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# Assessing the Basic Computational Skills for Livelihood Opportunities of the Out-of-School Youth

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## Abstract

Fostering fundamental computational skills is a global challenge, yet a significant "low awareness" gap persists among marginalized groups regarding the link between numeracy and economic agency. This study assessed the basic computational skills of Out-of-School Youth (OSY) in Tabogon, Cebu (N = 138), utilizing a quantitative descriptive-correlational design to identify skill gaps hindering sustainable livelihoods. Data collected via structured assessments of arithmetic and financial literacy were analyzed using Pearson's r and weighted means. Findings reveal a "skills-mobility paradox": while 74.64% reached secondary education, 54.35% remain unemployed. Proficiency declined sharply from basic arithmetic (67.39% excellence) to strategic tasks like pricing and inventory management (M = 3.20). Crucially, educational attainment showed no significant correlation with skills, whereas age correlated significantly with mastery of fractions ($r = .250$, $p = .003$), suggesting that functional numeracy is driven more by experiential learning than by formal schooling. A stark "aspirational dissonance" exists, as 63.77% desire entrepreneurship despite minimal engagement. The study concludes that the secondary curriculum remains decoupled from rural economic demands, leaving OSY with survivalist arithmetic but lacking strategic numeracy. It is recommended that the Alternative Learning System (ALS) transition to a "Livelihood Lab" model that prioritizes socialized, hands-on learning. Interventions should integrate strategic numeracy—such as profit forecasting—directly into collaborative workshops to bridge the gap between educational attainment and productive economic participation.

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## Introduction

Fostering fundamental computational skills is recognized as a global challenge, with mathematics education playing a pivotal role in national development. However, cultivating these competencies requires more than traditional instruction; it demands a multifaceted alignment of educational objectives, contextualized teaching materials, and robust teacher training—a systemic integration that remains particularly elusive in developing nations (Watanabe, 2023). Beyond the confines of the traditional classroom, basic computational skills represent indispensable life competencies that serve as the bedrock for financial literacy, employability, and effective societal participation. For out-of-school youth (OSY), these skills are not merely academic requirements but practical tools for economic agency; they empower individuals to manage personal finances, calculate profits, and make informed business decisions within the localized social networks of their own communities (Faulkner et al., 2021).

The Education Development Center [EDC] (2021) emphasizes that youth livelihood programming that integrates foundational skills leads to higher income, increased self-employment, and the long-term sustainability of economic activities. This perspective aligns with the capability approach described by Abreu et al. (2024), which posits that education and skill-building are essential for expanding an individual's ability to achieve economic and personal freedom. Consequently, the mastery of arithmetic operations and problem-solving is transformative, opening doors to self-reliance and breaking the pervasive cycle of poverty. However, as Žakelj and Klančar (2024) demonstrate, this mastery requires a deep integration of conceptual and procedural knowledge to ensure skills are adaptable to real-world challenges. Furthermore, achieving such proficiency demands not only cognitive skills but also mental resilience—or the Adversity Quotient—to navigate complex mathematical transformations and process-related errors (Fitri et al., 2022).

The promotion of these competencies is deeply rooted in both national mandates and international frameworks. The 1987 Philippine Constitution, Article XIV, Section 1, explicitly charges the State with protecting and promoting the right of all citizens to quality education at all levels, serving as the primary legal backbone for initiatives targeting marginalized learners. This is further operationalized through Republic Act No. 9155, or the Governance of Basic Education Act of 2001, which strengthens the Alternative Learning System (ALS) to provide viable learning options for those outside the formal schooling system. Furthermore, Republic Act No. 10931, the Universal Access to Quality Tertiary Education Act, promotes equity for underprivileged groups, ensuring that socio-economic status does not bar access to skill development. Globally, these efforts align with United Nations Sustainable Development Goal 4 (SDG 4), which advocates for inclusive, equitable, quality education and lifelong learning opportunities for all (UNESCO, 2012). Despite these legal frameworks, significant gaps remain in the actualization of computational proficiency among OSY in local contexts such as Tabogon. While the World Bank (2021) identifies numeracy as vital for labor-market adaptation, there is a distinct lack of context-specific data on the actual computational levels of OSY in this region. Current literature suggests a mismatch between available skills and the specific demands of local industries, compounded by financial and geographic barriers that limit access to tailored training (Urban Institute, 2019). This empirical void is exacerbated by a theoretical disconnect in existing scholarship; while recent studies have extensively mapped computational thinking and error patterns

through Newman's Error Analysis (Angraini et al., 2024; Fitri et al., 2022; Žakelj & Klančar, 2024), these investigations are predominantly confined to formal primary and tertiary environments, leaving the cognitive diagnostic needs of non-traditional learners largely unaddressed.

