Effect of Tablet Use on Teachers' Lesson Preparation and Teaching Effectiveness in Primary Schools: A Scoping Review

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Abstract.

In November 2022 the Government of Tanzania issued about 293,400 tablets to teachers in public primary and secondary schools. The aim was to modernise how teachers prepare and teach. Four years on, little is known about what teachers do with these devices, and still less about whether tablet use saves preparation time, widens the range of teaching methods or improves the assessment tasks that the competence-based curriculum demands. This scoping review mapped evidence on three relationships: (a) storing and organising teaching resources on tablets and the time teachers spend preparing lessons; (b) online searching and artificial intelligence (AI) applications and the variety of teaching methods teachers use; and (c) tablet use and teachers' ability to develop competence-based questions and assessment tasks. The review followed the Arksey and O'Malley framework, as refined by Levac and colleagues and the JBI, and is reported against PRISMA-ScR. Web-indexed searches and citation tracking identified 239 records. Nineteen sources met the inclusion criteria and were charted by context, design and objective. Six sources came from Tanzania, six from elsewhere in sub-Saharan Africa, one from another low- or middle-income country and six were international reviews or studies from high-income settings. Tanzanian studies show that teachers use tablets mainly to search for and download materials; few use them to write lesson plans, and classroom observation often finds devices unused during lessons. Studies from Sierra Leone and Uganda suggest that AI tools accessed by phone or tablet can support lesson planning at low data cost, but none has measured preparation time or changes in teaching methods directly. Evidence on assessment is thinnest: Tanzanian primary teachers struggle to write higher-order questions, and automatic question generation is promising but untested in Tanzanian classrooms. The evidence describes use but rarely measures effect. Tablets appear to change where teachers find materials more than how they plan, teach or assess. Research that measures preparation time, observes teaching and evaluates tablet-supported assessment design is needed before strong claims are made.

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1. Introduction

Teachers in Tanzanian public schools work under heavy demands. Classes are large, subject loads are wide and the competence-based curriculum asks teachers to plan lessons in which pupils do more than listen and copy. Preparation is therefore a real cost. It takes time to find suitable materials, to design activities that build skills and to write questions that test more than recall. Policy makers have looked to digital devices to lighten this load. In the 2022 financial year the government issued about 293,400 tablets to teachers in public primary and secondary schools (Prosper & Nderego, 2024), and the draft National Digital Education Strategy for 2024 to 2030 sets out a wider plan for digital content, e-learning platforms and teacher training (MoEST, 2024).

The demand for better preparation is sharpened by curriculum reform. The Education and Training Policy 2014, 2023 edition, commits Tanzania to competence-based teaching, in which pupils apply knowledge and skills rather than reproduce content (Ministry of Education, Science and Technology [MoEST], 2023). Planning a competence-based lesson is harder than planning a lecture. The teacher must choose activities, prepare materials for group work and design questions that ask pupils to reason. Assessment is harder still, and evidence from Dar es Salaam shows that most questions written by primary teachers test recall (Kyaruzi & Kisamo, 2025). If tablets are to help, they must help with these demanding tasks and not only with storing documents.

The hope behind this investment is simple. A teacher with a tablet should be able to store textbooks, syllabi and past lesson plans in one place; search online for pictures, videos and examples; and, more recently, ask AI applications to draft activities or questions. If this works, preparation should become faster, teaching should draw on a wider range of methods, and assessment tasks should improve. Each of these claims, however, is an empirical question. Access to a device does not by itself change practice, and studies of earlier technology programmes in Africa have found that devices were often kept in offices or used for personal purposes (Heinrich et al., 2020).

Early evidence from Tanzania gives grounds for both hope and caution. Primary school teachers report a moderate level of competence in using tablets for teaching and see opportunities for new strategies and wider content (Prosper & Nderego, 2024). A mixed-methods study in Karatu District, however, found that most teachers had received no formal training and that, although they reported using tablets daily, none was observed using a tablet during a lesson (Baha et al., 2026). At the same time, generative AI has arrived quickly. Teachers in Sierra Leone, for example, have used a WhatsApp chatbot for lesson planning and classroom management over many months (Choi et al., 2023).

The literature in this area is new, scattered across journals, conference papers, preprints and reports, and uneven in design. Many studies describe what teachers do with tablets; few test what difference it makes. A scoping review is suited to such a field, because its purpose is to map the extent and nature of evidence, clarify concepts and identify gaps, rather than to estimate an effect (Munn et al., 2018; Peters et al., 2020). This review maps the evidence on the effect of tablet use on teachers' lesson preparation and teaching effectiveness, with three specific objectives:

1. To determine the effect of storing and organising teaching resources on tablets on the time teachers spend preparing lessons.
2. To examine the relationship between the use of online searching and AI applications and the variety of teaching methods teachers apply.
3. To assess the effect of tablet use on teachers' ability to develop competence-based questions and assessment tasks.

1.1 Significance of the Review

The review matters for three reasons. First, Tanzania has already made a large investment in teacher tablets, and decisions about training, content and replacement will be made in the next few years. A clear map of the evidence can inform those decisions. Second, the rapid spread of AI applications means that teachers are already experimenting, often without guidance. Knowing what the evidence does and does not show can help the Ministry and teacher colleges set sensible expectations. Third, the review identifies the specific measures, such as preparation time, observed variety of methods and the cognitive level of teacher-made questions, that future Tanzanian studies should collect.

