develop, and Disseminate. The framework was adapted to a one-year research cycle. The Define phase encompassed needs assessment and context analysis. The Design phase produced the initial model guide, teaching module, project worksheets, and assessment rubrics. The Develop phase involved expert appraisal, revision, and limited field testing. Dissemination was limited to product packaging, intellectual property preparation, seminars, and manuscript preparation; mass implementation was outside the study scope.

Research Sites and Data Functions

Data collection was conducted in July 2026 at two purposively selected PKBM institutions in Bulukumba Regency, South Sulawesi. PKBM Afsana in Ekatiro, Bontotiro District, functioned as the initial development and one-group pretest-posttest trial site, whereas PKBM Nadya in Tamarellang, Ballasaraja Village, Bulukumpa District, extended the needs analysis and supplied user-appraisal, practicality, and self-assessment evidence. The comparative rationale was maximum contextual variation rather than statistical representativeness: both institutions delivered Paket C, but they differed in enrollment scale, attendance patterns, delivery modes, existing life-skills provision, and locally feasible vocational projects. This contrast enabled examination of whether a common PjBL syntax could remain usable while project content and participation arrangements changed. Because the sites served different analytic functions



and involved non-equivalent participants and instruments, evidence was analyzed separately by site and was not statistically pooled.

Table 1. Participants, instruments, and data functions

Site/source	Participants or records	Instrument details	Primary function
PKBM Afsana	30 Paket C learners; two tutor interviews	Composite pretest-posttest employability measure; interview guide	Initial development, needs analysis, and preliminary outcome trial
PKBM Nadya qualitative data	One institutional observation; one PKBM head; one tutor; 15 unique learner interviews	Observation notes and semi- structured interviews	Expanded needs analysis and qualitative triangulation
PKBM Nadya learner surveys	17 response forms; 18 practicality forms; 18 employability self- assessments	7 response items; 6 practicality items; 12 employability items	Acceptance, usability, and perceived employability profile
PKBM Nadya tutor appraisal	Two tutor forms	13 non-duplicated items in total	Initial tutor appraisal of usability and materials
Expert appraisal	Two validators	Five-point ratings of content, presentation, and language	Content and instructional- design review

Participant Flow and Data Management

Participant-level attrition was handled conservatively using available-case rules established for each dataset. The archived PKBM Afsana summary reported 30 learners who completed both measurements, but the submitted archive did not retain their matched participant-level scores. Accordingly, the reported means were treated only as aggregate descriptive statistics; no raw scores were reconstructed and no inferential test, confidence interval, or effect size was calculated. At PKBM Nadya, 15 unique learners were retained in the interview dataset after two identical transcripts assigned to the same informant were counted once. Questionnaire summaries included only complete and legible forms: 17 learner-response forms and 18 forms each for practicality and employability. Missing or unusable forms were not imputed. Because overlap among questionnaire respondents could not be reconstructed, denominators are reported for each instrument and no participant-level longitudinal claim is made. Qualitative findings contextualized, but did not statistically replace, missing quantitative observations; all outcome patterns were therefore interpreted as preliminary and non-causal.

Development and Field-Trial Procedure

During the Define phase, the research team conducted a comprehensive analysis of institutional conditions, learner characteristics, academic-vocational disparities, local economic prospects, and preferred learning modalities. Through interviews and observations, employability needs and viable project themes were identified.

In the Design phase, the prototype was developed to effectively connect academic content with vocational tasks. Mathematics was utilized to facilitate cost, price, and profit calculations, while language supported promotion, customer communication, and presentation. Digital tools were employed to create documents, spreadsheets, and marketing materials.

During the Develop phase, two experts evaluated the prototype's content, presentation, and language. Study records indicated that the revised prototype was then used across the planned 17-meeting sequence, although the available session-level evidence was insufficient to calculate verified implementation fidelity. At PKBM Afsana, learners diversified locally available fish into abon ikan (fish floss), bakso ikan (fish balls), and keripik ikan (fish chips). At PKBM Nadya, learners produced tutup bosara, decorative covers for a traditional Bugis-Makassar serving tray.