Furthermore, although perceptions of computational proficiency are beginning to be explored at the university level (Gasaymeh & AlMohtadi, 2024), there is a critical failure to account for the "academic boredom" and socio-economic determinants that Dumadag et al. (2023) identifies as primary drivers for youth disconnection from such learning. Even as social network analyses reveal that OSY in the Philippines are often isolated from institutional support and confined to localized, informal networks (Faulkner et al., 2021), research has yet to bridge these complex social tapestries with structured mathematical interventions. Moreover, there is a notable "low awareness" gap; many OSY and their communities may not fully grasp the direct link between mathematical proficiency and livelihood success, thereby diminishing motivation to acquire skills. This lack of structured, evidence-based intervention programs in Tabogon leaves a critical void in the transition from educational disadvantage to economic participation. Thus, this study was conducted to address these disparities by assessing the current level of basic computational skills among out-of-school youth in Tabogon and identifying the specific skill gaps hindering their sustainable livelihood opportunities. By establishing the connection between numerical competence and entrepreneurial potential, the research aims to provide an empirical basis for a localized intervention program. The study seeks to profile the respondents, evaluate their proficiency in arithmetic and problem-solving, and identify the socio-cultural barriers to their learning. Ultimately, the aim is to contribute to the economic and social development of Tabogon by designing a targeted training program that enables OSY to participate actively in local industries, thereby enhancing their quality of life and long-term success.

## Method

### Research Design

The study utilized a quantitative descriptive-correlational research design to evaluate the basic computational capabilities of out-of-school youth (OSY) in Tabogon, Cebu. The descriptive approach was used to systematically assess and categorize respondents' performance across fundamental mathematical domains, including basic operations, fractions, decimals, percentages, and problem-solving tasks. Simultaneously, the correlational component was integrated to assess the extent of the association between participants' computing proficiency and their demographic profiles, such as age and highest educational attainment. While this design provides a robust numerical foundation for a targeted intervention program, the study is characterized by a specific focus on the functional numeracy gaps within a localized rural context, rather than a broad generalization of OSY capabilities across different geographical regions.

### Research Environment and Participants

The research was situated in the Municipality of Tabogon, a rural and coastal community in northern Cebu, Philippines, comprising 25 barangays with a total population of 41,432 as of the 2020 Census. The respondents consisted of 138 out-of-school youth aged 15 to 30 years who were not currently enrolled in formal education.

Participants were selected through purposive sampling based on specific inclusion criteria: residency in the identified barangays, physical and emotional stability, and voluntary informed consent. While this sampling method was essential to reaching a specific and often hard-to-access vulnerable demographic, it is recognized as a limitation, as the results primarily reflect the unique socio-economic conditions of Tabogon and may not be fully representative of the OSY population in urbanized or significantly different regional settings.

**Research Instrument**

The primary data collection tool was a structured, four-part survey questionnaire adapted and modified from the Applied Numeracy Practice Tasks by Aon Assessment Solutions. The first section gathered socio-demographic data, including age, sex, and educational history. The second section featured a 30-item computational assessment covering arithmetic and financial literacy applications, such as profit calculation and budgeting, which was scored on a five-level descriptive scale from "Very Poor" to "Excellent." The third section used a 5-point Likert scale to assess the perceived difficulty of applying these skills in daily livelihood scenarios. Finally, the fourth section identified the respondents' preferred learning modalities and livelihood interests to ensure the subsequent intervention program was contextually relevant and learner-centered.

**Data Gathering Procedure**

The data collection process followed a systematic, ethical protocol, beginning with obtaining formal approval from the local government unit and barangay officials. Once clearance was granted, the researcher personally administered the instruments to the identified OSY in their respective communities. To ensure the reliability of the computational assessment, participants were strictly prohibited from using calculators or mobile devices. The researcher remained on-site to provide clarifications and ensure the completion and honesty of the questionnaires. Following the sessions, the data were retrieved, organized, and encoded for statistical processing, ensuring that all gathered information was handled with the highest level of academic integrity.

