



Teaching and Learning Materials and Learner Outcomes in Primary Schools: An Exploratory Study of Chongwe District, Zambia

Lizzie Nambela^{1*}Dr. C. Maria Ugin Joseph²¹*M.Ed Scholar, School of Education, DMI–St. Eugene University, Lusaka, Zambia.*²*Dean, School of Education, DMI–St. Eugene University, Lusaka, Zambia.*
ORCID: <https://orcid.org/0009-0000-3453-1596>

Abstract

Teaching and Learning Materials (TLMs) are fundamental to effective classroom instruction because they provide learners with opportunities to interact with knowledge through visual, practical, textual, audio and digital experiences. This study explored the availability, utilization and perceived impact of TLMs on teaching and learning in primary schools in Chongwe District, Lusaka Province, Zambia. The study was informed by constructivist learning theory, particularly cognitive and social constructivist perspectives, which emphasize active participation, interaction and the construction of knowledge through experience. A pragmatic paradigm and mixed-methods convergent-parallel case study design were employed. Quantitative data were collected through structured questionnaires, while qualitative information was obtained through semi-structured interviews, focus group discussions, classroom observations and document review. The study identified substantial shortages of textbooks, teacher resource books, supplementary reading materials, libraries, science equipment, digital resources and other instructional materials. Textbook shortages were particularly pronounced in rural schools and in Zambian language subjects. Although teachers recognized the contribution of TLMs to learner understanding, motivation, participation and academic achievement, classroom observations revealed continued reliance on teacher-centred “chalk-and-talk” approaches. The effective use of available materials was constrained by inadequate teacher training, large class sizes, limited preparation time, inadequate funding, poor distribution systems, weak storage and inventory management, and inadequate infrastructure. Nevertheless, active school leadership, teacher collaboration, practical professional development and community participation were identified as important facilitators. The study concludes that improving learning outcomes requires more than supplying instructional materials; it requires an integrated strategy combining adequate resources with teacher professional development, supportive infrastructure, effective school leadership and community participation.

Keywords: *Teaching and Learning Materials; learner-centred education; primary education; academic performance; teacher professional development; Chongwe District; Zambia*

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1. Introduction

Quality education depends not only on the presence of qualified teachers and appropriate curricula but also on the availability and effective utilization of Teaching and Learning Materials (TLMs). Textbooks, teacher guides, charts, maps, models, workbooks, real objects, laboratory equipment, computers, projectors and other instructional resources provide opportunities for learners to encounter concepts in concrete and meaningful ways. They can simplify abstract ideas, stimulate learner interest, facilitate participation and support the retention and application of knowledge. The importance of TLMs is particularly significant in contexts where education systems are attempting to move from teacher-centred approaches towards learner-centred pedagogies. Learner-centred education requires learners to participate actively in constructing knowledge, solving problems, discussing ideas, conducting investigations and applying concepts to real-life situations. Such approaches are difficult to implement when teachers and learners have limited access to appropriate instructional resources.

In Zambia, educational reforms have emphasized learner-centred approaches and the development of learners' knowledge, skills and values. The revised curriculum consequently places emphasis on interactive approaches such as inquiry, discovery, problem-solving, discussion, question-and-answer and collaborative learning. The literature reviewed in the study indicates, however, that the implementation of these approaches has frequently

been constrained by shortages of instructional resources, large classes, inadequate teacher preparation and examination-oriented teaching practices. Chongwe District provides an important context for examining these challenges. Located in Lusaka Province, the district contains both peri-urban and rural communities and consequently provides an opportunity to examine differences in educational resources and practices across contrasting contexts. The study reports that Chongwe has experienced population growth and pressure on educational infrastructure and resources, while rural schools face greater difficulties in accessing instructional materials. The problem addressed by the study is therefore not simply whether TLMs exist in schools, but whether they are sufficiently available, appropriately utilized and capable of contributing to meaningful learning. The study specifically examined the types of TLMs available, the extent to which teachers utilize them, their relationship with learner performance, and the challenges affecting their provision and use.

