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Traditional Car Repair Apprenticeship and Social Change in the Brotojoyo Community, Semarang

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ABSTRACT

While formal vocational training is widely explored, the learning mechanisms and Socio-economic impacts of traditional apprenticeships in urban informal vocational communities remain underexplored. This qualitative case study analyses traditional apprenticeship learning patterns and their Socio-economic impacts within a car repair community in Brotojoyo, Semarang. Data were collected from nine participants three experts, three apprentices, and three community leaders via in-depth interviews, observation, and documentation, and then analyzed using the Miles and Huberman interactive model. Findings reveal that the apprenticeship progresses gradually from observation and guided practice to full independence through specific episodes, including negotiation, unloading, workmanship, installation, and finishing. Ultimately, these structured yet informal learning phases significantly enhance apprentices' technical skills and economic welfare, while fostering social solidarity grounded in local wisdom values such as discipline, trust, mutual help, patience, and work responsibility. Theoretically, this study integrates traditional apprenticeship patterns with contextual learning theory. In practice, it offers an alternative, localized model for community empowerment to reduce unemployment and strengthen social capital.

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1. INTRODUCTION

Local wisdom-based learning communities have long served as a vital form of nonformal education, yet they are predominantly associated with rural empowerment [1]–[4]. However, this educational phenomenon is vividly illustrated in an urban industrial context in Brotojoyo Village, Semarang City, through its traditional ketok car (body repair) learning community. Historically, Brotojoyo was widely recognized as a marginalized urban settlement characterized by high youth unemployment and socio-economic vulnerability. Local demographic data and preliminary interview evidence indicate that, over the years, the

village has undergone a significant transformation into a thriving center of creative economic activity driven by workshop skills [5]. Historically, Brotojoyo was widely recognized as a marginalized urban settlement characterized by high youth unemployment. However, village monograph data from 2023 to 2025 shows a steady decline in unemployment rates as the informal automotive sector expanded. This is reinforced by preliminary observations, in which a local workshop owner noted that, from E1 2025, "the ketok car community has absorbed dozens of previously unemployed local youths, transforming them into skilled, independent earners."

The ketok car industry has become culturally and economically vital in Brotojoyo because it provides an accessible, low-barrier entry point for unskilled youth to acquire highly marketable technical competencies, functioning as a localized economic lifeline. In this specific setting, local wisdom is explicitly defined not as traditional arts but as practical, everyday workshop values such as gotong royong (mutual assistance), intergenerational trust, strict work ethic, patience, and work responsibility. These values are structurally embedded into the traditional apprenticeship practices, governing how experts and apprentices interact [6]–[8]. This presents a unique phenomenon: a localized, informal apprenticeship system that not only facilitates the transfer of technical skills but also functions as a powerful socio-economic catalyst.

Previous literature on community-based learning generally falls into two distinct trajectories. The first trajectory highlights the role of local wisdom in building social resilience and economic welfare, predominantly in rural or agricultural contexts, such as participatory cultural practices that strengthen village ties [9], [10]. The second trajectory focuses on the structural implementation of modern apprenticeships. The "Apprenticeship House" model, for example, is emphasized primarily as a tool for individual character education and the development of soft skills [11], often detaching it from local wisdom values or broader community empowerment. Consequently, a notable research gap exists in the current literature. While existing studies focus either on the socio-economic impacts of local wisdom in rural settings or the individual skill development of formal, structured apprenticeships, the mechanisms of informal urban industrial apprenticeships remain largely underexplored.

This study bridges the aforementioned gap by shifting the research focus to Brotojoyo's car repair community. The novelty of this research lies in its holistic approach, specifically designed to contribute to understanding informal technical apprenticeship as a primary driver of urban social change rather than merely a pedagogical tool for the transfer of individual technical skills.

Therefore, the primary objective of this study is to comprehensively examine the dynamics of the traditional car repair learning community in Brotojoyo, Semarang. Specifically, this study aims to: (1) uncover the historical development of the community as a skills-based learning space; (2) describe the traditional apprenticeship pattern rooted in local wisdom and its contribution to improving youth competence; and (3) analyze the impact of this learning community on improving community welfare, specifically regarding unemployment reduction and socio-economic strengthening.

The urgency of this research stems from the need for sustainable strategies to address youth unemployment in marginalized urban communities. Theoretically, this study provides empirical evidence on integrating local wisdom into sustainable, nonformal education models. In practice, the findings offer an actionable, localized alternative for community empowerment programs that can strengthen social capital in urban settings.

