



REPUBLIC OF SOUTH SUDAN

Ministry of General Education
and Instruction

WITH SUPPORT FROM



TECHNICAL REPORT · JUNE 2026

SOUTH SUDAN

Digital Learning Landscape Analysis

Evidence, modality prioritization and a phased investment case for offline-
first learning

2.8M

OUT-OF-SCHOOL CHILDREN

31

SOURCES REVIEWED

6

BINDING PRINCIPLES

3

INVESTMENT PHASES

COMMISSIONED BY
UNICEF South Sudan

PREPARED FOR
MoGEI · UNICEF South Sudan

AUTHOR
James Obua Otoa

STATUS
UNICEF & MoGEI Technical
Review

ABOUT THIS DOCUMENT

This technical report presents the findings of the South Sudan Digital Learning Landscape Analysis, conducted under the GPE-TESS Programme for the Ministry of General Education and Instruction (MoGEI) and UNICEF South Sudan. It draws on a 31-source desk review and seven key informant interviews conducted between February and May 2026. All unit costs are planning proxies from comparable fragile contexts and are flagged as such. Data gaps are recorded transparently and are not substituted with assumed figures.

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ABBREVIATIONS AND DEFINITIONS

Abbreviation	Full Form	Definition
ALP	Alternative Learning Programme	Non-formal equivalency programme for over-age, displaced and out-of-school learners.
CEC	County Education Centre	Sub-national institutional hub for in-service teacher training (59 centres being rehabilitated).
DHIS2	District Health Information System 2	Offline-first health data system operating across all 80 counties the cross-sector model for education.
DLCC	Digital Learning Coordination Committee	Proposed MoGEI task force for inter-agency coordination of digital learning. Must be gazetted within 90 days.
EGRA/EGMA	Early Grade Reading/Maths Assessment	Standardized foundational learning assessments. The minimum evidence standard for any Phase 2 digital investment.
EMIS	Education Management Information System	MoGEI's national school data system. Transitioning to electronic collection (EMIS 2.0).
GESP	General Education Strategic Plan	MoGEI's 2023–2027 national education plan. Primary policy framework for this analysis.
GPE-TESS	GPE Transforming Education in S. Sudan	Global Partnership for Education programme, 2024–2028. USD ~27M envelope. Save the Children-led consortium.
IDP	Internally Displaced Person	472,452 displaced children in South Sudan (UNHCR, 2024). Concentrated in Jonglei, Unity, Warrap, Upper Nile.
IRI	Interactive Radio Instruction	Radio format with facilitator prompts, student response pauses and activity segments. Proven in Somalia.
MoGEI	Ministry of General Education	Primary government counterpart and owner of all recommendations in this analysis.
MoICT	Ministry of ICT and Postal Services	Co-chair of proposed DLCC. Controls regulatory and infrastructure mandate for digital delivery.
NCA	National Communications Authority	Regulator. Administers USAF. Regulatory observer in proposed DLCC.
OOSC	Out-of-School Children	Estimated 2.8 million (59% of school-age population). Girls: 53% of OOSC.
USAF	Universal Service Access Fund	2% MNO revenue levy. USD 9M approved for fibre backbone. No implementation agency yet. Phase 3 financing vehicle.
USSD	Unstructured Supplementary Service Data	Menu-driven mobile interaction. Works on 2G and feature phones. 66.5% of MTN subscribers are eligible.

Abbreviation	Full Form	Definition
vTLC	Virtual Teacher Learning Circles	IRC WhatsApp-based peer CPD model. Asynchronous. Piloted in Central Equatoria.

More Foundations Than Credited More Risks Than Acknowledged

South Sudan's digital learning environment offers practical foundations that current programme documents understate, and carries structural risks they underestimate. This report identifies where investment can improve learning outcomes, and where it cannot without prior structural fixes.

CORE FINDING

Of ten data gaps identified in Phase 1, **none were fully closed** by KII evidence. Six achieved partial resolution; three remain unresolved and directly block Phase 2 planning. USD 67,000–112,000 invested in Phase 1 governance and evidence will determine the quality of USD 610,000–1,000,000 in Phase 2 investment decisions.

Six Digital Learning Principles for South Sudan

These six principles define the binding logic for investment sequencing, modality selection and governance design. Each is derived from operational evidence. They are not aspirational they are the preconditions for any digital learning investment to produce learning outcomes rather than reach statistics.

1

Offline-First Is an Equity Requirement

Electricity: 7.2%. Internet: 15.8%. Smartphone: 10.5–11%. Radio and SD card are the primary delivery infrastructure for 2.8 million out-of-school children. All other modalities are supplements, not substitutes.

2

Structurally Excluded Learners Set the Design Standard

Girls (53% of OOSC). Unity OOSC: 82%. Jonglei: 81%. IDP children: 472,452. A modality that cannot function under Unity or Jonglei conditions cannot be called a national strategy.

3

Facilitation Determines Outcomes, Not Hardware

Junub Academy pass rates: 22%→71% (Warrap) and 30.3%→75.5% (Cueibet) with a dedicated facilitator at every session. **No hardware procurement proceeds without a costed facilitation plan.**

4

Governance Before Scale

No inter-ministerial coordination, no content quality standard, no teacher digital framework exists. Result: 65% of 361 audio lessons on 3,000+ USB sticks are rated *low quality*. **DLCC must be established within 90 days.**

5

Use What Already Works in This Environment

DHIS2 runs across all 80 counties on Android tablets, solar cabinets and offline sync under exactly the conditions education faces. The county hub model and hardware stack are available for direct transfer.

6

Measurement Before Scale

189,000+ ALP learners enrolled. **Zero outcome data** from any ALP digital site. The only pre-test/post-test evidence covers 204 secondary students at two schools. Scale-up without EGRA/EGMA baselines is not evidence-based.

Modality Tiers at a Glance

All unit costs are planning proxies from comparable fragile contexts. South Sudan-specific costs must be confirmed before Phase 2 investment allocation. Source: Desk Review; KII Synthesis Matrix (Updated, May 2026).

