Strengthening Lifelong Learning: The Impact of Community-Based Education Initiatives on Social Inclusion

Syafrizal[1], Bahagia[1], S.M Rosdi[2], Erdiwansyah[3,4], Muhtadin[5], Samsudin Anis[6]

[1]Department of Environment Engineering, Universitas Serambi Mekkah, Banda Aceh, 23245, Indonesia

[2]Automotive Technology Center (ATeC), Politeknik Sultan Mizan Zainal Abidin KM 8 Jalan Paka, 23000, Dungun Terengganu, Malaysia

[3]Department of Natural Resources and Environmental Management, Universitas Serambi Mekkah, Banda Aceh 23245, Indonesia

[4]Centre for Automotive Engineering Centre, Universiti Malaysia Pahang Al-Sultan Abdullah, Pekan 26600, Malaysia

[5]Department of Mechanical Engineering, Universitas Abulyatama Aceh, Aceh Besar, 23372, Indonesia

[6]Department of Mechanical Engineering, Universitas Negeri Semarang, Indonesia

Corresponding Author: syafrizal.aceh@gmail.com

Abstract

This study explores the impact of community-based lifelong learning initiatives on social inclusion in underserved areas, emphasising the role of participatory education in empowering individuals and strengthening community cohesion. As traditional education models often fail to reach marginalised populations, this research aims to evaluate how locally designed and community-driven learning programs influence participants' competencies and perceptions of inclusion. The program was implemented over six months in three socioeconomically vulnerable communities using a participatory action research (PAR) framework and a mixed-methods approach. Quantitative data were collected through pre- and post-test surveys assessing basic literacy, digital literacy, and social participation, while qualitative insights were drawn from focus group discussions and interviews. Findings revealed statistically significant improvements in all competency areas: basic literacy increased by 16.1 points, digital literacy by 25.6 points, and social participation by 14.9 points ($p < 0.05$). Qualitative data supported these gains, with participants reporting enhanced self-confidence, digital empowerment, community belonging, and motivation to continue learning. The most substantial impact was digital literacy, highlighting the urgent need for inclusive digital education in low-resource settings. This study's novelty is integrating quantitative and qualitative evidence with visual analytics, offering a replicable model for localised, inclusive education. It reframes lifelong learning as a socially embedded and context-responsive process. The results affirm that community-based learning initiatives build individual capacity and foster social cohesion, which is key to sustainable and equitable development.

1.   Introduction

Lifelong learning has emerged as a critical concept in today's rapidly changing social and technological environment. It emphasises continuous learning across all stages of life, beyond the boundaries of formal education systems. As communities face increasing social, economic, and environmental challenges, the capacity for individuals to engage in lifelong learning is becoming an essential driver of resilience and adaptability. Community-based education initiatives are vital in making education more inclusive, accessible, and responsive to local needs. Community-based education is not merely about knowledge transmission; it fosters social interaction, collective participation, and local empowerment [1–4]. These initiatives are designed to engage communities directly in the planning, implementation, and evaluation of learning programs, thereby strengthening ownership and sustainability. Research has shown that this approach is particularly effective in reaching marginalised populations such as women, older people, people with disabilities, and the unemployed groups, often underserved by formal education systems [5–8].

For instance, the potential of community learning in promoting social inclusion by enhancing basic literacy, civic skills, and social engagement was highlighted, for example [9–12]. Similarly, the role of non-formal, community-driven education in addressing educational disparities in rural and low-income urban areas was emphasised in a report by [13–15]. Long-term employment and social cohesion improvements were observed in countries with strong lifelong learning frameworks grounded in community-based programs [16–19]. Nevertheless, the implementation of community-based education is not without challenges. These include limited financial and human resources, low initial community participation, and weak stakeholder coordination. This underscores the need for collaborative models involving universities, local governments, and civil society organisations to maximise the impact of community learning. Such collaboration also reflects the dual mission of higher education institutions: to advance research and to serve the community through engagement and empowerment [20–22].