2. METHOD

This study employed a qualitative research approach with a case study design to examine the practices of a traditional ketok car (car body repair) learning community in Brotojoyo, North Semarang. A case study design was selected because it allows for an in-depth exploration of complex meanings, human experiences, and dynamic social processes within the specific context of an urban community [12]. The research focused on three primary dimensions: the historical development of the learning community, the patterns of local wisdom-based apprenticeship, and the resulting Socio-economic transformation. The study was conducted over a six-month period. Specifically, the first month focused on pre-field preparation and initial documentation review. The subsequent four months were dedicated to intensive data collection (interviews and observations), while the final month involved rigorous data verification, member checking, and finalizing the analysis.

The research setting was purposively chosen in Brotojoyo Village due to its long-standing and active tradition of car body repair apprenticeship. The participants comprised nine individuals selected through a purposive sampling technique based on their roles and direct involvement in the community. To provide a comprehensive perspective, the participants were detailed as follows: (1) Three workshop managers/expert teachers (aged 45-60 years) with over 15 years of experience in car body repair, acting as the primary instructors and workshop owners; (2) Three local community leaders aged 50-65 years who were lifelong residents and deeply understood the village's Socio-economic evolution; and (3) Three youth apprentices aged 18-24 years. Crucially, the three apprentices were purposively selected to represent different learning stages: one in the initial observation phase, one in the guided practice phase, and one nearing full independence. All participants maintained close relationships with the Brotojoyo community, whether as native residents or long-term integrated migrants.

The researcher acted as the primary instrument, supported by semi-structured interview guidelines, focused observation protocols, and systematic field notes. Data were gathered using three complementary techniques:

In-depth Interviews: Conducted to elicit detailed narratives regarding the community's history, personal experiences, pedagogical strategies, transmitted local wisdom values, and socio-economic impacts. Each interview session lasted between 45 and 90 minutes. To build rapport and capture natural expressions, interviews were conducted in a mix of Indonesian and the local Javanese language. With the participants' consent, sessions were audio-recorded using a digital voice recorder and subsequently transcribed verbatim into Indonesian for coding and analysis.

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Participatory Observation: Conducted intensively, approximately two to three times a week during regular workshop operating hours. Observations specifically targeted distinct workshop activities, including structural welding, panel beating (*ketok*), painting, and customer negotiations. Key indicators recorded in the systematic field notes included the frequency and nature of teacher-apprentice interactions, problem-solving behaviors during complex repairs, and the physical demonstration of local wisdom values, such as *gotong royong* (mutual assistance) during heavy tasks and discipline in time management.

Documentation Review: Secondary data were collected to corroborate field findings. Sources included official village monograph records detailing demographic shifts and youth employment data; local historical archives; workshop attendance or financial records (where accessible); and photographs documenting the step-by-step apprenticeship process and the spatial layout of the repair community.

Data analysis was conducted continuously throughout the research phases using the Miles and Huberman interactive model [13]. This process involved three concurrent streams of activity: (1) **Data Condensation**, which included selecting, focusing, and coding the raw data from transcripts and field notes into meaningful themes social transformation; (2) Data Display, utilizing matrices and narrative texts to organize the findings systematically; and (3) Conclusion Drawing and Verification, where initial interpretations were continuously tested against the data to construct a robust understanding.

To ensure the credibility and trustworthiness of the findings, the researcher employed **triangulation** across sources, methods, and time. For instance, interview data from teachers were cross-verified with the perspectives of apprentices and community leaders, as well as with observational field notes [14]. Furthermore, a member-checking process was conducted [15], during which preliminary findings and interpretations were presented to participants to confirm that the researcher's narrative accurately reflected their lived experiences.

In accordance with standard qualitative research ethics, all participants were fully informed about the study's purpose and procedures before data collection began. Informed consent was obtained verbally and in writing. Participants' participation was entirely voluntary, without coercion. Furthermore, their privacy and confidentiality were strictly maintained through the use of pseudonyms and alphanumeric codes (E1-E3 for Experts, A1-A3 for Apprentices, and C1-C3 for Community Leaders) in all transcripts, field notes, and this final manuscript.

