First Principles: Designing and Implementing Effective Classroom Instructional Materials Compendium

This First Principles: Designing and Implementing Effective Classroom Instructional Compendium provides an overview and guidance for designing and implementing programs that create and use classroom learning materials. The principles, steps, and indicators are primarily meant to guide program designs, including the development of requests for and subsequent review of proposals, the implementation of program activities, and the development of performance management plans, evaluations, and research studies. The First Principles are intended to help USAID education officers specifically, as well as other stakeholders— including staff in donor agencies, government officials, and staff working for international and national non-governmental organizations— who endeavor promoting, developing, and implementing programs that make learning materials accessible and effective in the development context. The guidance in this document is meant to be used and adapted for a variety of settings to help USAID officers, educators and implementers overcome the numerous challenges in addressing issues around access, relevance, quality, and appropriateness in developing and using instructional materials. The last section provides references for those who would like to learn more about the development and use of classroom materials.
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**Introduction**

Designing and implementing effective classroom instructional materials is an important part of teaching as well as student learning. Research indicates that the strongest predictor of student achievement is teacher quality (Darling-Hammond, 2000; Rivkin, Hanushek & Kain, 2005), which includes the instructional practices and materials used. Teachers need to present information using research- and evidence-based instructional materials. To that end, teachers require the skills to effectively (a) use the instructional materials provided by the textbook and other publishers; (b) adapt the materials for specific students as needed; and (c) develop their own instructional materials when published ones are not available and/or do not correspond to students’ cultures or experiences. Ministries of education (MOEs) and other stakeholders need knowledge of and involvement in selecting materials. Traditional instructional materials include hardcover textbooks, workbooks, worksheets, and a variety of supplemental items, such as compact discs, games, posters, charts, and other reading materials. Teacher-created or local cultural materials are those used when published materials are not available or to augment published materials. These materials may include local items such as shells, stones, or nuts for mathematics or buckets, ropes, and pulleys for physics. Oral storytelling can also be used for language development.

Challenges exist for teachers in learning the skills they need to use pre-published materials and develop their own instructional materials. For example, teacher training programs often focus on the “what”—the subject content knowledge of language arts, mathematics, and science—but leave the “how” of the instructional materials for teachers to figure out on their own. To address this challenge, and others, this paper provides seven principles for developing and implementing effective instructional materials and six steps for creating and disseminating the materials. The principles and steps speak to the vast differences in instructional materials, curricula, and professional development in developing countries. At one end of the spectrum are countries with established ministries or national offices of education; a national curriculum and standards; published textbooks with supplemental materials for instruction; university-based teacher training programs; and on-site professional development for teachers regarding how to use instructional materials. On the other end of the spectrum are countries or regions without published textbooks, a curriculum, or supplemental materials, with schools that are managed by a sole teacher or a local tribal group, and no professional development available regarding instructional materials. USAID field officers or other development personnel will first need to determine where on the continuum a country or region lies.

**Figure 1: Variables for Increasing Student Achievement**
The level of development in a country and the dissemination of instructional materials do not occur as isolated events. Rather, research shows that student achievement increases through the interaction of the following variables: (a) a rigorous curriculum that is aligned to national standards within and across grade levels; (b) teaching and learning that includes an effective teacher and instructional practices and materials that are engaging, cognitively demanding, and differentiated; and (c) the regular use of data and formative assessments to make instructional decisions (see Figure 1) (Barr & Parrett, 2007; Dailey, Fleischman, Gil, Holtzman, O’Day, & Vosmer, 2005).

