



Bridging Land Literacy Gaps through Transformative Adult Education in Rural Tanzania: A Participatory Action Research Study

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Abstract

Rural Tanzania continues to face persistent land-related challenges, including tenure insecurity, environmental degradation, and farmer–pastoralist conflicts, which require responses that extend beyond technical and policy solutions. This study examines how participatory adult education, informed by diagnosed land literacy gaps and community priorities, contributes to incremental changes in knowledge, practices, and collective engagement in the land governance. Using a Participatory Action Research approach with 106 adults, a context-responsive four-module program was implemented covering land literacy and legal awareness, sustainable land use and agriculture, conflict management and negotiation, and drought management and resilience. Community participation informed needs identification and the contextual adaptation of content through iterative engagement with the community. The findings are based on triangulated qualitative and documentary evidence, including observations, reflections, and community records, suggesting emerging improvements in land-related knowledge, sustainable land-use practices, engagement in local governance processes, and collective initiatives, such as community-based organisations and adult literacy activities. These changes were interpreted as gradual and processual. This study contributes a context-responsive, gap-informed model of adult education to strengthen land literacy and community-based land governance.

Keywords: adult education; land literacy; participatory action research; land governance; Tanzania

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Introduction

In rural Tanzania, land is more than a resource; it shapes livelihoods, identity, and social relations. However, many communities continue to face persistent land-related challenges, including soil degradation, unclear ownership, intergenerational disputes and recurrent farmer–herder conflicts. Conventional technical and policy responses have often been insufficient because they treat land primarily as an administrative or technical issue rather than as a socially embedded and educationally mediated system of practice. In this study, land literacy refers to the knowledge, skills, and capacities that enable individuals and communities to understand land systems, navigate institutions, manage disputes, and engage in sustainable land use. Earlier approaches have largely emphasised technical dimensions, such as agricultural productivity, boundary demarcation, and administrative procedures (Catacutan et al., 2003; Chambers, 2006), often neglecting the social and governance dimensions that shape access to land. However, recent scholarship reframes land literacy as a critical and situated practice embedded in rights, power relations and institutional structures (Alden Wily, 2018, Shivji, 1998).

This study was grounded in Participatory Action Research (PAR) as its overarching methodological framework. PAR conceptualises enquiry as a cyclical process of collective problem identification, action, reflection and knowledge co-construction (Lewin, 1946; Fals Borda, 1987; Kemmis & McTaggart, 2005). It positions communities not as research subjects but as co-researchers engaged in defining problems, generating solutions, and interpreting change within their own contexts. Within this framework, knowledge is understood as emergent and continuously refined through iterative cycles of action and reflection.

Within this PAR framework, the study was operationalised through Transformative Adult Education (TAE) as its pedagogical foundation. TAE in this study is informed by critical pedagogy (Freire, 1970) and adult learning theory (Knowles, 1980; Mezirow, 1991), both of which emphasise that adults learn best through experience, dialogue, and critical reflection on real-life problems. Freire's notion

of problem-posing education is particularly central, as it shifts learning from information transmission to a dialogical process in which learners critically analyse their lived realities and act on them.

Building on this foundation, TAE is conceptualised as a process of transformative learning cycles, in which participants engage in (i) identifying land-related problems, (ii) critically reflecting on underlying causes, (iii) developing context-specific solutions, (iv) applying these solutions in practice, and (v) reflecting on outcomes for further learning. Kolb's experiential learning theory further supports this cycle by emphasising learning through concrete experience, reflection, conceptualisation, and experimentation. In this sense, TAE provides a pedagogical mechanism through which PAR processes are translated into structured learning and actions. In this sense, TAE provides a pedagogical mechanism through which PAR processes are translated into structured learning and actions. Thus, while PAR provides the research architecture of collective enquiry, TAE provides the educational logic of transformation within the enquiry process. The two are distinct but mutually reinforcing: PAR structures how knowledge is generated and validated, whereas TAE structures how learning and change are facilitated within that process.

Recent scholarship demonstrates a significant expansion in the application of PAR across Africa, particularly in land governance, agroecology, environmental education, and rural development, where it is used to generate knowledge and co-produce solutions through repeated cycles of dialogue and action (Cornish et al., 2023). Studies have shown that participatory approaches enhance inclusivity in land governance (Mihigo et al., 2025), strengthen sustainable agricultural practices and social capital (Mponela et al., 2023; Tumuhe et al., 2025), and improve behavioural and institutional outcomes in environmental and health contexts (Matowo et al., 2022).