2. Theoretical Perspective

The study was guided by constructivist learning theory, drawing particularly on cognitive constructivism associated with Piaget and social constructivism associated with Vygotsky. Constructivism views learners as active participants in the construction of knowledge rather than passive recipients of information. From a cognitive constructivist perspective, learners develop understanding through interaction with their environment. New experiences are connected to existing knowledge through processes of

assimilation and accommodation. TLMs can facilitate this process by giving learners opportunities to observe, manipulate, compare and experiment with objects and representations of concepts.

The social constructivist perspective further emphasizes the importance of interaction and collaboration. Vygotsky's concept of the Zone of Proximal Development highlights the difference between what learners can accomplish independently and what they can accomplish with guidance from teachers or more capable peers. Consequently, instructional materials can become tools around which learners discuss, investigate, collaborate and solve problems.

The theoretical perspective is particularly relevant because the educational value of TLMs depends on how they are used. A textbook that is merely read aloud by a teacher and copied by learners does not necessarily create a learner-centred environment. In contrast, a textbook, chart, model, real object or locally produced teaching aid can become a stimulus for inquiry, discussion, experimentation and problem-solving. Thus, the study conceptualizes TLM availability and utilization as interconnected rather than independent components of effective teaching.

3. Methodology

The study adopted a pragmatic research paradigm and a mixed-methods convergent-parallel design. The pragmatic approach was appropriate because the research questions required both quantitative evidence concerning availability, utilization and

learner outcomes and qualitative information concerning teachers' and learners' experiences. A case study approach was used to investigate Chongwe District as a bounded educational context. The quantitative component employed a cross-sectional approach, while qualitative information was generated through interviews and focus group discussions. The study also incorporated classroom observations and documentary evidence to strengthen interpretation and triangulation.

The study population comprised key stakeholders involved in teaching and learning, including headteachers, teachers, learners and District Education Board officials. Stratified random sampling was used for the quantitative component to represent urban/peri-urban and rural contexts, while purposive sampling was used for participants requiring specific administrative and policy knowledge.

Data collection instruments included structured questionnaires, semi-structured interview schedules, focus group discussion guides and document-review schedules. The questionnaire addressed demographic characteristics, availability and types of TLMs, utilization patterns and perceived impact on learner performance and teacher effectiveness. Interviews with school heads and district officials examined policy implementation, resource provision and distribution, while focus group discussions captured the experiences of teachers and learners. School inventories, examination results and district education records were also reviewed.

The quantitative data were analysed using descriptive and inferential statistics, including frequencies, percentages, means, standard deviations, correlation analysis and comparisons between school contexts. Qualitative data were analysed thematically. The study reports a Cronbach's alpha coefficient of 0.82 for the questionnaire during pilot testing, indicating good internal consistency.

Ethical procedures included informed consent, learner assent and parental/guardian consent where required, confidentiality, anonymity, voluntary participation and permission from relevant educational authorities.

4. Findings

4.1 Availability and Adequacy of Teaching and Learning Materials

The findings reveal substantial shortages of TLMs in primary schools in Chongwe District. Textbooks were among the most important resources but were insufficient in relation to learner numbers. Mathematics and English commonly had two to three learners sharing a textbook, while shortages were particularly severe in Zambian language materials. Rural schools generally experienced more serious shortages than urban and peri-urban schools.

The shortage extended beyond textbooks. Approximately 40% of teachers reported that they did not have access to teacher guides for the subjects they taught, while some of the available guides were reported to be outdated or

insufficiently aligned with the revised curriculum.

School libraries and supplementary reading resources were also inadequate. The study reports that only a small proportion of sampled schools had library facilities, broadly reflecting the national situation in which only 14% of primary schools had libraries. Most schools lacked supplementary reading materials, leaving learners dependent primarily on textbooks.

The shortage was also evident in specialized materials. While basic classroom materials were relatively more accessible, science equipment, audio-visual resources and computers/tablets were scarce. Digital resources were concentrated primarily in urban and peri-urban schools.