Although this paper focuses on effective instructional materials, a country’s field officer or development personnel will need to keep in mind that such materials occur within the framework of a country or school’s curriculum, assessment, and instructional practices used in the classroom. Together, the three parts shape and influence student achievement. Discussions with school personnel and MOEs will need to include all three components when considering long-range planning and strategies.
7 Key Principles in Developing and Implementing Classroom Instructional Materials

For many people, the concept of “instructional materials” equates to a stack of textbooks. In this scenario, the materials for teaching and learning are viewed as publisher-produced textbooks and workbooks. Although these are certainly the most often used instructional materials in Western countries, in non-Western countries, other types of materials are used as well and will be described in this document. For non-Western countries, the ability to obtain and afford hardcover textbooks may be insurmountable, and instructional materials may look quite different from traditional textbooks and workbooks. Teachers use what they have at hand, including beads, feathers, pottery, scarves, or even nature itself. Despite the claims of textbook publishers, there is no one set of “best” instructional materials. However, instructional materials with certain aspects or characteristics clearly enhance student learning. Teachers should ask the following questions in order to identify good instructional materials:

- Do the materials create curiosity and engage students in learning?
- Do they foster problem-solving?
- Are they age appropriate and culturally appropriate?
- Do they use gender-sensitive and disabilities-sensitive language?

To determine the answers to these questions and others, the MOE or other educational entity needs to have a process in place for reviewing instructional materials, including textbooks, before purchasing them.

Because instructional materials are not a “one-size-fits-all” proposition, educators need to understand how to determine the appropriateness of the materials as well as how to adapt such materials to students with different needs, and also create their own materials. The designing of instructional materials should consider students’ past learning, current age, developmental level, learning style, language, and more. Educators who develop instructional materials must be keenly aware of how to create materials that correspond to the different needs, abilities, and skills of specific learners.

As with any written documents, (e.g., learning standards, curricula), instructional materials can be set aside to gather dust if educators do not value their purpose or know how to use them. Both pre-service and in-service professional development is needed in order for teachers to implement the instructional materials provided to them.

Lastly, educators cannot use materials that they do not have. Some schools and regions may receive instructional materials, while others receive none. This lack of equity can be disheartening. Ideally, a country’s field officer or development personnel can lead discussions and assist in developing a strategic plan to ensure that the schools with the least materials—and which are probably located the farthest from urban areas—be the first to receive the materials and the accompanying teacher training. Based on the core knowledge about instructional materials, which includes (a) the importance of their being based on students’ differences in age, learning styles, culture, and language; (b) the need for teachers to receive professional development on how to use the materials and develop their own materials; and (c) a dissemination process that achieves equity, the following principles apply:

**Principle 1. Use supplemental instructional materials in addition to textbooks.**

Although textbooks and their accompanying workbooks serve as the primary type of instructional materials in most developed countries, (Florida Department of Education, 2008), other instructional materials are enlisted as well. Some developing countries will have the ability and the finances to purchase textbooks while others will not. For both groups, the MOE or another educational entity or non-governmental organization (NGO) may be able to bear the cost of textbooks and other instructional materials for the schools. Beyond textbooks, leveled readers and trade books often accompany the reading or language arts program without additional cost. Leveled readers are used in addition to the standard reading materials and provide students practice with a vocabulary level that corresponds to their abilities. Trade books may also be leveled readers but are on topics of interest to students who are generally older. They may also be novels written at a simplified vocabulary level. Without books, students cannot practice or improve their reading. A critical task of the MOE, therefore, is to ensure that all schools have an ample supply of books.
In addition to textbooks, manipulatives are another important type of instructional material. Manipulatives allow for hands-on learning, engage students physically and mentally, and increase student learning in multiple areas (Bredderman, 1982; Mattheis & Nakavama, 1988). Examples of manipulatives include seashells for sorting, sticks for bundling into groups, and photos to place on a region, country, or world map. Ancillary materials that are provided with textbooks may also include manipulatives. However, MOEs should strongly consider purchasing supplemental materials, that is, items not provided by textbook publishers. For those schools without budgets for manipulatives and additional instructional materials, the field officer or development personnel should encourage the MOE to provide professional development for teachers regarding how to create manipulatives from the physical resources around them, and to find donors to purchase books and manipulatives.

** Principle 2. Use instructional materials that engage and challenge learners, corresponding to their developmental needs. 