2. Theoretical and Conceptual Framework

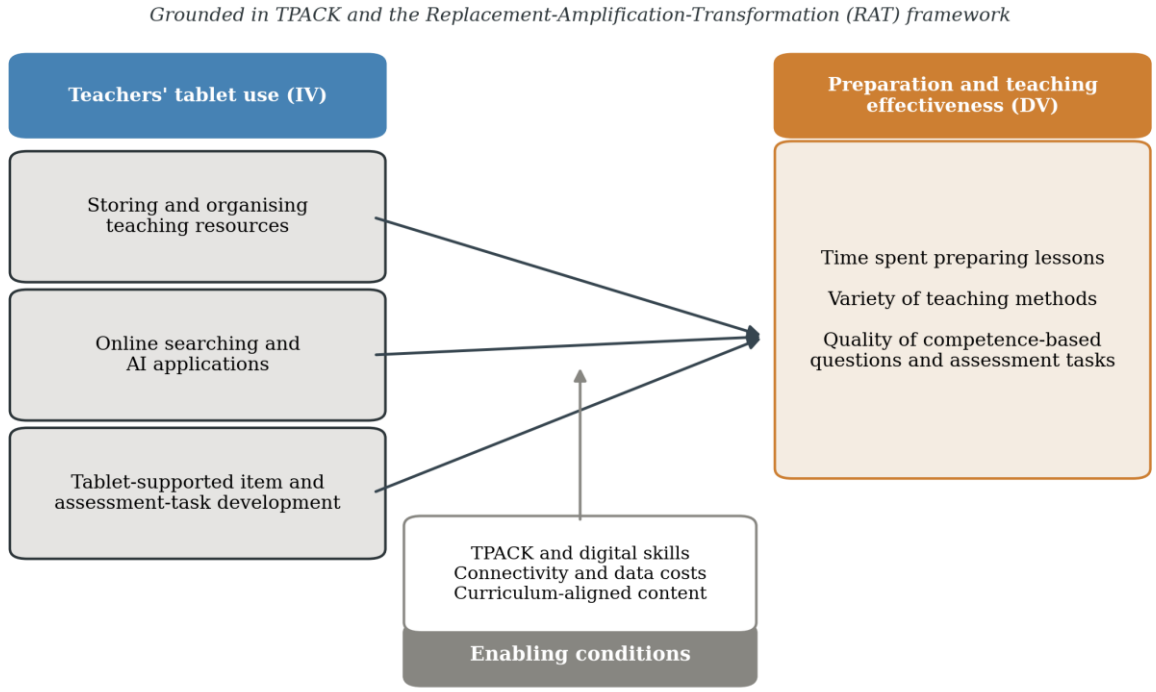
Two frameworks guide the review. The first is Technological Pedagogical Content Knowledge (TPACK). Mishra and Koehler (2006) argue that good teaching with technology requires more than technical skill; it requires an understanding of how technology, pedagogy and subject content interact. A teacher who can download a video (technological knowledge) but cannot judge when and how to use it to teach fractions (technological pedagogical content knowledge) will gain little. TPACK predicts that tablets will shorten preparation and widen teaching methods only where teachers have the knowledge to turn resources into lessons.

The second is the Replacement, Amplification and Transformation (RAT) framework (Hughes et al., 2006). Technology may replace an existing practice without changing it, as when a teacher reads a textbook on a screen instead of on paper. It may amplify a practice, making it faster or more efficient, as when stored lesson plans are reused. Or it may transform practice, making possible activities that were not possible before, such as showing a simulation or generating differentiated questions for several ability groups. The three objectives of this review map onto these levels. Resource storage and preparation time concern amplification. Online search and AI concern the move from amplification to transformation of teaching methods. Tablet-supported assessment design concerns transformation of a core professional task.

Cognitive load theory adds a further consideration (Sweller, 1988). Preparation is mentally demanding, and a well-organised digital library can lower the effort spent finding materials. Poorly organised files, unreliable connections and unfamiliar applications may, however, add effort. The net effect on preparation time is therefore not obvious in advance. Figure 1 presents the conceptual framework.

Figure 1

Conceptual Framework Linking Teachers' Tablet Use to Lesson Preparation and Teaching Effectiveness



Note. Developed by the author from Mishra and Koehler (2006) and Hughes et al. (2006).

2.1 Operational Definitions

Tablet use refers to teachers' use of a touch-screen tablet for professional tasks, whether the device was issued by government or owned privately. Studies of smartphones used for the same purposes were included where tablets were not separately reported, since in low-resource settings the two devices are often used interchangeably. *Lesson preparation* includes locating materials, writing lesson plans and schemes of work, and preparing teaching aids; *preparation time* is the time spent on these tasks. *Teaching effectiveness* is treated here through two observable indicators: the variety of teaching methods teachers use, and the quality of the assessment tasks they design. *AI applications* include generative chatbots and other tools that produce text, questions or plans in response to teachers' requests. *Competence-based questions and assessment tasks* are items that require pupils to apply, analyse or create, rather than recall, in line with the revised Bloom's taxonomy (Anderson & Krathwohl, 2001).

