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First Principles:

Designing Effective Education Programs Using Standards and Assessments

Digest

Credit: Cassandra Jessee/AIR

It is becoming increasingly apparent that standards and assessments play an important role in achieving high student learning. Results obtained from international assessments, such as the Trends in Mathematics and Science Studies (TIMSS), the Progress in International Reading Literacy Study (PIRLS), and the Programme for International Student Assessment (PISA), indicate that the education systems of high-performing countries share two key features: (1) clear, consistent, demanding, and publicly articulated academic standards and (2) regular, mandated programs for assessing student learning.

Standards and assessment may be regarded as two bookends to an education system. Standards define the expectations for what students must know and be able to do at the end of each grade level, whereas assessments (e.g., classroom-based assessments, large-scale examinations, national assessments of student learning) provide a measure for whether students are successfully learning the content delineated in the standards. Standards can be broken down further into content and performance standards.

Content standards specify what students should know and be able to do at the end of each grade level, while *performance standards* define the degree of mastery of the knowledge and skills required for proficiency.

Within any education system, standards and assessments must work hand in hand to ensure that key education stakeholder groups clearly understand what students are expected to learn and to determine how well students are learning. Therefore, the assessments must be developed to measure the knowledge and skills outlined in the standards. When standards and assessments are closely aligned, low student performance on the assessments implies poor student learning and provides the basis for a further examination of the alignment of other system components, such as curriculum, classroom instruction, materials development, teacher professional development, supervision, management, and accountability, relative to the expectations for student learning outlined in the standards.

Principles are defined as the foundational concepts, underpinnings, or main ideas that guide a given practice area. The principles outlined below provide a framework for the elements of best practice in standards and assessments. Principles can also be described as the outcome of properly implementing the steps described in the next section. Research and practice have shown that the successful implementation of standards and assessments depends on these key principles.

1. Establishing national and local consensus for the importance of applying standards and assessments in education is an essential prerequisite to developing and implementing standards and assessments.

A starting point for implementing standards and assessments in an education system is creating a reasonable level of understanding, purpose, and common interest across stakeholder groups—including government officials, teachers, parents, and community members. This approach generally requires a series of meetings and workshops, with skilled facilitation and participation from all regions of a country.

2. Challenging content standards should accurately and succinctly specify what students should know and be able to do at each grade level and in each key subject area.

Ideally, content standards are developed collaboratively by teams of local experts in curriculum, teacher training, supervision, and assessment. In addition, national content standards should be aligned to international standards so that students in a country will have the opportunity to learn world-class material. The standards need not be extensive—approximately 30 to 40 statements per grade level and subject area are usually sufficient.

3. A high-quality and comprehensive student assessment program should feature multiple types of assessments, all aligned to the content standards.

International experts recommend a multifaceted assessment system—with diagnostic assessments, classroom assessments, public examinations, and sample-based national assessments—to measure achievement of the content standards. Each type of assessment has its own purposes, whether for curriculum development, instructional improvement, system evaluation, or decision making.

4. Performance standards are essential in determining whether students have demonstrated proficiency on assessments in relation to the content standards.

Performance standards provide a way to interpret achievement scores that goes beyond numbers. Most commonly, a given assessment uses four performance categories (e.g., below basic, basic, proficient, advanced), each with a description of its meaning. Performance standards are common practice for simplifying and explaining the aggregate results from assessments, as well as for tracking the progress of students, individually or as a group, over time.

About This First Principles

This *First Principles: Designing Effective Education Programs Using Standards and Assessment Digest* provides an overview and guidance for designing and implementing programs focusing on standards and assessment. The principles and steps 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 nongovernmental organizations—who endeavor to improve education systems on the basis of standards and assessments in the developing country 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 developing and applying standards as well as the subsequent assessments of performance. The last section provides references for those who would like to learn more about issues and methods for developing and implementing a standards-based education system. This *Digest* version provides a brief overview of key considerations for using standards and assessment in education programming.