Students are different in many ways; they have different learning styles, attitudes, perceptions, experiences, and so forth. It is critical to remember these differences when selecting, using, and creating instructional materials. Several theorists have outlined characteristics to describe the differences in how students learn, which can be useful to teachers as they select, use, and create instructional materials. For example, Piaget identified the following four developmental learning stages: (1) sensorimotor; (2) preoperational; (3) concrete operations; and (4) formal operations (Piaget & Inhelder, 1969). The four stages represent learners' cognitive development. The initial sensorimotor and preoperational stages require educators to develop hands-on and experiential materials for students as a means of learning. Another theory posits that students use three “learning styles:” visual, auditory, or kinesthetic. Teachers who follow this theory use aids and instructional materials that present key information through the students’ audio, visual and tactile senses. A third theory of students' learning—and a challenge to Piaget's cognitive development work—is Howard Gardner's “multiple intelligences.” Gardner questioned the idea that intelligence is a single entity that can be measured by IQ tests. Gardner's original classification included seven intelligences: (1) linguistic; (2) logical-mathematical; (3) musical; (4) bodily-kinesthetic; (5) spatial; (6) interpersonal; and (7) intrapersonal (Gardner, 1993). The commonality among the theorists and their work is the belief that learners differ and thus, educators need to identify and respond to these differences in their teaching.

In response to learners’ differences, renowned researcher and author Carol Ann Tomlinson, encourages educators to respond to individualized student needs through the use of differentiated instruction—"an approach to teaching that advocates active planning for and attention to student differences in classrooms, in the context of high quality curriculums" (Tomlinson, 2011). The role of curriculum and the implementation of instructional materials are central to her definition, with the aspect of assessment critical to knowing the learner’s current state. Tomlinson acknowledges the connection between curriculum, instruction/instructional materials, and formative assessment (see Figure 1).

Formative assessments are “a process used by teachers and students during instruction that provides feedback to adjust ongoing teaching and learning to improve students’
achievement…” (Council of Chief State School Officers, n.d.). The results inform the teacher and the learner in a continual process about changes needed in instructional practices and materials in order to close the gap between the learning goal and the student’s current state (Heritage, 2008). According to Heritage (2007), formative assessments may fall into three categories. The first, “on-the-fly,” occurs spontaneously during the lesson. For example, the teacher may overhear students’ misconceptions in small group discussions and correct their mistaken thinking. In the second category, “planned-for interaction assessment,” the teacher plans the questions or activities the students will encounter and uses their responses to determine their learning. The third category is the “curriculum-embedded assessment,” which typically includes end-of-chapter or unit tests. The disadvantage of this type of assessment is that the chapter is technically “finished” at this point in time, and thus the results cannot be used to aid in differentiating instruction for learners who need continued practice or information presented in a varied manner. Although formative assessments are usually included in published textbooks, teacher training programs do not always discuss how to effectively use the results in a timely and productive manner to differentiate and affect student learning. The use of published textbooks is the biggest threat to individualizing instruction and materials for students. It can become too easy for teachers to use the textbook directly without considering how students’ differ cognitively in learning styles, in multiple intelligences, and in other ways. Countries or regions without access to current and appropriate published textbooks can use local manipulatives (e.g., shells, leaves) as the instructional materials and cultural situations (e.g., selling corn at the market) as formative assessments to determine gaps in student learning.

Principle 3. Include visual images that are engaging and developmental appropriate in all instructional materials.

Research has shown that the best instructional materials have certain visual aspects. In preparing instructional materials, MOEs should consider several facts, while remembering that the research cited here applies to English language materials only and not to languages that do not reflect a “ball and stick” writing script (e.g., Japanese, Hebrew, and Arabic). A review of research by the Florida Department of Education (2008) found that readability is supported by (a) simple fonts (e.g., Times New Roman, Arial) without treatments such as italics or bold; (b) use of upper and lower case letters as they would normally appear (e.g., a capital letter to start the first word in a sentence); (c) normal spacing between words; (d) unjustified paragraphs; and (e) fonts with proportional spacing. In addition, younger students perform better with larger fonts, as noted in a study which found that U.S. kindergarteners’ reading performance improved with a 24–point font size, while students in second grade, found a 12–point font size to be adequate (Davis, Woods, & Scharff, 2001). Other studies examined the role of illustrations and found that, when illustrations were provided with text, the reading comprehension of first- and third-grade students in the United States increased (Brookshire, Scharff, & Moses, 2002).