Tier	Modality	Cost / Child / Year	Investment Decision
TIER 1	Solar radio broadcast (IRI format)	USD 1–5	Deploy now. Commission 50 IRI-format lessons in five national languages. Replace talk-heavy Education on Air scripts.
TIER 1	SD card / USB + printed picture guides	USD 2–8	Deploy now post-QA review only. Freeze distribution of unreviewed content. Only 72 of 361 lessons currently cleared.
TIER 2	USSD / SMS (zero-rated)	USD 1–4	Pilot. Score upgraded 5→7 following MTN MoU (March 2026). Viable on 66.5% feature phone base.
TIER 2	Facilitated offline tablet centre (Kolibri / Junub Academy Model 2)	USD 15–40	Pilot. Facilitation infrastructure must precede hardware. County Digital Learning Hub model co-financed with DHIS2.
TIER 2	Blended OER + teacher communities of practice	USD 5–15	Pilot. IRC vTLC model for CPD in IDP-adjacent contexts. WhatsApp-based with zero-rated access.
TIER 3	Satellite community hub (VSAT)	USD 50–150	Conditional. Cost-sharing with cross-sector partners required. WPDI site data unconfirmed (Data Gap 8: UNRESOLVED).

Three-Phase Strategic Roadmap

This is a dependency chain, not a timeline. Phase 2 cannot begin until Phase 1 governance conditions are met. Phase 3 cannot begin until Phase 2 provides learning outcome evidence.

P1**Phase 1**

Months 0–12 · Governance

USD 67K–112K

- Gazette DLCC (Month 1–2)
- Teacher digital skills baseline TOR
- MTN/Zain MoUs operationalized
- QA review of 361 radio lessons
- EGRA/EGMA MEL framework

Lead: MoGEI, UNICEF, UNESCO, MoICT

P2**Phase 2**

Months 12–36 · Pilot Expansion

USD 610K–1M

- 3 county digital learning hubs
- USSD zero-rated pilot
- ALP pilot with EGRA/EGMA baseline
- Junub Academy ALP extension
- CEC digital CPD programme

Lead: MoGEI, UNICEF

P3**Phase 3**

Months 36+ · Evidence-Based Scale

TBD

- Conditioned on Phase 2 EGRA/EGMA data
- USAF digital learning allocation
- MNO co-financing social good tier
- MoGEI primary funder; UNICEF advisory

Lead: MoGEI (primary), UNICEF, MNOs, USAF

Ten Guided Recommendations

1

Gazette the DLCC as a MoGEI task force within 90 days. Delegate technical functions to an NREN working group under MoICT. (MoGEI, MoICT Phase 1)

2

Map MoICT's mandate and route all infrastructure, interoperability and data-protection questions through MoICT, not education policy alone. (DLCC, MoICT Phase 1)

3

Secure a USAF implementation agency and designate digital learning a priority expenditure category, converting the 2% MNO levy into a recurrent domestic financing stream. (NCA, MoICT, MoGEI Phases 1–3)

4

Operationalize the content QA checklist within 90 days of DLCC establishment and suspend distribution of all unreviewed content immediately. (MoGEI NCDC Technical Review Committee Phase 1)

5

Commission ALP EGRA/EGMA baselines using randomized student selection before any ALP digital scale-up decision. Teacher-selected sampling is prohibited. (MoGEI, UNICEF Phase 1)

6

Stand up the telecom-integrated complementary model zero-rated platform access paired with zero-rated USSD/SMS with outcome tracking built in from inception. (DLCC, MNOs Phase 2)

7 **Build EMIS 2.0 on the DHIS2 offline-first architecture** for emergency-tolerant education data, co-financed with health at county level. (MoGEI EMIS Unit Phase 2)

8 **Establish a population-level teacher digital-skills baseline** and competency framework before allocating CPD investment. (MoGEI, UNESCO Phase 1)

9 **Make gender-disaggregated reporting a non-negotiable data standard** at every digital pilot site. No current programme in the inventory reports this data. (DLCC Phase 2)

10 **Map all partners to the DLCC register** and common content and reporting standards to prevent further fragmentation. (DLCC Phase 1)

Introduction and Methodology

KEY MESSAGE

This analysis provides the evidence base for determining how digital learning can extend access and improve foundational outcomes within South Sudan's specific constraints. It was commissioned by UNICEF under GPE-TESS to inform technology-facilitated learning investment from 2026 onwards.

1.1 Background and Purpose

South Sudan's education system faces a compounded learning crisis: 59 per cent of school-age children are out of school; enrolled Grade 3 learners score 39.1 per cent correct on foundational literacy assessments (GESP 2023–2027). This analysis does not ask whether digital learning is desirable. It asks which digital modalities can function under South Sudan's specific infrastructure, governance and workforce conditions, and what investment sequence will produce learning outcomes rather than reach statistics.

1.2 Methodology: Two-Phase Sequential Design

PHASE 1: DESK REVIEW

31 sources reviewed across six analytical dimensions: delivery conditions, programme capacity, teacher and facilitation, equity and inclusion, governance and financing, and comparable-context evidence.

PHASE 2: PRIMARY RESEARCH

7 primary KII interviews + 7 secondary desk reviews spanning 14 stakeholder organizations. Conducted February–May 2026. Evidence triangulated against Phase 1 findings.

Policy Implication

The analysis identifies ten data gaps that constrain Phase 2 investment planning. Three remain fully unresolved. These are not knowledge limitations they are decision risks that must be resolved, or formally accepted with documented risk, before procurement is approved.

Country Context and the Learning Crisis

KEY MESSAGE

South Sudan's digital learning agenda must start with the learning crisis, not with what technology can theoretically offer. Technology can accelerate that gap or narrow it the design choices made now determine which.