In this study, land literacy is conceptualised as comprising four interrelated dimensions: legal literacy (knowledge of land laws, rights, and documentation), civic literacy (capacity to participate in land governance processes), conflict literacy (ability to negotiate and manage land-related disputes), and practical literacy (application of sustainable land-use practices). These dimensions provided an analytical lens through which existing land literacy gaps were identified and interpreted in this study. However, when translated into adult learning practice, the dimensions were not treated as separate instructional units. Instead, they were contextualised through participatory diagnosis of community needs, priorities, and

lived experiences, resulting in four practice-oriented learning modules: Land Literacy and Legal Awareness, Sustainable Land Use and Agriculture, Conflict Management and Negotiation, and Drought Management and Resilience. Thus, the conceptual dimensions served as a framework for understanding the nature of land literacy challenges, while the learning modules represented the pedagogical response developed through the PAR process to address those challenges in a local context.

Despite the growing attention to land governance and participatory development, three gaps persist. First, land literacy is often studied in a fragmented manner rather than an integrated one. Second, interventions are rarely designed directly from empirically diagnosed community needs or expectations. Third, limited evidence exists on how adult education processes influence not only knowledge but also practices and community organisations over time. This study had three objectives.

1. To establish land literacy gaps and expectations among rural adults;
2. To examine how adult education can be designed based on gaps and expectations to enhance land literacy; and
3. To assess changes in knowledge, practices, and community organisations that emerge from the adult education intervention.

Methodology

The Participatory Action Research (PAR) approach guided the design and implementation, not merely as a methodological choice but as a deliberate response to the nature of land-related problems in this study's context. Land governance challenges in rural settings are socially embedded, dynamic, and shaped by everyday practices, making them poorly suited to linear, extractive, or one-off research designs. PAR was therefore justified because it enables research to function as a form of collective enquiry and action, where knowledge generation and practical change occur simultaneously through engagement with those directly affected by the research topic. Three interconnected objectives were the focus of the study: identifying land literacy gaps and learners' expectations, developing and implementing an adult education intervention informed by identified needs, and assessing changes in knowledge, practices, and community organisation emerging from the intervention. This structure reflects a purposive alignment between diagnosis, intervention design, and reflective assessment, ensuring that each stage

of the study informed the next in an iterative cycle rather than operating as separate phases.

The study was conducted in an anonymised village in Chalinze, Bagamoyo District, involving 106 purposively selected adult participants. This sampling strategy was justified by the need to include individuals with direct experience of land use, land disputes, and local governance processes, rather than aiming for statistical representativeness. Given the context-specific and practice-oriented nature of land literacy, depth of engagement and relevance to lived experiences were prioritised over generalisability.

Data collection combined structured questionnaires with qualitative participatory methods, including group discussions, observations, participant reflections and follow-up meetings. This methodological combination was necessary to capture both the measurable dimensions of land literacy and the experiential, relational, and behavioural dimensions that cannot be adequately represented through quantitative measures alone. Land literacy gaps were operationalised as measurable deficits in the legal, civic, conflict, and practical domains. A standardised gap score ($\text{Gap} = 5 - \text{mean}$) was used to identify priority areas for intervention. This provides a transparent and systematic basis for translating diagnostic findings into curriculum content and the learning activities. The gap score ($\text{Gap} = 5 - \text{mean}$) was calculated because the indicators were measured on a five-point Likert scale, with higher scores indicating stronger knowledge, confidence, or practice. The score represents the distance from the maximum possible competency level and identifies the priority learning needs. Gaps were classified as high (≥ 2.00), moderate ($1.00 - 1.99$), or low (< 1.00) based on the scale range. These thresholds served as analytical benchmarks rather than validated cut-offs. Effect sizes (η^2) were derived from one-way ANOVA tests examining variation across sociodemographic characteristics, and only values ≥ 0.05 were reported.

The intervention was organised into four thematic modules and implemented through participatory and experiential learning activities, such as group dialogue, mapping exercises, farm demonstrations, role-plays, and community-based problem-solving. This design was justified by the need to ensure that learning was not abstract or classroom-bound but was directly embedded in everyday land practices of the community. The repeated implementation process allowed for the continuous adjustment of activities based on participant feedback and emerging contextual realities.