Throughout the instructional sequence, learners progressed from self-awareness and local potential mapping to research, project ideation, pitching, digital literacy support, project planning, production, presentation, and reflection. Revisions were focused on refining project steps, providing examples, allocating roles, estimating timeframes, selecting appropriate tools and materials, and incorporating process-based employability assessments.

Intervention Exposure and Site-Specific Projects

The instructional sequence comprised 17 meetings organized into four units and was aligned with the Project-Based Learning module developed for Paket C Phase E and F equivalency education. Unit 1 focused on enhancing learners' self-awareness, emotional regulation, motivation, and growth mindset. Unit 2 guided learners in identifying local potential, comprehending fundamental entrepreneurship concepts, and conducting rudimentary field-based research. Unit 3 emphasized the exploration, development, validation, and presentation of project ideas while bolstering learners' digital literacy. Unit 4 concentrated on translating the selected ideas into authentic projects through project planning, production, monitoring, presentation, and evaluation. The instructional sequence integrated face-to-face meetings, independent learning activities, and tutorial sessions to accommodate the flexible learning characteristics of Paket C participants. Although the vocational products varied based on the local resources and learner needs at each research site, both PKBM institutions adhered to the same Project-Based Learning cycle and assessed comparable employability indicators, including communication, teamwork, problem-solving, adaptability, responsibility, and work discipline.

Table 2. Seventeen-meeting implementation and authentic project outputs

Meetings	Instructional focus	PKBM Afsana evidence/ output	PKBM Nadya evidence/ output
1-4	Self-awareness, emotion management, motivation, growth mindset, and Unit 1 assessment	Learner reflection, class agreement, dream board, and baseline employability assessment	Learner reflection, class agreement, dream board, and contextual needs evidence
5-10	Local-potential mapping, entrepreneurship, simple research, field information collection, verification, and Unit 2 assessment	Mapping of coastal and fisheries potential; selection of fish-processing opportunities	Mapping of local craft and cultural potential; selection of tutup bosara production
11-14	Project-idea exploration, pitching, digital literacy, and Unit 3 assessment	Design and feasibility discussion for abon ikan, bakso ikan, and keripik ikan	Design, material planning, and pitching for tutup bosara
15-17	Project planning, production, presentation/exhibition, reflection, and Unit 4 assessment	Production and presentation of three diversified fish products	Production and presentation of tutup bosara



Table 3. Operational syntax of the developed model

Phase	Core learner activity	Employability focus
1. Context and challenge orientation	Identify a local work or enterprise problem and clarify the expected output.	Relevance, initiative, goal clarity
2. Project selection and team agreement	Choose a project, assign roles, and agree on responsibilities and success criteria.	Teamwork, leadership, responsibility
3. Inquiry and planning	Collect information, calculate resources and costs, develop procedures, and schedule tasks.	Problem solving, digital literacy, time management
4. Production and monitoring	Create, test, revise, and document the product or service with tutor feedback.	Adaptability, procedural compliance, work discipline
5. Presentation or pitching	Present the product, rationale, budget, and potential use or market.	Communication, confidence, argumentation
6. Reflection and follow-up	Evaluate individual and team performance and connect learning to work plans.	Self-assessment, feedback use, career awareness

Instruments and Scoring

The expert-validation instrument used a five-point scale to assess content, presentation, and language. Scores above 4.20 were classified as highly valid using the study rubric. At PKBM Nadya, the learner-response questionnaire contained seven items, the practicality questionnaire six items, and the employability self-assessment 12 items. These questionnaires used four-point response scales. Percentage scores were calculated by dividing the observed score by the maximum possible score and multiplying by 100. Employability indicators covered communication, teamwork, problem solving, and adaptability. The Afsana archived composite additionally incorporated presentation and self-confidence within the relevant domains. Because item-level response matrices were not retained in the available archive, internal-consistency coefficients could not be recalculated. This limitation was considered when interpreting the questionnaire results.

Data Analysis

Expert and user-appraisal data were summarized using means and percentages. The Afsana archive contained only overall and domain-level pretest and posttest means, which were compared descriptively. No participant-level scores were reconstructed from these aggregate statistics. The inferential output in the research report was not used because the reported standard deviation was mathematically inconsistent with the reported mean difference, sample size, and t statistic, while the 30 matched raw scores were unavailable for reanalysis. The Nadya employability questionnaire was interpreted as self-assessment rather than as a causal outcome measure. Interview and observation records were read repeatedly, assigned descriptive codes, grouped into recurring themes, and displayed in cross-site matrices. Questionnaire patterns were then compared with observation and interview evidence.

