

Intergenerational Informal Learning through Work Values and Community Empowerment among Waste-Picker Families in Surabaya, Indonesia

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Abstract

Background – Waste pickers contribute to urban recycling while experiencing livelihood insecurity and social marginalization. Their everyday work also creates informal learning settings in families and community networks.

Research Urgency – Evidence remains limited on how work values are learned across generations and how participants connect them with community empowerment.

Research Objectives – This study examined learning processes, recurring work values, and perceived empowerment pathways in a waste-picker community near Benowo, Surabaya.

Research Method – A qualitative case study involved nine purposively selected adults: four waste pickers, two recyclable-material collectors, a village head, a community leader, and a local resident. Indonesian-language interviews, observation, and documents were analyzed through iterative coding and thematic comparison.

Research Findings – Family socialization, guided participation in daily work, and community interaction reinforced responsibility, discipline, perseverance, cooperation, honesty, adaptability, and environmental awareness. Participants associated these values with livelihood continuity, social cohesion, environmental responsibility, and adaptive capacity, but structural vulnerability remained.

Research Conclusion – Intergenerational informal learning may support community capabilities, yet it cannot substitute for occupational protection, social services, fair recognition, or safeguards against child labour.

Research Novelty/Contribution – The study offers a provisional framework linking informal-learning settings and processes with work values and perceived empowerment pathways in an Indonesian waste-picker community.

Keywords: community empowerment; informal learning; intergenerational learning; waste pickers; work values

How to Cite:

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INTRODUCTION

Informal waste workers recover materials that would otherwise remain in disposal streams, yet they often perform this environmental service without secure recognition, remuneration, or social protection. Recent reviews show that waste pickers contribute to recycling and plastic-pollution mitigation while remaining exposed to exclusion, unstable income, and occupational hazards (Cook et al., 2024; Costa de Castro et al., 2026; Rani et al., 2025). Their contribution is therefore simultaneously ecological, economic, and social. Treating waste pickers only as beneficiaries of assistance obscures the practical knowledge and collective arrangements through which they identify materials, respond to changing prices, organize work, and sustain household livelihoods.

Urban informality is not external to the city; it is part of how services, livelihoods, and resource flows are produced. Research on the informality–sustainable-city nexus shows that informal practices can contribute to urban functioning while remaining weakly represented in planning and governance (Abagna et al., 2021). Waste picking illustrates this contradiction sharply. Informal workers recover materials that municipalities and firms value, but the institutions that benefit from those materials may not recognize workers as legitimate service providers. Recent analysis of waste pickers in Africa similarly describes social reproduction and environmental contribution as intertwined with marginalization (Koroma et al., 2025). This dual position makes education and empowerment inseparable from questions of labour rights, recognition, and distributive justice.

This tension is visible in Indonesia. Waste-picker households may depend on financial, human, informational, and social resources while experiencing deficits in housing, education, health care, and income security (Amin et al., 2025, 2026). Evidence from Makassar identifies trust, networks, norms, values, and solidarity as resources in livelihood strategies (Angriani et al., 2024). At the same time, Indonesian waste-to-energy initiatives raise questions of distributional justice and community participation, because technological modernization does not automatically resolve the burdens borne by surrounding communities (Astuti et al., 2026). International evidence likewise suggests that inclusive circular-economy transitions require recognition of waste-picker organizations, environmental services, care relations, and social protection rather than material recovery alone (Castillo-Ospina et al., 2025; Gutberlet, 2021; Valencia et al., 2023).

The Benowo waste-management area in Surabaya provides a critical setting for this inquiry. The site combines municipal waste processing, recyclable-material trading, informal recovery, and a waste-to-energy facility. Research has documented everyday waste-picking practices in Benowo and continuing environmental or health concerns in and around the site (Imandini et al., 2023; Kasih et al., 2025; Wisnu et al., 2023). These studies are important but largely foreground infrastructure, daily livelihoods, or exposure. Less is known about the learning processes through which work-related knowledge and values are reproduced in families and reinforced through interactions among waste pickers, collectors, and nearby residents.

Informal learning offers a more precise educational lens for examining this process. Informal work-related learning develops through observation, experimentation, feedback, participation, and interaction embedded in ordinary activity rather than through a prescribed curriculum (Decius et al., 2021; Smet et al., 2022; Toiviainen et al., 2022). Within marginalized communities, knowledge construction may also emerge through repeated experience, social exchange, and accessible community networks (Nugroho et al., 2024). This perspective allows family and work settings to be examined as learning environments without automatically idealizing them. It also makes it possible to distinguish valuable community knowledge from unsafe conditions or forms of labour involving children that require protection rather than normalization.