59%

of school-age children out of school

82%

OOSC rate in Unity State highest nationally

39.1%

EGRA score, Grade 3 learners (GESP baseline)

92%

of P3 learners cannot sound a single letter (Montrose, 2016)

2.1 Population and Education Indicators

South Sudan's population of approximately 12.04 million is one of the youngest in the world (median age: 18.7 years). The estimated 4.75 million school-age children represent 39 per cent of the total population demand far exceeding current supply capacity. Approximately 80 per cent of the population lives below USD 1.90/day. Adult literacy stands at approximately 35 per cent, with significant gender and rural-urban disparities. These two indicators poverty and adult literacy are the primary contextual constraints on any digital learning strategy.

2.2 State-Level OOSC Concentration: The Unity/Jonglei Design Test

Out-of-school children are not evenly distributed. Unity (82%) and Jonglei (81%) account for the greatest concentration of unserved learners and the most acute infrastructure deficits. This geographic reality defines a practical test for all modality selection: **any proposed modality must demonstrate it can operate under Unity and Jonglei conditions** no grid electricity, 15–25% mobile broadband, frequent displacement, 2G coverage at best before it can be classified as a primary reach vehicle for South Sudan's most unserved populations.

State	OOSC Rate (6–13)	Mobile Broadband	Primary Modality
Unity	82%	15–25%	Radio, SD card only
Jonglei	81%	17–20%	Radio, SD card only
Warrap	~75%	20–35%	Radio, SD card, facilitated tablet (hub)
Central Equatoria	~35%	60–80%	All modalities viable
Juba (urban)	~25%	80%+, 4G	All modalities viable incl. web platform

Policy Implication

A digital learning programme that performs well in Juba but cannot operate in Unity has not solved the problem it has served the population that already has the most options while bypassing the population with the fewest. The modality selection framework throughout this report treats Unity and Jonglei as the design standard, not the edge case.

2.3 The EGRA/EGMA Lesson: Methodology Determines Evidence Quality

The GPEP 2018 endline recorded a drop in reading comprehension from 43% to 17% not programme regression, but the unveiling of a baseline corrupted by teacher-selected student samples. Some Lakes State sites recorded 100% pass rates at baseline: a statistical impossibility under genuine randomization. **Phase 2 mandates randomized student selection at all EGRA/EGMA assessment points. Teacher-selected sampling is explicitly prohibited.**

Enabling Environment for Digital Learning

KEY MESSAGE

South Sudan's digital infrastructure is more uneven than absent. The challenge is not zero capacity but highly concentrated capacity that mismatches the geographic distribution of educational need. This distinction determines programme design.

7.2%

National electricity access

2%

Schools with reliable electricity

15.8%

Internet penetration

10.5–11%

Smartphone penetration

66.5%

MTN subscribers on feature phones (USSD-capable)

3.1 Connectivity Landscape

Only 4 per cent of the population lives within 10km of a fibre node and only 7 per cent within 50km. South Sudan's road density is the lowest in Africa at 15km per 1,000 sq km. Juba and state capitals have 4G connectivity and commercial broadband. Most counties have 2G at best; Unity and Jonglei have 15–25% mobile broadband coverage. These five indicators together define the outer boundary of digital modality viability: any programme component that assumes connectivity as a baseline condition is not designed for South Sudan it is designed for a different country's conditions transposed onto South Sudan's geography.

3.2 DHIS2 as the Cross-Sector Precedent

The District Health Information System (DHIS2) covers all 80 counties with 1,162 functional facilities reporting. It operates on Android tablets, solar charging cabinets and offline synchronization under exactly the infrastructure conditions education faces. Its four transferable features are: (1) offline-first synchronization; (2) solar charging cabinets eliminating grid dependency; (3) pictorial job aids for low-literacy users; (4) Granular Site Management supervision (coaching visits, not compliance inspections). The county hub model, hardware stack and procurement channels are available for direct adoption by education without new infrastructure investment.

Validated Approach

The MTN–MoGEI–Educare MoU (10 March 2026) confirms that commercial arrangements for public-benefit digital services can be achieved through government-led negotiation. Zain approval is confirmed; Digitel has offered server and hosting services. The design task is integration and sustained operation not invention from scratch.

Digital Learning Programmes and System Capacity

SYSTEM FINDING

South Sudan has 10 digital learning programmes at various implementation stages. The inventory reveals a consistent pattern: **reach is tracked, learning outcomes are not**. No programme at primary or ALP level has published EGRA/EGMA-aligned learning outcome data. The single exception Junub Academy Model 2 operates at secondary level with 204 students across two schools.

Programme	Lead	Modality	Status	Outcome Data
Education on Air II	MoGEI/UNICEF/UNESCO/EDC	Radio + USB/SD card	Active	None
Junub Academy Model 1	MoGEI / Educare	Web platform (zero-rated)	Active	None
Junub Academy Model 2 ★	MoGEI / Educare / UNICEF	Offline tablet + projector	Pilot	Pre/Post ✓
ALP Digital Integration	MoGEI / UNICEF	Tablet-based (planned)	Planned	CRITICAL Gap
IRC ApreDIA + vTLC	IRC / Airbel	AI CPD + WhatsApp	Early pilot	Pending
WPDI Satellite Centres	WPDI / Intelsat	VSAT + Kolibri	Unconfirmed	None
NRC Digital Pilots	Norwegian Refugee Council	Tablet (Jonglei/Unity)	Active	None

★ Junub Academy Model 2 is the only programme with pre-test/post-test learning outcome data in South Sudan.

Active Risk: Content Quality

Only 72 of 361 Education on Air audio lessons (20%) are properly sequenced for primary level. 65% are rated low quality. This content is being distributed now on 3,000+ USB sticks an active risk in a currently operating programme. Distribution must be frozen pending MoGEI NCDC QA review. No further distribution of unreviewed content should proceed.

Facilitation and Teacher Digital Capacity

KEY MESSAGE

Facilitation quality is not a supporting factor in digital learning outcomes in South Sudan it is the primary determinant. Every hardware procurement proposal must include a facilitation infrastructure plan costed and staffed before approval. Hardware without facilitation is not an investment in learning; it is an asset deployment with no outcome pathway.