When learning new concepts, learners of all ages benefit from the use of symbols as representations of an object (e.g., photographs, drawings) before moving towards abstract thinking about the concept. For example, using symbols of objects during a math lesson might help students understand concepts like addition. A picture of five apples plus a picture of three apples is initially clearer to students than 3 + 5, especially when they are first starting to learn numbers, because they can physically count the number of apples. MOEs should consider the use of visuals with text in books and on computer screens, especially when presenting new material to the learner. Computers
If textbooks from the United States are used, non-Western countries need to be aware that, while strides have been made recently to include more photos and drawings of students with black and brown skin tones and with disabilities, the vast majority of textbook characters are Caucasian, and the physical settings shown (e.g., homes, stores, animals, and food) will usually look strangely unfamiliar to learners outside the United States. Each country will need to decide how to address this issue. Possibilities include (a) having an educational publishing company develop ancillary materials that are specific to the country to support the U.S. textbook; or (b) providing extra pay for groups of local teachers to create instructional materials to be mass produced within the country.

Principle 4. Establish a documented process to review and select instructional materials.

The selection of textbooks and other instructional materials for purchase is, among other considerations, a financial decision. Depending on the number of students in a country, the cost can be millions of dollars, which means political parties, interest groups, and other lobbyists may attempt to influence the outcome of the bidding and selection process (Florida Department of Education, 2008). With this result in mind, the individual state departments of education in the United States have generally used a tiered level of committees that includes stakeholders from multiple private and public groups, including parents. This committee approach would likely serve developing countries well as a means to select materials that are the best for the students—and not which benefit companies and adults. The committee needs to first develop adoption or creation criteria to measure the appropriateness of instructional materials; one criterion is cost-per-pupil. Other criteria include those listed in Principle 2, with the inclusion of activities, lessons, practices, and materials that correspond to the various developmental, cognitive, and communicative needs, and learning styles of students. Decisions regarding the language to be used for instruction and instructional materials may be ripe for political chaos. For countries that were once colonized, the pull will be to use the colonizer’s language or the country’s original language. Many countries have multiple tribes, each with their own individual languages. Other countries will see English as the language of the future and determine that it is the best language for instruction. Foreign officers would be wise to allow these discussions to occur and serve as a “thought partner” or facilitator but not be a part of the decision.
If a country has the budget to hire a publishing company to create textbooks specifically for the country, then a number of issues need to be addressed before the project begins and the contract is signed. The MOE needs to have the following in place: (a) student/learning standards that the publisher will use to develop corresponding materials; (b) lists and descriptions of best instructional practices and materials that the publisher needs to use; and (c) design criteria for textbooks and ancillary materials—for example, format, font size, use of pictures and graphs, and cultural appropriateness of content. The capacity of the MOE to work closely with a publisher needs to be examined, and the staff available to work alongside the publisher needs to be substantial. For an extended list of the steps and responsibilities involved in developing textbooks with a publisher, see Florida’s Department of Education website: http://realm.cimes.fsu.edu/resources/files/researchReportfinal.pdf

**Principle 5. Secure long-term funding for expensive instructional materials, such as textbooks and computer.**

Textbooks are extremely expensive. In the United States, state departments of education can only afford to adopt a new textbook for one content area (e.g., math or science) every 5 to 7 years. These costs are shared in a sense because, although textbook companies claim otherwise, most of the material in U.S. textbooks is very similar for all states; little differentiation occurs (Sewall, 2005). If a developing country pays a publisher to create a textbook solely for its country, then the costs increase exponentially. Funding the cost of instructional materials is typically born by the MOE. However, if this is not possible, NGOs and foundations may be able to provide assistance. If budgets do not allow for the purchase of textbooks, the government could consider purchasing ancillary instructional materials. The focus should be on math and science manipulatives, K–12 leveled readers and trade books, and K–12 books for language arts development. Teaching manuals and other supports for teachers would also be highly useful in creating and implementing teachers’ own instructional materials. Before purchasing computer equipment and programs, a study of a country’s (or area’s) capacity for electricity, computer security and repair, and educational programming needs to be conducted. Textbooks, computers, and instructional materials need continual updating and upgrading, which usually requires additional costs; this should be part of long-range planning.