Ethical Considerations

The study received ethical approval under approval number 136/III.3/AU/LPPM/2026. All participants and informants³ provided informed consent for their data to be used in this manuscript. Participation was voluntary, and participants were informed of the study purpose and their right to decline or withdraw. Names were replaced with codes, identifying details were omitted from the manuscript, and the research data were used solely for scholarly purposes.

RESULTS AND DISCUSSION

Results

Cross-Site Needs and Learner Characteristics

Both sites required contextual and employment-oriented learning, but their operational conditions differed. At PKBM Afsana, attendance fluctuated from approximately one to 15 learners per meeting, the minimum learning time was around 45 minutes, and classes could move between community locations such as the space beneath a resident's house and a village office. Several learners attended primarily to obtain an upper-secondary-equivalent credential for employment, requiring tutors to rebuild learning motivation and challenge the perception that nonformal education was only administrative. Afsana's coastal context supported project possibilities in culinary production, online selling, fish processing, boat repair, marine services, and tourism-related communication. Mathematics was needed for capital, cost, price, and profit calculations, while English had potential use in the Bira tourism area.

PKBM Nadya reported 16 tutors and approximately 100 Paket C learners, many of whom were employed and unable to attend simultaneously. The learning approach combined face-to-face meetings, Zoom sessions, independent tasks through Setara Daring, and tutorials. The head and tutor clarified that life skills and empowerment were already incorporated into the curriculum; therefore, the development focus should be on organizing academic-vocational integration through clearer projects and assessments rather than introducing an isolated vocational subject.

Across 15 unique Nadya learner interviews, motivations for learning included obtaining an upper-secondary credential, securing better employment, supporting family income, opening a business, and continuing education. Learners expressed a desire to acquire culinary skills, administrative expertise, Microsoft Excel proficiency, communication abilities, certified training, and visits to micro and small enterprises. Of the 14 learners who provided a usable response regarding their learning preferences, 13 preferred practice or real-world projects, while one preferred theory or materials based on the activity. The following translated statements exemplify this pattern:

"I favor direct practice as it facilitates comprehension and retention." (N05)

"While the theory holds relevance, practical application remains constrained; visits to small businesses or certified training sessions would be beneficial." (N16)

"I still require enhancement in public speaking and confident expression of opinions." (N15)

Table 4. Cross-site needs and implications for model development

Theme	Field evidence	Design implication
Flexible participation	Afsana had small, fluctuating attendance; Nadya used face-to-face, online, independent, and tutorial modes.	Divide projects into manageable stages, negotiate schedules, and permit online consultation.
Contextual learning	Lecture-only instruction produced boredom; practice, visuals, games, and local examples improved engagement.	Use an authentic local problem as the organizing center of the project.
Diverse vocational interests	Interests included culinary work, fisheries, marine services, computing, administration, design, sewing, makeup,	Provide a menu of project options rather than one standardized product.



Theme	Field evidence	Design implication
Employability gaps	agriculture, mechanics, entrepreneurship, and safety. Public speaking, confidence, problem solving, adaptation, work experience, leadership, time management, discipline, and procedural compliance needed strengthening.	Use process rubrics, pitching, simulations, scenario changes, and workplace exposure.
Existing life-skills provision	Nadya already included skills and empowerment in its curriculum.	Position novelty in standardized integration and assessment, not in claiming that life skills were absent.
Different preferences	Most learners preferred practice, but one preferred theory or materials depending on the activity.	Combine concise orientation, demonstration, practice, reflection, and differentiated complexity.

Model Characteristics and Design Output

The prototype had six defining characteristics. Each project began with a work- or enterprise-related problem grounded in learners' experience. Academic content was embedded in project work rather than treated as a separate textual requirement. Projects could combine classroom meetings, group work outside class, online consultation, and independent tasks. Learners selected themes according to their interests, local potential, and available resources. Instruction combined concise conceptual orientation, demonstration, practice, reflection, and presentation. Assessment addressed the product and the project process, including communication, teamwork, problem solving, adaptability, discipline, responsibility, and procedural competence.