2.2 Policy Context of the Teacher Tablet Programme

The tablets issued in 2022 did not arrive in a vacuum. Tanzania's ICT Policy for Basic Education set out, as early as 2007, the aim of using technology for teaching, learning and school management (Ministry of Education and Vocational Training, 2007). The Education and Training Policy, in its 2023 edition, links digital skills to the competence-based curriculum (MoEST, 2023), and the draft National Digital Education Strategy proposes ICT resource centres and continuing teacher development in digital literacy (MoEST, 2024). The teacher tablets were originally procured for the 2022 national census and then passed to schools, which helps explain why they reached teachers with little accompanying training or content (Baha et al., 2026). This history matters for interpretation. The programme was, in effect, a distribution of hardware that has had to find its educational purpose after the event. The evidence mapped in this review should be read with that in mind: limited effects may reflect the way the programme was introduced rather than the potential of tablets for teachers.

3. Methods

3.1 Design

The review followed the five stages of the Arksey and O'Malley (2005) framework, with refinements proposed by Levac et al. (2010) and the JBI (Peters et al., 2020): identifying the research question; identifying relevant studies; selecting studies; charting the data; and collating, summarising and reporting the results. Reporting follows the PRISMA extension for scoping reviews (PRISMA-ScR; Tricco et al., 2018). Analysis and presentation follow the JBI recommendations for scoping reviews (Pollock et al., 2023). The optional sixth stage, consultation, was not carried out.

3.2 Eligibility Criteria

Eligibility was set using the Population, Concept and Context (PCC) format. The *population* was practising teachers in basic education. Primary school teachers were the main focus, but studies of secondary school teachers were charted where they addressed the same questions, because Tanzania's tablet issue covered both levels and primary-specific evidence was expected to be scarce. These sources are flagged throughout. The *concept* was teachers' use of tablets, or of AI and online tools accessed through tablets or phones, for lesson preparation, teaching or assessment design. The *context* was any country, with no restriction on setting, although sources from Tanzania and sub-Saharan Africa were sought actively. Primary studies of any design, systematic and scoping reviews, conference papers, preprints and substantial reports were eligible. Sources had to be in English and published between 2010 and September 2026. Studies of pre-service teachers only, of higher education, or of devices used only by pupils were excluded.

3.3 Search Strategy

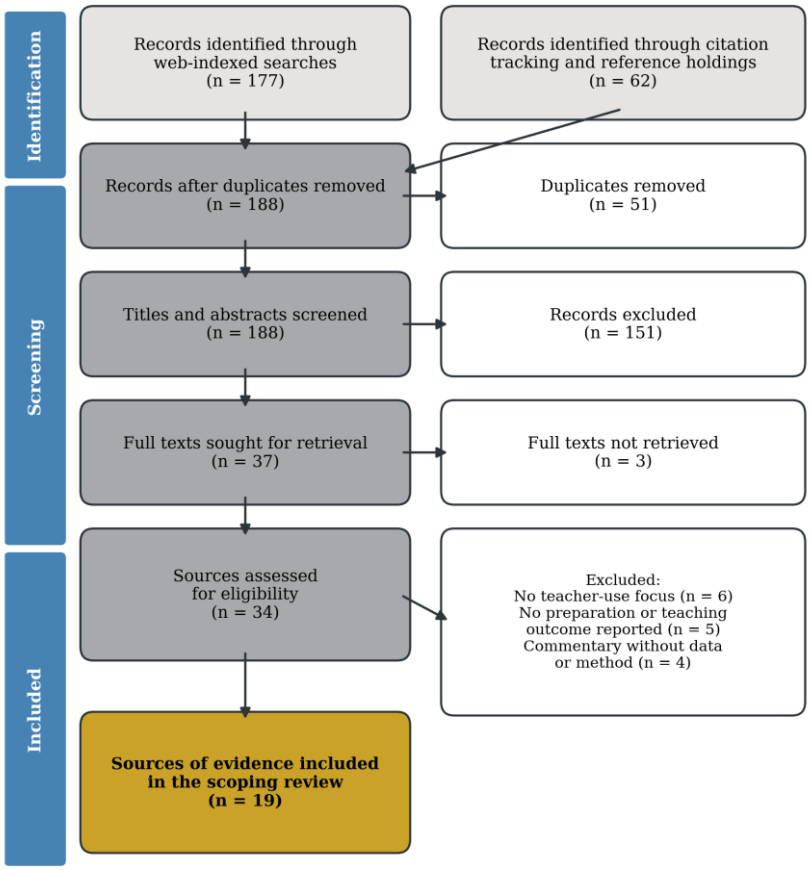
Searches were run in September 2026 through web-indexed scholarly search tools that cover journal databases, publisher platforms, preprint servers and open-access repositories, including arXiv, ERIC, PubMed Central, Springer, Taylor and Francis, Wiley and East African open-access journals. Terms were combined in blocks for device (*tablet*, *mobile device*, *smartphone*), user (*teacher*), task (*lesson plan*, *lesson preparation*, *teaching method*, *assessment*, *test item*, *question*) and tool (*AI*, *ChatGPT*, *chatbot*, *generative*, *online search*). Country terms were added in some searches. The full strings are given in Appendix A. Reference lists of included sources and the author's reference holdings were also checked.