Infrastructure constraints further complicated the effective use of TLMs. Overcrowded classrooms, inadequate seating and high pupil-teacher ratios restricted opportunities for learners to handle materials, participate in group work and receive individualized support.

4.2 Patterns of TLM Utilization

The availability of TLMs did not automatically translate into effective classroom utilization. Textbooks and chalkboards were the most frequently used resources. However, observations indicated that materials were commonly employed through teacher-centred methods, including reading from textbooks, writing on the board and requiring pupils to copy notes.

Classroom observations showed that textbooks

were frequently used by teachers but that pupils did not always have direct access to them. Visual aids, real objects, manipulatives, group activities and differentiated instruction were used considerably less frequently.

The study identified several explanations for the underutilization of TLMs. Teachers reported shortages of materials, lack of training, large class sizes, fear of damaging scarce resources, limited time for preparation and reliance on traditional instructional methods. Fear of damage is particularly significant because it demonstrates that scarcity can create a paradox: materials become so valuable that teachers hesitate to use them regularly, even though their educational purpose is to support classroom learning.

The findings therefore demonstrate a distinction between availability and effective utilization. Providing a textbook, chart or computer is insufficient if teachers lack the pedagogical knowledge, preparation time, classroom conditions or institutional support required to integrate the resource meaningfully into instruction.

4.3 Impact on Learner Outcomes

Teachers generally perceived TLMs positively. The study found that teachers associated instructional materials with improved learner understanding, engagement, retention, assessment performance and teaching effectiveness. The greatest perceived benefits were related to understanding concepts and learner engagement. The quantitative analysis also reported positive relationships between TLM availability or usage and examination performance.

Textbook availability, school library presence, teacher resource books, supplementary readers and frequency of TLM use were associated with learner performance across subjects. The strongest reported relationships included textbook availability with Mathematics performance, TLM usage with English performance and library presence with English performance. The study found that TLMs were perceived to contribute to several specific learning outcomes. Reading comprehension and mathematical problem-solving were among the areas showing stronger reported improvements, while effects on creativity, scientific inquiry and collaboration were comparatively weaker. This pattern is consistent with the observation that TLMs were often used for transmission of information rather than for higher-order learning.

Learner perspectives reinforced these findings. Pupils reported that individual access to textbooks enabled them to read, practise exercises and review material at home. Where textbooks were scarce, learners experienced frustration because they had limited opportunities to interact directly with the materials. Learners also expressed a desire for storybooks, magazines and other supplementary reading resources. Visual aids and real objects were reported to make difficult concepts easier to understand.

Documentary evidence provided additional support. Schools with higher TLM availability recorded better examination results than schools with lower availability. The study reports that schools in the highest TLM-availability category scored higher in Mathematics and English and recorded substantially

higher pass rates than schools in the lowest category. Nevertheless, the study appropriately cautions that these relationships should not be interpreted as proof that TLMs alone cause higher achievement. The cross-sectional design and presence of other variables mean that learner performance is influenced by several interacting factors.

4.4 Barriers to Effective TLM Utilization

The barriers identified were systemic, institutional and classroom-based. Inadequate government funding and delayed or irregular supply of materials were major concerns. Rural schools experienced additional difficulties because of distance from suppliers and weaknesses in last-mile distribution. At school level, inadequate storage, fear of theft or damage, weak inventory management and the locking away of scarce materials limited access. Documentary analysis revealed inconsistencies between inventory records and actual materials in some schools, suggesting weaknesses in resource management.

Teacher-related barriers included inadequate preparation, insufficient training and uncertainty about integrating TLMs into lesson delivery. The study's literature review similarly emphasizes that professional development is central to the successful implementation of learner-centred teaching. Existing Zambian professional-development mechanisms such as SPRINT and teacher groups can provide platforms for teachers to share classroom experiences and instructional strategies. Large class sizes were another major

obstacle. When a teacher is responsible for a very large number of pupils and has only a few instructional materials, meaningful individual or small-group interaction becomes difficult. Consequently, teachers may revert to whole-class verbal instruction.