The adult education programme was implemented through approximately six phases/modules between July and December 2025, beginning with baseline planning and concluding with an end line reflection. Learning activities were delivered through participatory sessions organised around four thematic areas: land literacy and legal awareness, sustainable land use and agriculture, conflict management and negotiation, and drought management and resilience. Participant attendance was monitored throughout the programme, with engagement documented across modules. A follow-up reflection phase in December 2025 was used to examine the emerging changes after implementation. The reported developments were verified through triangulation of facilitator observation records, program documentation, photographs of community activities, and participant reflection sessions. These sources provided supporting evidence of changes in knowledge application, land-use practices, conflict management approaches, and collective community initiatives while ensuring that interpretations remained grounded in participants' experiences and the PAR process.

Quantitative analysis focused on descriptive statistics and effect size estimation using eta squared, allowing the study to identify not only the levels of land literacy but also the extent to which socio-demographic factors shaped the variation in outcomes. Qualitative data were thematically analysed and used to interpret patterns of learning, participation, and behavioural change. Triangulation between methods strengthened the credibility of the findings by linking statistical patterns to lived experiences.

Assessment of change followed PAR principles, where outcomes were not treated as static before-and-after differences but as evolving processes emerging through cycles of action and reflection. This approach is justified because social and behavioural changes in community settings are rarely immediate or linear. Instead, it unfolds gradually through participation, practice and collective interpretation. Accordingly, changes were identified through the participants' reflections, observed practices, and follow-up discussions during the intervention period. These were interpreted as cumulative and contextually grounded developments rather than externally imposed effects. In line with PAR logic, change was understood as co-produced through participation and continuously validated within the community through shared reflection and action (Kemmis & McTaggart, 2005; Reason & Bradbury, 2008; McTaggart, 1991).

Ethical procedures were integrated into the study design and implementation. Prior administrative authorisation was obtained from the Institute of Adult Education

(IAE) and relevant local government authorities, including the Regional Administrative Secretary (RAS), Pwani Region; District Administrative Secretary (DAS), Bagamoyo District; District Executive Director (DED), Chalinze; Ward Executive Officer; and Village Executive Officer. These permissions provided institutional and administrative clearance to conduct the study within the community. Informed consent was obtained from all participants before data collection and participation in learning activities. Confidentiality and anonymity were maintained throughout the research process, and participation was voluntary. Given the sensitivity of land-related issues, particular attention was paid to ensuring that discussions and activities did not expose individuals or groups to social, institutional and interpersonal risks.

Results

Land Literacy Gaps and Expectations Among Rural Adults

Baseline Land Literacy Gaps among Rural Adults

The first objective was to establish existing land literacy gaps and expectations among rural adults through a mixed-methods baseline assessment (N = 106), combining structured questionnaires, interviews and group discussions. The findings reveal a community characterised by strong local embeddedness, uneven land tenure security, and generally low levels of formal education, conditions that collectively shape differential access to land-related knowledge, participation, and practices. Descriptive findings indicate that most respondents (74.5%) had attained primary education or below, while 14.2% were landless, and the remainder operated under diverse tenure arrangements, including verbal agreements, informal receipts, and partially formalised claims. These structural conditions provided a broader context within which the land literacy gaps were examined.

Quantitative analysis revealed substantial gaps across the four land literacy domains: legal, civic, conflict and practical. The most pronounced deficits were observed in understanding land documents (Mean = 1.43; Gap = 3.57, High) and knowledge of land rights (Mean = 2.84; Gap = 2.16, High), indicating significant weaknesses in procedural and legal literacy. Similarly, conflict prevention knowledge demonstrated a high gap (Mean = 2.71; Gap = 2.29), suggesting a limited capacity to translate awareness of peaceful coexistence into preventive actions. Other dimensions, including participation, communication, and land use

practices, showed moderate gaps, indicating partial but inconsistent competencies. The effect size analysis (Table 1) further demonstrates that land literacy outcomes are strongly associated with tenure status and participation-related factors. Tenure emerged as a consistent explanatory factor influencing understanding of land documents ($\eta^2 = 0.099$), inclusion of women and youth ($\eta^2 = 0.096$), participation in land meetings ($\eta^2 = 0.082$), and knowledge of dispute resolution processes ($\eta^2 = 0.069$). Similarly, participation in community activities was associated with peaceful engagement ($\eta^2 = 0.109$), awareness of harmful practices ($\eta^2 = 0.064$), and knowledge of the land registration process ($\eta^2 = 0.052$).