3.4 Source Selection

Records were combined and duplicates removed. Titles and abstracts were screened, and potentially relevant full texts were read against the PCC criteria. Figure 2 summarises the process. Of 239 records identified, 51 were duplicates. Of the 188 screened, 37 were sought in full, three could not be retrieved and 34 were assessed. Fifteen were excluded: six did not focus on teachers' own use, five reported no information on preparation, teaching or assessment, and four were commentaries without data or a described method. Nineteen sources were included.

Figure 2

PRISMA-ScR Flow Diagram of Source Selection



Adapted from PRISMA-ScR (Tricco et al., 2018)

3.5 Data Charting and Synthesis

A charting form, piloted on three sources, recorded author, year, country, school level, design, sample, type of tablet or AI use, outcomes relating to preparation, methods or assessment, and the objective addressed. In line with scoping review guidance, formal quality appraisal was not used to include or exclude sources (Peters et al., 2020), but the design and the nature of the outcome measure were recorded so that readers can judge the strength of each finding. Results were summarised numerically by context and objective, and then synthesised narratively under each objective.

4. Results

4.1 Characteristics of the Sources

Table 1 lists the 19 included sources. Six came from Tanzania, including one from Zanzibar; four of these concerned secondary schools or mixed levels, and only two dealt specifically with primary teachers. Six came from elsewhere in sub-Saharan Africa (Sierra Leone, Uganda, Kenya and South Africa), one from Bangladesh, and six were international reviews or studies from high-income countries. By design, there were eight surveys or mixed-methods studies, three qualitative or descriptive studies, three analyses of AI tool use or output, one programme evaluation and four reviews. The sources were recent: 13 of the 19 were published from 2022 onwards, which reflects both the 2022 tablet issue in Tanzania and the arrival of generative AI.

Table 1

Characteristics of the Included Sources

Source	Country and level	Design and sample	Tablet or AI use	Relevant finding	Obj.
Baha et al. (2026)	Tanzania; secondary	Mixed methods; 191 teachers, 10 heads, 20 students	Government-issued teacher tablets	Main use searching and downloading notes (47.1%); lesson plans 7.3%; none observed in class	1, 2, 3
Haji et al. (2024)	Zanzibar; secondary	Qualitative; 30 teachers and officials	Teacher tablets	Used for images, videos, virtual visits, e-books and stored materials	1, 2
Prosper and Nderego (2024)	Tanzania; primary	Survey; 130 teachers in 10 schools	Teacher tablets	Moderate competence; opportunities for new strategies and wider content	1, 2
Mwakapemba et al. (2024)	Tanzania; primary and secondary	Online survey; 81 teachers	Teacher tablets	Productivity and access to information; training gaps	1
Tossy (2026)	Tanzania; secondary	Mixed methods; 758 respondents	Teacher tablets	Sharing resources with colleagues; experimenting with strategies	1, 2
Kyaruzi and Kisamo (2025)	Tanzania; primary	Mixed methods; 213 teacher-made items, 20 teachers	None (baseline for assessment)	73.2% of items at lower levels of Bloom's taxonomy	3
Choi et al. (2023)	Sierra Leone; basic education	Implementation study; 193 teachers, 122 schools	WhatsApp AI chatbot	Used for lesson planning, classroom management and subject content; sustained use	2

Source	Country and level	Design and sample	Tablet or AI use	Relevant finding	Obj.
Björkegren et al. (2025)	Sierra Leone; basic education	Analysis of 40,350 queries	AI chatbot versus web search	AI used more than web search; far lower data cost; rated more relevant	1, 2
Kloker et al. (2024)	Uganda; secondary	Prototype evaluation; 24 lesson plans	Retrieval-augmented AI lesson planner	Plans rated about 75–80% quality against an East African protocol	1
van den Berg and du Plessis (2023)	South Africa; teacher education	Conceptual and illustrative analysis	ChatGPT for lesson planning	Useful drafts; need for critical teacher judgement	2
Murithi and Yoo (2021)	Kenya; primary	Survey; 351 teachers	ICT in competence-based curriculum	Basic training only; difficulty integrating ICT in lessons	2
Heinrich et al. (2020)	Kenya; primary	Quasi-experimental, mixed methods	One-to-one tablet programme	Teacher capacity limited instructional change	2
Power et al. (2012)	Bangladesh; primary and secondary	Programme evaluation	Mobile devices with audio and video resources	Wider use of communicative activities in class	1, 2
König et al. (2022)	International	Scoping review	ICT in lesson plans	Lesson plans rarely show deep ICT integration	2
Hennessy et al. (2022)	LMICs	Systematic review	Technology for teacher development	Mobile devices widely used; effects depend on design and support	2
Celik et al. (2022)	International	Systematic review	AI tools for teachers	AI aids planning and assessment; teacher oversight needed	2, 3