**Principle 6. Use local experts to develop country-specific supplemental materials, especially when local references are lacking.**

The cost of national textbooks is extremely high, and many developing countries cannot afford this expense. An alternative is to translate Western textbooks into a country’s native language. This works well with mathematics and science texts, which have concrete, defined formulas and answers. However, language arts or history textbooks would not be appropriate for such translation, as these are specific to a country’s authors, stories, and languages and to their history and culture. Instead, national and local experts could come together in small groups and use the national standards and/or curricula to guide the writing of textbook chapters or small information booklets. Economically, these smaller booklets could be circulated among the schools, and thus save money on printing and publishing. Together, the booklets would serve as a textbook. In addition, local educators could create cultural materials specific to their tribal or area group and share their ideas in teacher booklets. Donors could be sought to hire educators to create these materials during the school’s vacation times.

**Principle 7. Focus training and dissemination of materials first on those with greatest need.**

Areas of a country with the least instructional materials should be the first to receive materials and corresponding teacher training; this would provide a much needed academic boost to both teaching and learning. Textbook dissemination may be part of the contract with the publishing company, but the MOE will need to oversee the distribution of materials to ensure that it is conducted as agreed upon. Training teachers is critical in order for them to understand how to use the materials provided and how to extend, adapt, and create their own additional materials. The dissemination process should be part of the larger, initial strategic plan as it is likely to occur in waves, with some areas receiving books and instructional materials each year. In some climates, dissemination plans should include the provision of storage containers to protect the materials from humidity, bugs, and rain; in other climates, materials that are considered valuable may need to be locked in storage cabinets. Dissemination may also include teachers working with parents and the community to make similar materials available for use at home, which will enable students to practice and master important concepts.
6 Steps for Developing and Implementing Classroom Instructional Materials

The following section describes six steps to operationalize the key principles.

**Step 1. Conduct a participatory assessment of (a) the availability of current classroom instructional materials, (b) teacher use of the materials, and (c) educators' perceived needs.**

A participatory assessment of the following three factors will set the stage for developing the strategic plan for this initiative: (1) What instructional materials are available to teachers? (2) How and when are the materials used? and (3) What do teachers perceive as their needs in this area? To answer these questions, a well-designed, randomized sample across a country should be conducted throughout a country. The sample should include rural and urban areas; varied language and dialect groups; varied religious and tribal groups; and elementary and secondary schools. Responses will vary across these groups and will be used to inform the goals and timeline of the strategic plan. The assessment may be conducted through interviews, surveys, and school visits, which will add to the participatory nature, with teachers, educators, administrators, and the community involved. Using universities to design and implement the assessment adds yet another important stakeholder to the group. Teachers could offer valuable input in planning and developing the assessment tool(s).

**Step 2. Co-define the problem with stakeholders and use the assessment results to develop a strategic plan, including tool(s) to evaluate the effectiveness of the initiative during the project and after the project ends.**

Once the pre-assessment data are obtained, the results are used to establish the strategic plan for improving the availability and use of instructional materials throughout a country. A strategic plan of 3–5 years may be more realistic than a plan with a shorter timeframe if in fact the goal is to serve all schools and teachers. In this case, prioritizing the goals of the plan in areas of the country with limited instructional materials becomes essential. Goals should be concrete with clear timelines and include lists of those responsible for carrying them out. The prior use of numerous stakeholders, including community members and universities involved in the assessment step, will provide continuous partners for the MOE as they face the task of obtaining, developing, and disseminating instructional materials. In the United States, teams or committees typically work on various aspects of the plan and then periodically share the information in a large group. Such committees may consist of head or lead teachers, parents, curriculum leaders, community leaders, and university staff. An essential component of the strategic plan is a description of how the progress or success of the initiative will be measured. This is often developed through backward planning—that is, determining the outcomes that the stakeholders wish to see at the middle and end of the initiative and then creating the means to measure those outcomes in the initial strategic planning phase.