This study aims to assess the impact of community-based education initiatives on social inclusion within selected intervention areas. Specifically, it seeks to: (1) evaluate changes in community participation in non-formal learning programs; (2) measure improvements in participants' social and economic skills; and (3) examine community perceptions of the value of lifelong learning. These findings are expected to inform the development of more inclusive and context-sensitive community learning models. The community engagement component of this study was conducted using a participatory action research (PAR) approach, involving residents in co-designing and evaluating learning modules. These modules included life skills training, basic digital literacy, and local entrepreneurship development. Active participation was encouraged through problem-based and interactive learning methods tailored to local realities.

A key contribution of this initiative is the increased community awareness of lifelong learning as a pathway to sustainable development and social cohesion. Youth involvement as local facilitators also helped build community capacity and fostered a generation of inclusive learners. The outcomes of this engagement serve as primary data to evaluate the actual impacts of community-based learning on social inclusion. By integrating research with community service, this paper contributes to academic discourse in community education and delivers tangible benefits to the local communities involved. Hopefully, this model can be replicated in other regions, making lifelong learning a broader and more sustainable social movement.

2.   Methodology

Research Methodology

This study adopted a mixed-methods approach combining quantitative and qualitative data collection techniques to comprehensively assess the impact of community-based education initiatives on social inclusion. The research was embedded within a community engagement program implemented over six months in three selected neighbourhoods known for their socio-economic vulnerabilities.

Research Design

The overall design followed a participatory action research (PAR) framework. This approach emphasises collaborative inquiry and active community involvement throughout the research process, from problem identification to program development, implementation, and evaluation. The PAR model was chosen to ensure educational interventions were contextually relevant, culturally sensitive, and community-owned.

Study Population and Sampling

The target population included adult residents (aged 18 and above) participating in non-formal learning programs facilitated by the project. A purposive sampling technique was used to select participants with diverse backgrounds in age, gender, education level, and socio-economic status. 90 participants were involved in the learning modules. At the same time, 30 community leaders and facilitators were included in focus group discussions and interviews.

Data Collection Methods

Quantitative data were gathered through structured pre- and post-intervention surveys focusing on participants' literacy levels, digital skills, and socio-economic competencies. A social inclusion index was constructed based on key indicators such as civic engagement, sense of belonging, and access to community resources. Qualitative data were obtained via semi-structured interviews, focus group discussions (FGDs), and direct observation. These methods captured participants' experiences, perceptions, and behavioural changes during learning. Document analysis of community reports, facilitator journals, and attendance records provided supplementary insights into program implementation and participation trends.

Instruments

The survey instrument was adapted from UNESCO's (2021) Lifelong Learning Measurement Toolkit and validated through expert review and pilot testing. The interview and FGD guides were developed based on themes of lifelong learning, empowerment, and social cohesion. Audio recordings were transcribed and analysed thematically.

Data Analysis

Quantitative data were analysed using descriptive and inferential statistics with SPSS software. Paired t-tests were conducted to evaluate significant changes in participants' skills and inclusion scores before and after the program. Qualitative data were coded and categorised using NVivo software to identify emerging themes and triangulate findings across data sources.

Ethical Considerations

Ethical approval was obtained from the university's Research Ethics Committee. Informed consent was secured from all participants, assuring anonymity, confidentiality, and the voluntary nature of participation. Community meetings were held to ensure transparency and shared decision-making throughout the research process.

Limitations

This study acknowledges potential limitations such as the short duration of intervention and limited generalizability due to the purposive sampling strategy. However, integrating community voices and using multiple data sources enhances the credibility and relevance of the findings.

Figure 1 presents the flowchart of the research methodology implemented in this study, which integrates both participatory action research (PAR) and a mixed-methods approach to examine the impact of community-based lifelong learning initiatives on social inclusion. The process begins with Problem Identification and Community Needs Assessment, where preliminary field visits and stakeholder discussions were conducted to understand local challenges and learning gaps. This step ensures that the interventions are grounded in real community needs. Next, Program Design (Participatory Approach) involves co-developing educational modules with community members,