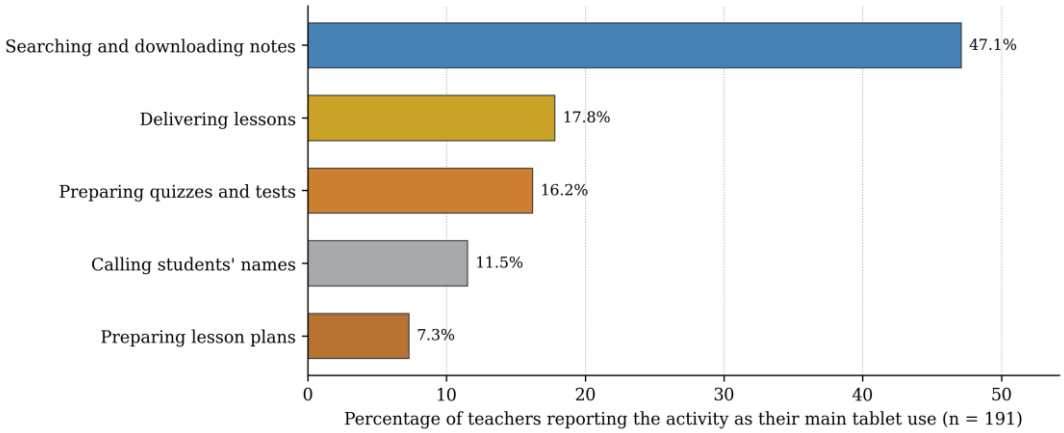
Source	Country and level	Design and sample	Tablet or AI use	Relevant finding	Obj.
Kurdi et al. (2020)	International	Systematic review	Automatic question generation	Generated items often acceptable; weak on higher-order items	3
Rikala et al. (2013)	Finland	Survey; 171 teachers	Classroom tablets	Actual use well below perceived potential	1
Bjørgen et al. (2021)	Norway; primary	Qualitative; longitudinal interviews	Classroom tablets	Teachers redesigned assignments; greater complexity of work	1

Note. Obj. = objective addressed. LMICs = low- and middle-income countries. Sources on secondary schools are charted as adjacent evidence.

Figure 3 shows the pattern of teachers' main tablet uses in the one Tanzanian study that reported these in detail. It illustrates a finding that recurs across the sources: tablets are used mostly for finding materials, and much less for planning and assessment.

Figure 3

Teachers' Main Uses of Government-Issued Tablets in Karatu District, Tanzania



Note. Data from Baha et al. (2026), public secondary schools, n = 191. The figure is drawn from the published frequencies.

4.2 Objective 1: Storing and Organising Resources and Lesson Preparation Time

No included source measured preparation time directly, for example through time logs or before-and-after comparisons. The evidence on this objective is therefore descriptive and comes mainly from teachers' reports of how they use their devices.

Tanzanian studies agree that storage and retrieval of materials is the main use of teachers' tablets. In Karatu, searching for and downloading notes was the most common use, reported by 47.1% of teachers, followed by delivering lessons (17.8%) and preparing quizzes and tests (16.2%); only 7.3% named preparing lesson plans as their main use (Baha et al.,

2026). Teachers moved files between phones and tablets by Bluetooth, file-sharing apps or cable, and many used the tablets offline. In Zanzibar, teachers stored e-books, multimedia files and teaching resources on their devices (Haji et al., 2024). Teachers in Tossy's (2026) study valued the ease of sharing resources with colleagues, and those surveyed by Mwakapemba et al. (2024) linked tablets to productivity and quicker access to information. These accounts suggest that tablets reduce the effort of finding and carrying materials. Whether this translates into less total time spent preparing is not known.

Evidence from other settings points the same way but adds caution. Kloker et al. (2024) found that an AI tool drawing on accredited Ugandan textbooks produced lesson plans rated at about 75 to 80% quality against a protocol designed for East African competence-based curricula. The tool was built to save teachers time, but the study assessed the plans, not the time saved or the lessons taught. In high-income settings, teachers have reported that tablets increased the complexity of their work, at least at first, as they redesigned assignments (Bjørgen et al., 2021), and a Finnish survey found that actual use lagged well behind the potential teachers perceived (Rikala et al., 2013). These findings are consistent with cognitive load theory: organised digital libraries may lower search effort, but learning new tools and redesigning tasks can raise preparation demands in the short term.

4.3 Objective 2: Online Searching, AI Applications and Variety of Teaching Methods

Evidence on the second objective is more plentiful but still indirect. Studies describe what teachers search for and ask AI tools to do, and teachers' accounts of changed practice; few observe lessons.

In Sierra Leone, a WhatsApp-based AI chatbot was used by 193 teachers in 122 schools for lesson planning, classroom management and subject knowledge, and use was sustained across a school year (Choi et al., 2023). A later analysis of 40,350 queries showed that teachers used the chatbot more than web search for teaching help. Only 2% of the corresponding web search results contained content from Sierra Leone, the average web result used over 3,000 times more data than an AI response, and independent teachers rated the AI responses as more relevant, helpful and correct (Björkegren et al., 2025). These findings matter for Tanzania, where the cost of internet bundles limits online searching. They show that AI tools can deliver locally relevant teaching ideas at low data cost. They do not show that teachers then used a wider range of methods in class.