5. **Accountability provisions can increase system performance by rewarding or sanctioning students, schools, and districts on the basis of the learning outcomes.**

In addition to being used for instructional improvement, assessment results can be used to hold schools and districts accountable for student learning. Accountability can be a powerful lever by establishing high or low "stakes" (rewards or sanctions) for student achievement. Such policy-related issues require careful consideration by technical experts and stakeholders. In addition, the stakes must be clearly communicated so that the public buys into and supports the system.

6. **Maximum efficiency is gained by aligning all parts of a system—standards, curriculum, materials, training, assessments—to promote student achievement.**

The concept of alignment—the degree to which the parts of an education system are in agreement and are focused on promoting better student learning—is perhaps the key issue in efficiently using education resources. Strong alignment requires a well-planned, collaborative effort to directly link curriculum, instruction, professional development, teacher management, supervision, and student assessments to the content and performance standards.

7. **All students deserve the opportunity to learn the same content standards, even though they may have different socioeconomic, racial/ethnic, gender, geographical, and linguistic characteristics or backgrounds.**

Fairness in education means that all students have equal access to the same academic content. Although students will not perform at the same level on assessments, standards can promote fairness by ensuring that academic expectations are not raised or lowered for particular groups of students. In fact, standards are essential in creating a merit-based environment for success in school and promotion to the next cycle of education.

8. **Responsibility for the implementation of standards, curriculum, and instruction is most effective when it is decentralized to the districts and schools.**

Districts and schools are in the best position to facilitate the implementation of the standards because of their proximity to the classrooms and their knowledge of local conditions. Decentralization should promote structures and policies in which district officials support implementation at the classroom level, school principals function as instructional leaders, and teachers work collaboratively in groups to learn from one another.

9. **Standards-aligned supervision, support, and technical assistance must be provided at all levels to foster the improvement of educational services.**

From the central level to the schools, support needs to be available throughout the system so that the different elements of education that are aligned to the standards can be comprehensively and effectively implemented. Technical experts and advisors at the national and regional levels create standards-aligned materials for teachers, classrooms, and training systems to ensure the capacity of teachers at the local level to provide instruction according to the learning expectations outlined in the standards. District supervisors provide direct training and guidance at the school and classroom levels in support of the attainment of the standards.

10. **Information from assessments of student learning outcomes is the basis for guiding policy analysis, decision making, educational planning, and resource allocations.**

Measurement of student learning outcomes—through classroom-based assessments, public examinations, or sample-based national assessments—provides the most important information for determining whether the system is achieving intended results and for developing interventions to build on strengths and address weaknesses. It is essential to have information from standards-aligned assessments to guide planning, decision making, and revisions of curriculum and policies.
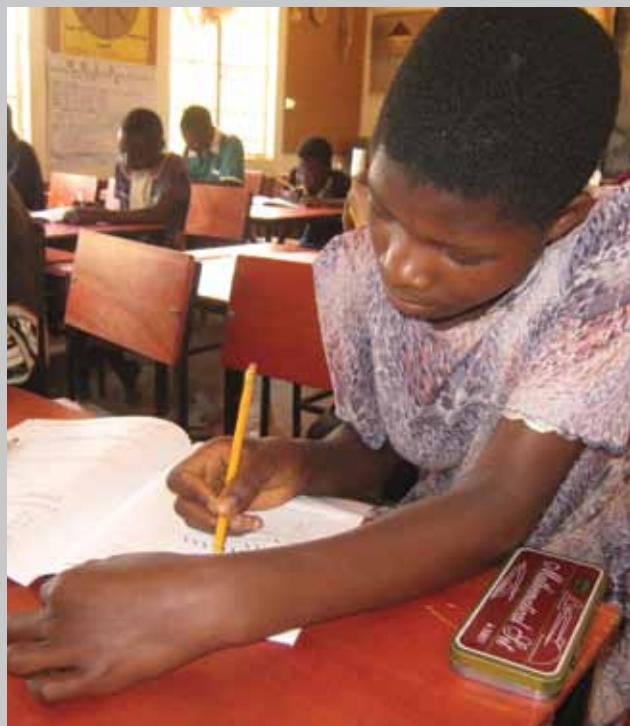
6 Steps in Implementing Standards and Assessments

The following six steps are essential for designing and implementing standards and assessments. Each step includes several activities for developing a standards-based system. The principles previously described should be considered while implementing these steps because they can facilitate a successful outcome to implementing standards and assessment programs.