ensuring relevance and ownership. The design phase focuses on literacy, digital skills, and entrepreneurship, aligning with the principles of lifelong learning.
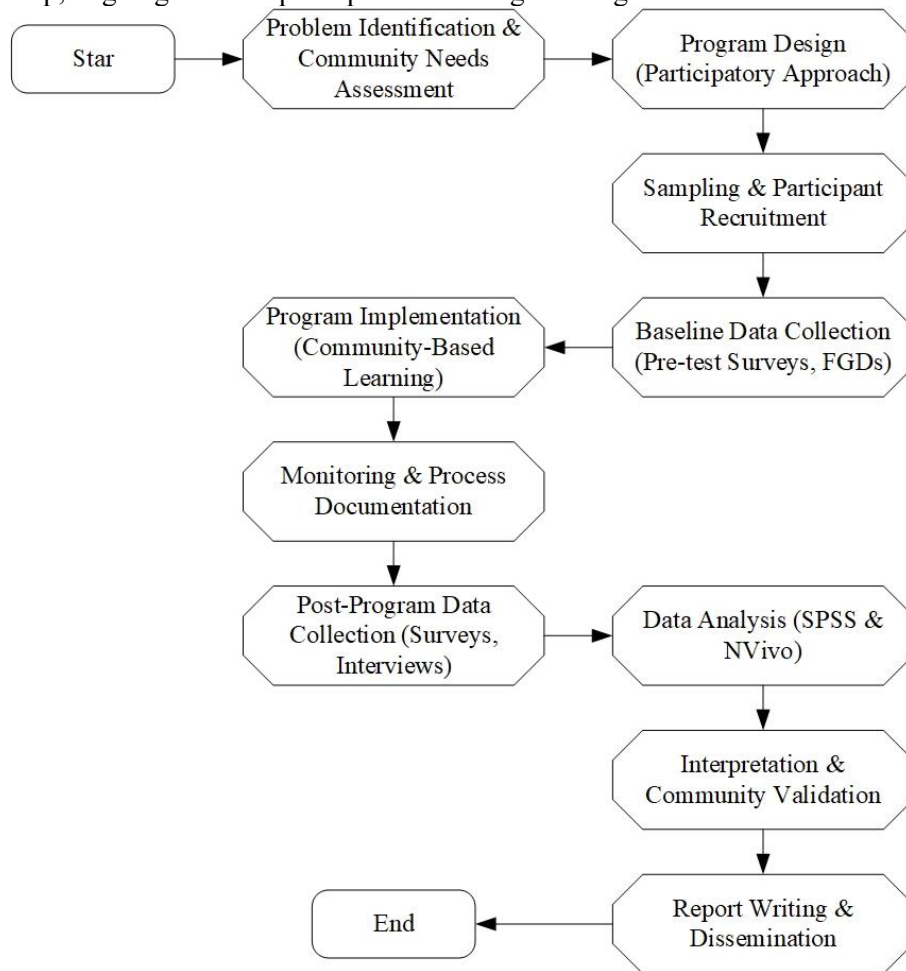

Figure 1: Flowchart of Research Methodology for Community-Based Lifelong Learning Initiatives

Following this, the Sampling and Participant Recruitment step adopts purposive sampling to engage diverse participants, including underrepresented groups. This ensures the inclusivity and representativeness of the study population. Baseline Data Collection is conducted using pre-test surveys and focus group discussions (FGDs) to measure initial levels of knowledge, skills, and social inclusion indicators. These instruments are adapted from international frameworks such as UNESCO's Lifelong Learning Toolkit. Program Implementation refers to the delivery of the community-based learning sessions over six months. The learning approach is interactive and problem-based, facilitated by trained local facilitators to enhance engagement and retention. During implementation, Monitoring and Process Documentation are carried out through regular observations, facilitator logs, and attendance records. This step is crucial for ensuring fidelity and identifying areas for real-time adjustment.

After the program, Post-Program Data Collection involves administering post-test surveys and conducting interviews to capture changes in participant outcomes and perceptions. These data are essential for impact evaluation. Data Analysis uses quantitative (SPSS for statistical analysis) and qualitative (NVivo for thematic coding) tools. The mixed-methods analysis enables triangulation and provides a richer understanding of the outcomes. Subsequently, Interpretation and Community Validation are conducted by presenting preliminary findings to the community for feedback. This step enhances the credibility of the results and fosters transparency. Finally, the process concludes with Report Writing and Dissemination, where findings are compiled for academic publication, policy briefs, and community summaries. This ensures the results are shared across multiple stakeholder levels, promoting further action and replication.