**Statistical Treatment of Data**

The gathered quantitative data were analyzed using both descriptive and inferential statistical methods. Frequency and percentage were used to summarize the demographic distribution of the respondents, while the weighted mean was employed to measure the level of computational skill and the severity of challenges encountered. To investigate the relationships among the variables, Pearson’s Correlation Coefficient (r) was applied, paired with a t-test for Pearson's r to determine the statistical significance of the correlation between respondents' profiles and their mathematical proficiency. These treatments allowed the researcher to pinpoint specific skill gaps and demographic trends, which served as the empirical basis for the proposed intervention program.

**Ethical Considerations and Data Management**

The study was conducted in strict adherence to the National Ethical Guidelines 2017 and the Data Privacy Act of

2012 (R.A. 10173). All participants were informed of the study's purpose and their right to withdraw at any time without penalty. Informed consent was obtained in writing, and the survey process was designed to avoid offensive or discriminatory language. To safeguard participant privacy, all direct identifiers were removed during the data analysis phase, and transcripts were scheduled for permanent deletion once the research objectives were fulfilled. The researcher declared no conflict of interest, ensuring that the findings remained an objective contribution to the field of community-based education.

### Scope and Limitations

The scope of this study is strictly defined by its focus on the basic computational skills and livelihood preferences of OSYs within the Municipality of Tabogon. Consequently, the findings are limited by the use of purposive sampling, which may introduce selection bias, and the restriction to a single municipality. These factors suggest that while the data provides deep, actionable insights for local intervention and policy development in Tabogon, caution should be exercised when applying these results to different cultural or economic landscapes within the Philippines.

## Results

### Demographic Landscape of the OSY

The study surveyed *N=138* validated Out-of-School Youth (OSY) respondents. The cohort is characterized by a slight male majority (53.62%) and a concentration in the "young-youth" bracket, with 34.78% aged 18–20.

Educational attainment data (Table 1) reveal a significant clustering at the secondary level. A combined 74.64% of respondents reached either the High School Level (34.78%) or completed High School (39.86%), while only 16.67% achieved some level of tertiary education (see Table 1).

Table 1. Highest Educational Attainment of OSY

| **Highest Educational Attainment** | **Frequency *(f)*** | **Percentage (%)** |
|---|---|---|
| Elementary Level | 7 | 5.07 |
| Elementary Graduate | 5 | 3.62 |
| High School Level | 48 | 34.78 |
| High School Graduate | 55 | 39.86 |
| College Level | 23 | 16.67 |
| **Total** | **138** | **100.00** |

Economic participation among the OSY is markedly low, as shown in Table 2. Over half of the respondents (54.35%) are currently unemployed. Among those earning an income, the majority are engaged in daily wage work (33.33%), with minimal representation in entrepreneurship (9.42%) or primary industries such as farming and fishing (2.90%) (see Table 2).

Table 2. Current Source of Income of OSY

| Current Source of Income | Frequency *(f)* | Percentage (%) |
|---|---|---|
| Small Business | 13 | 9.42 |
| Farming/Fishing | 4 | 2.90 |
| Daily wage work | 46 | 33.33 |
| Unemployed | 75 | 54.35 |
| **Total** | **138** | **100.00** |

**Computational Competencies and Practical Application**

The respondents' computational skills were assessed across three core domains (see Table 3). While the majority (67.39%) demonstrated "Excellent" proficiency in basic arithmetic, performance significantly declined in complex areas. Only 23.91% were rated "Excellent" in fractions, decimals, and percentages, with a plurality (32.61%) falling into the "Fair" category.

Table 3. Level of Computational Skills of the Respondents

| Computational Skills | Excellent | | Good | | Fair | | Poor | | Very Poor | |
|---|---|---|---|---|---|---|---|---|---|---|
| | f | % | f | % | f | % | f | % | f | % |
| Basic arithmetic operations (addition, subtraction, multiplication, and division) | 93 | 67.39 | 23 | 16.67 | 8 | 5.80 | 10 | 7.25 | 4 | 2.89 |
| Fractions, decimals, and percentages | 33 | 23.91 | 18 | 13.04 | 45 | 32.61 | 30 | 21.74 | 12 | 8.70 |
| Problem-solving and financial literacy applications | 43 | 31.16 | 29 | 21.01 | 23 | 16.67 | 18 | 13.04 | 25 | 18.12 |

*Legend: 9-10 – Excellent, 7-8 – Good, 5-6 – Fair, 3-4 – Poor, 0-2 – Very Poor*

When applied to daily and livelihood-related activities (see Table 4), the OSY cohort reported an Overall Weighted Mean of 3.20 (Moderate). Simple transactional tasks, such as calculating payments (3.48) and giving change (3.57), were rated as "Easy." However, more strategic business tasks, such as comparing supplier offers (2.97) and deciding on pricing strategies (2.98), received the lowest scores, indicating a "Moderate" level of difficulty.