4.5 Urban–Rural and School-Type Differences

The findings demonstrate a clear inequality between urban/peri-urban and rural schools. Urban and peri-urban schools generally had better access to textbooks, libraries, teacher guides, infrastructure and digital resources. They also recorded stronger learner outcomes. The reported differences were statistically significant for several TLM indicators.

Differences were also reported according to school type. Grant-aided and private schools generally demonstrated better TLM availability than government/community schools, although resource shortages remained even in better-resourced schools. This suggests that the problem is systemic rather than confined exclusively to one category of institution. Community participation emerged as an important facilitator. Schools with active Parent-Teacher Associations and supportive communities were more likely to mobilize resources, develop locally produced teaching aids and support school maintenance. However, community capacity varied according to socioeconomic conditions, potentially creating further inequalities between wealthier peri-urban communities and poorer rural communities.

5. Discussion

The findings demonstrate that the challenge facing

primary education in Chongwe is not simply a shortage of physical resources but a broader resource-utilization system problem. The shortage of textbooks creates immediate constraints, but the educational consequences are amplified when teachers lack training, classrooms are overcrowded, libraries are absent and school management systems are weak. The findings support the constructivist perspective underlying the study. Learners cannot easily construct knowledge through observation, manipulation, discussion and experimentation when materials are unavailable or inaccessible. The continued dominance of teacher-centred instruction means that learners frequently remain recipients of information rather than active participants in learning.

The textbook findings are particularly important. Although textbooks are essential, the study shows that textbook provision alone is unlikely to transform learning. The relationship between textbook availability and achievement was positive but relatively modest. This is consistent with the study's discussion of international evidence suggesting that textbooks produce limited gains when learners lack foundational skills or when teachers do not use textbooks in pedagogically effective ways. The implication is that material provision must be accompanied by instructional improvement. The near-absence of libraries represents an equally important educational deficit. Libraries can provide learners with opportunities for independent reading and exposure to materials beyond the formal textbook. The study's findings associate library presence with stronger Mathematics and English performance, suggesting

that supplementary reading environments may have benefits beyond literacy itself. Teacher competence is therefore central. TLMs do not teach by themselves. Teachers must select appropriate resources, connect them to learning objectives, organize learner activities, ask thought-provoking questions and assess whether the materials have facilitated learning. The study's finding that available teacher guides were frequently underutilized reinforces the need for practical rather than purely theoretical professional development. The study also demonstrates that infrastructure is part of the TLM equation. A textbook cannot be effectively used when several learners must share one copy, when pupils lack appropriate seating or when classroom overcrowding prevents meaningful interaction. Likewise, digital learning materials cannot be introduced sustainably without appropriate electricity, connectivity, equipment, technical support and teacher competence.

The urban–rural divide raises an important equity issue. If access to instructional resources depends heavily on geographical location or community socioeconomic capacity, educational inequalities are likely to persist. The objective of improving quality education therefore requires targeted investment in underserved schools rather than relying solely on uniform distribution mechanisms.

6. Conclusions

The study concludes that TLMs are essential components of quality primary education in Chongwe District, but their educational value depends on both availability and effective

utilization. The evidence demonstrates significant shortages of textbooks, supplementary reading materials, libraries, specialized resources and digital materials, particularly in rural schools. Teachers recognize the value of instructional materials, and the study identifies positive associations between TLM availability/use and learner outcomes. However, classroom practice remains predominantly teacher-centred, limiting the potential contribution of TLMs to critical thinking, creativity, inquiry and collaborative learning.

The barriers are interconnected. Inadequate funding contributes to shortages; shortages encourage teacher-centred instruction; large classes make the effective use of scarce resources difficult; inadequate training limits teachers' ability to use available materials creatively; and weak management systems may prevent existing resources from being used effectively. Consequently, the solution cannot be reduced to textbook distribution. What is required is an integrated educational-resource strategy linking procurement, distribution, teacher development, school leadership, infrastructure, libraries, community participation and classroom pedagogy.

