Koloso

Pedagogical rationale

Teaching Support System for African Primary and Secondary Schools | Version 4 | March 2026

1. Purpose of this document

This document sets out the pedagogical rationale underpinning Koloso's design as a Teaching Support System (TSS) for primary and secondary schools across sub-Saharan Africa. It explains why Koloso is designed the way it is, which established bodies of research and pedagogical evidence inform that design, and how the product's core components connect to known mechanisms for improving teaching quality and, through it, student learning outcomes.

This rationale draws on Koloso's founding Theory of Change (2023) and the company's engagement with the EdTech Hub's Evidence for Entrepreneurs programme. It reflects the evolution of the product from its initial assessment-focused K1 architecture to the full K2 teaching loop described below. It is intended as a living document, to be updated as the evidence base develops.

Koloso does not deliver learning content directly to students. It supports teachers to plan better lessons, deliver them with greater structure and confidence, assess student understanding more systematically, and act on that evidence in subsequent teaching. The impact pathway is:

> **Impact pathway**
>
> Better-supported teachers → improved classroom practice → more targeted and better-paced student instruction → improved student learning outcomes.

2. The problem Koloso is designed to address

2.1 A market shaped by megatrends

Sub-Saharan Africa faces converging demographic and structural pressures on its education systems. Population growth means that by 2050, one in three children on the planet will be living in Africa — with the number of school-age children in the region projected to rise from 496 million (2015) to 661 million (2030). Rapid urbanisation is simultaneously shifting populations away from subsistence livelihoods and increasing demand for employment-ready skills.

At the same time, expanding digital infrastructure — with near-universal 3G+ coverage projected across the region by 2030 and smartphone penetration approaching 50% — is creating the technical conditions for scalable edtech solutions. Koloso is designed and positioned to grow with this expanding market, not ahead of it.

2.2 The learning quality crisis

Sub-Saharan Africa's education system faces a severe and well-documented learning quality crisis. UNESCO data indicate that the majority of primary-age children in low- and middle-income African countries cannot read or understand a simple story by the age of ten; similar deficits exist in foundational numeracy. More than 84% of students in sub-Saharan Africa are not proficient in reading or mathematics by the end of primary school (UN, cited in RTI 2023). This is not primarily a curriculum design problem — most countries have well-structured national curricula. It is a problem of implementation at classroom level.

Research on systemic drivers of foundational learning outcomes identifies the root cause precisely: learning is relatively invisible in school systems that track inputs and processes (buildings, enrolment, syllabus coverage) rather than what children are actually learning. Intervening in the 'managerial' system — academic support, parental engagement, goal setting and monitoring — is where evidence suggests the greatest possibility of change lies (Systemic Drivers of FLN, Foundational Learning.in, 2022).

Three interconnected classroom-level drivers compound this systemic failure:

- Weak lesson preparation: teachers frequently lack structured, curriculum-aligned planning tools, resulting in unfocused or content-light lessons.
- Limited pedagogical guidance: especially in under-resourced settings, teachers lack practical guidance on how to deliver specific content, manage mixed-ability classes, or use time effectively.
- Insufficient use of formative assessment: where assessment tools exist, they are rarely designed to generate actionable data that teachers can use to adapt their practice in the near term.

These are resource and support problems, rather than teacher motivation or ability problems. Research by Piper, Sitabkhan et al. (RTI International, 2018–2022) demonstrates that when teachers are provided with structured, curriculum-aligned support materials, student learning outcomes improve significantly and at scale without requiring expensive infrastructure.

3. From assessment tool to teaching support system

Koloso's product evolution has been driven entirely by listening to schools. The founding K1 product (2023–25) established Koloso's core capability: a structured, curriculum-aligned digital assessment tool that gave teachers actionable learning gap data, presented clearly at student and class level. Schools valued this. But what they consistently asked for was more - not just data about where students were falling behind, but guidance on what to do about it.

The transition from K1 to K2 is therefore not a change of direction. It is the logical, demand-led extension of the same impact model, from assessment to the full teaching loop that makes assessment meaningful.