Table 1:

Land Literacy Gaps by Domain and Indicator (N = 106)

Domain	Indicator	Mean (SD)	Gap (Level)	Key Factors	Effect Size (η^2)
Legal	Understanding land documents	1.43 (0.70)	3.57 (High)	Tenure	0.099
	Knowledge of land rights	2.84 (1.69)	2.16 (High)	Education	0.061
	Land registration procedures	3.73 (1.62)	1.27 (Moderate)	Age, Activity, Tenure	0.059; 0.052; 0.059
Civic	Women & youth participation	3.77 (1.74)	1.23 (Moderate)	Activity, Tenure, Education	0.052; 0.096; 0.056
	Land meetings frequency	2.56 (1.32)	2.44 (High)	Tenure	0.082
	Courage to speak in meetings	3.57 (1.76)	1.43 (Moderate)	Tenure	0.066
	Steps to take in disputes	3.24 (1.76)	1.76 (Moderate)	Tenure	0.069
	Resolve peacefully	3.34 (1.85)	1.66 (Moderate)	Activity, Education	0.109; 0.082
Conflict	Prevent conflicts	2.71 (1.74)	2.29 (High)	Tenure	0.052
	Prefer conversation	3.39 (1.81)	1.61 (Moderate)	—	—
	Peaceful land use	3.48 (1.74)	1.52 (Moderate)	Age, Activity	0.057; 0.057
Practical	Ready to try new methods	3.63 (1.75)	1.37 (Moderate)	—	—
	Aware of harmful practices	3.35 (1.79)	1.65 (Moderate)	Activity	0.064

Note. Only effect sizes ≥ 0.05 are reported (η^2 = variance explained). Gap = difference between observed and expected competency (High ≥ 2.00 ; Moderate 1.00–1.99; Low < 1.00). Multiple values indicate multiple factors; — = none. N $\approx$ 106.

Education showed moderate effects, particularly in knowledge of land rights ($\eta^2 = 0.061$), inclusion of women and youth ($\eta^2 = 0.056$), and peaceful engagement ($\eta^2 = 0.082$). Age effects were comparatively limited and domain-specific, mainly influencing land registration and land-use practices. Notably, sex did not emerge as a significant explanatory factor across the retained moderate and strong effects, suggesting that gender differences alone did not explain the variations in the land literacy outcomes. The qualitative findings reinforced these patterns by revealing a clear distinction between normative awareness and practical capability. Participants generally expressed support for land rights, inclusive participation, dialogue, and peaceful land use; however, these values were not consistently translated into effective procedures or preventive practices in the study. While many participants recognised the importance of avoiding conflict, fewer demonstrated practical knowledge of how disputes could be prevented, documented, or resolved.

Practical land management literacy remains limited. Participants reported reliance on basic strategies such as fencing, rotational cropping, and traditional approaches to managing land resources. Approximately 16% of respondents were unable to identify any structured land management practices. Similarly, water management strategies remain largely dependent on rainfall and simple harvesting approaches, indicating vulnerability to environmental variability and a limited adaptive capacity. The baseline assessment established that land literacy gaps were multidimensional, extending beyond knowledge deficits to include limited procedural capability, uneven civic participation, weak conflict prevention capacity, and constrained adaptive land management practices in the study areas.

Learners' Expectations for Land-Related Knowledge and Skills

The baseline enquiry also explored expectations regarding the knowledge and skills required to address land-related challenges. Respondents prioritised land literacy (26.4%), land ownership processes (17.9%), and adult education (11.3%), followed by sustainable land use (7.5%), conflict management (4.7%), and agriculture (3.8%). The remaining responses comprised less frequently mentioned areas, uncertainty, or no expectations. These priorities closely corresponded with the baseline gaps, indicating that community members recognised the need for improved legal understanding, procedural knowledge, and practical land management skills.

Expectations varied across age, gender, and occupation. Younger adults (18–30 years) placed greater emphasis on foundational learning, particularly land literacy

(23.8%) and adult education (19.0%), suggesting a focus on building capacity for future engagement with land-related issues. In contrast, older participants (≥ 61 years) showed a relatively greater emphasis on land ownership (23.1%) and conflict-related concerns (15.4%), reflecting more direct involvement in land governance and decision-making. Participants aged 46–60 also highlighted land literacy (29.4%) alongside practical concerns such as adult education (14.7%), ownership (11.8%), and conflicts (8.8%). Across gender groups, both men (23.2%) and women (30.0%) identified land literacy as a key priority for sustainable land management. Women placed comparatively greater emphasis on ownership (24.0%) than men (12.5%), while men exhibited a higher proportion of “Other/No response” (51.8% vs. 36.0%), which may indicate less specific articulation of expectations rather than lower levels of engagement in the program.