Table 4. Common Challenges in Applying Computational Skills

| Situations | Weighted Mean | Standard Deviation | Verbal Description |
|---|---|---|---|
| Calculating how much to pay when buying items | 3.48 | 1.12 | Easy |
| Giving the correct change when selling goods | 3.57 | 1.02 | Easy |
| Computing profit from a small business | 3.22 | 1.13 | Moderate |
| Budgeting your daily or weekly expenses | 3.29 | 1.08 | Moderate |

| Situations | Weighted Mean | Standard Deviation | Verbal Description |
|---|---|---|---|
| Understanding interest rates when borrowing money | 3.16 | 1.04 | Moderate |
| Calculating discounts during sales or promos | 3.08 | 1.05 | Moderate |
| Deciding on a pricing strategy based on cost, demand, and competition. | 2.98 | 1.05 | Moderate |
| Tracking inventory of items sold and restocked in a sari-sari store. | 3.17 | 1.09 | Moderate |
| Calculating mark-up price (e.g., if a product costs ₱20 and is sold for ₱30, what's the mark-up?). | 3.09 | 1.06 | Moderate |
| Comparing supplier offers based on bulk prices and transportation costs. | 2.97 | 1.09 | Moderate |
| **Overall** | **3.20** | **0.968** | **Moderate** |

*Legend: 4.20 - 5.00 – Very Easy (VE), 3.40 - 4.19 - Easy (E), 2.60 - 3.39 – Moderate (M), 1.80 - 2.59 – Difficult (D), 1.00 – 1.79 – Very Difficult (VD)*

**Correlation Between Demographic Profile and Computational Skills**

Pearson's *r* correlation analysis was conducted to determine the relationship between the respondents' demographic profiles and their computational skills (see Table 5).

Table 5. Relationship Between Demographic Profile and Computational Skills

| Correlated Variables | r value | Computed t value | p value | Critical Value at 0.05 | Decision | Interpretation |
|---|---|---|---|---|---|---|
| Age and Basic Arithmetic | 0.167 | 1.975 | 0.053 | 1.984 | Fail to Reject $H_0$ | Not Significant |
| Age and Fractions, decimals, and percentages | 0.250 | 3.011 | 0.003 | 0.050 | Reject $H_0$ | Significant |
| Age and Problem-solving and financial literacy applications | 0.127 | 1.493 | 0.140 | 0.050 | Fail to Reject $H_0$ | Not Significant |
| Highest Educational Attainment and Basic Arithmetic | 0.079 | 0.924 | 0.354 | 1.984 | Fail to Reject $H_0$ | Not Significant |
| Highest Educational Attainment and Fractions, decimals, and percentages | 0.100 | 1.172 | 0.226 | 1.984 | Fail to Reject $H_0$ | Not Significant |
| Highest Educational Attainment and Problem-solving and Financial Literacy Applications | 0.110 | 1.278 | 0.187 | 1.984 | Fail to Reject $H_0$ | Not Significant |

The results show a significant positive correlation between Age and Fractions, Decimals, and Percentages ($r = 0.250$, $p = 0.003$), suggesting that older youth tend to have a higher mastery of these specific concepts. However, Age showed no significant relationship with Basic Arithmetic or Financial Literacy Applications ($p > 0.05$). Notably, Highest Educational Attainment showed no significant correlation with any category of computational skills. All *p*-values for educational attainment were above the 0.05 threshold, indicating that reaching a higher grade level did not necessarily translate to higher computational proficiency within this cohort.