Tanzanian studies suggest that online resources widen the content teachers bring to lessons. Teachers in Zanzibar used tablets to show images and videos and to take pupils on virtual visits to museums and national parks (Haji et al., 2024). Primary teachers saw opportunities for innovative strategies and broader content (Prosper & Nderego, 2024). Yet the Karatu study offers a warning: teachers and heads reported frequent tablet use in teaching, but no teacher was observed using one in class, and students reported that teachers mostly used the tablets for chatting and calls (Baha et al., 2026). The gap between reported and observed practice is a recurring theme. In Kenya, teachers had received mainly basic computer training and struggled to integrate ICT into lessons under the competence-based curriculum (Murithi & Yoo, 2021), and in a one-to-one tablet programme, weak teacher capacity limited changes in teaching (Heinrich et al., 2020).

Two further strands help interpret these findings. In Bangladesh, the English in Action programme gave teachers mobile devices loaded with audio and video resources, and evaluation found wider use of communicative, pupil-centred activities (Power et al., 2012). This is one of the few cases where devices were linked to observed changes in method, and the devices came with structured content and school-based support. Reviews point the same way. Hennessy et al. (2022) found that mobile technology was widely used in teacher professional development in low- and middle-income countries, but that effects depended on the design of the support around it. König et al. (2022) found that teachers' lesson plans rarely showed deep

integration of ICT. Celik et al. (2022) concluded that AI can help teachers with planning but requires teacher oversight, and van den Berg and du Plessis (2023) argued that AI drafts are useful starting points only when teachers apply critical judgement. In RAT terms, most reported uses amount to replacement or amplification; transformation of methods remains the exception.

4.4 Objective 3: Tablet Use and Competence-Based Questions and Assessment Tasks

The third objective has the least direct evidence. No included study tested whether Tanzanian teachers who used tablets or AI tools wrote better competence-based questions than those who did not.

The need, however, is well documented. Kyaruzi and Kisamo (2025) analysed 213 multiple-choice items written by 20 primary teachers in Dar es Salaam and found that 73.2% assessed only the lower levels of Bloom's taxonomy, while most items contained item-writing flaws. The finding shows that writing competence-based questions is a real weakness, and therefore a plausible target for technological support. In Karatu, 16.2% of teachers named preparing quizzes and tests as their main tablet use (Baha et al., 2026), but the study did not examine the quality of what was produced.

International evidence on automatic question generation is more developed. Kurdi et al. (2020), reviewing systems that generate questions automatically, found that generated items were often acceptable to experts but that most systems produced factual, lower-order questions and that evaluation methods varied widely. Celik et al. (2022) reported that AI tools can support teachers with assessment, but warned about accuracy and the need for review. Since these reviews, generative AI has improved, and tools such as that tested in Uganda align output to curricula (Kloker et al., 2024). The gap for Tanzania is that no study has asked whether such tools, used on tablets by primary teachers, raise the cognitive level of the questions that reach pupils.

4.5 Conditions Cutting Across the Objectives

Four conditions recur across the sources and shape all three relationships. The first is training. In Karatu, 67% of teachers had received no formal training on their tablets and learnt mainly from colleagues or on their own (Baha et al., 2026); Zanzibar and Kenyan studies report the same pattern of brief or basic training (Haji et al., 2024; Murithi & Yoo, 2021). Without training that links tools to teaching, the move from storing materials to redesigning lessons is unlikely. The second is connectivity and data cost. Teachers who pay for their own bundles ration online searching, and offline transfer between devices becomes the norm (Baha et al., 2026). This explains part of the appeal of low-data AI tools (Björkegren et al., 2025). The third is ownership and personal use. Because tablets were issued to individual teachers, they also serve as personal devices, and students' reports of teachers using them for calls and chatting (Baha et al., 2026) are a reminder that professional use competes with private use. The fourth is content. Only 2% of web search results in the Sierra Leone study came from the country itself (Björkegren et al., 2025), and generic online material may not match the Tanzanian syllabus. Tools anchored to national textbooks, as in Uganda, address this directly (Kloker et al., 2024).

Table 3 classifies the uses reported in the sources against the RAT framework. It shows that most reported uses fall at the levels of replacement and amplification, and that examples of transformation are few and mostly outside Tanzania.

Table 3

Reported Teacher Uses of Tablets Classified by the RAT Framework

RAT level	Examples from the sources	Sources
Replacement	Reading e-books and notes on screen instead of paper; storing past papers	Baha et al. (2026); Haji et al. (2024)

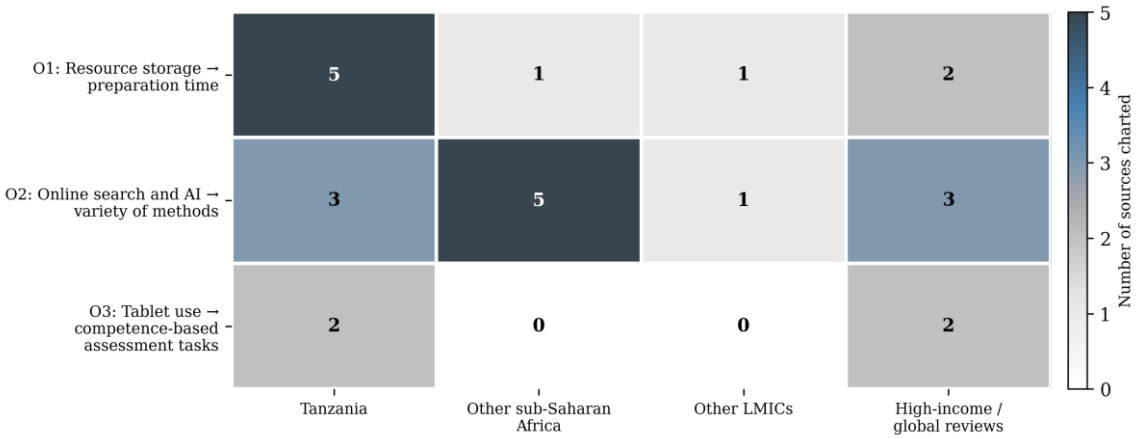
RAT level	Examples from the sources	Sources
Amplification	Faster retrieval and sharing of materials between colleagues; reuse of stored lesson plans; drafting plans with AI	Tossy (2026); Mwakapemba et al. (2024); Kloker et al. (2024)
Transformation	Virtual visits to museums and parks; audio-visual resources used for communicative pupil activities; AI-supported, locally relevant teaching advice on demand	Haji et al. (2024); Power et al. (2012); Björkegren et al. (2025)