Occupational differences reflect the relationship between livelihoods and land. Farmers demonstrated the strongest demand for land literacy, ownership processes, and adult education, consistent with their direct dependence on land-based activities. Pastoralists showed interest in literacy and conflict management, reflecting the challenges associated with grazing arrangements and resource competition, while vendors and artisans expressed limited but relevant interest in literacy and sustainable land use. Expectations extended beyond acquiring information to developing practical capacities for improved land governance, conflict prevention, sustainable resource management, and livelihood security. Together with the identified land literacy gaps, these expectations provided an empirical basis for defining the focus and content of the adult education intervention.

Table 2:*Main Expectations by Participant Characteristics (N = 106)*

Group	Main expectations, n (%)
Age 18–30 (n = 21)	Land literacy, 5 (23.8%); Adult education, 4 (19.0%); Ownership, 3 (14.3%); Other/No response, 9 (42.9%)
Age 31–45 (n = 38)	Land literacy, 11 (28.9%); Ownership, 9 (23.7%); Sustainable use, 6 (15.8%); Other/No response, 12 (31.6%)
Age 46–60 (n = 34)	Land literacy, 10 (29.4%); Adult education, 5 (14.7%); Ownership, 4 (11.8%); Conflict, 3 (8.8%); Other/No response, 12 (35.3%)
Age ≥61 (n = 13)	Ownership, 3 (23.1%); Land literacy, 2 (15.4%); Conflict, 2 (15.4%); Other/No response, 6 (46.2%)
Male (n = 56)	Land literacy, 13 (23.2%); Adult education, 7 (12.5%); Ownership, 7 (12.5%); Other/No response, 29 (51.8%)
Female (n = 50)	Land literacy, 15 (30.0%); Ownership, 12 (24.0%); Adult education, 5 (10.0%); Other/No response, 18 (36.0%)
Farmers (n = 69)	Land literacy, 19 (27.5%); Ownership, 15 (21.7%); Adult education, 8 (11.6%); Other/No response, 27 (39.1%)
Pastoralists (n = 25)	Land literacy, 5 (20.0%); Adult education, 3 (12.0%); Conflict, 2 (8.0%); Other/No response, 15 (60.0%)
Vendors/Artisans (n = 11)	Land literacy, 4 (36.4%); Sustainable use, 3 (27.3%); Ownership, 2 (18.2%); Other/No response, 2 (18.2%)

Note: Percentages are calculated within groups (row percentages) and sum to 100%. “Other/No response” includes all remaining responses (e.g., no response, “don’t know,” and less frequent categories such as life skills, land management, and land legal literacy. One participant did not provide occupational information; therefore, the occupational distribution totals 105 valid responses.

Designing Adult Education Intervention through Land Literacy Gaps and Expectations

Objective 2 examined how an adult education intervention could be systematically designed based on empirically identified land literacy gaps and articulated expectations of the target group. Rather than adopting a predetermined curriculum framework, the study employed a data-informed participatory design process in which quantitative gap analysis, effect size patterns, and qualitative expectations were treated as complementary inputs for co-constructing the learning program. The design process was directly informed by the diagnostic results reported under Objective 1, particularly the distribution of land literacy gaps across the legal, civic, conflict, and practical domains, as well as the variation in explanatory factors such as tenure status, participation in community activities, age, and education. Instead of relying solely on mean scores, programme prioritisation was guided by the magnitude of observed gaps and the strength of associated sociodemographic

relationships ($\eta^2 \geq 0.05$), ensuring that content selection reflected both need intensity and structural determinants of learning disparities.

Based on this integrated analysis, four interrelated learning modules were developed: Land Literacy and Legal Awareness, Sustainable Land Use and Agriculture, Conflict Management and Negotiation, and Drought Management and Resilience. These modules were not externally imposed but emerged through iterative synthesis of statistical findings and participatory consultations with community members. The Land Literacy and Legal Awareness module responded to pronounced gaps in understanding land documents, land rights, and registration procedures, which were strongly associated with tenure status and education level. In response, the module prioritised practical engagement with land documentation processes, simplified legal interpretation, and dialogue with local administrative actors, reflecting the need to bridge the procedural knowledge gaps identified in the baseline assessment. The intervention modules represent a pedagogical translation of the conceptual land literacy framework, wherein analytical domains (legal, civic, conflict, and practical) were integrated into context-specific, practice-oriented learning modules that reflect the interconnected nature of community learning needs.