Intergenerational learning is used here in a restricted sense. It refers to the movement of knowledge, values, and practices between older and younger family or community members as described by adult participants. It does not imply that every participant belonged to a sampled parent–child pair, nor that

transmission was unidirectional. Younger workers can modify inherited strategies when markets, technology, or regulation change, and experienced workers can learn from those adjustments. The concept therefore combines continuity and adaptation. This distinction is important because the available sample does not support a full account of social reproduction across multiple generations; it supports analysis of adult narratives and observed interactions within one bounded setting.

Work values in this article refer to shared orientations that participants associated with responsible conduct in waste recovery: responsibility, discipline, perseverance, cooperation, honesty, adaptability, and environmental awareness. The study treats these values as possible social resources because they may organize expectations, support reciprocity, stabilize trading relations, and guide responses to uncertainty. Evidence from waste management indicates that networks and trust can support collective action and waste-related behavior (Handoyo et al., 2023; Priscilla, 2022; Zhou et al., 2022). However, social capital should not be presented as a substitute for fair prices, occupational protection, public services, or formal recognition. Community strengths operate within structural constraints.

Community empowerment is consequently used here as an analytical process rather than an assumed outcome. It concerns participants' capacity to act collectively, maintain livelihoods, participate in decisions, protect their environment, and adapt to changing conditions. Research in nonformal education emphasizes participatory learning, mentoring, institutional coordination, and community-based program design as routes for developing local capabilities (Hayat et al., 2024, 2026; Hidayat et al., 2026; Jannah et al., 2026; Nengsih et al., 2026). Program governance and evaluation also matter because empowerment claims should be connected to identifiable inputs, processes, participation, and outcomes (Akhadi & Shofwan, 2024; Lutfiansyah et al., 2026).

Articles by Imam Shofwan and colleagues provide a useful but bounded connection to this study. Their work demonstrates the value of multimodal, project-oriented learning and systematic training management in nonformal education (Djibu et al., 2024; Ilyas et al., 2025; Sari et al., 2024). These studies do not provide evidence about waste-picker communities. Rather, they inform the practical implication that any future training should begin with participants' existing experiential knowledge and be organized through relevant media, participation, mentoring, and evaluation. Recent JoNE research similarly shows that reflection, mentoring, and learning from everyday work situations can support informal capability development (Firdaus et al., 2026; Sopingi et al., 2026; Suminar et al., 2024).

A JoNE-oriented framing also requires a clear distinction between an existing informal learning process and a future nonformal intervention. Family and workplace learning in Benowo occurs without a formal curriculum, provider, or certification. By contrast, a nonformal program would be intentionally organized, time-bounded, facilitated, and evaluated. Community-based curriculum design can make such provision relevant to local conditions (Kurniawan et al., 2026), but the program should remain voluntary and should complement—not appropriate—community knowledge. This distinction prevents the article from relabeling all community activity as nonformal education while still explaining its relevance to the journal's scope.

The research gap is therefore twofold. Waste-picker scholarship has established environmental contribution, livelihood vulnerability, health risk, and the importance of organization, but has paid less attention to intergenerational informal learning as a mechanism through which work values are reproduced. Conversely, nonformal-education scholarship examines community learning and empowerment but rarely addresses informal waste work as an educational setting. Connecting these literatures can explain how locally embedded learning contributes to perceived empowerment pathways while keeping structural limits visible.

This study asked: (1) Through what family, work, and community processes are work values learned and reinforced? (2) Which work values were most consistently described or observed? and (3) How did participants connect these values with livelihood continuity, social cohesion, environmental responsibility,

and adaptive capacity? The contribution is a provisional, case-grounded framework of intergenerational informal learning. It is not presented as a universal theory or a causal model.

METHODS

Design and Setting

The study was revised as a qualitative case study with grounded-theory-informed iterative coding. This description resolves the inconsistency in the source manuscript, which alternated between constructivist and Straussian grounded theory without documenting the theoretical sampling, researcher positioning, or analytic procedures needed to justify a full grounded-theory claim. A bounded case design is more proportionate to the available evidence: nine adults connected to informal recycling activity around the Benowo waste-management area in Surabaya. Coding was used to develop a provisional conceptual framework rather than a substantive theory.

