



EQUITY AND PARTICIPATION | 2026 PRACTITIONER EDITION

Gender Inclusion Audit for STEM Programmes

A field framework for examining who enters, who participates technically, who advances and who shapes the programme.

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For schools, NGOs, funders, programme designers, evaluators and public institutions committed to equitable STEM participation.

FIELD-TESTED THINKING | PRACTITIONER TEMPLATES | EVIDENCE ANCHORS

What this manual helps you decide

Move from idea to explicit decisions, owners, evidence and next actions.

1	Move beyond headcounts to technical agency	Balanced attendance can coexist with unequal access to equipment, challenge, feedback, visibility and leadership.
2	Audit the full participation funnel	Selection language, cost, transport, timing, confidence norms and prior exposure shape who enters and remains.
3	Design belonging into technical challenge	Belonging grows when learners experience competence, useful struggle, visible contribution and credible futures.
4	Make participation safe enough to be meaningful	Harassment, humiliation, stereotype threat, unsafe travel and inaccessible reporting can quietly remove learners from STEM pathways.
5	Track who advances into technical futures	Completion is not the end of inclusion; programmes should examine advanced roles, credentials, study, work and leadership.
6	90-day application	Use 90 days to establish the funnel, observe technical roles, test safety routes and implement a small number of accountable changes.

Use the manual as a decision cycle

1 OBSERVE	2 DECIDE	3 ASSIGN	4 REVIEW
Start with the ordinary operating condition, not the launch-day exception.	Record the choice, the alternatives rejected and the assumption carrying the most risk.	Name one accountable owner, the supporting actors and the evidence they must produce.	Set a date and define what evidence will trigger continuation, repair, redesign or stop.

A completed template is not evidence of success. Pair every decision with an observable artefact, a named owner and a scheduled review.

Move beyond headcounts to technical agency

Balanced attendance can coexist with unequal access to equipment, challenge, feedback, visibility and leadership.

Inclusion is meaningful when learners make consequential technical decisions, receive high-quality support and can progress safely.

DESIGN MOVE	WHAT IT REQUIRES	EVIDENCE TO KEEP
Access	Examine who hears, applies, qualifies, attends consistently and can meet time or travel expectations.	Disaggregated participation funnel
Roles	Track who codes, builds, tests, troubleshoots, documents, presents and leads.	Structured role observation
Feedback	Compare teacher attention, question difficulty, correction quality and encouragement.	Observed feedback sample
Agency	Ask whose ideas change the design and who can challenge decisions or request support.	Learner voice and decision examples

Decision questions

1. Who is present but technically peripheral?
2. Which roles carry the most learning and status?
3. Does group work distribute decisions or merely tasks?
4. Whose contribution is publicly recognised?

Decision gate

PROCEED WHEN	PAUSE OR REDESIGN WHEN
Participation evidence covers technical roles, feedback and agency as well as attendance.	A 50:50 register is treated as proof of equal experience.

Field application

Observe three sessions using a role map. Compare time on high-value technical decisions by gender and by intersection with disability, language and prior exposure.

Audit the full participation funnel

Selection language, cost, transport, timing, confidence norms and prior exposure shape who enters and remains.

Recruitment and retention should remove avoidable barriers without lowering the capability standard.

DESIGN MOVE	WHAT IT REQUIRES	EVIDENCE TO KEEP
Invitation	Review images, language, channels, eligibility and whether the programme is framed as belonging to certain learners.	Recruitment-content audit
Selection	Test prerequisites for necessity, transparency and bias toward prior private access.	Selection rubric and applicant profile
Participation cost	Identify fees, devices, data, travel, clothing, care and unpaid time required.	Barrier register and mitigation plan
Retention	Analyse absence, withdrawal and non-progression with confidential participant explanation.	Cohort trend and exit insight

Decision questions

1. Which requirement measures future potential and which measures previous privilege?
2. Who receives encouragement to apply?
3. What hidden cost rises after admission?
4. At what moment does the participation gap widen?

Decision gate

PROCEED WHEN	PAUSE OR REDESIGN WHEN
Entry criteria are necessary, transparent and paired with practical barrier reduction.	The programme blames confidence or culture without examining its own design.