Expert Validity and Tutor Appraisal

Two experts evaluated the prototype. The overall mean was 4.51 on a five-point scale, equivalent to 90.3% and categorized as highly valid. Presentation received the highest score (92.0%), followed by content (90.0%) and language (89.0%). Expert feedback emphasized that assessment should extend beyond the appearance of the final product to include communication, utilization of information, adaptation, and problem-solving processes.

Two tutors at PKBM Nadya completed forms that were not identical. Across the 13 non-duplicated recorded statements, 12 responses were rated strongly agree and one agree, equivalent to 98.1% of the maximum obtainable score. Because the forms differed and only two tutors participated, the percentage is reported as a descriptive summary of initial tutor feedback, not as a psychometric scale score or a generalizable estimate of practicality.

Table 5. Expert validity and initial tutor appraisal

Assessment	Aspect	Mean or response pattern	Score
Expert validation	Content feasibility	4.50/5	90.0%
Expert validation	Presentation feasibility	4.60/5	92.0%
Expert validation	Language feasibility	4.45/5	89.0%
Expert validation	Overall	4.51/5	90.3%
Tutor appraisal	Ease of use	5 strongly agree	100.0%
Tutor appraisal	Quality of materials	3 strongly agree; 1 agree	93.8%
Tutor appraisal	Expected learning impact	4 strongly agree	100.0%
Tutor appraisal	Overall	12 strongly agree; 1 agree	98.1%

Learner Response and Practicality at PKBM Nadya

Table 6 shows favorable overall learner response (83.2%, $n = 17$) and practicality (81.9%, $n = 18$), but the item pattern qualifies those aggregate scores. Learners most strongly supported continuing the method (89.7%) and reported greater motivation to attend (87.5%), whereas ease of vocational practice (75.0%), module support for project completion (76.4%), and instructional clarity (79.2%) were weaker. Thus, the quantitative ratings indicate acceptance of the model's purpose, while the relatively lower operational items identify where the materials still require clearer sequencing, examples, and scaffolding.

Table 6. Learner appraisal at PKBM Nadya

Measure	Valid n	Overall score	Highest indicator	Priority for revision
Learner response	17	83.2%	Continuation of the method (89.7%)	Ease of practicing vocational content (75.0%)
Learner-rated practicality	18	81.9%	Motivation to attend (87.5%)	Module support (76.4%) and instruction clarity (79.2%)

Implementation Fidelity and Project Products

The research records indicated that the 17-meeting module sequence was implemented; however, session-level attendance and evidence were not complete enough to calculate a verified fidelity percentage. The culminating authentic projects varied across the sites. At PKBM Afsana, groups engaged in the processing of fish into abon ikan, bakso ikan, and keripik ikan. This process encompassed product planning, material and cost calculations, task allocation, hygiene and production procedures, packaging or presentation, and group reflection. Conversely, at PKBM Nadya, learners produced tutup bosara, integrating local craft knowledge, material selection, design, team coordination, production monitoring, presentation, and reflection. These outputs illustrate the contextual adaptation of a common PjBL cycle rather than the utilization of a single standardized product across the sites.

Preliminary Employability Outcomes

At PKBM Afsana, the archived summary showed an increase in the overall mean employability score from 54.37 at pretest to 82.87 at posttest. All four domains increased descriptively. Teamwork had the highest posttest mean (85.00), followed by adaptability and self-confidence (84.00), communication and presentation (82.50), and problem solving (80.00). These values indicate a favorable pattern during the field trial, but statistical significance and effect size are not reported because the matched raw scores were unavailable and the inferential summary in the archive contained internally inconsistent statistics.

Table 7. PKBM Afsana pretest-posttest employability scores ($n = 30$)

Domain	Pretest mean	Posttest mean	Change
Communication and presentation	55.00	82.50	+27.50
Teamwork	60.00	85.00	+25.00
Problem solving	52.50	80.00	+27.50
Adaptability and self-confidence	50.00	84.00	+34.00
Overall	54.37	82.87	+28.50

Note. Values are descriptive means transcribed from the archived research summary. The 30 matched participant-level scores were not available; therefore, no raw scores were generated or reconstructed, and no inferential test or effect size is reported.