**Step 3. Assist in obtaining, selecting, and creating instructional materials.**

If the MOE plans to purchase textbooks, it will need a stringent and fair process for the review and purchase of books. The textbook adoption process needs to include selection criteria as described in Principles 1, 2 and 3, and it should be delineated in a request for proposal for the publishers (i.e., a formal request). In order to avoid any conflict of interest between the parties, the MOE’s role is to develop a process that is transparent. The websites of several U.S. state departments of education include information about the process for selecting and obtaining textbooks. These websites would serve as good resources for developing countries. Private educational consultants also offer information on this topic (Wiggins, G. n.d.), and university professors provide recommendations and guidelines for this process (Stein, Stuen, Carnine, & Long, 2001). If the cost of textbooks is prohibitive, or if additional supplemental materials are needed, skilled personnel should be sought to develop the materials. Not all teachers can “think outside of the box” and develop materials that are unique and appropriate for the students they teach. Contests could be held for creative instructional materials, and teachers selected from such a group could be paid to create additional instructional materials. Ideally, the MOE would be able to mass produce such materials for all teachers. Other sources of instructional materials might include: partners, such as universities; schools in the United States or England that are updating their textbooks and willing to send their used books to other countries; and financial support from foundations or other donors.
Step 4. Support the dissemination of instructional materials.

The strategic plan should include the steps for dissemination as well as a timeline. The timeline should show that the schools and locations with the least number of instructional materials will receive new materials first. The MOE, urban schools, or a country’s government may resist this practice. The areas with the fewest materials are likely those that are the most remote. They also may be a tribe or sect that is not in favor with the government, or they may have only a few schools. The field officer will have to decide how to encourage this action, yet know when to stop pressing if the result is detrimental to schools receiving the materials. Ideally, the dissemination of textbooks should be written into the contract with the publisher, and it becomes the publisher’s job to deliver the books to the schools. However, the MOE will need to ensure that this happens, and that favoritism or bribes do not occur. As for other instructional materials, it is hoped that those made by teachers will be mass produced by the MOE and disseminated at teacher trainings. The dissemination of computers will require extensive planning, including a strong preplanning component to ensure that electricity, support and repair staff, and replacement components are available.

Step 5. Ensure professional development occurs for teachers to familiarize them with the new instructional materials.

The instructional materials will not improve student learning if they are not used because teachers are unsure of how to use them. In many countries around the world, computers sit idle in
classrooms year after year because teachers do not know how to operate them. With millions of dollars spent on instructional materials, developing countries cannot afford to simply buy the products. Those within the MOE who are responsible for improving learning through the use of innovative techniques also must provide the training to operate the products. It is important to remember, too, that it is not just teachers who will need training, but others in the education system as well, including those at the district level, principals, and so forth. Sometimes textbook publishers offer free or low-cost training; other times, the MOE will need to find consultants to provide training. Consultants might come from within or outside a country. To increase the credibility of consultants, they should have a good understanding of a country’s culture. Current U.S. research shows that professional development is most successful in changing teacher practices when it is job-embedded, continuous, and focuses on subject matter and student learning (American Educational Research Association, 2005; Center for Technology in Learning (2009); Learning Forward, 2011). Job-embedded means that the training occurs in the classroom alongside the teacher, such as through mentoring or coaching. This model has high impact in creating teacher change but is also expensive. Even some schools in the United States cannot afford such a model, but this could be a goal in non-Western countries.

Step 6. Model data-based decision-making on the changes needed in the instructional materials and training from the results of the measures of progress.