70%

of primary teachers have no formal training

93:1

National primary pupil-teacher ratio

0

Population-level teacher digital skills baseline

5.1 Six CPD Channels: Architecture, Not a Single Solution

Six CPD channels currently function in South Sudan. No single channel can serve the entire workforce given infrastructure and capacity constraints. A blended architecture combining channels based on connectivity profiles is the only viable approach.

CPD Channel	Reach	Infrastructure Need	Phase Action
Cluster meetings / school-based	All states	None	Phase 1 equip CEC tutors as digital facilitators
County Education Centres (59)	County level	Solar, basic facility	Phase 2 county hub anchor point
Radio (Education on Air)	National incl. Unity/Jonglei	Battery radio only	Phase 1 IRI format upgrade for teacher modelling
SMS / MNO campaigns	4.5M+ reached via MTN	Feature phone + 2G	Phase 1 micro-learning prompts for cluster prep
Junub Academy teacher resources	~588K MTN subscribers	Smartphone + zero-rated	Phase 1 operationalize MTN/Zain MoUs
IRC vTLC + WhatsApp	IDP/host community teachers	Smartphone + intermittent	Phase 2 expand if Central Equatoria pilot shows gains

Policy Implication

MoGEI, Save the Children and UNESCO independently assessed the master trainer cascade model as not feasible at scale as a standalone CPD vehicle. The GESP 2023–2027 relies on it as the primary strategy. Phase 2 must combine cascade structures with digital reinforcement the decentralized mentoring model (7 tutors per county) paired with zero-rated Junub Academy and IRC vTLC for IDP contexts.

Learner Profiles and Structural Exclusion

KEY MESSAGE

Equity in South Sudan's digital learning context is a question of which learner groups are structurally excluded *before a device is ever switched on*. The five profiles below define who must be at the centre of modality design not addressed in equity annexes, but as the primary design standard.

1

PROFILE

Girls in Remote Rural Schools

Girls account for 53% of 2.8 million OOSC. Unity and Jonglei OOSC rates exceed 80%; girls' exclusion is higher than boys' across all states with disaggregated data. Female rural smartphone access is below 8%.

Viable modalities: Radio with community listening groups, take-home SD cards with printed guides, facilitator-led community sessions (not school-fixed). Female facilitator parity required at all sites.

2

PROFILE

Internally Displaced Children

472,452 children (UNHCR 2024). Concentrated in Jonglei, Unity, Warrap, Upper Nile. May move multiple times within an academic year. EMIS cannot track them reliably.

Viable modalities: Radio (no fixed address required), take-home USB sticks that travel with families. Location-fixed modalities (tablet centres, VSAT) structurally excluded for this population.

3

PROFILE

ALP Learners Critical Data Gap

189,000+ enrolled. Zero learning outcome data from any ALP digital site. Over-age learners with lower literacy baselines, operating in community settings without electricity. No national language digital content at ALP level exists.

ACTION: ALP digital investment must be conditional on a commissioned EGRA/EGMA baseline. This is Gap 4: CRITICAL. No procurement before baseline complete.

4

PROFILE

Children with Disabilities

Estimated 190,000–237,500 in school-age cohort (4–5%). No current digital programme has been tested for screen reader compatibility. No content adapted for South Sudan Sign Language. National Inclusive Education Policy (2020) mandates adaptive ICT not operationalized.

Disability-responsive design requirements (audio-first content, pictorial UI, SSSL inserts) must be mandatory in all DLCC-approved content from inception.

5

PROFILE

Nomadic and Pastoralist Children

Concentrated in Lakes, Jonglei, Warrap, Western Bahr el Ghazal. Move across state lines following seasonal grazing circuits. No fixed school, no registration. EMIS cannot track them.

Viable modalities: Battery-powered radio, take-home SD card in waterproof case, printed picture guides only. Any investment plan that excludes these modalities has made a deliberate design decision to exclude this population.

STRUCTURAL EXCLUSION CONCLUSION

Radio and SD card are the only two modalities with structural reach across all five profiles subject to one condition: content must exist in national languages (Bari, Dinka, Nuer, Zande, Toposa). The absence of P1–P3 digital content in these languages is not a content gap; it is an equity gap. It is the binding constraint on Tier 1 deployment.

Governance, Policy and Financing

KEY MESSAGE

South Sudan has a substantial policy framework for digital learning and a critical gap between that framework and operational practice. Seven policy instruments frame the mandate. The implementation mechanisms lag far behind. The DLCC's establishment within 90 days is the single most time-sensitive action in this analysis.

7.1 Policy Framework: Seven Instruments, One Coordination Gap

- **National General Education Policy (2017–2027)**

Mandates ICT literacy for all teachers by 2030 and e-learning curriculum integration (Section 12).

- **GESP 2023–2027**

Prioritizes equity, resilience and innovation; includes e-learning and digitalized inspection systems.

- **National Inclusive Education Policy (2020)**

Mandates adaptive and assistive ICT for learners with disabilities. Not yet operationalized in any digital programme.

- **MoICT ICT Sector Policy (Section 6.3.8)**

Assigns responsibility for the national e-learning framework to MoICT. Infrastructure and regulatory questions route through MoICT, not MoGEI.

- **Cybercrime and Computer Misuse Act (2026)**

Section 42: platform liability implications for digital content administrators. Requires legal review before AI or learner-data platforms are deployed to children.

- **ICT for Education Ministerial Communiqué (2024)**

Signed by 26 Ministers. Calls to integrate e-learning into telecom service. Provides NCA regulatory legitimacy to formalize zero-rating.

7.2 The DLCC: Design Rationale

The DLCC is designed as a MoGEI task force not a GPE programme committee. This is the difference between a governance structure that dissolves when GPE-TESS funding ends in 2028 and one that persists within the ministry's institutional architecture. It reports to Undersecretary level. It is co-chaired by MoGEI ICT Unit and MoICT ICT Policy Directorate, with NCA as regulatory observer.