At PKBM Nadya, the employability instrument provided complementary self-assessment evidence rather than a causal outcome test. The overall mean was 3.32 on a four-point scale (83.1%). Teamwork was the strongest (86.6%), followed by adaptability (83.3%), problem-solving (81.9%), and communication (80.6%). At item level, helping group members (91.7%) and accepting criticism or suggestions (90.3%) were strengths, whereas confident expression of ideas, adjustment to schedule changes, and identification of root causes required further development.

Table 8. PKBM Nadya employability self-assessment (n = 18)

Domain	Mean (1-4)	Score	Agree/strongly agree	Study category
Problem solving	3.28	81.9%	96.3%	Very good
Teamwork	3.46	86.6%	100.0%	Very good
Communication	3.22	80.6%	94.4%	Good
Adaptability	3.33	83.3%	88.9%	Very good
Overall	3.32	83.1%	94.9%	Very good

Qualitative-Quantitative Triangulation

The contrast in Table 8 was sharpened by the qualitative evidence. Teamwork was the highest-rated domain (86.6%), consistent with learners' reports that they could cooperate across ages and backgrounds. Communication was the lowest-rated domain (80.6%), and at least seven of the 15 interviewed learners identified public speaking or confidence as an unresolved need, describing nervousness during presentations, job interviews, and encounters with unfamiliar clients. The percentages therefore suggest generally positive self-perceptions, whereas the interviews reveal specific situations in which communication remained difficult. Learners also requested more direct work experience, computer practice, certified training, and visits to micro and small enterprises.

Triangulation revealed that project content should vary by location while maintaining a stable core syntax. Afsana implemented fish-product diversification through abon ikan, bakso ikan, and keripik ikan, reflecting its coastal and fisheries context. Nadya implemented the production of tutup bosara, which reflects locally relevant craft and cultural opportunities. These projects support a modular design in which each PKBM selects a contextual product while retaining common planning, inquiry, production, presentation, reflection, and employability-assessment phases.

Discussion

The model is best understood as a standardized integration framework rather than a fixed vocational-content package. Although the two PKBM institutions differed in size, attendance, learning modes, and existing life-skills provision, both needed a mechanism connecting academic knowledge with vocational action. The framework therefore standardizes project organization and assessment while allowing themes to reflect learners' interests, local livelihoods, and available resources. This responds to the multilayered conditions shaping participation in nonformal adult education (Vaculíková et al., 2024) and the need for blended arrangements when employment limits regular attendance (Saleha & Shofwan, 2025).

The academic-vocational integration also addresses a recurring weakness in skills education. Practical activities may be undertaken without sufficient conceptual reasoning, while academic lessons may remain disconnected from work. By embedding mathematics, language, digital documentation, and reflection into authentic projects, the model treats employability as both knowledge application and social performance. This



is consistent with the multidimensional perspective proposed by (Rausch et al., 2024) and with (Orih et al., 2024), who emphasize explicit instruction, repeated practice, and observable assessment of soft skills.

The high expert and user-appraisal percentages suggest strong initial acceptance, but the lower learner scores for module support, instruction clarity, and ease of vocational practice are more valuable for revision than the overall percentages. A conceptually sound model does not automatically result in an accessible learning experience. The findings imply that project worksheets should include numbered procedures, visual examples, lists of tools and materials, role allocation, time estimates, safety instructions, checkpoints, and explicit criteria for acceptable outputs. This interpretation aligns with international meta-analytic evidence emphasizing scaffolding, instructional design, and evaluation in PjBL (Zhang & Ma, 2023).

The descriptive increase observed at PKBM Afsana is theoretically plausible because PjBL gives learners repeated opportunities to negotiate roles, gather and evaluate information, calculate resources, solve practical problems, revise plans, and present outcomes. Evidence from a large project-based course further indicates that collaboration outcomes are shaped partly by the functioning of student groups, underscoring the need to guide group processes rather than merely assign group tasks (Johnsen et al., 2024). Meta-analytic evidence indicates that PjBL can enhance learning when projects are adequately scaffolded and evaluated (Zhang & Ma, 2023). Transferable skill development in blended PjBL also hinges on alignment among teaching support, engagement, and context (Li & Zhu, 2023), while progressive assessment can make collaboration and revision visible throughout the project (Wang, 2023). Nevertheless, the one-group design cannot exclude testing, maturation, tutor influence, or other explanations. Consequently, the results should be described as preliminary evidence of change rather than definitive proof of causal effectiveness.