Benowo was selected because waste pickers, recyclable-material collectors, local residents, and community representatives interact around collection, sorting, transport, trade, and municipal waste processing. The setting is analytically relevant to nonformal education because learning occurs through family, work, and community participation outside a prescribed curriculum. The study does not classify waste picking itself as an educational program, and it does not treat hazardous work conditions as desirable learning environments.

Participants and Sampling

Purposive sampling identified nine adults with direct knowledge of waste recovery and community interaction: four informal waste pickers, two recyclable-material collectors, one village head, one community leader, and one local resident. Reported inclusion criteria were age 20 years or older, at least three years of relevant community involvement, knowledge of community life, and willingness to participate. Table 1 presents only the verified role distribution; demographic details and intergenerational family links were not available in the source file.

Table 1. Adult Participant Groups

Participant group	n	Analytical contribution
Informal waste pickers	4	Family learning, work routines, values, livelihood strategies
Recyclable-material collectors	2	Trading relationships, trust, weighing, market information
Village head	1	Local governance and community context
Community leader	1	Collective relations and community practices
Local resident	1	Contextual perspective on community interaction
Total	9	—

Data Collection

The source manuscript reports nine individual, semi-structured interviews conducted in Indonesian, each lasting approximately 30–60 minutes. Interviews addressed work histories, family learning, daily routines, cooperation, trading relationships, environmental practices, and responses to livelihood uncertainty. With adult participants' permission, interviews were audio-recorded and transcribed. Observation focused on waste collection and sorting, family and community interaction, and exchanges between waste pickers and collectors. Village records, photographs, and community materials were used as contextual documents.

The revised manuscript distinguishes adult interview participants from other people who may have been visible during fieldwork. Statements about children originate from adult accounts and contextual

observation; children were not listed as interview participants. This distinction is necessary because the source file contains field evidence about children while its inclusion criteria apply only to adults.

Data Analysis

Data collection and analysis were reported as iterative. The revised analysis retained open, relational, and integrative coding as practical steps but did not label them proof of Straussian grounded theory. Initial codes captured learning settings, learning processes, work practices, values, social relationships, constraints, and perceived outcomes. Related codes were compared across interviews, observations, and documents and organized into themes. The analysis then mapped relationships among the themes to produce a provisional framework. Current qualitative guidance supports explicit alignment among the research question, coding choices, theme development, and the status of the resulting conceptual claims (Braun & Clarke, 2021, 2022; Byrne, 2022; Naeem et al., 2023).

The final themes were: (1) family socialization and guided participation, (2) daily work as an informal learning environment, (3) community interaction, reciprocity, and trust, (4) seven recurring work values, and (5) perceived pathways toward empowerment. The analysis used negative-case reasoning by retaining evidence of economic insecurity, health risk, unequal bargaining power, and potential child-labour concerns. No claim of theoretical saturation is made because the source document does not provide a saturation grid or sufficient information about theoretical sampling; sample adequacy should instead be judged in relation to the bounded case and the specificity of the research questions (Hennink & Kaiser, 2022).

Analytical Boundaries

Three boundaries guided interpretation. First, a participant's statement about a value was treated as an account of meaning, not independent proof of behavior. Where possible, the interpretation compared that account with observation or another participant role. Second, recurring values were treated as themes, not scale dimensions. Frequency of mention was not converted into prevalence, and no ranking of values was calculated. Third, empowerment was examined through participants' perceived pathways and contextual evidence. The analysis did not infer causal change in income, health, bargaining power, environmental performance, or political participation.

These boundaries also shaped the terminology. 'Waste picker' is retained because it is widely used in current international scholarship and foregrounds workers' role in material recovery; 'informal waste worker' is used when referring to the broader occupational position. 'Community' denotes the network of participants and relationships around the case, not a homogeneous or formally bounded organization. 'Intergenerational' refers to narrated and observed learning between age cohorts, not a complete genealogy. This vocabulary reduces the risk of turning a small, heterogeneous case into a generalized portrait of all waste-picker families in Surabaya.