4.6 Map of the Evidence

Figure 4 and Table 2 summarise how the evidence is distributed. Tanzanian sources concentrate on the first objective and are largely descriptive. Sub-Saharan African evidence on AI is concentrated in Sierra Leone and Uganda. Evidence on assessment is scarce everywhere.

Figure 4

Distribution of Charted Sources by Objective and Context



Note. A source may address more than one objective.

Table 2

Summary of the Evidence Mapped Against Each Objective

Objective	What the evidence shows	Type of evidence	Main gap
1. Resource storage → preparation time	Tablets used mainly to find, store and share materials; AI tools can produce usable plans	Self-report surveys; qualitative accounts; one prototype evaluation	No measure of time saved
2. Online search and AI → variety of methods	AI tools used for planning at low data cost; reported wider content; observed practice rarely changed without support	Query analysis; self-report; one programme evaluation; reviews	No lesson observation linked to tablet or AI use in Tanzania
3. Tablet use → competence-based assessment	Teachers' items mostly lower-order; automatic generation acceptable but weak on higher-order items	One Tanzanian item analysis; international reviews	No test of tablet or AI support for item writing

5. Discussion

This review set out to map evidence on how tablet use affects teachers' lesson preparation and teaching effectiveness. Three broad conclusions emerge.

The first is that the evidence describes use far more than it measures effect. Across the sources, teachers report using tablets to find, store and share materials, and increasingly to consult AI tools. None measured preparation time, and very few observed lessons. This pattern is common in young research fields, and it is what a scoping review would be expected to reveal. It does mean that claims about time saved or teaching improved are, for now, assumptions rather than findings.

The second is that tablets appear to change the sources of teachers' materials more than their planning and teaching. In the language of the RAT framework, most use is replacement or amplification (Hughes et al., 2006). This fits the TPACK view that technological access without pedagogical knowledge leads to limited change (Mishra & Koehler, 2006). The Karatu findings are striking in this regard: two-thirds of teachers had no formal training on tablets, they learnt mainly from colleagues and on their own, and the devices stayed out of classrooms (Baha et al., 2026). The English in Action evidence suggests what is missing: devices changed teaching when they came with structured content and school-based support (Power et al., 2012).

The third is that AI may alter the balance for teachers in low-connectivity settings. The Sierra Leone evidence shows that AI answers are cheaper in data, more local and more useful to teachers than web search (Björkegren et al., 2025). For Tanzanian teachers who must buy their own internet bundles, this is a real advantage. It also creates new risks. AI outputs can be wrong or poorly matched to the Tanzanian syllabus, and the quality of AI-generated questions at higher cognitive levels is uncertain (Kurdi et al., 2020). The Ugandan approach, which ties AI output to accredited textbooks, offers one model for managing that risk (Kloker et al., 2024).

5.1 Reconciling Reported and Observed Use

The difference between what teachers report and what observers see deserves attention, because it shapes how all tablet evidence should be read. In Karatu, two-thirds of teachers reported daily use for teaching, yet observers saw none in lessons (Baha et al., 2026). The finding need not mean that teachers overstated their use. Much of the value of a tablet for preparation happens before a lesson, in the staffroom or at home, when a teacher finds a diagram, copies notes or checks a fact. Such use is real but invisible to classroom observation. It does mean, however, that questions about teaching effectiveness cannot be answered from self-report alone. A teacher may prepare a better lesson with a tablet and then teach it in the same way as before. Studies that combine preparation logs, lesson plans and lesson observation would show where, in the chain from preparation to teaching, tablet use makes a difference and where it does not. Finnish evidence of a gap between the potential teachers perceive and the use they achieve (Rikala et al., 2013) suggests that the pattern is not unique to low-resource settings.

5.2 Ethical and Professional Considerations in Teachers' Use of AI

The spread of AI tools raises questions that Tanzanian guidance has yet to address fully. The first is accuracy. AI tools can produce fluent but wrong content, and teachers who are under time pressure may not check it. The second is curriculum fit. General tools are trained mostly on material from other countries, and their suggestions may not match the Tanzanian syllabus, examination format or language of instruction. The third is professional judgement. Van den Berg and du Plessis (2023) argue that AI can support planning only when teachers treat its output as a draft to be evaluated, not as a finished plan. The fourth concerns data and privacy, since queries about particular pupils or schools may be stored outside the country. None of these concerns argues against AI use; teachers in Sierra Leone clearly found it useful

(Choi et al., 2023). They argue for national guidance, for tools anchored in Tanzanian materials, and for training that builds the habit of checking and adapting AI output.