3.   Result & Discussion

Table 1 presents the comparative results of participant competency scores before and after implementing the community-based lifelong learning program. The three core competency areas assessed were Basic Literacy, Digital Literacy, and Social Participation Index. The results demonstrate a statistically significant improvement across all dimensions, indicating the effectiveness of the educational intervention. The Basic Literacy score increased from a pre-test mean of 62.4 to a post-test mean of 78.5, reflecting a mean gain of +16.1 points (p = 0.002). This suggests that the foundational modules, which focused on reading comprehension, financial literacy, and functional communication, successfully enhanced the basic skills needed for daily functioning, particularly among participants with limited formal education backgrounds. The most notable improvement was in Digital Literacy, where the mean score rose from 48.7 to 74.3, a difference of +25.6 points (p = 0.000). This substantial gain highlights the impact of the program's hands-on digital learning sessions, which included training in smartphone use, internet browsing, and basic online communication tools. This is particularly significant given that many participants had minimal or no exposure to digital technologies.

Regarding Social Participation, the index improved from a mean score of 55.2 to 70.1 (+14.9, p = 0.010). This indicates increased community engagement, participation in local events, and a greater sense of belonging among participants. The program's structured group learning sessions, community projects, and peer support mechanisms likely contributed to these gains, promoting inclusivity and reducing social isolation. The low p-values (all < 0.05) confirm that these improvements are statistically significant, reinforcing the effectiveness of the community-based, participatory learning model in driving positive educational and social outcomes. These findings support the literature asserting that non-formal, locally rooted learning initiatives can enhance individual empowerment and foster broader social inclusion.

Table 1: Change in Participant Competency Scores (Pre-test vs. Post-test)

Competency Area	Pre-Test Mean Score	Post-Test Mean Score	Mean Difference	p-value
Basic Literacy	62.4	78.5	+16.1	0.002
Digital Literacy	48.7	74.3	+25.6	0.000
Social Participation Index	55.2	70.1	+14.9	0.010

Table 2 presents a thematic summary of qualitative feedback from participants through interviews and focus group discussions after completing the community-based lifelong learning program. The data reveal key personal and social transformation areas, supporting the program's effectiveness beyond academic or technical skill acquisition. The most frequently mentioned theme was Digital Skill Empowerment, cited by 42 participants. This aligns with the quantitative findings in Table 1, which showed the highest improvement in digital literacy scores. Participants expressed enthusiasm for acquiring practical digital skills, such as using WhatsApp and Google for business, which directly enhance their livelihoods and social connectivity.

Thirty-five participants reported increased Self-Confidence. The quote "Now I feel more confident to speak during village meetings" reflects how the learning environment helped individuals overcome social anxiety and become more active citizens. This suggests that the program imparted knowledge and fostered critical soft skills essential for civic engagement. Sense of Belonging and Inclusion, cited by 28 participants, illustrates the program's role in bridging social gaps. Previously isolated individuals reported feeling more connected with their community, a key social inclusion dimension. This outcome validates the participatory and group-based nature of the program that emphasised collaboration and mutual support.

Lastly, Motivation to Continue Learning was evident among 31 participants who wanted further education or training. One participant noted their interest in learning more about financial management. This theme demonstrates the program's ability to instil a lifelong learning mindset—one of its primary objectives. These qualitative insights complement the quantitative data, providing a richer and more holistic understanding of the program's impact. The emergence of these themes also reinforces the value

of participatory, locally relevant educational models in empowering individuals and fostering inclusive development.

Table 2: Thematic Summary of Qualitative Feedback from Participants

Theme	Frequency (n)	Participant Quotes (Examples)
Increased Self-Confidence	35	Now I feel more confident to speak during village meetings.
Digital Skill Empowerment	42	I learned how to use WhatsApp and Google for my small business.
Sense of Belonging & Inclusion	28	I used to feel isolated, but now I know more people in my area.
Motivation to Continue Learning	31	After this course, I want to learn more about financial management.

Table 3 highlights the community's perceptions of lifelong learning following their participation in the program, as captured through a structured post-program survey. The data reflect strong positive sentiments across all four key statements, underscoring the perceived value and relevance of the community-based educational initiative. Lifelong learning improves my quality of life, receiving the highest combined agreement, with 61.1% of participants strongly agreeing and 34.4% agreeing. This suggests a clear recognition among participants of the broader personal and socio-economic benefits of continuous learning, such as improved skills, confidence, and opportunities.