Trustworthiness and Researcher Reflexivity

Credibility was supported by comparing accounts across participant roles and checking interview interpretations against observations and documents. The source manuscript reports member checking, but it does not identify which participants reviewed which materials or whether feedback changed the themes. Transferability is supported through a description of the setting and participant roles, while dependability and confirmability require a documented coding trail. Because work values and empowerment are normatively loaded concepts, the researchers should also state their relationship to the community and how preconceptions were examined during coding.

Ethical Considerations

The source manuscript states that adult participants received information about the study purpose, voluntary participation, confidentiality, and the right to withdraw, and that written informed consent was

obtained. It also states that recordings, transcripts, and notes were securely stored. However, the source file does not identify an ethics committee, an institutional permission document, an approval number, or the consent and safeguarding procedure for any child visible during observation.

RESULTS AND DISCUSSION

The analysis identified intergenerational informal learning as a situated process occurring across family life, daily work, and community interaction. The seven work values were embedded in accounts of livelihood continuity and social relationships, but participants also described structural vulnerability. Table 2 previews the thematic structure before each theme is discussed. Convergence across roles was strongest for responsibility, regular work routines, mutual assistance, and trust in trading relationships. Waste pickers emphasized family livelihood and adaptation; collectors emphasized accuracy and continuity in transactions; community representatives supplied contextual accounts of cooperation and local conditions. Differences in role matter because the same practice can be interpreted differently. For example, early work may be narrated as discipline by an adult worker, as dependable supply by a collector, and as vulnerability by a social-protection perspective. The discussion therefore retains multiple interpretations instead of treating agreement as automatic validation.

Table 2. Themes, Evidence, and Cautious Interpretation

Theme	Indicative evidence	Interpretive boundary
Family socialization	Accompanying adults; observing sorting; guided tasks; moral instruction	Does not legitimize child labour or unsafe exposure
Daily work learning	Observation, repetition, feedback, price and material information	Learning occurs under livelihood insecurity
Community interaction	Mutual aid, information sharing, trust with collectors	Solidarity does not replace social protection
Work values	Responsibility, discipline, perseverance, cooperation, honesty, adaptability, environmental awareness	Case themes, not a validated scale or universal traits
Empowerment pathways	Livelihood continuity, cohesion, environmental responsibility, adaptive capacity	Perceived associations, not causal effects

Family Socialization and Guided Participation

Participants described the family as the earliest setting in which occupational knowledge and moral expectations were introduced. Learning began by accompanying older family members, watching how materials were separated, and completing limited tasks under supervision. Participant 4 explained: “I learned this work from my parents. At first, I only followed them to the landfill, but over time they taught me how to distinguish recyclable materials, work honestly, and never waste anything that could still be useful.” This account links technical recognition with thrift, honesty, and responsibility.

The mechanism resembles informal workplace learning because knowledge was acquired through observation, participation, correction, and repetition rather than a formal lesson (Decius et al., 2021; Smet et al., 2022). It also resembles knowledge construction in marginal communities, where experience and social interaction provide important learning resources (Nugroho et al., 2024). The case adds an intergenerational dimension: participants framed work knowledge as part of family livelihood continuity, not only individual skill acquisition.

The evidence nevertheless requires ethical caution. The source manuscript refers to children accompanying parents and learning simple sorting practices. Such observation cannot be treated only as cultural transmission because landfill work may expose children to health, safety, and educational risks. Recent Indonesian evidence reports child involvement in waste picking as a sign of household vulnerability rather than empowerment (Amin et al., 2025). The present analysis therefore recognizes informal learning while explicitly rejecting any interpretation that legitimizes child labour.

Daily Work as an Informal Learning Environment

Daily work provided a second learning setting. Participants described learning to identify recyclable materials, judge quality, negotiate with collectors, adjust collection strategies, and manage the timing of work. New or younger workers watched experienced workers and received immediate guidance within actual production and trading routines. These processes were embedded in material conditions: changing waste composition, weather, transport, landfill operations, and fluctuating prices.

Discipline and perseverance were repeatedly linked to timing and uncertainty. Participant 2 stated: “We usually leave home before sunrise because if we arrive late, most recyclable materials have already been taken. My parents always taught us that being late means losing today’s opportunity.” Participant 5 added: “Sometimes we only earn enough for food, but stopping work is never an option. My father always said tomorrow will bring another chance.” These statements show how work values were narrated as responses to livelihood insecurity. They should not be read as evidence that insecurity itself is educationally desirable.