1. Build support for using standards in education.

Several activities are prequisites to creating standards and assessments. The Ministry of Education generally creates a task force or steering committee to lead meetings with stakeholders (from the government, businesses, unions, communities, etc.) and to make decisions on policy, planning, development, implementation, and evaluation of the reform. Accompanying the steering committee is a technical committee that provides advice on technical issues related to standards, assessments, and other parts of the system (curriculum, materials, training, supervision). Policymakers need to define the stakes for performance on the various assessments (classroom assessments, examinations, national assessments) for the different levels of the system (student, classroom, school, district). Costs for the reform are estimated, and legal and administrative issues are addressed.

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2. Develop content standards.

The process of developing content standards is a central technical piece that precedes the development of a standards-aligned education system. Without a solid foundation of strong, clear, and relevant content, the pedagogical and assessment systems will be compromised. Content standards begin with local experts, in some cases supported by international technical advisors, analyzing the content in existing curricula and textbooks. Preliminary standards can be developed from this existing content, comparisons with similar countries, and lessons based on the experiences of local educators and technical advisors. An important part of this step is comparing the preliminary national standards with international content standards. The goal is to ensure that the national standards take into account international best practices. From national and international sources, the experts then generate clear, succinct, and appropriate behavioral statements of academic content. They also check that the standards are sequenced correctly within grade level (horizontally) and across grade levels (vertically). Finally, the experts produce a standards document, which is generally a short booklet that contains the standards for a cycle of schooling.

3. Implement content standards.

Standards-aligned teacher guides—often called pacing guides—have two purposes: (1) to group and sequence the standards in monthly units so that teachers can pace their instruction throughout the school year and (2) to connect the standards with resources such as the curriculum and textbooks. The guides also provide sequenced standards and units for classroom-based assessment so that assessments can be designed to test the material for that month of instruction. Important complements to the pacing guides are model lesson plans, which provide teachers with structure and activities for teaching their daily lessons. Textbooks and materials should also be aligned to the content standards for efficient implementation. Both in-service and preservice teacher training provide an orientation and a follow-up

to standards-based instruction; the in-service training, to monitor and supervise classroom practices, is ongoing and designed as a mechanism for continuous improvement of teacher behavior.

4. Assess student achievement.

Policymakers, planners, assessment experts, pedagogy specialists, and financial managers should collaborate at an early stage to determine an assessment plan. The plan includes determining the types of assessments, the grade levels and subject areas, the timetable for implementation, and the intended uses of assessment results. Assessments of student achievement are grouped into two main categories: formative (diagnostic assessments, classroom-based assessments) and summative (public examinations, sample-based national assessments). A comprehensive assessment system contains both types. Each assessment should be based on the standards and be mutually supportive in contributing to the overall goals of the system. Ideally, assessments, with the exception of some classroom-based assessments, are constructed by experts in the field of testing, including content specialists and psychometricians (statisticians who specialize in measurement through testing). Some assessments involve other activities, such as collecting background information on students, teachers, and schools and developing sampling plans. Significant attention should be dedicated to administering and scoring the assessments. Finally, a country should seriously consider participating in international assessments to have access to cross-national comparative data for both test results and pedagogical strategies.