Field application

Map 100 hypothetical eligible learners through awareness, application, selection, attendance and completion. Quantify where exclusion compounds.

Design belonging into technical challenge

Belonging grows when learners experience competence, useful struggle, visible contribution and credible futures.

Inclusive pedagogy combines high expectations with scaffolding, varied representation, structured collaboration and bias-aware feedback.

DESIGN MOVE	WHAT IT REQUIRES	EVIDENCE TO KEEP
Challenge	Use tasks with multiple entry points and authentic complexity rather than gendered assumptions about interest.	Task audit and learner response
Representation	Show diverse technical contributors without turning role models into symbolic decoration.	Curriculum and speaker review
Collaboration	Rotate consequential roles and protect individual practice and evidence.	Role protocol and observation
Feedback	Check whether praise, correction and stretch opportunities differ in tone or technical depth.	Feedback coding and teacher reflection

Decision questions

1. Does the task assume prior exposure unrelated to the objective?
2. Who receives the hardest follow-up question?
3. Can each learner demonstrate independent capability?
4. Does the curriculum connect STEM to multiple identities and purposes?

Decision gate

PROCEED WHEN	PAUSE OR REDESIGN WHEN
Lesson design produces independent evidence and equitable access to challenge.	Inclusion is reduced to inspirational talks or easier parallel activities.

Field application

Video or script one lesson and code every teacher interaction by learner, purpose and cognitive demand. Discuss patterns before assigning intent.

Make participation safe enough to be meaningful

Harassment, humiliation, stereotype threat, unsafe travel and inaccessible reporting can quietly remove learners from STEM pathways.

Safety includes physical, psychological, online and institutional conditions, with trusted support and non-retaliatory reporting.

DESIGN MOVE	WHAT IT REQUIRES	EVIDENCE TO KEEP
Risk map	Identify risks across travel, facilities, equipment, online spaces, group interaction and public visibility.	Context-specific safeguarding assessment
Reporting	Offer confidential, accessible routes with clear response time, support and escalation.	Learner-tested reporting pathway
Voice	Include participants in design and review without making them responsible for fixing institutional harm.	Consultation record and management response
Response	Track patterns, near misses and consequences while protecting privacy.	Incident trend and system action

Decision questions

1. Can a learner report without approaching the person causing concern?
2. What happens after disclosure?
3. Which risks increase during competitions, travel or online collaboration?
4. Do participants see evidence that feedback changes practice?

Decision gate

PROCEED WHEN	PAUSE OR REDESIGN WHEN
Learners understand and trust a rehearsed safeguarding and feedback route.	The programme has a policy document but participants cannot name a safe reporting option.

Field application

Ask participants privately to explain how they would report three different concerns. Treat inconsistent answers as a system defect, not a learner deficit.

Track who advances into technical futures

Completion is not the end of inclusion; programmes should examine advanced roles, credentials, study, work and leadership.

Equity requires attention to transition points where networks, finance, sponsorship, confidence signals and opportunity information shape destinations.

DESIGN MOVE	WHAT IT REQUIRES	EVIDENCE TO KEEP
Capability	Compare performance, task access and feedback without assuming equal scores imply equal opportunity.	Moderated outcome data and context
Next step	Make advanced courses, internships, competitions, mentors and scholarships transparent and accessible.	Opportunity register and referral evidence
Networks	Audit who receives introductions, references, public platforms and leadership roles.	Sponsorship and visibility record
Destinations	Follow study, work, entrepreneurship, return participation and reasons for exit.	Longitudinal progression data

Decision questions

1. Who advances after completing the same programme?
2. Which next opportunity has an opaque selection route?
3. Who is mentored versus actively sponsored?
4. What structural barrier appears only after the programme?

Decision gate

PROCEED WHEN	PAUSE OR REDESIGN WHEN
The programme measures and acts on progression gaps beyond completion.	Equity claims end at enrolment or graduation photographs.

Field application

Review the last two cohorts and map every advanced opportunity offered. Compare nomination, application, selection and completion by gender and other relevant characteristics.