Adaptability was learned through market feedback. Participant 6 reported: “Plastic prices change very often. When that happens, we collect more cardboard or metal instead. My parents taught me that surviving means being flexible.” This pattern aligns with research showing that waste-picker livelihoods depend on interacting forms of capital and remain vulnerable to price, information, and institutional conditions (Amin et al., 2025, 2026; Angriani et al., 2024). It also supports the view that learning spaces expand through engagement with changing work practices and relationships (Toiviainen et al., 2022).

Community Interaction, Reciprocity, and Trust

Community interaction reinforced values introduced in families and tested in daily work. Participants described sharing market information, helping to transport materials, lending equipment, and assisting households during illness. Participant 3 stated: “If someone cannot work because of illness, neighbours usually help collect recyclable materials for that family. We believe that one day we may also need the same help.” Reciprocity therefore reduced some short-term vulnerability and strengthened a sense of shared fate.

Honesty was especially important in transactions with collectors. Collector 1 explained: “We continue buying from the same families because they always report the correct weight. Once trust is lost, cooperation becomes difficult.” Here, integrity had both moral and economic functions: it maintained access to recurring trading relationships in the absence of formal contracts. Similar studies identify networks, trust, shared norms, and organization as resources for waste-picker livelihoods and circular-economy participation (Gutberlet, 2021; Handoyo et al., 2023; Priscilla, 2022; Valencia et al., 2023).

These relationships were not uniformly empowering. Dependence on collectors may also reflect unequal bargaining power, and informal mutual aid cannot replace social insurance or occupational protection. Reviews of waste-picker integration show that recognition and payment for environmental services remain incomplete even where participation initiatives exist (Castillo-Ospina et al., 2025; Costa de Castro et al., 2026). The findings therefore support a relational understanding of social capital while avoiding the claim that community solidarity resolves structural marginalization.

Work Values Identified in the Case

Seven recurring values were identified across interviews, observations, and field documentation: responsibility, discipline, perseverance, cooperation, honesty, adaptability, and environmental awareness. Table 2 summarizes the evidence and the cautious interpretation attached to each value. The categories are descriptive themes derived from this case; they are not a validated measurement scale.

Responsibility was framed as completing assigned tasks and contributing to family welfare. Participant 7 stated: “My parents always reminded us that every task had to be completed properly because our family depended on everyone’s responsibility.” Cooperation and honesty regulated relationships among workers and collectors. Adaptability supported shifts between materials when prices changed. Environmental awareness connected sorting with reduced waste and cleaner work areas. Participant 8 explained: “People think we only collect rubbish, but actually we reduce the amount of waste going into the landfill. We also teach our children not to throw recyclable materials away.”

The environmental contribution is consistent with research on plastic-pollution mitigation, recycling systems, and ecosystem services (Cook et al., 2024; Sidharta et al., 2025, 2026; Yirga et al., 2026). However, environmental awareness reported by participants should not be equated with measured environmental impact. Nor should work values be treated as inherent traits of all waste pickers. They are situated interpretations produced within this small case.

Table 3. Work Values and Empirical Indicators

Value	Empirical indicator in the case	Possible community function
Responsibility	Completing sorting or assigned work; contributing to household needs	Accountability and livelihood continuity
Discipline	Early and regular work routines	Access to materials and routine coordination
Perseverance	Continuing or adjusting work during low earnings	Coping with instability
Cooperation	Sharing transport, information, equipment, and emergency help	Reciprocity and short-term support
Honesty	Accurate reporting and weighing in recurring transactions	Trust and continuity of trading relations
Adaptability	Changing materials, hours, or strategies when conditions change	Response to market and operational uncertainty
Environmental awareness	Separating recyclables and maintaining work-area cleanliness	Environmental responsibility and material recovery

Perceived Pathways toward Community Empowerment

Participants connected the identified values with four perceived pathways: livelihood continuity, social cohesion, environmental responsibility, and adaptive capacity. Discipline and perseverance supported regular work; cooperation and honesty sustained reciprocal and trading relationships; environmental awareness guided sorting and cleanliness; and adaptability supported changes in materials, timing, and strategy. Participant 8 summarized the dignity dimension: “Since I was little, my parents always told me that collecting waste is not something to be ashamed of. What matters is working honestly, being diligent, and never giving up because this work feeds our family.”