**Pedagogical Preferences and Livelihood Aspirations**

The assessment of pedagogical preferences reveals a strong inclination toward collaborative and kinesthetic learning environments. As illustrated in Table 6, the most favored modalities were Group Workshops or Seminars (38.41%) and Hands-on Training (35.51%). Collectively, nearly 74% of the respondents preferred interactive, social learning over individualized or digital-only methods. This preference suggests that for the out-of-school youth in Tabogon, computational skill acquisition is perceived as more effective when embedded in a social context. By favoring social and experiential settings, the OSY indicate a desire for training that mimics the collaborative nature of local marketplaces and small-scale industries.

Table 6. Learning Methods for Computational Skills

| **Methods in learning computational skills** | **Frequency *(f)*** | **Percentage (%)** |
|---|---|---|
| Hands-on training | 49 | 35.51 |
| Group workshops or seminars | 53 | 38.41 |
| One-on-one mentoring | 17 | 12.32 |
| Using mobile apps or online tools | 19 | 13.76 |
| **Total** | **138** | **100.00** |

The alignment between preferred learning styles and future economic goals is further clarified by the participants' livelihood priorities. As shown in Table 7, a substantial majority of the respondents (63.77%) identified Small Business as their primary livelihood aspiration. This is followed by traditional local industries, specifically farming or fishing (19.57%), and craft-making or skilled work (16.66%).

Table 7. Livelihood Preferences Among Respondents

| **Livelihood Activities** | **Frequency *(f)*** | **Percentage (%)** |
|---|---|---|
| Small Business | 88 | 63.77 |
| Farming or fishing | 27 | 19.57 |
| Craft-making or skilled work | 23 | 16.66 |
| **Total** | **138** | **100.00** |

This finding reveals a notable "aspiration-engagement" gap: while most OSY aspire to entrepreneurship, their current engagement in business activities remains low. This discrepancy underscores the critical need for localized intervention programs that not only teach arithmetic in isolation but also apply these computational skills to

business management, profit calculation, and financial forecasting, directly supporting their entrepreneurial intent.

## Discussion

The findings of this study offer a critical perspective on the socioeconomic and cognitive landscape of Out-of-School Youth (OSY), revealing a complex interplay among educational stagnation, functional numeracy gaps, and economic aspirations.

### The Educational-Economic Paradox and Credential Inflation

A primary finding of this study is the pronounced disconnect between formal educational attainment and subsequent economic stability. As a significant majority of the cohort (74.64%) reached or completed secondary education, this investment in human capital did not effectively facilitate entry into the formal labor market, as evidenced by the 54.35% unemployment rate (see Table 2). Theoretically, secondary education is a critical stage that should equip students with the essential skills and functional competencies needed for immediate labor-market transition, particularly for those who do not pursue higher education (Bandyopadhyay & Chugh, 2020). However, the high rate of economic inactivity among the respondents suggests a breakdown in this transition.

These results indicate that in the localized economy of Tabogon, secondary education functions as a "terminal educational ceiling"—a credential that, while once a gateway to socioeconomic mobility, now provides insufficient leverage for participation in the formal sector. This shift aligns with the theory of credential inflation (Collins, 2011), which posits that as the ubiquity of basic diplomas increases, their relative market value diminishes. As high school completion becomes a baseline requirement rather than a competitive advantage, youth are increasingly relegated to what Standing (2011) defines as the "precariat"—a social class characterized by a lack of labor security and stable identity. This is reflected in the 33.33% of respondents reliant on precarious daily wage work, a sector defined by volatility and the absence of institutional benefits.

Furthermore, the findings mirror global trends identified by Sumberg et al. (2024), who observed that in developing economies, formal-sector employment remains geographically and structurally concentrated. Consequently, even after achieving secondary certification, youth remain underemployed or trapped in informal subsistence work. This creates what La and Ngo (2025) term the "Skills-Mobility Paradox": a state where educational investments are made, yet institutional recognition gaps and a lack of sector-specific practical experience prevent upward mobility. Within the context of the current study, this paradox manifests as the cohort's inability to transition from an "educated" status to a "productive" economic role, suggesting that the secondary curriculum remains decoupled from the actual technical and computational demands of the rural and peri-urban economy.

### Functional vs. Strategic Numeracy Gaps

The computational skill assessment reveals a sharp decline in proficiency as tasks move from "functional" to

"strategic." While 67.39% show excellence in basic arithmetic—likely a survival skill honed through daily transactions—only 23.91% maintain this level for fractions and percentages. This gap is further illuminated in Table 4, where "transactional" tasks (giving change) are rated Easy, but "strategic" tasks (pricing strategies and comparing supplier offers) are rated Moderate.