7. Recommendations

First, the Ministry of Education and relevant stakeholders should increase investment in teaching and learning materials and improve procurement and distribution systems. The national target of a 1:1 textbook-to-learner ratio should be pursued, with particular attention to early-grade and Zambian language materials. Second, school

libraries should be established and strengthened. Where permanent libraries are not immediately feasible, classroom reading corners and mobile library services can provide alternative mechanisms for increasing access to supplementary reading materials.

Third, teacher professional development should place greater emphasis on practical TLM utilization. Teachers should be supported to design lessons around inquiry, problem-solving, group work, demonstrations and locally available resources rather than merely receiving theoretical workshops. Fourth, school leaders should strengthen instructional leadership and resource management. Inventory systems should be regularly updated, materials should remain accessible for legitimate classroom use, and school improvement plans should explicitly incorporate TLM management and utilization.

Fifth, overcrowding should be addressed through teacher recruitment, deployment and infrastructure expansion, particularly in early primary grades. Reducing class sizes would make learner-centred teaching and meaningful use of materials more feasible. Sixth, community and parental participation should be encouraged while ensuring that reliance on community contributions does not deepen inequalities. Government provision must remain the foundation, with communities acting as partners rather than substitutes for public responsibility.

Seventh, locally relevant teaching materials should be developed using the cultural, linguistic and

environmental context of Chongwe learners. Locally produced charts, models, real objects and other low-cost resources can complement commercially produced materials. Finally, digital resources should be introduced progressively where infrastructure permits. Digital materials should complement rather than replace essential physical resources, particularly in rural schools.

8. Implications for Policy and Practice

The findings have implications beyond Chongwe District. They suggest that educational policy should shift from a narrow emphasis on the quantity of materials supplied towards a broader concern with the quality, accessibility, relevance and classroom utilization of materials. The Zambia 2024–2029 Partnership Compact provides an important policy context because it emphasizes inclusive quality teaching and learning and establishes targets relating to learning environments, teaching materials and teacher-pupil ratios. The Chongwe findings provide a useful district-level baseline against which the implementation of such reforms can be assessed.

The study also contributes to the literature by demonstrating that TLMs should be understood as part of a wider educational ecosystem. Their effectiveness depends on teachers, learners, school leaders, infrastructure, community support and policy implementation. This integrated perspective is particularly relevant for resource-constrained education systems.

9. Limitations and Directions for Further Research

The study is a case study of Chongwe District and therefore its findings should not automatically be generalized to all Zambian districts. The cross-sectional design also limits causal interpretation. The study relied partly on self-reported data, which may be affected by social desirability bias. In addition, learner achievement is influenced by several factors beyond TLMs, including household socioeconomic circumstances, parental education, nutrition, health and teacher characteristics. Future research should therefore employ longitudinal designs to examine whether improvements in TLM availability produce sustained improvements in learner outcomes. Comparative studies across Zambian districts would also help identify contextual differences and effective practices. Further research should examine the cost-effectiveness of textbooks, libraries, teacher training and digital resources, as well as the potential contribution of locally produced teaching materials.

10. Conclusion

Teaching and Learning Materials constitute an essential foundation for effective primary education. The evidence from Chongwe District demonstrates that learners benefit when they have access to appropriate textbooks, visual materials, real objects, supplementary reading resources and other instructional aids. However, the findings also demonstrate that the presence of materials alone is insufficient.

The central challenge is to transform TLMs from resources that teachers possess into resources that

learners actively use. This requires adequate supply, equitable distribution, practical teacher training, supportive school leadership, appropriate infrastructure, manageable class sizes and strong school-community partnerships. The Chongwe case therefore illustrates a broader lesson for education systems seeking to improve learning outcomes: investment in educational materials must be accompanied by investment in the people, practices

and environments that make those materials educationally meaningful. A textbook placed in a school is a resource; a textbook effectively used by a learner to read, question, practise, investigate and solve problems becomes an instrument of learning. The future of quality primary education in Zambia depends on closing this gap between provision and meaningful utilization.

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