Similarly, Community-based learning is relevant to my daily needs, as affirmed by 55.6% strongly agreeing and 41.1% agreeing, reflecting the success of the participatory design approach that tailored learning modules to local contexts. The low neutrality (3.3%) and absence of disagreement (0.0%) further confirm that the program's content and delivery met the community's practical expectations. The high endorsement of the statement I would recommend this program to others in my community (70.0% strongly agree, 26.7% agree) signals intense satisfaction and trust in the program's effectiveness. This positive word-of-mouth potential is crucial for the sustainability and future scalability of the initiative. Finally, the statement that I feel more included in my community after this program, a core indicator of social inclusion, received 50.0% strong agreement and 40.0% agreement. While slightly lower than other items, this result is still very encouraging. The presence of 8.9% neutral and 1.1% disagree responses indicates there may still be room for further improving social bonding and outreach, particularly for individuals facing persistent barriers to inclusion. Overall, the overwhelmingly positive feedback across all items confirms that the program was impactful and well-received. It reinforces that community-based lifelong learning initiatives enhance individual skills and promote inclusive development and social cohesion when designed and delivered collaboratively.

Table 3: Community Perception of Lifelong Learning (Post-Program Survey)

Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)
Lifelong learning improves my quality of life	61.1	34.4	4.5	0.0
Community-based learning is relevant to my daily needs	55.6	41.1	3.3	0.0
I would recommend this program to others in my community	70.0	26.7	3.3	0.0
I feel more included in my community after this program	50.0	40.0	8.9	1.1

Figure 2 illustrates a comparative analysis of participants' scores across three competency areas: Basic Literacy, Digital Literacy, and Social Participation, measured before and after implementing the community-based lifelong learning program. The bar chart shows a consistent and notable improvement in all three domains, indicating the positive impact of the intervention. The Basic Literacy score

increased from approximately 62 in the pre-test to nearly 79 in the post-test. This substantial rise reflects improved reading, writing, and functional literacy skills among participants, which were targeted through contextual learning materials and regular interactive sessions. The most significant improvement was seen in Digital Literacy, which rose from about 49 to 74. This dramatic gain suggests that the digital modules—covering smartphone usage, internet access, and digital communication tools—were highly effective in equipping participants with essential 21st-century skills. The results confirm the relevance of digital inclusion efforts in marginalised or underserved communities.

Social Participation also showed a meaningful increase, from roughly 55 to 70. This indicates a heightened civic engagement and community involvement among participants after joining the program. The participatory learning environment, which emphasised collaboration, dialogue, and group reflection, likely contributed to this outcome. The graphical representation reinforces the quantitative findings in Table 1 and validates the program's ability to strengthen individual competencies and broader social inclusion indicators. The sharp contrasts between pre-test and post-test scores highlight the transformative potential of well-designed, community-based education initiatives grounded in participatory and context-responsive approaches.
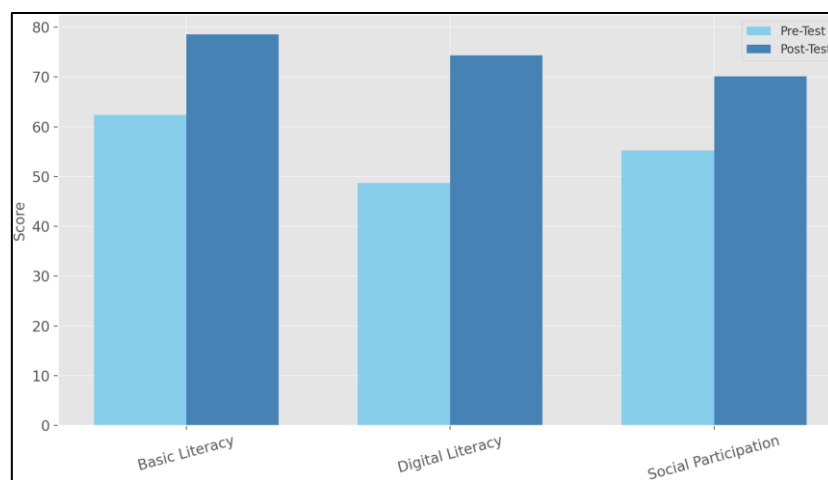