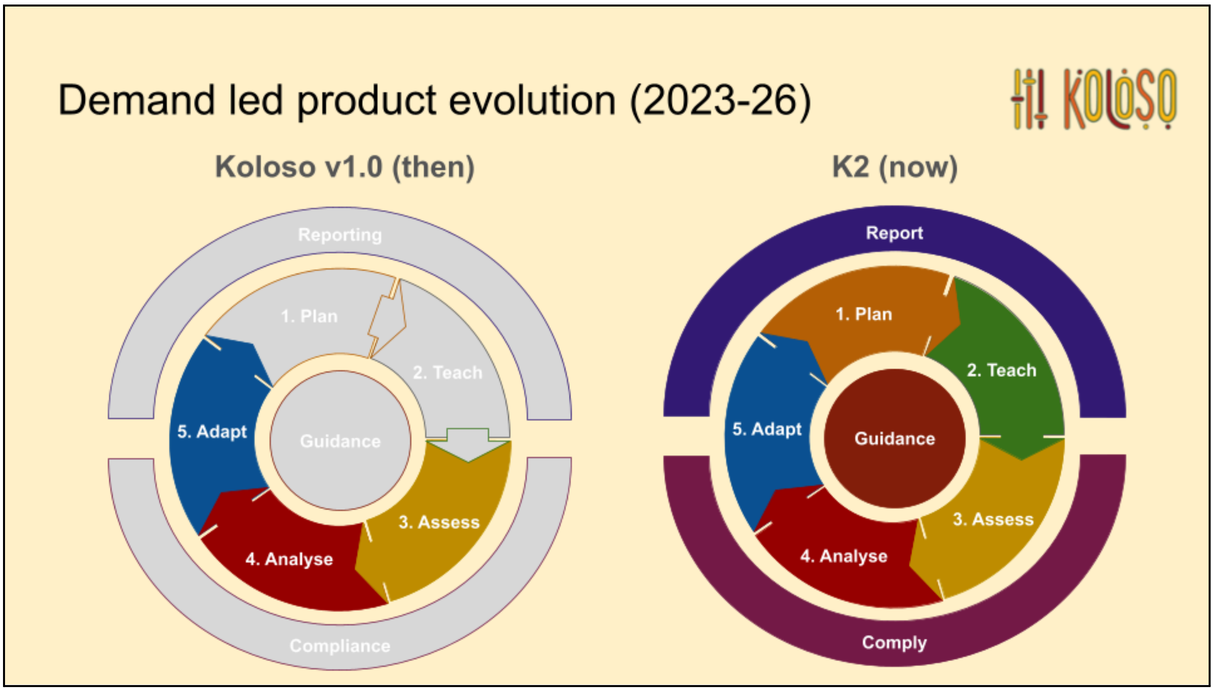

Figure 1: Koloso product evolution 2023–26. K1 (left) established the assessment core with Reporting and Compliance outer rings. K2 (right) completes the full teaching loop — Plan, Teach, Assess, Analyse, Adapt — with Guidance at the centre, and Report and Comply as the accountability layer.

The five inner stages of the teaching loop and Guidance at the centre are present in both K1 and K2. In K1 these were partially implemented, with the product's primary strength in the Assess and Analyse stages. K2 fully activates all five stages, adding structured lesson planning tools (Plan), pedagogically grounded micro-guidance notes (Teach and Guidance), and adaptive next-step prompts (Adapt). The outer Comply ring, partial in K1, becomes a fully developed module in K2 — supporting TCZ competency standards in Zambia and equivalent obligations in other markets.

Demand-led evidence

The evolution from K1 to K2 was driven by direct feedback from Koloso's 50+ subscribing schools. The 100% renewal rate is evidence not only of K1's impact but of school leader confidence in Koloso's direction of travel. Schools do not renew products that teachers do not use or that do not improve their work.

4. Theory of change: The K2 teaching loop

Koloso's founding Theory of Change (2023) identified two overarching objectives: sustainable change (delivered through a commercially viable product that teachers, students, and parents genuinely want to use) and impact at scale, through a solution adapted to the particular circumstances of the sub-Saharan Africa market.

K2 is the full realisation of this model.

Stage	What Koloso provides
PLAN	Curriculum-aligned lesson planning tools structured to national syllabi (Zambia ECZ, South Africa CAPS, Nigeria, Uganda). Teachers move from curriculum objective to planned lesson within a structured workflow, with built-in prompts and guidance.
TEACH	Micro-guidance notes for specific learning objectives — concise, practical guidance on how to deliver content, including suggested activities, common misconceptions, and differentiation prompts for large classes.
ASSESS	Embedded formative assessment items aligned to specific learning objectives taught, enabling teachers to check understanding during and immediately after teaching.
ANALYSE	Simple tools for teachers to interpret assessment results at class level — identifying which students or groups need further support and on which specific objectives.
ADAPT	Guidance on responsive next steps: reteaching, consolidation activities, or extension — enabling teachers to close identified gaps before moving on.
REPORT	Structured progress data for school leaders and parents, automatically generated from teaching and assessment activity.
COMPLY	Alignment to national teacher competency and curriculum monitoring requirements, including TCZ professional standards in Zambia.

