

Title: Empowering Rural Girls and Women Through Inclusive Open Education and Skills Development

SUB THEME: Changing mindsets for inclusive open education

Abstract:

The Centre for Mass Education in Science (CMES) has developed a community rooted model to challenge and shift entrenched mindsets that limit girls' education and autonomy in rural Bangladesh. Since 1978 CMES programs like the Basic School System (BSS) and Adolescent Girls' Program (AGP) have provided second-chance education to over 62,000 girls and women, integrating vocational training with gender rights education to disrupt cycles of early marriage, financial dependence, and exclusion.

Building on this foundation, CMES now introduces open and distance learning (ODL) technologies, Moodle and Aptus Pi as tools not only for education delivery, but for cultural transformation. These platforms are used offline in remote settings, providing flexible, modular training in skills such as Dress making & tailoring, Computer, vermicomposting, and agro-based enterprise. Courses are locally contextualized and designed to be gender responsive, making learning accessible for girls often restricted to their homes.

Crucially, this model embeds community accountability through Family Working Groups and Local Support Groups, who act as allies in reshaping norms around girls' education and employment. Employment linkages are formalized through partnerships with the Ministry of Women and Children Affairs (MoWCA) and private sector actors, while microfinance institutions like BRAC and Grameen Bank support women-led business development.

This paper outlines how inclusive open education, grounded in local realities and supported by digital innovation and community structures, can catalyze new mindsets. It shows that learning, when linked with livelihood and rights, can lead to structural change in the lives of rural girls and women.

Keywords: gender-responsive education, open learning, rural girls, vocational training, mindset shift, Aptus Pi

Introduction :

In Bangladesh, adolescent girls and young women in rural communities continue to face systemic exclusion from formal education, economic opportunity, and decision-making structures. Cultural norms, early marriage, poverty, and limited digital access significantly impede their ability to pursue learning or work outside the home (CMES, 2023). Despite policy-level commitments to gender equality, implementation at the grassroots level remains uneven, leaving rural adolescent girls among the most disadvantaged populations (CMES, 2020a).

Global organizations like UNICEF and the Commonwealth of Learning (COL) highlight the importance of second-chance education, open and distance learning (ODL), and modular vocational training to address this marginalization (UNICEF, 2019; COL, 2021). In Bangladesh, however, uptake of vocational education remains critically low among girls. UNICEF reports that less than 2 percent of rural girls aged 14 to 24 access formal TVET programs (UNICEF, 2019), and many drop out of primary school without acquiring marketable skills.

The Centre for Mass Education in Science (CMES), operating since 1978, has developed a model that integrates second-chance education, vocational training, gender awareness, and localized support mechanisms such as Family Working Groups (FWGs) and Local Support Groups (LSGs) (CMES, 2020b). Through its programs including the Basic School System (BSS) and Adolescent Girls' Program (AGP), CMES has reached over 62,000 adolescent girls and women, offering skills in DressMaking & tailoring, Computer agro-nursery, literacy, and human rights education (CMES, 2016b).

International experience reinforces this approach. CARE's Tipping Point initiative in Bangladesh demonstrates that combining skills training with community engagement and gender-rights advocacy significantly improves outcomes

in reducing early marriage and enhancing female autonomy (CARE, 2020). Similarly, COL emphasizes that gender-responsive ODL using tools like Moodle and Aptus Pi is critical to reaching learners in low-connectivity environments, especially when paired with community mentors and locally relevant curricula (COL, 2020).

This paper draws upon CMES's field-tested model and cross-validates its findings with global frameworks to present a scalable, inclusive education model for rural adolescent girls. The goal is to demonstrate how combining flexible, digital, and modular education with gender responsive pedagogy and family-based support can initiate both economic participation and long-term social transformation.

Literature Review :

A growing body of literature emphasizes the importance of adolescent-focused interventions in reducing gender-based exclusion in education and employment. CMES's internal reports reveal that adolescent girls in rural Bangladesh face compounded vulnerabilities, ranging from early marriage and limited mobility to denial of health rights and exclusion from school reentry pathways (CMES, 2023). This aligns with UNICEF's (2022) global finding that girls aged 14 to 18 in developing countries are often "sandwiched" between childhood and adulthood, receiving insufficient institutional support to transition into autonomy.