The Sustainable Land Use and Agriculture module was informed by moderate gaps in adaptive land use practices and water management strategies, alongside qualitative evidence of reliance on rainfall-dependent systems and limited diversification of coping strategies among FGD participants. Therefore, the module emphasised experiential learning, demonstration plots, and participatory experimentation, aligning ecological principles with the everyday livelihood practices of the community. The Conflict Management and Negotiation module was shaped by observed gaps in preventive conflict behaviour and uneven dispute-handling practices, as well as strong but inconsistently translated normative support for peaceful resolution. Therefore, learning activities were structured around dialogue circles, scenario-based learning, and role-play exercises aimed at strengthening preventive capacities, rather than reactive responses to conflict.

The Drought Management and Resilience module addressed vulnerability in coping strategies related to environmental variability, particularly the weak diversification of adaptive responses to droughts. This module integrates participatory scenario planning, local knowledge exchange, and collective problem-solving to strengthen community resilience to climate-related stressors such as droughts. Across all modules, pedagogical design was guided by the principles of adult learning theory

and critical pedagogy, emphasising participation, dialogue, and experiential engagement, rather than transmissive instruction. Learning methods such as storytelling, participatory mapping, field demonstrations, and role-playing were deliberately selected to translate abstract concepts into contextually grounded practices embedded in the realities of everyday land use practices.

The programme's implementation was further shaped by contextual and temporal constraints, including seasonal agricultural cycles, labour demands, and mobility patterns. Therefore, sessions were scheduled in a way that maximised accessibility across gender, age, and occupational groups. Local facilitators, including community leaders and technical practitioners, were engaged as co-facilitators to enhance legitimacy and ensure that knowledge exchange remained grounded in local institutional realities. This arrangement positioned external expertise as supportive rather than authoritative, reinforcing horizontal learning relations consistent with PAR principles.

Importantly, the design process demonstrates how effect size-informed interpretation of land literacy data can strengthen participatory curriculum development. Rather than treating statistical outputs as ends in themselves, this study used patterns of variation in η^2 values to prioritise learning content, identify structural constraints, and guide module sequencing. In this sense, adult education design functions as a reflexive process that translates empirical inequalities into structured, yet flexible, learning opportunities. Objective 2 demonstrates that when land literacy gaps, socio-demographic effects, and expectations are treated as integrated design parameters, adult education can move beyond generic awareness-raising toward a context-responsive and evidence-informed pedagogical framework for land rights education. This approach enabled the development of a learning intervention that is both empirically grounded and socially legitimate, addressing legal awareness, sustainable land use, civic participation, and conflict transformation in an integrated manner.

Table 3:*Adult Education Programme Design Based on Literacy Gaps and Expectations*

Phase / Module	Linked Gaps and Expectations	Key Pedagogical Features	Time Frame
Planning & Baseline	Overall land literacy gaps; variation by tenure, activity, education ($\eta^2 \geq 0.05$); broad demand for land literacy and adult learning	Surveys, interviews, participatory discussions	July 2025
Land Literacy & Legal Awareness	High gaps in land documents, rights, and registration; strong demand for land literacy and ownership processes	Workshops, storytelling, mapping, legal Q&A with local experts	August 2025
Sustainable Land Use & Agriculture	Moderate gaps in land use and water management; expectations for sustainable land use and agriculture	Field demos, group planning, participatory experiments	August 2025
Conflict Management & Negotiation	High gap in conflict prevention and dispute handling; expressed need for conflict management skills	Role-plays, dialogue circles, problem-solving sessions	September 2025
Drought Management & Resilience	Moderate gaps in adaptive capacity; demand for practical livelihood and resilience knowledge	Scenario planning, knowledge sharing, group reflection	November 2025
Endline Reflection	Review of changes across domains; continued interest in strengthening knowledge and practice	Reflection sessions, feedback, consolidation of practices	December, 2025

Changes in Knowledge, Practices, and Community Organisation

Objective 3 examined changes in knowledge, practices, and community organisation emerging from the adult education intervention, with attention to how these relate to the land literacy gaps identified earlier and the intervention design that followed. As outlined in the methodology, change is treated as processual rather than discrete and is therefore interpreted through the convergence of multiple evidence streams rather than through a single post-intervention measure. In practice, this involved triangulating baseline diagnostic findings on land literacy gaps with participatory records of how the intervention was designed and implemented, alongside post-intervention verification data generated through observation, group reflection, documentary evidence, and community reporting. These sources provide a basis for interpreting shifts across four interrelated domains: knowledge, practice, social organisation, and institutional engagement. Within this framework, the changes presented in Table 4 emerged progressively

through repeated cycles of learning and reflection on the learning process. All observed outcomes were continuously interpreted in relation to the baseline conditions established under Objective 1 and linked to the participatory intervention strategies outlined in Objective 2.