The term perceived pathways is deliberate. The study did not measure household income, network density, recycling volume, decision-making power, or change over time. It therefore cannot establish that values caused empowerment. Instead, the data show how participants interpreted the relationship between

learned values and their capacity to continue working, cooperate, care for the environment, and respond to uncertainty. This interpretation is compatible with evidence that community empowerment depends on participation, mentoring, capability development, and supportive governance (Ambarini et al., 2025; Hayat et al., 2026; Hidayat et al., 2026; Widodo et al., 2024).

Figure 1 integrates the empirical themes into a provisional framework. Family socialization, daily work, and community interaction function as learning settings. Observation, guided participation, repetition, and feedback are the learning processes. These processes reinforce work values that participants associated with empowerment pathways. The arrows indicate an analytical sequence, not a tested causal chain.

Provisional Intergenerational Informal-Learning Framework

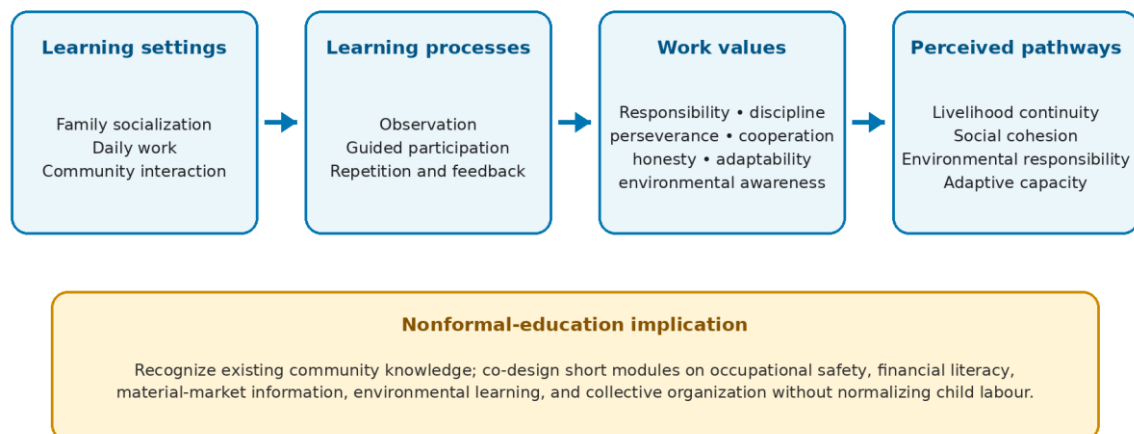


Figure 1. Provisional Intergenerational Informal-Learning Framework

The framework contributes to nonformal education by identifying where external programs can connect with existing community learning. Training should not replace local knowledge with a standardized package. It should be co-designed around participants' priorities and combine occupational safety, financial and market literacy, environmental learning, collective organization, and access to public services. Structured mentoring, multimodal materials, and participatory evaluation are relevant design principles (Akhadi & Shofwan, 2024; Darmawan et al., 2025; Djibu et al., 2024; Ilyas et al., 2025; Sari et al., 2024). Community-learning initiatives also need transparent governance and partnerships with local government, recyclers, health services, and worker organizations (Hayat et al., 2026; Hidayat et al., 2026; Lutfiansyah et al., 2026; Suminar et al., 2024).

A practical program could be organized in five linked phases. A participatory needs assessment would map existing knowledge, priority risks, work schedules, literacy preferences, gendered responsibilities, and access barriers. Co-design would convert those priorities into short, flexible modules using demonstrations, photographs, material samples, role play, and peer facilitation. Guided applications would place safety, price calculation, sorting quality, and negotiation exercises close to real work problems. Mentoring would support experimentation without penalizing errors, consistent with recent evidence on reflective informal learning (Sopingi et al., 2026). Evaluation would combine participant-defined indicators with observable changes in safe practice, access to information, collective action, and service referral rather than relying only on attendance.

Safeguarding must be built into every phase. Training for adults should be scheduled so that participation does not reduce essential income or transfer work to children. Program staff should be able to refer families to education, health, identity-document, and social-protection services. Any activity involving minors requires an explicit protection mandate, parental or guardian consent, age-appropriate assent, safe locations, and a clear rule that educational participation does not include hazardous waste handling. These

safeguards are not peripheral ethics requirements; they determine whether a program strengthens capabilities or unintentionally reproduces vulnerability.