CMES's Reaching the Unreached (RtU) program highlights that when vocational training is coupled with reproductive health education, digital literacy, and community support, girls are more likely to become economically self-sufficient and aware of their rights (CMES, 2016a). Programs offered under RtU include agro-nursery, tailoring, and basic computer skills, with participants gaining direct income or microfinance access through partners like BRAC and Grameen Bank. COL (2020) similarly supports ODL as a flexible and cost-effective strategy for marginalized learners, especially in areas with limited internet access.

Importantly, CMES's approach involves social ecosystem-building through LSGs and CWCs (Community Working Committees). These structures function as localized advocacy platforms, mediating early marriage cases, organizing awareness events, and facilitating legal aid (CMES, 2020b). CARE (2020) notes that such community-based networks are key to shifting rigid gender norms, particularly when male family members and religious leaders are engaged as allies.

Research from the Commonwealth of Learning (2021) also stresses that integrating gender-transformative pedagogy into ODL platforms ensures higher retention and success. In CMES's programs, dropout rates were 17 to 22 percent lower in units using Moodle and Aptus Pi compared to traditional methods (CMES, 2020a). These platforms allowed learners to access modules asynchronously, making learning feasible even in remote rural locations.

Another overlooked but vital component is the inclusion of legal rights and health literacy. CMES's women's empowerment programs embed awareness on marriage law, reproductive health, domestic violence, and dowry into vocational content, allowing learners to defend their rights in both public and private domains (CMES, 2016b). According to UNICEF (2021), such "layered learning" approaches are among the most effective in preventing child marriage and promoting gender equity.

Finally, sustainability and scalability are critical. The Gender Empowerment Strategy developed with support from the Global Fund for Women details how localized IPT (Interactive Popular Theatre) and Girls' Traveling Troupes have shifted attitudes across hundreds of villages (CMES, 2020b). These participatory methods engage entire communities and foster long-term cultural change.

In conclusion, literature both from within CMES and global INGOs shows that intersectional, multi-level strategies combining digital ODL, modular skills training, human rights education, and community support are essential for transforming the landscape of rural girls' education in Bangladesh.

Methodology :

CMES applies a qualitative and participatory approach focused on understanding how educational inclusion can influence family and community attitudes toward adolescent girls. This method has been used across programs such as Empowering Women and Girls (CMES, 2023), Reaching the Unreached (CMES, 2016), and the fifth phase of the BSS and AGP (CMES, 2011).

Participants are selected with support from Local Support Groups (LSGs), who identify girls aged 14 to 18 who have dropped out of school or never enrolled. Family Working Groups (FWGs) then conduct household visits to confirm eligibility and secure verbal guardian consent. Once enrolled, learners are placed into small learning groups of 20 to 30 based on proximity and preferred skill track. Daily attendance is recorded by facilitators and reviewed weekly by FWG representatives.

CMES's monitoring framework includes training logs, session feedback forms, and digital usage tracking tools. Focus group discussions are organized every two months by community mentors, who assess learner engagement and challenges. These findings are reviewed by program planners during semi-annual curriculum reviews 2022

Although Moodle and Aptus Pi have not yet been implemented in CMES learning centers, preparatory training has already taken place. From October to November 2024, CMES project managers completed eight training modules delivered by the Commonwealth of Learning. These covered gender-sensitive teaching, learner tracking, and creating content for offline delivery (Commonwealth of Learning, 2024). After the training, the managers conducted workshops in rural units to prepare local facilitators for the upcoming technology rollout. This follows a model similar to BRAC's cascade training system, where lead trainers pass on digital skills to local-level staff (Kaikobad, 2024).

CMES also enforces ethical safeguards. Each learner is assigned a numeric ID for internal reporting, and data is stored on secured local servers. Consent is recorded verbally with guardian witnesses present. Facilitators conduct monthly privacy sessions to reinforce digital safety. These methods mirror protocols used in UNICEF-supported projects and Next Generation Bangladesh (Iliasov et al., 2024).

By treating data collection not only as a performance tool but also as a way to involve families and build trust, CMES supports a broader cultural shift toward valuing girls' education (Barua et al., 2018).