3. RESULTS AND DISCUSSION

3.1. Results

a. The Cross-Historical Development of the Traditional Carpentry Learning Community

The development of the traditional *ketok car* (car body repair) learning community in Brotojoyo, North Semarang, is a long journey closely tied to the local community's social dynamics. The community began to grow in the late 1970s through the initiative of the late Mr Yari, a pioneer in creating a space for local youth to learn car repair skills. At that time, the socio-economic conditions of the Brotojoyo community were dominated by informal work with a relatively high unemployment rate. The presence of a traditional car repair shop

became an entry point for the formation of a learning community that functioned as a place to work and an arena for knowledge transmission.

Over time, learning practices at the auto repair shop evolved into a traditional, nonformal apprenticeship pattern, where beginners learned directly from teachers through actual practice. This process is slow but sure, as experienced by Mr. Yari's students, such as Hartono and Paiman, who took decades to become proficient and open their own workshops. Young people who previously had no specific skills had the opportunity to learn in a community setting, where knowledge transfer occurred in a situational, context-specific manner. Although initially based on simple technology and manual methods, the Brotojoyo car repair community has sustained itself by combining traditional practices with innovations to meet market needs.

b. Learning Patterns of Traditional Apprenticeship Based on Local Wisdom

The traditional apprenticeship pattern that takes place in Brotojoyo requires direct involvement in daily practice. In daily practice, apprenticeship stages generally progress through four phases: observation, guided practice, gradual independent practice, and full independence. In the early stages, apprentices observe to understand the workshop's work values, ethos, and culture. Furthermore, during the guided practice stage, the workshop owner or head fitter serves as a scaffolder, providing direction while gradually reducing it as the apprentice's ability increases. As skills improve, apprentices enter the independent practice stage by being given more responsibility for core work. The final stage is full independence, when apprentices can manage the workshop independently and even train the next generation.

When viewed in more detail, the learning pattern in Brotojoyo can be mapped into five main episodes:

1. Price and work negotiations: Conducted only by the workshop owner or head craftsman. Apprentices learn cost estimation, labor calculation, and the length of work.
2. Unloading for work: Novice apprentices dismantle nuts and bolts to understand the car's overall construction.
3. Workmanship: The culmination of the learning process requires high technical skills (e.g., knocking out damaged car parts using traditional homemade tools). It requires accuracy, sensitivity to touch, and the ability to estimate work results.
4. Installing work returns: Apprentices learn about vehicle reconstruction after repairs, which demands precision and a thorough mechanical understanding.
5. Finishing: Divided into compositing without painting, or a combination of compositing, painting, and recompositing.

Besides the technical aspects, the traditional apprenticeship at Brotojoyo is also loaded with character building, work ethic, and moral integrity. Apprentices learn discipline, patience, perseverance, and social responsibility for their work.

c. Socio-economic Impact of Brotojoyo's Carpentry Learning Community

The learning community in Brotojoyo has driven significant community transformation. From initially facing limited employment opportunities, low income, and

weak social solidarity, the community has slowly moved towards more prosperous and productive conditions.

Table 1. Socio-economic Changes in Brotojoyo Community

Aspect	Before the Learning Community	After the Learning Community
Job Opportunities	Limited, many unemployed	Wider, absorbed as workers or business owners
Family Income	Low and unstable	Increased, more stable, and sustainable
Unemployment Rate	High	Decreased significantly
Technical Skills	Minimal, limited to odd jobs	Growing, mastering car repair skills
Work Ethic	Weak, tend to be passive	Strong, disciplined, and productive
Social Solidarity	Tend to be individualistic	Close-knit, growing culture of mutual cooperation
Asset & Infrastructure	Low area is considered a slum	Land prices increased, improved roads and shops
Social Environment	Relatively closed, homogeneous	Open, many migrants, new pollution/security issues

In terms of the economy, family welfare has visibly increased. Young people who initially had no skills are now able to work in workshops, and some have opened their own businesses. Family income, which previously depended on odd jobs, now has a steady source from car repair skills. Socially, the relationship between teachers, apprentices, and workers has developed into a close family bond. The area is no longer seen as a slum full of unemployment, but as a thematic village of "traditional repair shops."

However, the impact of change is not entirely positive. While natives benefited greatly from reduced unemployment and rising asset values, some newcomers complained about noise and air pollution from the workshops, as well as security concerns about outsiders entering the village. To address these negative impacts, residents, together with local neighborhood leaders (RT) and the urban village office (kelurahan), held deliberations and established joint rules to balance the workshop's operations and environmental comfort.