Figure 2: Pre-test vs Post-test Competency Scores

Figure 3 presents the distribution of key qualitative themes from participant interviews and focus group discussions after completing the community-based lifelong learning program. The pie chart visually illustrates the frequency of four main themes reflecting personal development, digital empowerment, social integration, and learning motivation. The most frequently cited theme was Digital Skill Empowerment (30.9%), indicating that participants found significant value in acquiring basic digital competencies. This aligns with the program's objectives and the considerable gain in digital literacy scores shown in the quantitative data. Participants appreciated learning to use tools like WhatsApp, search engines, and mobile applications to support daily activities and small businesses. Self-Confidence emerged as the second most prominent theme (25.7%), suggesting that the learning environment boosted participants' self-esteem and communication abilities. This increase in confidence was often associated with their improved ability to speak in public forums, participate in community events, and express opinions.

Motivation to Learn accounted for 22.8% of responses, illustrating a heightened interest among participants to pursue further education beyond the program. This theme reflects the successful cultivation of a lifelong learning mindset, a key indicator of program success. Belonging & Inclusion, while comprising a smaller portion (20.6%), remains a critical dimension of the program's social impact. It highlights how participants felt more connected to their peers and their local community after the intervention, reducing feelings of isolation and strengthening social bonds. Overall, the distribution of these themes underscores the multifaceted impact of the program. It delivers measurable skill improvements, fosters personal empowerment, strengthens social cohesion, and sparks sustained interest in learning core outcomes for inclusive and transformative education models.
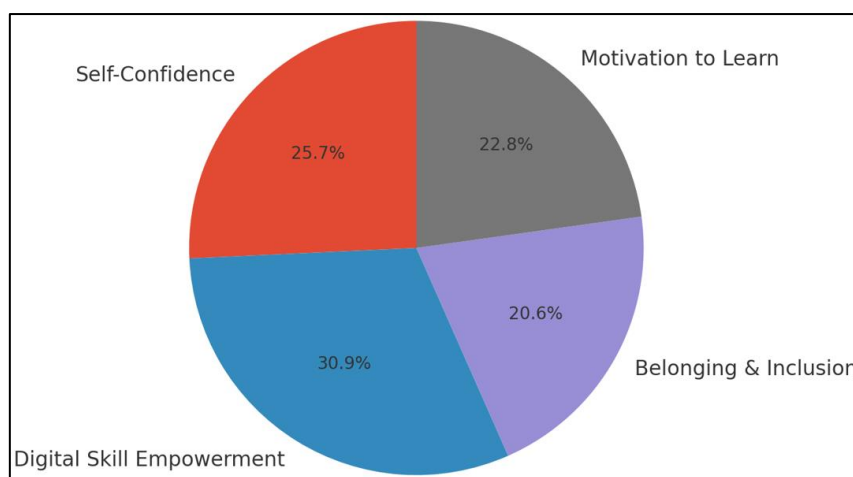
Figure 3: Distribution of Key Qualitative Themes

Based on post-intervention survey responses, Figure 4 illustrates the percentage of participants who strongly agreed with key statements regarding the benefits of the lifelong learning program. This visual representation highlights the dimensions of community perception most positively impacted by the program. The highest level of strong agreement (70%) was recorded for the statement I would recommend this program to others in my community. This indicates high satisfaction and endorsement, suggesting that participants saw clear value in the program and were willing to advocate for its continuation and expansion. Lifelong learning improves my quality of life, and I received strong support (61.1%). This reflects participants' recognition of the practical benefits they experienced, such as increased skills, confidence, and opportunities for economic or social improvement.