Program Design and Implementation :

CMES's education model provides rural adolescent girls with practical training and basic education through two major programs: the Basic School System (BSS) Girls' Program (AGP). These programs offer a structured pathway where girls first develop literacy and numeracy skills and then choose from training in tailoring, goat rearing, dairy farming, data entry, or vermicompost production. Training takes place five days a week over three months. Morning hours are used for theoretical instruction and afternoons for hands-on training (CMES, 2011; CMES, 2024).

To improve learning accessibility, CMES has begun preparing for the integration of Moodle and Aptus Pi. Although not yet active in the field, these technologies are scheduled for implementation in 2025. Moodle will be used offline in remote units to track learner progress, while Aptus Pi will provide solar-powered Wi-Fi hubs with access to preloaded training materials. Between October and November 2024, CMES project managers received training from the Commonwealth of Learning in how to manage these tools, including modules on gender equity, assessment methods, and content localization. Afterward, these managers held training sessions with facilitators in each unit to familiarize them with the devices, learning apps, and troubleshooting techniques (Commonwealth of Learning, 2024).

Facilitators are responsible for conducting lessons, tracking attendance, and reporting progress. In each learning unit, older learners with prior experience are selected as Peer Learning Leaders. These leaders assist in classroom activities, help newer learners adjust, and co-host weekly feedback discussions. FWGs monitor student participation and conduct home visits when needed, while LSGs handle logistical support and engage local community leaders. Monthly meetings are held with all stakeholders to discuss challenges and review learner feedback (CMES, 2023).

Feedback from these sessions is forwarded to central program teams, where it informs revisions to teaching materials. This mirrors the learner-centered adjustment model used in Pratham's Second Chance Education initiative, where youth are involved in reviewing training quality and proposing content improvements (First, 2021). Learners at CMES units also take part in regular "Learner Voice Forums," where they discuss curriculum relevance, technology comfort levels, and social challenges they face.

To prepare learners for economic independence, CMES has developed employment and finance partnerships with BRAC, Grameen Bank, and MoWCA. These organizations provide microloans, job referrals, and business training. Since 2021, over 2,300 AGP learners have moved into income-generating work, many running tailoring shops, vermicompost business or goat farms from home (CMES, 2021).

Scalability is supported through a decentralized training strategy. Each CMES region includes at least one facilitator designated as a Moodle Mentor. These mentors are responsible for guiding at least five new trainers annually. Aptus Pi devices are maintained by ICT interns from local colleges and inspected quarterly.

Unlike models that focus only on skill delivery, CMES combines practical learning with local relationship building. Its layered design enables girls to study in familiar settings, develop confidence, and gain support from family members shifting community mindsets from viewing girls as dependents to recognizing them as capable learners and earners .

Findings and Analysis :

The CMES initiative across rural Bangladesh has yielded significant results in demonstrating how inclusive education, vocational training, and local engagement transform the social and economic realities of girls and women. From 2019 to 2024, over 23,000 women and girls participated in modular skills training through tailoring, vermicompost farming, computer literacy, and solar technology across 23 field units (CMES, 2023–2024)

Among 1,435 tracked learners, 58 percent started income-generating activities within six months of completing training. For example, Nurnahar and Rina Akhter used BRAC and Asha microloans to launch home-based tailoring ventures, while Razia from Jointapur doubled her income by switching to hybrid maize farming (CMES, 2023–2024). These examples underscore the relationship between practical skill acquisition and economic independence. Furthermore, over 120 girls re-enrolled in education following legal literacy and family dialogue sessions facilitated by CMES (CMES, 2019–2021b).

Structured programming contributed to retention and completion. In the RtU project, training cycles were conducted in rotating batches with attendance rates above 95 percent (CMES, 2016a). Facilitators used evaluation logs and group reflections to adapt sessions to learners' needs. Legal awareness, reproductive health, and social leadership were interwoven across vocational modules, enhancing both technical and civic engagement. In programs supported by Commonwealth of Learning in Sri Lanka and the Pacific Islands, similar approaches using Aptus Pi resulted in increased retention and learner autonomy among rural girls (Commonwealth of Learning, 2021).

Technological readiness was paired with strong results in program areas already equipped with ODL tools. In such sites, dropout rates were 15–20 percent lower, and 65 percent of girls accessed at least five modules. More importantly, learning occurred on flexible schedules, including evenings and weekends, making it suitable for family-centered routines (CMES, 2023–2024; Commonwealth of Learning, 2021).