Koloso's commercial evidence to date is consistent with this theory of change. A 100% school renewal rate across 50+ subscribing schools in four countries indicates that school leaders and teachers are experiencing genuine value from the product's impact on teaching practice.

5. Research foundations

5.1 Structured pedagogy and curriculum-aligned teacher support

The most direct research base for Koloso's design comes from the structured pedagogy literature. RTI International's evaluations in Kenya, Uganda, and Ethiopia (Piper et al., 2018; Sitabkhan et al., 2019) found effect sizes of 0.3–0.6 standard deviations on literacy and numeracy outcomes when teachers received structured curriculum-aligned materials — without changes to class size, qualifications, or infrastructure. The mechanism was improved lesson quality.

Complementary evidence on targeted instruction (EdTech Hub / J-PAL, 2021) demonstrates that programs which target instruction to students' current learning level, made possible by reliable assessment data, produce consistent learning gains, particularly for the most disadvantaged students. Koloso's teaching loop is designed to enable exactly this: assess, identify gaps, adapt instruction accordingly.

In the UK context, White Rose Maths — the curriculum-led teacher support model most analogous to Koloso's approach — has become the dominant primary mathematics resource in England, cited in EEF evaluations as consistent with effective practice. The fundamental principle that curriculum-aligned, sequenced teacher guidance improves lesson quality is directly embedded in Koloso's K2 architecture.

5.2 Formative assessment and assessment-informed instruction

The role of formative assessment in improving learning outcomes is among the most robust findings in educational research. Black and Wiliam's seminal review (1998) synthesised evidence from over 250 studies and found that improving formative assessment practice produces effect sizes equivalent to moving a student from the 50th to the 70th percentile.

RTI International's research on assessment-informed instruction (Science of Teaching, 2023) reinforces the point that what matters most is not assessment itself but the use of assessment results to modify subsequent teaching. Four well-documented challenges stand in the way of teachers doing this effectively: not knowing what to assess and when; not having time; not being able to track results; and not knowing how to act on findings. Koloso's teaching loop directly addresses all four: assessment items are pre-built and curriculum-aligned (what and when); they are embedded in the lesson flow (time); results are structured and aggregated at class level (tracking); and the Adapt stage provides explicit next-step guidance (action).

Rachel Jordan (RTI International) has observed directly that 'technology is a good fit solution for capturing formative assessment data, as new assessments can easily be added to an app-based tracker … algorithms can remove much of the analysis work for teachers while also generating actionable feedback.' This is precisely the role Koloso is designed to play.

Hattie's (2009) meta-analysis across 800+ studies confirms that formative evaluation and teacher feedback are consistently among the highest-impact practices across educational contexts. Koloso's K1 product established structured assessment data and learning gap analysis as its core capability; K2 ensures that assessment results drive the full teaching loop.

5.3 Rosenshine's Principles of Instruction

Rosenshine (2012) synthesised cognitive science and classroom observation research into ten evidence-based principles for effective instruction, including beginning lessons with a short review of prior learning, presenting new material in small steps, and checking for student understanding frequently. Koloso's micro-guidance notes are structured around these principles: each note provides a lesson opening for prior knowledge activation, a sequenced teaching progression, embedded check questions, and a consolidation close.

5.4 Teacher professional development and reflective practice

Koloso functions as an embedded professional development tool. The teaching loop structure reflects Schön's (1983) concept of reflective practice — professional learning through cycles of planning, action, and structured reflection. Joyce and Showers' (2002) research confirms that sustainable changes in classroom practice require ongoing, job-embedded support rather than periodic training events. Koloso provides this support at the point of need — when a teacher is planning a lesson.

5.5 Curriculum coherence and content-specific guidance

Research on curriculum coherence consistently identifies it as a significant predictor of learning outcomes (Schmidt and Houang, 2012). Koloso's curriculum mapping, which aligns all planning and guidance tools to national syllabi at the learning objective level, ensures that teacher support is precisely calibrated to the specific content being taught. Kennedy (1998) found that transfer of pedagogical training is greatest when training is content-specific rather than generic — Koloso's guidance addresses individual learning objectives, not subjects in the abstract.

5.6 Three-stakeholder learning alliance

Koloso's founding Theory of Change identified a distinctive design principle: that learning is most effective when it is a shared experience involving students, teachers, and parents working in alliance. Evidence confirms that programs making education-related information available to parents increase learning outcomes at low cost, and that parental engagement positively affects academic achievement, behaviour, and motivation (EdTech Hub, Providing Information to Parents or Students, 2021). The K2 Report and Comply modules create the structured communication channels that make this alliance operational.