The tool(s) to measure progress is defined by the planning group in Step 2. It might include surveys, interviews, and site visits to schools, similar to the predevelopment of the plan or other tools. The discussion around and decisions about this tool increase the stakeholders’ understanding about the objective use of data and the use of data to make decisions (Mid-continent Research for Education and Learning, 2003; U.S. Department of Education, n.d.). This process also provides a similar model for teachers to use in their classrooms and for the stakeholders to use as they move toward independence in this initiative. As with the pre-assessments, a mid-assessment and post-assessment should be conducted in order to consider the efficacy of both the materials and the training. Questions that should be addressed include:

- Have the teachers changed their instructional practices due to the new instructional materials?
- Do the materials help them differentiate instruction?
- Did the training provide them with the knowledge and skills to replicate the use of the materials in their classrooms?
- Are more textbooks available in more schools?

The mid-assessment and post-assessment would again include a varied sample of schools and teachers throughout a country. In reviewing the results, the use of visuals such as graphs and charts should be used to help the stakeholders reach their own conclusions about the data and determine changes needed. The results should be disseminated to teachers and administrators throughout a country—to build confidence in the belief that their voices are being heard and that changes are being made—as well as to the media, donors, and community members. Collection of data and review of the results should be a continual process and should be followed by changes to the instructional materials, the training, and the dissemination process, as needed.
Challenges and Limitations

There are challenges and limitations in all educational initiatives. The list below represents some of the most common challenges and limitations that might be encountered with this initiative.

1. Costs of textbooks and other instructional materials are prohibitive for many developing countries.

Books and other learning materials are expensive, and textbooks written specifically for a country and language group are even more expensive. Many developing countries must spend their limited money on food and shelter for their people, and education and the resources needed for it—school buildings, teachers, and books—are seen as luxuries that the government cannot afford.

Response: Without education, the cycle of generational poverty occurs; one generation begets poverty to the next generation if education does not intervene. A role of the field officer could be to help MOE staff and other decision-makers understand that the cost of education may be a reasonable price to pay for their citizens to have the ability to increase their income for feeding their families and providing shelter. Beginning steps towards this understanding might include discussions and conferences to encourage the idea that education is critical to breaking the cycle of poverty. In the initial years, a field officer might assist a country in securing donors for instructional materials with the hope that the cost will be paid for in later years through the economic successes of future generations.

2. Entrenched power structures dominate the selection and distribution of materials to favored areas and groups in a country.

At the national and local levels, entrenched power structures, including those in education, may attempt to control the selection, purchase, and distribution of educational materials. Their control may include authoritarianism, corruption, and lack of transparency. The results are (a) books and materials are used that do not correspond to the students’ needs or that offer a skewed view of the history and culture of a country; (b) money is spent for bribery rather than on instructional materials; or (c) there is a lack of equitable distribution of the materials.

Response: Formalizing and utilizing a documented process to review and select instructional materials (Principle 4) should assist in ensuring that the power structures cannot act alone. Similarly, the inclusion of stakeholders in the development of the strategic plan and its implementation (Steps 2 and 3) helps to ensure that no single person or group is in charge of the process.

3. Multiple dialects and languages are spoken in the country.

In many developing countries, multiple languages and dialects are spoken. In some former colonized countries, the language of the colonizers (e.g., French, English, or Portuguese) was, at one time, the language used for business and required in schools; however, times have changed. Tribal groups and entire countries now are using their native languages. The use of multiple languages forces the government to decide the language used for business and education. Some will decide to use a single language, which all citizens must learn; others will decide that, as an international language, English should be the language learned; and others will allow the tribal groups to maintain their languages, with a bilingual acceptance of English. Decisions about languages are highly political and not without conflict.
Response: Due to its political nature, this is generally not a topic open for discussion by the field officer. However, once a decision about language is made, the officer can assist the committee—which will include multiple language groups—in developing the memorandums of understanding for the publishers of textbooks and instructional materials, and the processes for reviewing and selecting the materials.

4. Professional development for educators is expensive and requires travel.

Without professional development, educators will have difficulty effectively implementing new instructional materials and knowing how to adapt them to the needs of specific learners. However, professional development costs money and requires teachers to travel to trainings, which is usually a hardship for those who live far from urban areas. The most successful professional development is continuous and job-embedded, that is, it occurs within teachers’ classrooms.