DLCC MEMBERSHIP AND MANDATE

MEMBERS

- MoGEI (ICT Unit, EMIS, Curriculum Division, Teacher Management)
- MoICT ICT Policy Directorate (co-chair)
- NCA (regulatory observer)
- UNICEF, UNESCO, Save the Children
- MTN South Sudan, Zain South Sudan
- IRC, WPDI

FIVE STANDING MANDATES

- Content quality standard approval
- Digital CPD channel coordination
- EMIS 2.0 digital infrastructure integration
- MNO commercial arrangement oversight
- Data protection protocol development

Secretariat: MoGEI ICT Unit (permanent). UNICEF: technical and financial support, first 24 months. Meeting frequency: monthly Year 1, quarterly thereafter.

7.3 Financing Architecture: Three Streams

PHASE 1–2: GPE-TESS

~USD 27M programme envelope (2024–2028). Phase 1 governance costs (USD 67K–112K) absorbable in current budget. Phase 2 pilots require dedicated allocation.

PHASE 2–3: MNO IN-KIND

Zero-rating MoUs (MTN confirmed, Zain in principle) cover data transmission costs. Extend to device donations, discounted bandwidth and SMS CPD campaigns.

PHASE 3: USAF

2% MNO levy. USD 9M approved for fibre. No implementation agency exists yet. Must be activated in Phase 1 as the government financing pathway for Phase 3 sustainability.

Lessons from Comparable Contexts

KEY MESSAGE

Four lessons recur across all six cases: facilitation determines outcomes; offline-first is achievable at scale; commercial partnerships for zero-rating are negotiable; and government stewardship determines sustainability. DHIS2 is not a comparable-context analogy it is operational proof from the same country under the same conditions.

EASTERN DRC

IRC/UNICEF facilitated tablets

Facilitation quality was the primary predictor of learning gains not device quality or content volume. Sites with consistent facilitation showed measurable gains; sites without did not, despite identical hardware. Operating conditions comparable to South Sudan's ALP and IDP contexts.

SOMALIA

UNICEF/BBC Media Action
IRI radio

IRI format radio reached 1.5 million learners. Facilitator attendance tracking was the key operational variable sessions with a trained facilitator showed significantly higher engagement than passive household listening. The Somalia IRI template is directly applicable to Education on Air redesign.

KENYA & RWANDA

Safaricom / MTN Rwanda
USSD zero-rating

Confirms that the South Sudan MTN MoU (March 2026) model is replicable without net-neutrality legislation. Government-MNO agreement designating specific short codes as public benefit services is the regulatory mechanism. USSD reaches the 2G footprint where 66.5% of subscribers use feature phones.

SOUTH SUDAN: DHIS2

Offline-first, all 80 counties

Highest-weight evidence. DHIS2 operates across all 80 counties (1,162 facilities) under 7.2% electricity and 15.8% internet penetration the same conditions education faces. The four transferable features (offline sync, solar cabinets, pictorial job aids, GSM coaching visits) are proven in South Sudan's actual environment, not comparable contexts. The DHIS2 team explicitly recommended co-financing with education at county level.

On Artificial Intelligence

AI applications that require continuous cloud connectivity are non-starters for the learners this analysis centres. IRC's AprenDIA + vTLC (teacher-facing, asynchronous) demonstrates the correct entry point. Four near-term AI applications are viable within the six principles: dropout early warning (rules-based), AI-assisted content localization, on-device adaptive practice (Kolibri-class), and WhatsApp-based CPD chatbots. All are subject to Principle 6: the DLCC's data protection mandate must precede any learner-level AI data collection.

Six Digital Learning Principles for MoGEI and UNICEF

These six principles define the binding logic for all investment decisions. They are derived from operational evidence, not aspiration. **All six operate as a system.** A programme satisfying Principles 1–3 but not Principle 4 will not survive the GPE-TESS cycle. One satisfying 1–4 but not Principle 6 cannot be scaled responsibly. They are not a menu.

1 Offline-First Is an Equity Requirement

Electricity access: 7.2% nationally. Only 2% of schools have reliable electricity.

Internet penetration: 15.8%. Only 4% live within 10km of a fibre node.

Smartphone penetration: 10.5–11%. Female rural access below 8%.

Road density: Lowest in Africa at 15km per 1,000 sq km of arable land.

These five indicators define the outer boundary of digital modality viability. Radio broadcast and SD card distribution are the primary delivery infrastructure for the 2.8 million OOSC. All other modalities are supplements to that base not replacements for it. Offline-first is not a fallback; it is the design starting point.

2 Structurally Excluded Learners Set the Design Standard

Girls (53% of OOSC), 472,452 IDP children, 189,000+ ALP learners, children with disabilities, nomadic populations and children in Unity (82% OOSC) and Jonglei (81% OOSC) must be the primary test for any proposed modality.

The Unity/Jonglei Design Test

A modality that cannot function under no grid electricity, 15–25% mobile broadband, frequent displacement and 2G coverage at best cannot be the primary reach vehicle for South Sudan's most unserved populations. Structural exclusion must be named explicitly in modality selection decisions, not softened in equity annexes.

3

Facilitation Determines Outcomes, Not Hardware

WARRAP (JUNUB ACADEMY)

22% → 71%

Pass rate with dedicated facilitator

CUEIBET (JUNUB ACADEMY)

30.3% → 75.5%

Pass rate with dedicated facilitator

EASTERN DRC (IRC)

0% gains

Unmonitored sites with same hardware

Rule: Every hardware procurement proposal must include a facilitation infrastructure plan costed and staffed before it is approved by the DLCC. Hardware without facilitation infrastructure is not an investment in learning; it is an asset deployment with no outcome pathway.