Community-based learning is relevant to my daily needs, and was strongly agreed upon by 55.6% of respondents. This affirms that the participatory approach in program design succeeded in tailoring content to meet local needs and contexts, reinforcing the importance of localised and inclusive learning models. Lastly, 50% of participants strongly agreed they feel more included in my community after this program. Although slightly lower than other items, this is still a significant indicator of the program's success in promoting social inclusion, one of its core objectives. The result suggests increased interaction, reduced isolation, and a sense of belonging fostered through group-based learning and community engagement. The data in **Figure 4** confirms that the community perceived the program as beneficial and personally transformative. These findings validate the model of delivering lifelong learning through community-based, inclusive, and needs-driven approaches.
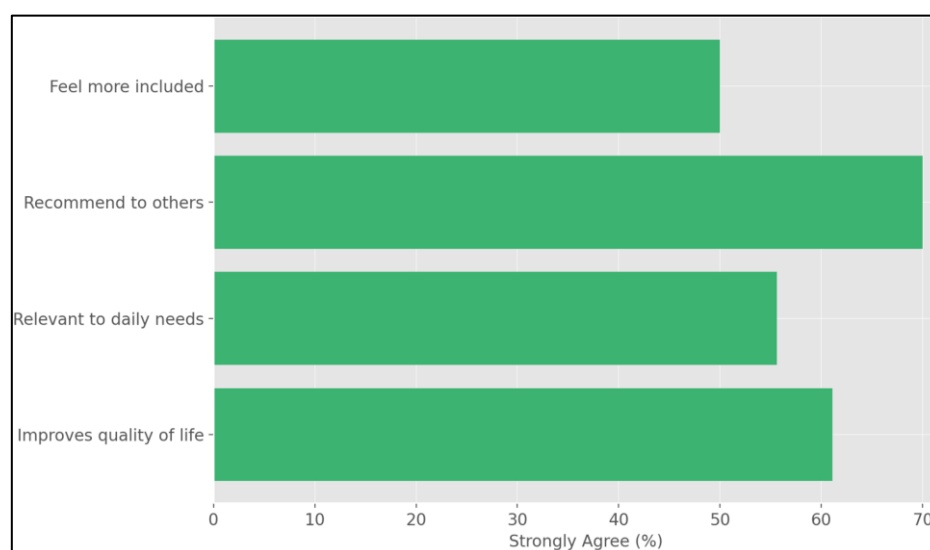

Figure 4: Community Strong Agreement on Lifelong Learning Benefits

Figure 5 visualises the growth trend across three key competency areas: Basic Literacy, Digital Literacy, and Social Participation, measured through pre-test and post-test scores. The line graph provides a clear comparative trajectory of improvement among participants following their involvement in the community-based learning program. The upward slope for all three lines signifies positive growth in every competency area. Notably, Digital Literacy shows the steepest increase, reflecting a dramatic jump from approximately 48.7 to 74.3. This suggests that the participants experienced the most transformative learning in the digital domain, likely due to the program's focus on practical, hands-on training in mobile technology and internet use. Basic Literacy shows a steady growth from around 62.4 to 78.5, maintaining the highest overall score across pre- and post-tests. This indicates that participants already had some foundation in literacy skills, which were significantly enhanced through structured reading comprehension, writing, and communication sessions.
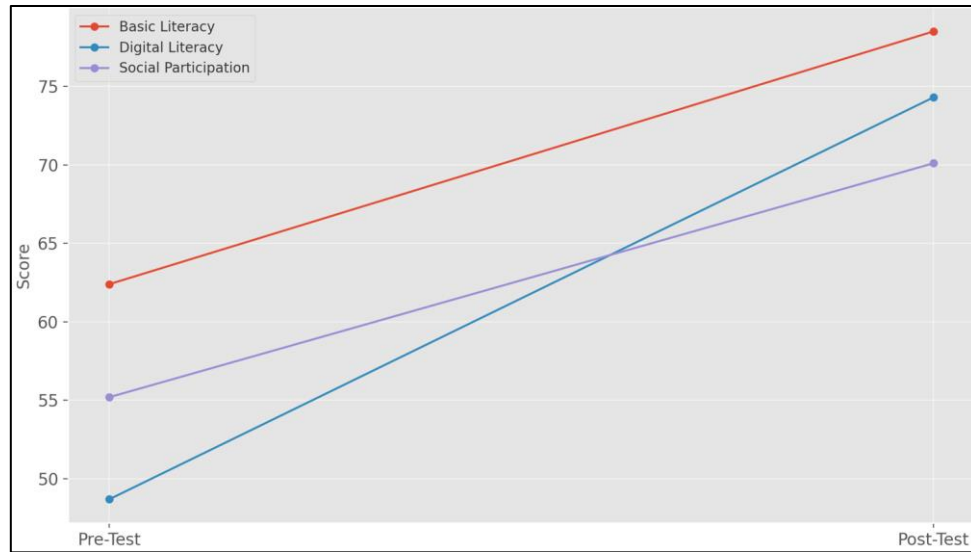