3.2 Discussion

a. The Cross-Historical Development of the Traditional Carpentry Learning Community

The historical trajectory of the Brotojoyo community aligns with the view that local communities are often the center of social innovation that departs from practical community needs [16]. The slow but sure apprenticeship pattern observed aligns with **experiential learning theory**, which **emphasizes that knowledge is** formed **through** a cycle of experience, reflection, conceptualization, and experimentation [17]. This shows that skill learning goes beyond technicalities and deeply influences the formation of work character and a strong work ethic.

Furthermore, the situational knowledge transfer observed in the community is consistent with situated learning theory, emphasizing that learning occurs in a social context through real engagement in community practices [18]. Thus, car repair skills act as a local cultural identity passed across generations, making traditional learning communities

effective enculturation platforms. The community's ability to evolve from manual methods to fulfilling modern market needs can be understood through the theory of innovation diffusion, which explains how an innovation is gradually accepted and adopted [19].

b. Learning Patterns of Traditional Apprenticeship Based on Local Wisdom

The apprenticeship practices in Brotojoyo heavily rely on tacit knowledge. This aligns with the view that tacit knowledge is acquired through real experience and interaction, rather than written instructions [20]. Furthermore, situated learning theory emphasizes that novices learn by participating in communities of practice, moving from the periphery to the center of activity [21].

The initial observation phase is supported by the concept of modeling in cognitive apprenticeship, in which skills are acquired through real examples [22]. The subsequent guided practice phase reflects "guided participation" learning through social engagement in meaningful activities [23]. As apprentices transition to independent practice under supervision, this reflects the zone of proximal development, where learners complete tasks with minimal assistance before internalizing the skills [24]. The full independence cycle confirms the experiential learning theory [25].

The integration of character building into technical training aligns with the humanistic educational approach, emphasizing holistic individual development [26]. The presence of local wisdom in this process serves as a medium for acculturation, shaping character and acting as a humanistic guide to life [27], [28]. Furthermore, a community of practice is an arena for both social and professional identity formation[29].

c. Socio-economic Impact of Brotojoyo's Carpentry Learning Community

Socio-economic change never occurs instantaneously but rather unfolds over a long process, influenced by innovation, interaction, and adaptation [30]. The transformation in Brotojoyo validates the diffusion of innovations perspective, highlighting that systemic changes take considerable time to be internalized [31]. The economic empowerment seen in the village supports the argument that community-based education acts as a direct strategy for economic empowerment, transforming local skills into both social and economic capital [32], [33]. Socially, the direct guidance from experienced practitioners instills moral values alongside technical abilities, an outcome consistent with cognitive apprenticeship frameworks [34]. The familial bonds created among workshop members foster social capital such as trust, norms, and cooperation networks that strengthen community cohesion [35], [36].

However, the emergence of environmental and social friction (pollution and security concerns) illustrates the dual nature of social change, where innovation brings both opportunities and consequences [37]. **Viewed through the lens of social change theory, the** overall dynamics in Brotojoyo represent planned change. The late Mr Yari served as a strategic change agent, demonstrating that social change is driven not just by structure but also by individual breakthroughs [38], [39]. Ultimately, the adaptation of the Brotojoyo community aligns with the functional theory, demonstrating that elements of society capable of adjusting will establish a new, sustainable social balance [40].

4. CONCLUSION

This study concludes that the traditional ketok car (car body repair) learning community in Brotojoyo functions not only as a vocational training center but also as a vital catalyst for urban Socio-economic transformation. Addressing the research objectives, the findings are threefold. First, the informal apprenticeship model seamlessly integrates technical skill acquisition with the internalization of local wisdom, such as work ethic, discipline, and social responsibility, as learners progress from observation to full independence. Second, this grassroots educational model generates significant Socio-economic impacts, specifically through employment creation, income improvement, workshop entrepreneurship, strengthened social solidarity, and the gradual transformation of a marginalized area into a more economically resilient community. Third, this research, both theoretically and practically, enriches the literature on situated learning and cognitive apprenticeship by providing a contextually relevant model for community empowerment.

Consequently, policymakers, local governments, and educational practitioners are encouraged to recognize and support such grassroots learning communities formally. This support should materialize through the provision of infrastructure, supplementary training, and spatial regulations that balance economic productivity with quality of life.

Despite its contributions, this qualitative case study is limited to a single geographic location and the automotive sector. To validate and expand upon these findings, **future research** should **conduct longitudinal studies to measure long-term** economic impacts **and sustainability**. Furthermore, it is highly recommended to undertake comparative studies between informal workshop communities and formal vocational training programs across various cultural landscapes.

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