Response: In the United States, webinars are being used more and more to resolve the issues of transportation and distance and meet the need for continuous training. Although webinars might be available in a few developing countries, teachers and other relevant personnel from within the education system will most likely need to travel to a common area for training. One possible solution is for trainers to travel to urban areas to meet with groups of teachers. They could bring in small classes of students and model lessons with the students to demonstrate a job-embedded scenario. To increase the likelihood of their attending such trainings, teachers would need to be paid for the days that they receive training. For teachers in rural areas, a traveling professional development consultant would be the most efficient use of time and money.

5. Scaling up to the entire country takes time and large amounts of effort.

The MOE faces a large task in providing textbooks and other instructional materials to all schools in a country. As described earlier, the cost alone may be insurmountable for several years. In addition, the dissemination process is difficult at best for remote and mountainous areas of a country. Untrained teachers and a lack of community commitment to education serve as barriers as well.

Response: Countries need the political will and human capital to invest in education and the materials and personnel to implement this initiative. To scale up the initiative throughout a country, the country’s government must agree it is a priority in terms of human resources and finances. The MOE needs to make decisions and include stakeholders in planning. Local leaders and educators need to be part of the decision-making process for their areas if they are to accept the larger concept of education and the instructional practices and materials that accompany it. “Scaling up” may refer to some regions being served first, with an awareness of those with the greatest need receiving the materials and training. Regional mid-assessments and post-assessments of the initiative will help improve the process for each wave of implementation.
**Suggested Indicators of Success**

The overall goal of instructional materials is to increase students’ learning. Materials may be divided into three groups: (1) textbooks, (2) other teaching and learning materials those provided by textbook publishers, such as leveled readers), and (3) supplemental materials (those developed by others, such as trade books and teacher-made materials). Initially, the mere increase in the quantity and quality of these materials will serve as an indicator of success. Next, the professional development that teachers receive and implement about the materials, and their ability to make adaptations based on individual student needs serve as indicators. Changes in policy and processes at the governmental and local levels may be indicators as well. Outcomes will vary for each country and situation, but general categories are provided.

**Access Indicators**

Access indicators generally refer to ratios and proportion, including changes in them, which provide information about the availability of materials and other resources. Access indicators include:

- Ratio of textbooks to students available by content area (including increase over time);
- Ratio of other learning and teaching materials to students that accompany available textbooks (including increase over time);
- Ratio of supplemental materials—developed and produced by national experts and made available by a national educational entity—to students (including increase over time);
- Ratio of schools that receive (a) textbooks, (b) ancillary materials, and/or (c) supplemental materials (including increase over time);
- Ratio of teachers who receive professional training directly related to the instructional materials (including increase over time); and
- Ratio of trainings teachers receive (including increase over time).

**Quality Indicators**

Quality indicators are usually measured through observations, interviews, focus group discussions, and document reviews. In order to measure changes over time, it is necessary to conduct these observations at intervals, such as a baseline at the start of the intervention followed by annual, midterm, and/or end-line observations, depending on the activity, expected results, and project timeline. Quality indicators include:

- Improvements in the amount that teachers use instructional materials;
- Improvements in the quality of teachers’ use of instructional materials for differentiated instruction;
- Improvements in teachers’ ability to create instructional materials;
- Improvements in policy as reflected in legislative and regulatory frameworks and processes for reviewing, selecting, purchasing, and disseminating instructional materials; and
- Increase in national investment in instructional materials as reflected in average expenditure per child.
**Essential Readings**

To create instructional materials:


To understand the importance of and how to use data for instructional decision-making:


To determine policy and planning regarding the use of technology for instruction:


To conduct textbook adaptation processes:


**References**


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First Principles: Designing and Implementing Effective Classroom Instructional Materials is part of a series called First Principles, which provides guidance for programming in a range of topics in education and development. Topics in the series include:

- Community Engagement
- Early Childhood Development
- Early Reading
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- In-Service Teacher Professional Development
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