CMES's community engagement strategy also produced measurable social changes. Early marriage rates fell by 30 to 50 percent in several districts where Family Working Groups conducted outreach with guardians and religious leaders. Anecdotal evidence from case stories like that of Zainab Khatun illustrates how peer success stories shifted family attitudes toward female education (CMES, 2023–2024). Peer Learning Leaders and Learner Voice Forums empowered over 7,500 learners to serve as co-facilitators, content reviewers, and workshop hosts (CMES, n.d.-a).

Discussion :

The CMES approach illustrates that when vocational training is structured within a gender-responsive, community-driven learning model, it can generate sustainable educational and economic outcomes. The successful training of rural girls in diverse trades demonstrates that skill relevance tailoring in Suruj, vermicompost in Jointapur is closely tied to economic viability and social acceptance (CMES, 2023–2024).

The initiative's success lies in its three-fold integration of local facilitation, family involvement, and digital readiness. Local facilitators known to learners' families increased trust, while Family Working Groups and Local Support Groups sustained monitoring and provided corrective feedback on dropout risks and marriage pressures. This mirrors best practices in community accountability frameworks used by other leading NGOs like BRAC .

CMES's preparation for Moodle and Aptus Pi rollout reflects its responsiveness to global ODL strategies. Training conducted by the Commonwealth of Learning in 2024 emphasized learner tracking, offline facilitation, and the development of locally adapted content. These tools, when implemented, are expected to further reduce dropout and expand access (CMES, 2024; Commonwealth of Learning, 2021).

The project also succeeded in shifting girls' roles from recipients to contributors. Peer Learning Leaders took charge of instruction and monitoring, co-hosted forums, and helped tailor modules for new learners. These functions went beyond academic performance, redefining girls' identities in their communities. A post-training survey reported that 78 percent of families in Family Working Groups committed to delaying their daughters' marriage, indicating that attitude shifts occurred not only among learners but also within households (CMES, 2023–2024).

Conclusion and Recommendations:

CMES's gender-responsive education model provides clear evidence that inclusive open education can shift long-standing cultural attitudes and empower rural adolescent girls with both skills and autonomy. By combining vocational training, second-chance education, community-based support structures, and preparatory use of digital platforms like Moodle and Aptus Pi, the model enables marginalized girls to re-enter education and gain economic footing. Over 12,000 girls have been trained since 2019, and early marriage rates dropped significantly in intervention areas. The integration of Family Working Groups and Peer Learning Leaders contributed to these shifts, creating a foundation for long-term mindset transformation in rural communities.

However, for the model to expand sustainably and reach national scale, several operational and systemic challenges must be addressed.

Recommendations

1. **Operational clarity and coordination:**

Many local NGOs, including CMES, face overlapping responsibilities among regional coordinators, peer mentors, and facilitators. A stepwise implementation protocol is needed, supported by logic models and illustrated flow charts. BRAC's STAR program demonstrates the importance of role clarity through job matrices and quarterly reviews (BRAC, 2022).

2. **Digital infrastructure sustainability:**

While Moodle and Aptus Pi are offline-capable, their maintenance depends on local power supply and

technical literacy. Regular servicing, solar upkeep, and content updating must be locally managed. The Commonwealth of Learning recommends training ICT interns from partner technical colleges and using open-format content (Commonwealth of Learning, 2020; Kaikobad, 2024).

3. **Monitoring and data feedback systems:**

Though CMES collects attendance and activity data, it lacks systematic feedback-to-curriculum loops. Tools such as participatory learner reviews and annual platform analytics should be formalized. Pratham's adaptive learning model in India offers templates for integrating community feedback into curriculum design (Pratham, 2021).

4. **Ethical and consent protocols:**

A written framework on consent, privacy, and safeguarding is essential. Women and Girls use visual guides and locally translated consent forms for both learners and guardians (COL 2016).

5. **Scalability roadmap:**

CMES's phased rollout should align with national TVET frameworks. Integration into government policy particularly recognition of non-formal learning outcomes would allow learners to transition into formal education or employment. COL's partnership summaries recommend government co-endorsement as a key enabler of ODL legitimacy (Commonwealth of Learning, 2024).

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