5.3 Implications for Policy and Practice

Several implications follow for Tanzania. First, the government's tablet investment would benefit from a structured, offline library of curriculum-aligned materials, including schemes of work, lesson plan templates and item banks from the Tanzania Institute of Education, so that storage leads to planning and not only to downloading notes. Second, training should move beyond device operation to TPACK, showing teachers how to turn stored and searched resources into specific activities. Third, if AI tools are promoted, they should be tied to the national syllabus and textbooks, delivered through low-data channels, and accompanied by guidance on checking outputs. Fourth, item writing deserves direct attention: training that combines Bloom's taxonomy with AI-assisted drafting and peer review could address the weakness documented by Kyaruzi and Kisamo (2025). Finally, school heads and quality assurers should look for tablet use in lessons, not only in staffrooms, since the evidence shows how easily reported use and observed use diverge.

5.4 Research Gaps and Agenda

Table 4 sets out the main research gaps and suggests suitable designs. The gaps follow directly from the objectives. Each can be addressed with methods that are within reach of Tanzanian universities.

Table 4

Research Gaps and Suggested Designs

Gap	Suggested research question	Suitable design
Preparation time not measured	Does a curriculum-aligned tablet library reduce the time primary teachers spend preparing lessons?	Time-use diaries; cluster-randomised or matched comparison
Reported and observed use diverge	How often, and in what ways, do teachers use tablets during lessons?	Structured classroom observation with teacher interviews
AI and teaching methods untested	Does AI-supported planning increase the variety of methods observed in lessons?	Mixed-methods quasi-experiment
AI-supported assessment untested	Does AI-assisted item writing raise the cognitive level and technical quality of teachers' questions?	Item analysis before and after training, with expert rating
Primary-specific evidence scarce	How do primary teachers, as distinct from secondary teachers, use government tablets?	National or regional survey with observation sub-sample

5.5 Limitations

The review has limitations. Searches relied on web-indexed tools rather than direct searches of subscription databases, so some sources may have been missed. A single reviewer screened and charted the sources. Several key sources are preprints or conference papers, reflecting the speed of research on AI, and their findings may change after peer review. Four of the six Tanzanian sources concern secondary or mixed-level schools, so conclusions about

primary teachers draw partly on adjacent evidence. Only English-language sources were included.

6. Conclusion

The tablets issued to Tanzanian teachers have become, above all, tools for finding and carrying materials. The evidence mapped here shows that teachers value this, and that AI tools can offer locally relevant planning help at low cost. It does not yet show that tablet use saves preparation time, widens teaching methods or improves the competence-based assessment tasks that the curriculum requires. These are the outcomes that matter for pupils. Closing the gap will require curriculum-aligned content on the devices, training grounded in TPACK rather than device operation, careful guidance on AI, and Tanzanian research that measures time, observes teaching and examines the questions teachers write.

The review also carries a broader lesson for technology policy. A device becomes a professional tool only when it is loaded with the right content, supported by training and embedded in expectations about practice. Tanzania now has the devices. The next steps are to supply structured, curriculum-aligned materials, to train teachers in the pedagogical use of what they find, to provide safe and syllabus-aligned AI support, and to build evaluation into these steps so that the country learns what works for its own teachers and pupils.

Declarations

Funding: This review received no specific funding. **Conflict of interest:** The author declares no conflict of interest. **Data availability:** The charting form and source list are available from the author on reasonable request.

Appendix A

Search Strings Used in the Review

Table A1

Search Strings by Concept Block

Block	Terms combined with OR within blocks, and with AND across blocks
Device	tablet *OR "mobile device*" OR smartphone *OR iPad OR "digital device*"
User	teacher *OR educator* OR "classroom practitioner*"
Task	"lesson plan*" OR "lesson preparation" OR "teaching method*" OR pedagog *OR assessment OR "test item*" OR question* OR "competence-based"
Tool	"artificial intelligence" OR AI OR ChatGPT OR chatbot OR "generative AI" OR "online search*" OR internet
Context (optional)	Tanzania OR Zanzibar OR Kenya OR Uganda OR "Sierra Leone" OR "sub-Saharan Africa" OR "low- and middle-income"

Note. Strings were adapted to each search tool. The optional context block was used to raise the yield of regional sources.

Appendix B

Data Charting Form

Table B1

Fields Recorded for Each Included Source

Field	Description
Source details	Author, year, title, publication type and peer-review status
Context	Country, region, urban or rural setting, and school level (primary, secondary or mixed)
Participants	Number and type of teachers or other respondents
Design	Survey, qualitative, mixed methods, tool evaluation, programme evaluation or review
Tablet or AI use	Device, ownership, applications and tasks for which the device was used
Preparation outcomes	Any information on preparation time, planning practices or resource management
Teaching outcomes	Any information on teaching methods, whether reported or observed
Assessment outcomes	Any information on question writing, test preparation or assessment quality
Conditions	Training, connectivity, data cost, content alignment and support
Objective addressed	Objective 1, 2 or 3 of this review

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