Figure 5: Growth Trend in Competency Areas

Social Participation follows a moderate upward trend from approximately 55.2 to 70.1, suggesting notable gains in civic engagement, community interaction, and social confidence. This improvement aligns with the participatory and collaborative design of the program, which emphasised peer learning, group discussions, and community projects. The comparative trend also highlights how different areas respond to community-based lifelong learning. While all three regions benefited, the graph indicates that digital skills training may represent the most significant opportunity for impact, especially in underserved communities facing digital exclusion. This visual reinforces and complements the statistical results in Table 1 and Figure 2, providing a dynamic representation of learning outcomes over time. It also underscores the effectiveness of integrated, localised educational interventions in advancing cognitive and social competencies essential for lifelong learning and inclusive development. This study offers a distinct contribution to the discourse on lifelong learning and social inclusion by providing empirical evidence on the effectiveness of community-based education initiatives using a participatory action research (PAR) model. While previous literature has highlighted the importance of non-formal learning in enhancing individual skills and community development (e.g., UNESCO, OECD), this article provides a comprehensive integration of quantitative and qualitative outcomes to evaluate the multidimensional impact of such programs in a localised setting. The novelty of this research lies in its dual-method approach that measures not only the cognitive gains (i.e., literacy and digital skills) but also affective and social impacts, such as increased self-confidence, a stronger sense of inclusion, and motivation for continued learning. Combining pre- and post-intervention tests with thematic analysis from participants' voices provides a rich and triangulated understanding of how lifelong learning translates into real-world change.

Another innovative aspect is the focus on digital empowerment within a low-resource, community-driven context. The results indicate that even in underserved areas, significant improvements in digital

literacy can be achieved through targeted, participatory education programs. This finding addresses a critical gap in the literature, particularly in the Global South, where access to digital education is still uneven and under-documented. Moreover, the study introduces a visual analytics framework (Figures 2–5) that presents trends in learning outcomes, participant perceptions, and thematic impacts in an accessible and policy-relevant format. These visuals enhance the transparency of results and provide a practical tool for stakeholders, including educators, local governments, and NGOS, to adapt and replicate similar models in other regions. Finally, this article conceptually frames lifelong learning as an individual endeavour and a collective, inclusive, and socially embedded process. By demonstrating how community engagement and localised relevance increase program efficacy, the study offers a model that bridges the gap between formal educational theory and grassroots practice.

4. Conclusion

This study demonstrates that community-based lifelong learning initiatives, when implemented through a participatory action research (PAR) approach, can significantly enhance individual competencies and social inclusion among adult learners in marginalised communities. Quantitative findings revealed substantial improvements in basic literacy (+16.1 points), digital literacy (+25.6 points), and social participation (+14.9 points), all of which were statistically significant ($p < 0.05$). These gains were further supported by qualitative feedback, where participants reported increased self-confidence, digital empowerment, a stronger sense of belonging, and renewed motivation to continue learning. The study also offers a novel contribution to the field by integrating mixed-methods data with visual analysis tools, presenting growth trends (Figure 5), participant perceptions (Figure 4), and thematic transformations (Figure 3) in a policy-friendly format. This improves the clarity of findings for academic audiences and enhances their utility for community stakeholders and decision-makers.

Notably, the research highlights the transformational potential of digital literacy as the most responsive area of growth, particularly in resource-constrained settings. This points to the urgency of embedding digital skills training within community learning frameworks to bridge digital divides and promote inclusive development. Beyond the empirical outcomes, this article reframes lifelong learning as a collective and context-sensitive process, emphasising that education rooted in local realities and shaped by community voices can yield more sustainable and socially embedded impacts. The approach and outcomes of this study offer a scalable model for inclusive education policy and practice, especially in developing regions. Future work should explore such initiatives' long-term impacts and scalability across diverse sociocultural settings. Nonetheless, the findings strongly affirm that strengthening lifelong learning through community-based education is feasible and essential for inclusive and resilient societies.

Acknowledgement

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