6. Design for African classroom contexts

Koloso's founding principle, as stated in its original Theory of Change, is that it is 'structured, designed and built with the circumstances of the sub-Saharan Africa target market in mind, giving an immediate adaptation advantage over more established edtech providers.' Research confirms that contextually-adapted materials outperform imported generic ones (Vavrus and Bartlett, 2013), and that the best technology in low-income settings is the one already available, known how to use, and affordable (World Bank ICT principles, 2010).

Design area	Challenge in SSA context	Koloso's design response	Research basis
Language	English is often teachers' second or third language	Guidance written at Grade 8 reading level or below; plain, direct language throughout	USAID language-of-instruction research; RTI literacy programme design
Class size	Classes of 60–80+ are common in government and low-fee private schools	Micro-guidance notes include specific variations for large classes	Structured pedagogy literature (Piper et al.)
Resources	Limited printed materials; unreliable electricity and connectivity	Activities designed for zero-resource delivery; app works on low-bandwidth connections	World Bank ICT principles; UNESCO low-resource classroom research
Curriculum	National syllabi vary significantly and are not interchangeable	Full mapping to ECZ (Zambia), CAPS (South Africa), Nigerian and Ugandan national curricula at LO level	Curriculum coherence research (Schmidt & Houang)

Compliance	Teachers face accountability obligations (e.g. TCZ in Zambia)	Planning and assessment tools mapped to TCZ professional competency standards	Teacher accountability frameworks
Cultural fit	Learning as shared, person-to-person experience; family involvement valued	Product designed around school-teacher-parent data alliance; collaborative and competitive elements built in	Koloso ToC (2023); Epstein partnership model

7. Koloso's evidence framework and research agenda

7.1 Three dimensions of evidence

Koloso's evidence-driven approach, developed through engagement with the EdTech Hub's Evidence for Entrepreneurs programme (Cohort 5, March–June 2024), is organised around three dimensions:

	Dimension	How Koloso engages
1	Evidence base: the pre-existing knowledge about how technology can be used effectively in education	Koloso's product design and development is grounded in the evidence base set out in Section 5 of this document. This includes structured pedagogy research, formative assessment literature, Rosenshine's principles, and EdTech Hub curated research summaries.
2	Evidence building: activities that improve knowledge of how technology can be used effectively	Koloso generates evidence through real-world deployment: adoption data, renewal rates, and the structured impact study underway in Q2–Q3 2026. As usage scales, Koloso will contribute to the evidence base for what works in teacher support tools in African primary schools.
3	Evidence uptake: how evidence is used to inform decision-making at school and policy level	Koloso enables evidence uptake at the school level (teachers use assessment data to adapt instruction), the meso level (school leaders use progress reports to manage teaching quality), and potentially the macro level (aggregated anonymised data can inform system-level interventions).

7.2 Koloso's five key evidence questions

Koloso is committed to building evidence that answers five specific questions about its real-world impact, formulated at the outset of the evidence programme:

- Does using Koloso lead to a sustained impact on learning outcomes?
- Does Koloso work for the most marginalised children and enhance equity?
- Is it feasible to scale Koloso in a cost-effective manner that is affordable for the context?
- Is using Koloso effective in the specific implementation context?

- Does using Koloso align with government priorities and contribute to the strengthening of national education systems?

These questions are not sequential — evidence bearing on all five is being gathered simultaneously through commercial deployment, user feedback, and the structured impact study described below.

7.3 Current evidence portfolio and development roadmap

Evidence type	Current status / timeline
Theory of change	Completed 2023; updated for K2, February 2026
Founder evidence training	EdTech Hub Evidence for Entrepreneurs, Cohort 5, March–June 2024 (James Blewett, CEO). Certificate of completion awarded 10 June 2024.
Commercial adoption data	50+ schools, Zambia / South Africa / Nigeria / Uganda. 100% school renewal rate (as at March 2026).
Educator case studies	Structured case studies with early-adopter schools — in development, Q2 2026
Internal impact study	Structured teacher survey across 8–12 Zambia schools: planning practice, assessment use, pedagogical confidence, workload — planned Q2–Q3 2026
Evidence page	Dedicated evidence page on koloso.com, with theory of change, case studies, and study results published progressively as available — in development, Q2 2026

Evidence commitment

Koloso defines success as a commercially viable edtech product that contributes to the sustainable improvement of educational outcomes for children in sub-Saharan Africa and can be delivered effectively at scale. Our commercial success is inextricably bound up with our developmental impact. We will build our evidence base progressively, transparently, and in direct response to our five key questions. Evidence building is how Koloso tests and improves its product, not a superficial compliance exercise.

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