4

Governance Before Scale

The Technical Review Committee mandated by MoGEI NCDC is not yet operational. As a direct consequence, 65% of 361 audio lessons distributed on 3,000+ USB sticks are rated low quality. No teacher digital competency framework is in active use. These are not implementation gaps that faster rollout resolves they are the conditions that determine whether any investment can be sustained after GPE-TESS ends in 2028.

90-Day Clock

The DLCC must be formally gazetted within 90 days of this report's finalization. This is an administrative act requiring no new budget or staffing. It is the single most time-sensitive recommendation in the entire analysis. This is the prerequisite for all Phase 2 investment.

5

Use What Already Works in This Environment

DHIS2 operates across all 80 counties under exactly the conditions education programmes face. It is not a comparable context analogy it is operational proof from the same country. The county hub model, GSM supervision approach, Android tablet/solar cabinet hardware stack and offline-sync architecture are available for direct transfer to education without new infrastructure investment.

Android tablets

USD 80–120/unit

Solar cabinets

USD 200–400/unit

Power banks

USD 15–25/unit

Offline sync

via GSM

189,000+ ALP learners are enrolled. Zero outcome data exist from any ALP digital pilot site. The GPEP endline revealed that teacher-selected student samples had produced inflated baselines some Lakes State sites recorded 100% pass rates, a statistical impossibility under genuine randomization. When randomized sampling was applied at endline, reading comprehension dropped from 43% to 17%.

Mandatory Standards for All Phase 2 MEL

- EGRA/EGMA baseline required before any Phase 2 procurement is approved
- Randomized student selection is mandatory at all assessment points
- Teacher-selected sampling is explicitly **prohibited**
- Control group design at all pilot sites
- ALP digital investment conditional on a commissioned baseline enrolment data is not sufficient

Critical Risks: Unresolved Data Gaps

RISK SUMMARY

Of ten data gaps identified in Phase 1, none were fully closed by KII evidence. Six achieved partial resolution, three remain unresolved and one was addressed through quality data. These are not knowledge limitations they are active decision risks. The total cost of closing all gaps: **USD 67,000–112,000** a fraction of the Phase 2 pilot budget of USD 610,000–1,000,000 that depends on them being resolved.

#	Risk / Data Gap	Severity	Status	Mitigation Action (Phase 1)
R1	ALP Learning Outcomes 189,000+ learners, zero outcome data	CRITICAL	UNRESOLVED	Commission ALP EGRA/EGMA baseline through MoGEI and OPM. Control group design. Randomized selection. No ALP procurement before baseline complete. Blocks all Phase 2 ALP investment.
R2	Teacher Digital Skills Baseline No population-level baseline exists	HIGH	PARTIAL	Commission baseline within 90 days of DLCC. Joint MoGEI–UNESCO lead. Estimated USD 40,000–70,000. Contextualized ICT-CFT Level 1 rubric. Without this, all CPD investment is misallocated.
R3	South Sudan Unit Cost Data 3–5x variance in proxy estimates	HIGH	UNRESOLVED	Commission unit cost study (Month 3–6) for radio, SD card, USSD and facilitated tablet. Account for 45% import tax, logistics and security constraints. Required before Phase 2 budget finalization.
R4	USAF Implementation Gap USD 9M approved, no implementation agency	HIGH	PARTIAL	NCA to prioritize implementation mechanism. MoGEI to designate education as priority category. DLCC to include USAF as standing agenda item. Blocks Phase 3 government financing pathway.
R5	Content Quality (Active Risk) 65% of content rated low quality, distributed now	HIGH ACTIVE	PARTIAL	Immediate action required. Operationalize QA checklist within 90 days of DLCC. Freeze all unreviewed content distribution. Prioritize 72 cleared lessons for redistribution. Commission 50 IRI-format lessons in 5 national languages.

Three-Phase Strategic Roadmap

DEPENDENCY LOGIC

This is a dependency chain, not a timeline. Phase 2 cannot begin until Phase 1 governance conditions are met (Principle 4). Phase 3 cannot begin until Phase 2 provides EGRA/EGMA evidence of learning gains (Principle 6). Phase boundaries are decision gates not calendar milestones.

P1

Phase 1: Governance Foundation and Evidence Base

Months 0–12 · Lead: MoGEI, UNICEF, UNESCO, MoICT

USD 67,000–112,000

Governance & evidence investment

ACTIONS

- **Month 1–2:** Gazette DLCC directive. Sign MoGEI–MoICT inter-ministerial MoU.
- **Month 2–3:** Issue TOR for teacher digital skills baseline (joint with UNESCO).
- **Month 1–3:** Operationalize MTN MoU; complete Zain negotiation; formalize Digitel hosting.
- **Month 2–4:** QA review of all 361 radio/USB lessons. Freeze distribution of 289 unreviewed.
- **Month 1–6:** Integrate EGRA/EGMA MEL framework into all Phase 2 pilot designs.
- **Month 3–6:** Commission South Sudan unit cost study (radio, SD, USSD, tablet).

BUDGET BREAKDOWN

DLCC secretariat support	USD 15,000–25,000
Teacher digital skills baseline	USD 40,000–70,000
Content QA review	USD 12,000–17,000

P2**Phase 2: Pilot Expansion and System Integration**

Months 12–36 · Lead: MoGEI, UNICEF · Conditioned on Phase 1 governance

USD 610,000–**1,000,000**

Pilot investment envelope

SIX PILOT ACTIONS

- **Action 7:** 3 County Digital Learning Hubs (Jonglei, Unity, Warrap) co-located with DHIS2 precede with county readiness assessment.
- **Action 8:** USSD learning pilot in Central Equatoria. Track usage, interaction depth, dropout points.
- **Action 9:** ALP digital pilot with EGRA/EGMA baseline. Control group mandatory. No procurement before baseline.
- **Action 10:** Junub Academy extension to ALP and 5 national languages.
- **Action 11:** CEC digital CPD pilot (3 states). DHIS2 GSM supervision model adapted for education.
- **Action 12:** 5,000 USB sticks (post-QA content only) to flood-affected schools in Jonglei, Unity, Warrap.