Policy implications extend beyond training. Inclusive waste governance should recognize waste pickers' environmental services, strengthen occupational health and social protection, improve access to information and fair trading conditions, and enable meaningful participation in municipal decisions (Al Furqan et al., 2026; Castillo-Ospina et al., 2025; Costa de Castro et al., 2026; Darwel et al., 2026). Circular-economy and waste-bank initiatives may support empowerment when economic, social, and environmental objectives are connected and when community participation is substantive rather than symbolic (Warsiyah et al., 2025).

At the organizational level, local government and recycling firms could establish regular consultation, transparent weighing and price information, access to protective equipment, health monitoring, and grievance procedures. Worker associations or cooperatives may strengthen representation, but organization should not be assumed to produce inclusion automatically. Current international reviews show that integration arrangements vary in payment, decision-making power, and whether they support individuals or collectives (Castillo-Ospina et al., 2025; Costa de Castro et al., 2026). Evaluation should therefore ask who gains recognition, who bears costs, and whether women, migrants, older workers, and independent pickers can participate on fair terms.

Conceptual Contribution

The conceptual contribution is a shift from linear inheritance to negotiated continuity. Values were described as originating in family interaction, but their meaning was repeatedly tested in work and community relations. Discipline acquired significance through competition for materials; honesty acquired significance through repeated exchange with collectors; cooperation acquired significance during illness or transport problems; and adaptability acquired significance when prices or waste streams changed. Transmission was therefore neither a one-time parental message nor simple imitation. It was a recurring process in which values were interpreted, enacted, reinforced, and sometimes modified in response to changing conditions.

This interpretation also refines the use of social capital. Trust and reciprocity can reduce transaction uncertainty and support mutual aid, yet the same networks may operate within dependent market relations. Social capital is thus one resource among several and may have unequal benefits. Recent Indonesian livelihood research shows that financial, human, and informational capital remain decisive and that social relations do not automatically produce livelihood security (Amin et al., 2025, 2026). The framework consequently places work values between learning processes and perceived pathways, but it does not position them as sufficient conditions for empowerment.

Two feedback relationships are implied. First, empowerment experiences can feed back into learning: a successful adjustment, collective action, or safer practice becomes new knowledge that can be shared. Second, structural shocks can interrupt transmission: displacement, technological change, declining recyclable prices, illness, or exclusion from waste streams may make inherited strategies less viable. Future studies can investigate these feedback relationships through longitudinal family interviews, participatory timelines, network mapping, and repeated observation. Such designs would show whether values persist, change, or lose relevance across life stages and policy transitions.

The framework is therefore best used as a set of testable analytical propositions. Informal learning should be more visible where people participate repeatedly in shared work; work values should be reinforced where feedback and reciprocal expectations are stable; and empowerment pathways should be stronger where community capabilities are supported by fair institutional conditions. Comparative research can examine these propositions across municipal systems, organized and independent workers, and different generations. Quantitative validation, if later attempted, should develop measures from participatory qualitative work rather than treating the seven themes in this case as a ready-made scale.

Limitations

This study is limited to one setting and nine adult participants, only four of whom were identified as waste pickers. The source file does not provide participant demographics, a family relationship map, exact observation hours, a document inventory, a coding audit trail, or complete ethics documentation. Intergenerational evidence relies on adult recollections and contextual observations rather than systematically sampled family dyads across generations. The study did not measure empowerment outcomes over time, recycling performance, income change, social-network structure, or environmental impact. The framework is therefore provisional and transferable only through analytical comparison, not statistical generalization. Future research should include multi-generational family sampling, age-appropriate safeguards, longitudinal evidence, participatory validation, and comparison across organized and non-organized waste-picker groups.

CONCLUSION

In the Benowo case, participants described work values as learned through family socialization, guided participation in daily work, and community interaction. Responsibility, discipline, perseverance, cooperation, honesty, adaptability, and environmental awareness organized accounts of how people continued livelihoods, maintained relationships, sorted materials, and responded to uncertainty. These values functioned as situated community resources, but their contribution to empowerment remained conditional on wider economic, institutional, health, and environmental circumstances. The study's contribution is a provisional framework linking informal-learning settings and processes with work values and perceived pathways toward livelihood continuity, social cohesion, environmental responsibility, and adaptive capacity. The framework supports nonformal programs that recognize community knowledge while adding occupational safety, financial and environmental learning, collective organization, and access to services. It does not justify unsafe work or child labour, and it does not replace the need for formal recognition, social protection, and participatory waste governance.

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