This suggests that while OSY can function as workers in basic retail, they lack the "strategic numeracy" required for business sustainability. As Žakelj (2024) demonstrates, mastery requires a deep integration of conceptual and procedural knowledge to ensure skills are adaptable to real-world challenges. Without this integration, the mathematical complexity of inventory tracking and markup calculation creates a cognitive barrier to entrepreneurship. Furthermore, as Fitri et al. (2022) suggest, navigating these process-related errors requires a level of mental resilience that may be lacking in learners who have been disconnected from formal support systems for extended periods.

**The Role of Age and Experience over Formal Schooling**

Perhaps the most academically provocative finding is the lack of significant correlation between Highest Educational Attainment and computational skills (see Table 5). This indicates that time spent in formal schooling did not significantly improve the respondents' practical mathematical abilities, suggesting a curriculum decoupled from rural economic demands. In contrast, the significant positive correlation between Age and Fractions/Decimals/Percentages ($r = 0.250$, $p = 0.003$) suggests that these complex skills are being acquired through informal experiential learning. This highlights a critical need to reform OSY curricula to mirror real-world applications. This finding mirrors the observations of Gasaymeh & AlMohtadi (2024), who note that even at the university level, perceptions of proficiency often differ from actualized skills, suggesting that "lived experience" is a more potent teacher of computational logic than abstract classroom theory.

**Aspirational Dissonance and Policy Implications**

There is a clear "aspirational dissonance" in the data: 63.77% of OSY desire to start a small business, yet more than half are currently unemployed. This goal is currently hindered by the "low awareness" gap, in which youth may not fully grasp the direct link between mathematical proficiency and livelihood success. Regarding intervention, the preference for Group Workshops (38.41%) and Hands-on Training (35.51%) (see Table 6) indicates that OSY are social learners who prefer kinesthetic and collaborative environments.

This preference for socialized learning is critical because, as Faulkner et al. (2021) identify, OSY in the Philippines are often isolated from institutional support and confined to localized, informal networks. Therefore, any intervention must bridge these complex social tapestries with structured mathematical training. The path to economic mobility for OSY is not just "more schooling," but targeted, socialized interventions that bridge the gap between survivalist arithmetic and the strategic financial literacy required for the small businesses they hope to lead (see Table 7).

## Conclusion

The study concludes that a significant "skills-mobility paradox" exists among Out-of-School Youth (OSY) in Tabogon, where relatively high levels of secondary education completion (74.64%) fail to translate into economic security or advanced computational proficiency. The findings reveal a critical divergence between basic survivalist arithmetic, in which most respondents excel (67.39%), and the strategic numeracy required for sustainable entrepreneurship, such as pricing and inventory management, which remains a significant "Moderate" difficulty barrier (*M=3.20*). Furthermore, the lack of correlation between formal educational attainment and practical mathematical skills, contrasted with the significant positive correlation between age and complex computational concepts ($r = .250$, $p = .003$), suggests that functional literacy is being driven by informal experiential learning rather than the traditional classroom. Given the high "aspirational dissonance"—where 63.77% desire to launch small businesses despite a 54.35% unemployment rate—intervention strategies must pivot toward socialized, hands-on training that bridges this gap. Ultimately, fostering economic resilience in OSY requires a shift from abstract pedagogy to localized, collaborative interventions that align mathematical mastery with the strategic demands of rural entrepreneurship.

## Recommendations

To address the identified "skills-mobility paradox" and "aspirational dissonance," it is recommended that the Alternative Learning System (ALS) and local government units in Tabogon transition from abstract mathematical pedagogy to a context-integrated, "Livelihood Lab" model. This approach should prioritize the 74% preference for socialized and kinesthetic learning by embedding strategic numeracy—such as pricing strategies, interest rates, and profit forecasting—directly into collaborative entrepreneurship workshops that mimic real-world marketplace dynamics. Furthermore, implementing a Prior Learning Recognition (PLR) framework is essential to capitalize on the experiential mastery observed among older youth ($r = .250$), enabling a more efficient transition from educational attainment to productive economic participation. By bridging the gap between survivalist arithmetic and the technical demands of small-business management, these targeted, socialized interventions can effectively transform the secondary education "terminal ceiling" into a viable pathway for sustainable livelihood and community-based economic resilience.

## Statements and Declarations

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