BUDGET BREAKDOWN

County hub infrastructure (3 pilots)	USD 200–350K
ALP baseline and pilot	USD 120–200K
National language content	USD 150–250K
CPD mentoring programme	USD 80–120K
USB distribution (QA content only)	USD 60–80K

P3**Phase 3: Evidence-Based Scale-Up**

Months 36+ · Lead: MoGEI (primary) · Conditioned on Phase 2 evidence

TBD

Conditioned on Phase 2 EGRA/EGMA evidence

Phase 3 scale-up requires three evidence conditions to be met all three, not one:

EVIDENCE GATE 1

ALP digital pilot shows measurable EGRA/EGMA gains over control group with randomized student selection confirmed.

EVIDENCE GATE 2

3 county hubs operational: monthly sync rate $\geq 80\%$; facilitator attendance $\geq 70\%$; DHIS2-comparable data quality.

EVIDENCE GATE 3

DLCC operational, meets at scheduled frequency, has approved at least one content quality standard and one CPD framework.

Risk Mitigation Framework

KEY MESSAGE

Scaling digital learning in South Sudan involves three intersecting risk categories: Technical, Logistical and Social. Each requires specific mitigation strategies. The DLCC Risk Register, updated quarterly, is the accountability mechanism for tracking and responding to these risks across all Phase 2 pilot sites.

TECHNICAL RISKS: DEVICE AND INFRASTRUCTURE FAILURE

- **Device failure in field conditions** → Community-based hardware stewardship (CEC Steward role); three-tier maintenance protocol; pictorial maintenance guides in national languages.
- **Solar power degradation** → Monthly inspection protocol; 5-year replacement budget line in DLCC asset register; DHIS2 solar cabinet supplier framework adopted.
- **Content obsolescence** → Pre-loaded SD card master library updated quarterly by county officer; open-source Creative Commons licensing on all DLCC content.
- **Platform liability under Cybercrime Act (2026)** → Legal review of Section 42 provisions before any AI-enabled platform deployed; DLCC data protection protocol operationalized.

LOGISTICAL RISKS: SUPPLY CHAIN, ACCESS AND CAPACITY

- **Flooding disruptions (July–October)** → Pre-positioned emergency content inventory on SD cards cleared by QA before flood season; radio content maintained as standing distribution channel; hub sites selected above flood line.
- **45% import tax on devices** → Procurement through DHIS2 government supply chain (co-procurement with MoH); DLCC to request MoF tax exemption for educational devices.
- **Security access constraints in Jonglei/Unity** → County readiness assessment before hub site selection; 5-criteria scoring (staffed CEC, DHIS2 hub nearby, secure storage, functioning CEC, EMIS reporting discipline); counties meeting <4 criteria deferred to Phase 3.
- **County education officer capacity gaps** → Hub site selection conditioned on readiness assessment; DHIS2 sync rate and EMIS submission history as proxy indicators for county administrative capacity.

SOCIAL RISKS: ACCEPTANCE, CHILD SAFETY AND GENDER DYNAMICS

- **Community acceptance of digital content** → School Management Committee (SMC) asset agreements signed at site inception; content in national languages, reviewed by MoGEI NCDC; community facilitators drawn from local population.
- **Device theft and security** → SMC asset agreements reduce device loss 40–60% (IRC Kenya/DRC evidence); lockable storage mandatory; secure storage included in county readiness checklist.
- **Systematic exclusion of girls** → Female facilitator parity at all sites; take-home SD card packs for girls who cannot attend; session timing flexibility (morning and late afternoon); gender-disaggregated outcome data mandatory.
- **Child online safety** → DLCC data protection protocol before any online platform deployed; no biometric data; Cybercrime Act 2026 compliance review; IRC safeguarding standards applied at all sites in absence of national Data Protection Act.

Sustainability and Ownership Model

KEY MESSAGE

The most common failure mode in EdTech deployments in fragile states is not the technology it is the handover. The sustainability model proposed here operates across three dimensions: institutional ownership, technical maintenance and financial continuity. All three must be established in Phase 1 before GPE-TESS funding ends in 2028.

13.1 Institutional Ownership: MoGEI as Digital Learning Principal

The DLCC is embedded in MoGEI's senior management structure reporting to Undersecretary level rather than housed in a project management unit that dissolves when funding ends. Phase 1 actions: gazette DLCC with five standing mandates; establish digital asset register under EMIS Unit; assign a named MoGEI Digital Learning Officer at Director level; require all programme designs to include exit and handover strategies as mandatory documentation.

13.2 Technical Maintenance: Community-Based Hardware Stewardship

Each County Digital Learning Hub designates a Digital Hub Steward: a CEC-trained officer responsible for monthly device health checks, first-level troubleshooting using pictorial guides and escalation to state-level ICT officers. The role is added to an existing CEC position, compensated by a small monthly stipend (USD 15–25) consistent with DHIS2 county officer practice. Three-tier maintenance protocol: Tier 1 (CEC Steward, monthly); Tier 2 (State ICT Officer, quarterly); Tier 3 (UNICEF/supplier, annual hardware audit).

Phase	Ownership Milestone	Technical Milestone	Financial Milestone
Phase 1 Months 0–12	DLCC gazetted; Digital Learning Officer named; asset register established in EMIS.	Pictorial maintenance guide developed; 2 solar technicians trained per state.	USAF digital learning priority designation requested; MNO Phase 2 in-kind agreement scoped.
Phase 2 Months 12–36	MoGEI independently convenes DLCC; exit strategies in all pilot TORs; SMC asset agreements at all sites.	Hub Steward tier operational in all pilot counties; quarterly Tier 2 audits; first annual hardware audit completed.	USAF co-financing for battery replacement formalized; MNO device donation agreement signed; open-source content library established.
Phase 3 Months 36+	Full DLCC secretariat transfer to MoGEI ICT Unit; UNICEF advisory role only; MoGEI reports independently to GPE Results Framework.	Community-based maintenance operating without external support; supplier annual audits under warranty.	Digital learning in MoGEI annual budget line; USAF digital education allocation active; MNO zero-rating and SMS CPD sustained.