Move from participation claim to inclusion evidence

Use 90 days to establish the funnel, observe technical roles, test safety routes and implement a small number of accountable changes.

PERIOD	GATE	FIELD WORK	OUTPUT
Days 1-15	Diagnose	Observe ordinary conditions, establish the baseline and name the highest-risk assumptions.	Approved baseline and decision register
Days 16-30	Design	Select a bounded use case, define responsibilities and agree the evidence standard.	Signed design brief and risk controls
Days 31-60	Pilot	Run repeated practice under normal constraints; log failures, adaptations and participant experience.	Pilot evidence pack and repair log
Days 61-75	Review	Compare intended capability with observed performance and test equity, cost and continuity.	Review decision with conditions
Days 76-90	Institutionalise	Assign recurring ownership, budget, cadence and escalation routes before expansion.	Operating plan and next review date

Decision record

Priority participation gap	_____
Evidence source	_____
Affected learners	_____
Design cause	_____
Immediate repair	_____
Responsible owner	_____
Success indicator	_____
Review date	_____

Do not report inclusion from headcounts alone. Report access, technical agency, safety, capability, progression and the programme decisions changed by the evidence.

Evidence anchors and further reading

The frameworks translate public guidance and implementation evidence into practical decision tools.

SOURCE	RESOURCE	ADDRESS
Ghana Ministry of Education	Education Strategic Plan 2018-2030 (2018)	https://moe.gov.gh/edge/content/uploads/2019/05/Education-Strategic%20Plan-2018-2030.pdf
UNESCO GEM Report	Technology in education: A tool on whose terms? (2023)	https://gem-report-2023.unesco.org/
UNICEF Innocenti	Digital Learning, Real Classrooms: Implementation Research in Ghana (2025)	https://www.unicef.org/innocenti/reports/digital-learning-real-classrooms
Ghana Cyber Security Authority	National Child Online Protection Framework (2024)	https://www.csa.gov.gh/resources/National%20COP%20Framework.pdf
African Union	Continental Artificial Intelligence Strategy (2024)	https://au.int/en/documents/20240809/continental-artificial-intelligence-strategy

Use these sources as starting points. Confirm current law, policy, curriculum and regulator guidance before making consequential institutional decisions. This manual is an implementation aid, not legal, financial or safeguarding advice.

Evidence quality protocol

CHECK	QUESTION	RECORD
Currency	Is the source still current for the decision date, jurisdiction and learner group?	Version, publication date and date checked
Authority	Is it primary guidance, independent research, implementation evidence or vendor material?	Source type and responsible institution
Fit	Do its assumptions match the school, infrastructure, language, staffing and safeguarding context?	Transfer limits and local verification needed
Use	Which decision does this source inform, and what would cause that decision to change?	Decision link, owner and review trigger

Measure participation beyond the register

A practical contribution to stronger AI, coding, robotics and STEM education systems in Ghana and Africa.

The value of a framework is not the elegance of its diagram. It is the quality of the decisions, routines and learning that it makes possible.

About Jonathan Kennedy Sowah

Jonathan is a Ghanaian AI engineer and K-12 STEM systems builder working across robotics, coding, applied artificial intelligence, teacher development and context-aware education technology. His wider portfolio has reached 25,000+ learners, trained 2,500+ educators and engaged 100+ schools. KodeVR has more than 10,000 active learners.

He works with schools, governments, companies and development partners to turn high-visibility technology ambitions into practical learning systems that can operate under real African conditions.

Use this work responsibly

Adapt the tools to the programme, participants, institution and regulatory context. Record assumptions. Seek qualified technical, legal, safeguarding, financial and evaluation review where the decision requires it.

Before commissioning implementation support

QUESTION	A STRONG ANSWER SHOULD NAME
What capability must remain after the engagement?	The learner, teacher and institutional behaviours that should continue without external supervision.
What conditions shape delivery?	The ordinary timetable, infrastructure, language, safeguarding, procurement and maintenance realities.
How will quality be governed?	Decision owners, evidence definitions, review cadence, repair route and stop-or-scale thresholds.
What will the institution inherit?	Reusable learning assets, local capability, documented routines, data rights and an affordable continuity plan.

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