Table 4:

Planned vs Implemented Activities and Observable Outcomes

Module	Observable Outcomes	Status
Land Literacy & Legal Awareness	Land mapping and land-documentation processes initiated through village authorities	Ongoing process
Sustainable Land Use & Agriculture	Tree planting (≥ 5 trees per participant reported) and improved land/water management practices	Implemented activity
Conflict Management & Negotiation	Increased dialogue-based conflict resolution practices	Emerging behavioural change
Drought Management & Resilience	Rehabilitation of four dams and improved drought preparedness	Implemented activity
Cross-Cutting Integration	CBO formed with four committees; adult literacy class established	Initiated; CBO awaiting registration

At the behavioural level, the participants demonstrated increased engagement in land and environmental management practices. A key collective outcome was widespread tree planting, with most participants reporting planting at least five trees, representing an implemented practice change linked to the sustainable land use module. The community collectively rehabilitated four dams as a practical response to drought vulnerability. These activities were completed during the intervention period and verified through observation, site visits, and participant reports. Relative to baseline conditions characterised by weak and uneven adaptive land and water management practices, these developments indicate movement towards more coordinated and sustainable action.

At the institutional level, the participants increasingly engaged with formal land governance systems through collective land mapping and the initiation of land documentation processes with village authorities. Unlike tree planting and dam rehabilitation, these documentation activities represent ongoing processes rather than completed outcomes, as formal land procedures extend beyond the duration of the intervention. Evidence of progress was obtained through mapping records,

meeting documentation, participant reflections and reports of engagement with local authorities.

A significant organisational outcome was the formation of a Community-Based Organisation (CBO) comprising four thematic committees: land use, conflict resolution, drought management, and land tenure. At the time of reporting, the CBO had been formed but was undergoing formal registration, indicating an established collective structure rather than a fully institutionalised organisation. Similarly, the adult literacy class was initiated following participants' reflections on persistent reading and writing challenges identified during the learning cycles. The class represents an emerging community-led response that remains in its early implementation stage.

Discussion

This study provides evidence suggesting that community-based adult education contributes to incremental improvements in land literacy, practices, and collective organisation; however, these changes are gradual, uneven, and context-dependent rather than immediate or uniform. This pattern is consistent with participatory and adult learning scholarship, which cautions against linear interpretations of change in complex rural governance contexts (Biesta, 2010). In such settings, learning operates as a mediating process through which knowledge and practice evolve progressively within existing social and institutional constraints.

The diagnostic findings (Objective 1) revealed substantial and multidimensional land literacy gaps across the legal, civic, conflict and practical domains. These gaps were not merely individual deficits but also reflected structural conditions, including insecure tenure arrangements, partial land rights formalisation, and uneven access to governance systems. This interpretation aligns with recent PAR-informed scholarship, which emphasises that knowledge gaps in rural contexts are co-produced through institutional exclusion and power asymmetries rather than isolated educational shortcomings (Alden Wily, 2018; Cornish et al., 2023). Accordingly, land literacy is embedded within broader governance and social relations rather than existing as an individual cognitive attribute.

The intervention design (Objective 2) directly addressed these gaps by translating them into participatory learning modules and activities. These include land mapping, legal awareness sessions, experiential agricultural learning, and dialogue-based conflict resolution. The use of participatory and experiential pedagogies

enabled learning to be situated within lived land-use realities, consistent with contemporary PAR approaches that emphasise the co-production of knowledge and iterative reflection (McIntyre et al., 2007). Importantly, the alignment between the identified gaps and program design strengthened the relevance and contextual grounding of the intervention.

Post-intervention evidence (Objective 3) showed that changes emerged unevenly across the domains. More visible shifts were observed in the legal and practical domains, particularly in land mapping, initiation of documentation processes, tree planting, and the rehabilitation of communal water infrastructure. These outcomes correspond directly to baseline gaps in procedural land literacy and adaptive land management. However, changes in preventive conflict behaviour and sustained negotiation practices were less pronounced, suggesting that behavioural transformation requires long-term reinforcement beyond initial participatory engagement. This pattern is consistent with the PAR literature, indicating that cognitive and procedural shifts tend to precede behavioural consolidation in contexts where informal norms remain strong (Kerr et al., 2022; Tumuhe et al., 2025).