Financing Beyond 2028

The recommended path uses donor financing (GPE-TESS) to build and prove the system in Phases 1 and 2, transfers recurrent financing to the government model through a USAF digital learning allocation in Phase 3, and sustains private in-kind contributions for connectivity throughout with the DLCC holding the blend together. Financial sustainability is ultimately a political decision: it requires MoGEI and MoF to allocate a domestic budget line to digital learning before GPE-TESS ends. The Digital Learning Officer role created in Phase 1 is designed to create that domestic champion before external funding ends.

Technical Annexes A–E

ANNEX A • DATA GAPS REGISTER

Phase 2 Planning Constraints Tracker

This tracker flags the three data gaps that directly constrain Phase 2 investment decisions. They must be resolved or formally accepted with documented risk before procurement is approved. Each gap is rated by Severity (CRITICAL / HIGH / MEDIUM) and Resolution Status. This tracker is a living document; it must be updated at each DLCC quarterly meeting.

GAP 4: ALP Learning Outcomes CRITICAL • UNRESOLVED**BLOCKS PHASE 2**

189,000+ enrolled. Zero outcome data. Blocks all ALP digital investment in Phase 2. Mitigation: commission EGRA/EGMA baseline via MoGEI and OPM before any procurement. Control group design. Randomized selection mandatory.

GAP 5: South Sudan Unit Costs HIGH • UNRESOLVED**BUDGET RISK**

3–5x variance in proxy estimates. 45% import tax and security-logistics costs not yet measured for South Sudan. Mitigation: unit cost study Months 3–6 covering radio, SD, USSD, facilitated tablet. Required before Phase 2 budget finalization.

GAP 8: WPDI Satellite Site Data HIGH • UNRESOLVED**CONDITIONAL**

Exact site count, costs and learning outcomes not confirmed. Primary reason VSAT is classified Tier 3 Conditional. Mitigation: WPDI to provide data to DLCC at inaugural meeting. Cost-effectiveness assessment required before any VSAT investment.

Six Minimum Indicators for Phase 2 Digital Learning Investment

Calibrated to the data gaps in this analysis, the MEL design lessons from GPEP and EGRA/EGMA evaluations, and the EMIS 2.0 transition. These are minimum standards not optional enhancements.

- 1 % of digital learning pilots with EGRA/EGMA baseline** Target: 100% of Phase 2 pilot sites. Randomized selection. Baseline before procurement approved.

- 2 Facilitator attendance rate at digital learning sites** Target: ≥70% sessions with trained facilitator present. Monthly paper register with quarterly verification visit.

- 3 Gender-disaggregated enrolment at digital pilot sites** Target: parity reporting at 100% of sites. Non-negotiable data standard. Currently absent from all programmes.

- 4 Content QA compliance rate** Target: 100% of content at active sites cleared by MoGEI NCDC TRC. Zero tolerance for unreviewed content at pilot sites.

- 5 County hub monthly data sync rate** Target: ≥80% sites syncing monthly. Primary operational viability indicator for hub model. Reported quarterly to DLCC.

- 6 EGRA/EGMA post-test learning gains vs. control** Target: statistically significant gains with control group comparison. This is the decision gate for Phase 3. Without it, scale-up decisions are not evidence-based.

Evidence Collection: 7 Primary KIIs + 7 Secondary Desk Reviews

Evidence collection combined seven primary Key Informant Interviews with seven secondary desk research reviews conducted between February and May 2026. Scope followed a structured gap analysis against the ToR's six dimensions after Phase 1 desk review completion.

PRIMARY KII RESPONDENTS (7 INTERVIEWS)

- MoICT ICT Policy Directorate
- MTN South Sudan
- Educare Organisation / Junub Academy
- MoGEI Teacher Management Directorate
- MoGEI Curriculum Division / NCDC
- MoGEI EMIS Unit
- DHIS2 / Ministry of Health South Sudan

SECONDARY DESK REVIEWS (7 REVIEWS)

- Save the Children International
- UNESCO South Sudan
- IRC ApreDIA + vTLC programme docs
- WPDI programme documentation
- Zain South Sudan
- NRC digital pilot documentation
- JWL Humanitarian eLearning Platform

Technology-Facilitated Learning in South Sudan: Programme Logic

PROBLEM STATEMENT

South Sudan's education system faces a compounded learning crisis: 59% of school-age children out of school; Grade 3 learners score 39.1% on foundational literacy; 92% cannot decode a single letter; 45% score zero on reading comprehension. Technology cannot fix this without trained humans mediating the content, without governance ensuring quality, and without evidence confirming that the intervention reaches the learning gap rather than the connectivity map.

IF (INPUTS + ACTIVITIES)

DLCC established, governance framework in place, EGRA/EGMA baselines commissioned, QA content produced in national languages, facilitation infrastructure costed and deployed, cross-sector co-financing activated.

THEN (OUTPUTS + OUTCOMES)

Structurally excluded learners (girls, IDPs, ALP, nomadic, CwD) access quality-assured digital content; teachers receive evidence-based CPD through blended channels; county hubs produce reliable education data; EGRA/EGMA gains documented above control.

LEADING TO (IMPACT)

Measurable improvement in foundational literacy and numeracy for enrolled and out-of-school learners in South Sudan's most underserved states; government-owned, domestically financed digital learning system sustained beyond GPE-TESS 2028 funding cycle.

South Sudan Digital Learning Landscape Analysis · Technical Report · June 2026

Ministry of General Education and Instruction (MoGEI) · UNICEF South Sudan · GPE-TESS Programme

Author: James Obua Otoa, EdTech Strategist · Under the supervision of the UNICEF South Sudan Education Specialist