Cost-effective supplementary learning and teaching materials (LTMs) can enrich teaching in every subject, engage students in multi-dimensional learning, and build students’ abilities to apply their knowledge.

Learning and teaching materials (LTMs) are concrete, tangible vehicles for supporting student learning. High quality LTMs are based on standards and curricular frameworks that connect disciplines with big ideas, themes, and concepts, and are the product of careful field testing and refinement. Issues policy and education planners must consider when deciding on LTMs are: the linkage with learning outcomes, selection, content area and grade level appropriateness, access and storage, and prioritization of LTMs in resource constrained environments. Education planners also need to ensure that relevant professional development for teachers is in place, and that supervisors support teachers’ integration of new practices.

Issues and Discussion

LTMs and learning outcomes: LTMs impact how teachers teach and how students learn, improving student outcomes at all levels and across disciplines by increasing student engagement and providing learners several ways to demonstrate their knowledge and skills.(6)(7)(11)(14)(15)(19)(24)(25)(27) For LTMs to impact learners, teachers must engage in transformative professional development to understand proper use and where LTMs fit within the curriculum and learning process.(3)(5)(14) For the purposes of this article, LTMs exclude textbooks and teachers’ guides (please see the separate article on Textbooks and teachers’ guides).

Selection and minimum lists: The educational value of LTMs is dependent on their direct relation to an inclusive curriculum, motivating students and teachers to incorporate LTMs into the learning process, and ensuring multiple perspectives are represented.(24) Minimum lists of the LTMs needed by students and teachers to achieve desired learning outcomes should be determined for each subject and grade level.(21) These “minimum learning material profiles” can include, for example, reference books, games, work cards, activity books, teachers’ didactic aids (flash cards, vocabulary cards, etc), maps, wall charts posters, poster card, marker pens, and paper.(21)

Supplementary LTMs are critical for literacy outcomes: learning to read, developing reading as a habit, reading to learn and access information, and reading for pleasure and enrichment.(21) Literacy LTMs include relevant and interesting books, leveled readers, newspapers, informational pamphlets, and other materials printed in mother-tongue and instructional languages reflecting local customs and
concerns. It is recommended that classroom libraries have at least four books per student. (21) LTMs impact what students read, how they read and how well they read and learn, therefore, students must be provided a range of reading materials in order to differentiate and meet all students at their reading level. (27) What students read also impacts how they think, therefore, students need texts that are thematically rich, grounded in conceptual knowledge, and support a variety of learning goals for a range of learners. (21) (26) (27) High interest texts at the appropriate readability level engage struggling readers who are willing to work through difficulties. (4)

Mathematics manipulatives and mathematics tools promote mathematic skill and conceptual development. (22) Manipulatives have the most impact on learning, as they engage higher level mathematical thinking and allow connections to be made from concrete representations to abstract concepts. (22) (23) Effective mathematics manipulatives include base ten blocks, counters, Unifix cubes, geoshapes, square tiles, and Cuisenaire rods. (17) (22)

Science materials should be divided by grade or course and include safety equipment, non-consumable materials and equipment, consumable materials, kits, miscellaneous materials, and technology (see an example list for different ages and subjects). (2) Science kits are thematically-organized sets of materials, allowing students to learn science by doing science themselves. (9) Science kits should contain: investigation guides, teacher resources, equipment for investigations (consumable and non-consumable), a classroom set of student resources books, and multimedia. (10) It is important to ensure that kits meet the science standards and are research-based and field-tested with appropriate assessments. (9)

Social Studies: Effective Social Studies LTMs include audio/video recorders, projectors, pictures, globes, primary sources, maps, and charts. (1) Teachers may need special professional training in the use of these materials as some research shows that social science teachers continue to depend on textbooks and chalkboards for instruction even when more diverse materials are available. (19) (20)

Access and storage: To ensure longevity, LTMs need to be stored and managed. (24) Materials used daily should remain in classrooms; others can be divided into classroom kits to rotate/share between classrooms, and less frequently-used or bulky items can be kept in storage rooms. (24)

Prioritizing for limited-resources contexts: Education planners in resource-constrained contexts must evaluate the cost of all necessary learning and teaching materials, not only textbooks and teachers’ guides, and ensure that schools have what they need for effective learning in each subject. (21) (23) Overall cost reducing strategies some countries have adopted include: selecting fewer curriculum subjects in order to better equip those that are chosen, strategies to extend book life, book and LTM sharing, reduced use of four colours in printing, and the use of materials loan or rental systems. (21)

**Inclusiveness Considerations**

- Children with disabilities – Materials should be accommodating to special needs of students through large font or Braille editions and usage of multiple reading levels.
- Culturally and linguistically diverse learners – Active learning that engages diverse cognitive strengths can help to ensure that an unfamiliar language of instruction is less of a barrier for learning. Cultural content is essential for students outside the mainstream culture to see their heritage reflected in their reading and learning materials. (12) (27)
- Gender: LTMs should equally portray males and females in ways to avoid negative gender
stereotypes. Illustrations or text references favouring males leads to gender bias, promoting stereotypes within the culture and affecting the interest and aspiration of female learners.(8)(13)

Policy Examples:

- National Curriculum Statement of the Solomon Islands [PDF]
- Republic of Namibia Textbook Policy [PDF]
- Analyzing and Selecting Science Curriculum Standards in New Jersey [PDF]
- South Africa Draft National Policy for the Provision and Management of Learning and Teaching Support Material (LTSM) [PDF]
- Washington State Guidance for Selection of Instructional Materials [PDF]

References and sources