Teamwork emerged as Nadya's strongest self-assessment domain, whereas communication lagged. The operational conditions of nonformal adult education help explain this difference. Employed learners attended through changing combinations of face-to-face meetings, online sessions, independent work, and tutorials; fluctuating attendance reduced continuity and limited repeated whole-group presentation practice. Collaborative production nevertheless occurred frequently in small, familiar peer groups through role allocation, material preparation, and problem solving. These activities can strengthen cooperation without requiring the more demanding public expression involved in pitching, job interviews, or customer communication. Future implementation should therefore distribute brief presentations, structured pitching, interview simulations, customer-service role-play, and peer feedback across the full project sequence. Authentic interdisciplinary projects offer a suitable setting for this practice (González-Cespón et al., 2024).

The unequal opportunities for practice were also reflected in learner testimony: at least seven of 15 interviewees identified public speaking or confidence as a continuing need. Formal communication activities were fewer, involved unfamiliar audiences, and carried greater performance anxiety than routine collaboration with peers. Communication should therefore be treated as a targeted instructional priority, with flexible rehearsal opportunities for learners who cannot attend every session, rather than as evidence that the project failed to promote social participation.

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In contrast to previous vocational Project-Based Learning (PjBL) models, the present framework extends project-based learning to equivalency education by accommodating small or fluctuating groups, community learning spaces, online consultation, independent work, and locally selected project themes. Its most significant contribution lies in its contextual and organizational nature rather than asserting that the six phases are entirely novel. The model provides a structured approach to adapting established PjBL principles to a population whose participation patterns and occupational aspirations diverge from those of full-time vocational students.

Limitations

The findings should be interpreted within several limitations. The two sites involved different participant groups, sample sizes, and instruments; therefore, their evidence was complementary and was not statistically pooled. The Afsana trial had no comparison group, and the matched raw pretest-posttest scores were unavailable. Aggregate means cannot uniquely determine participant-level observations; consequently, the authors did not fabricate or reconstruct raw scores, and assumption checks, confidence intervals, effect sizes, and inferential results could not be verified. The Nadya employability results were self-assessments and may reflect social-desirability or response bias. Item-level questionnaire matrices were unavailable for recalculating reliability. Although records described completion of the 17 meetings and identified the project products, session-level evidence was incomplete, so implementation fidelity could not be quantified. Future studies should retain de-identified item-level datasets, employ a comparison group where feasible, and prospectively document attendance, implementation, consent, and ethics approval.

CONCLUSION

This study found that a six-phase, 17-meeting PjBL framework can organize Paket C academic learning, locally adaptable vocational projects, and explicit employability indicators across two contrasting PKBM settings. Expert, tutor, and learner appraisals offered favorable preliminary evidence of validity and usability; Afsana's archived means increased descriptively, while Nadya learners rated teamwork most strongly and communication as the principal area for further development. The practical implication is that tutors can retain a common project cycle while adapting products to local resources, provided that worksheets specify procedures, examples, safety guidance, roles, and process criteria. However, small non-equivalent samples, unavailable matched raw scores, Nadya's self-reported outcomes, incomplete fidelity records, and the absence of a comparison group limit the findings to relevance and feasibility rather than causal effectiveness. Future research should conduct adequately powered multi-site evaluations with standardized measures, preserved participant-level data, direct performance assessment, prospective fidelity monitoring, and randomized or well-matched comparison groups.

ACKNOWLEDGMENT

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The authors express their sincere gratitude to the Directorate of Research and Community Service (DPPM), Directorate General of Research and Development, Ministry of Higher Education, Science, and Technology of the Republic of Indonesia, for funding this study through the Beginner Lecturer Research Program (Penelitian Dosen



Pemula/PDP) under Contract No. 288/C3/DT.05.00/PL-BARU/2026. The authors also extend their appreciation to Universitas Muhammadiyah Bulukumba, PKBM Afsana, PKBM Nadya, the expert validators, tutors, administrators, and Paket C learners for their valuable contributions to this study.

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