At the organisational level, the emergence of a Community-Based Organisation and a community-led adult literacy class represents an important development in collective agency. These outcomes indicate that participatory learning can extend beyond individual knowledge acquisition to generate new forms of social organisation. However, their early stage nature and continued reliance on facilitation suggest that institutional sustainability is fragile. Recent PAR scholarship similarly notes that emergent organisations in participatory projects often require sustained support and institutional embedding to stabilise beyond project cycles (Cornish et al., 2023; Ajaps, 2026).

From a theoretical perspective, the findings support the view that adult education functions as a relational and mediating process through which learning and social negotiations occur simultaneously in the classroom. While classical transformative learning theory emphasises shifts in meaning perspectives (Mezirow, 1991; Freire, 1970), this study suggests that such shifts are better understood as gradual, uneven, and structurally conditioned rather than immediate or fully individualised. Contemporary PAR literature extends this view by framing change as distributed across social relations and institutional contexts rather than being located within individual learners (Biesta, 2010).

The integration of diagnostic evidence (Objective 1), participatory design (Objective 2), and iterative implementation provides a coherent explanatory pathway linking identified needs, educational responses, and observed changes. However, the findings also highlight a key limitation of short-cycle interventions: while they can generate meaningful entry points for learning and collective action, sustained behavioural and institutional change requires long-term engagement and stronger institutional anchoring in the community. Without this, emergent gains risk remaining partial and contextually fragile.

The study demonstrates that community-based adult education can contribute to incremental improvements in land literacy, environmental practice, and collective organisation when grounded in empirically diagnosed needs and designed with the community. Simultaneously, the findings reinforce the importance of viewing such interventions as ongoing participatory processes rather than discrete projects, where change unfolds gradually through continuous cycles of learning, action and adaptation within specific social and institutional contexts.

Conclusion and Recommendations

The findings indicate that adult education interventions grounded in empirically diagnosed land literacy gaps and community-defined expectations can support incremental improvements in rural land governance. In the absence of experimental pre- and post-testing, the findings were interpreted as contributory rather than causal, drawing on triangulated qualitative, documentary and participatory evidence. By linking baseline diagnostic results with participatory action research processes, this study shows how curriculum content, pedagogy, and sequencing can be systematically derived from empirically identified needs and from local priorities.

The findings further confirm that land literacy deficits are not only cognitive but also socially and institutionally embedded within the community. They are shaped by insecure tenure arrangements, partial formalisation of land rights, and limited access to formal governance structures. This suggests that adult education interventions in such contexts must move beyond information delivery to create structured spaces for dialogue, reflection and collective problem-solving grounded in local institutional realities. In this sense, adult education functions as a mediating process between informal land practices and formal governance systems, supporting gradual and negotiated change rather than immediate transformation.

Observed changes included improved legal and procedural knowledge, shifts in land-use practices, increased engagement with formal land governance systems, strengthened conflict mediation practices, and the emergence of community initiatives, such as community-based organisations and adult literacy classes. While these developments indicate a positive direction, variations in participation and continued dependence on facilitation suggest that learning-led change requires sustained institutional support to become fully embedded and self-sustaining.

Conceptually, this study contributes a multidimensional framework of land literacy encompassing the legal, civic, conflict, and practical domains. Methodologically, it demonstrates how participatory action research, supported by contribution-based and descriptive analyses, can strengthen the alignment between diagnosed needs, pedagogical design and observed outcomes. Empirically, it provides context-specific evidence from rural Tanzania on how adult learning processes can influence knowledge acquisition, everyday practices, and collective organisations.

For practice, the study recommends that adult education programmes addressing land issues be designed as continuous participatory learning cycles rather than one-off training events. Such programmes should be explicitly anchored in diagnosed literacy gaps and expectations and supported by inclusive facilitation approaches that strengthen participation across gender, age and livelihood groups. Stronger institutional linkages with land administration, environmental management, and conflict resolution structures are also necessary to enhance relevance and sustainability. Particular attention should be paid to strengthening procedural and civic literacy and supporting the institutional development of emerging community organisations.

Future research should adopt longitudinal and mixed-method designs that incorporate baseline, process, and follow-up measures to better capture changes over time, and strengthen analytical robustness. Further studies should examine the long-term evolution of community-based organisations after external facilitation ends, test the applicability of the land literacy framework across diverse socio-ecological settings, and identify the institutional conditions required for learning-led change to be sustained and integrated into formal governance systems.

Conflict of Interest

The author declares that there are no conflicts of interest regarding the publication of this paper.

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