5. Set and maintain performance standards.

This step involves establishing the performance standards, or the categories and descriptions of student performance, and maintaining the standards through statistical analysis (scaling and equating). To set the performance standards, a group of experts chooses among several internationally accepted methods. Group members also determine the categories for the performance standards—usually four categories—and work with teachers and content specialists to develop descriptors of student performance that match up with the categories. For instance, a description of what it means to be categorized as "proficient" in grade 3 mathematics will be based on a range of test scores. The descriptions and score ranges for performance categories are established at a standard-setting conference. Finally, through test construction and

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statistical analysis, psychometricians are responsible for maintaining the performance standards by ensuring that students who perform equally from one year to the next have similar test scores as well as the same classification by performance category.

6. Analyze, report, and use assessment results.

Psychometricians lead the analysis of the assessment data and create score reports. They also conduct analyses to correlate test scores with the background data. They write technical reports based on the assessments, which may include analyses by groups such as gender, zone (urban, rural), region, district, and school. The analyses can identify strengths and weaknesses by group, subject area, and content domain (e.g., number sense, operations, measurement, geometry, data, problem solving). The psychometricians may also conduct secondary analyses based on needs determined by government officials or other stakeholders, including donor agencies. Score reports and technical reports are disseminated by education officials. Assessment results should be used appropriately and comprehensively to improve classroom instruction and student learning outcomes, as well as to inform policy analysis, planning decisions, and resource allocations. In Honduras, for example, assessment results are used in teacher professional development workshops, with particular attention paid to how teachers should use publications such as pacing guides, textbooks, curricula, and formative assessments to improve student learning outcomes. Score reports are used to share a wealth of information for district-level educators, school directors, teachers, students, and parents.

Challenges and Limitations

Previous experience has shown that several challenges can impede the proper implementation of standards and assessments. However, given that the reform is backed up by extensive research and strong results throughout the world, countries have a vested interest in overcoming these challenges; in fact, they must be overcome for the education system to operate efficiently and effectively and for students to reach their potential as learners. The challenges tend to materialize in the following areas.

1. Stakeholders have difficulty moving beyond previous education paradigms.

This challenge usually involves a desire to retain tests and procedures in which high-quality standards and assessments are not as important as the need to select elite students for higher studies. In such cases, there is a need for activities such as building a strong steering committee and conducting study tours to countries that are successfully implementing standards and assessments. Stakeholders must understand that the key concepts for improving student learning are strong academic standards, criterion-referenced assessments, and opportunities for all students to learn.

2. Efforts at building local capacity do not bear as much fruit as needed.

Clearly, a need exists for local reform leaders and specialists in areas such as content standards, formative and summative assessments, and teacher professional development who understand how standards and assessments support improvements in student learning and can build components to make these improvements a reality. A need may also exist for more outside technical assistance to mentor local leaders and specialists and/or increase the amount of time it may take to implement standards and assessments in an education system.

3. Components of the standards-aligned education system are not working together in an efficient way.

This challenge refers to the issue of alignment, or ensuring that all components of the education system are based on the standards. It is not possible to have alignment be fully effective when curriculum developers, textbook publishers, and assessment specialists are working in isolation. Generally, for standards and assessment to bring about improvements in student learning requires leadership from decision makers, that is, those involved in the steering committee who can demand that component leaders collaborate and base their interventions on the standards.

4. Not enough focus is placed on results in terms of student achievement.

The goal of any successful education initiative is to increase learning for a maximum number of students. Countries with high rankings on international assessments of student achievement have large numbers of students with strong test scores. In other words, it does not help enough to have a few students who have outstanding results and the majority who either have low scores or have dropped out. This message can be strengthened through wide campaigns to reinforce the goal of the initiative, with presentations and discussions on how positive results can be achieved. Assessment results must be tracked, communicated broadly, and then used by decision makers and others (district officials, school principals, teachers, parents, and students) to improve achievement.

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Suggested Indicators of Success

A wide range of indicators can be identified or developed to judge the success of standards and assessments as an influence to improving an education system. Some of these indicators are more process oriented while others are impact oriented. Examples of indicators include the following:

- Identification and support of local reform leaders
    - Number of workshops held
    - Number of participants in attendance
    - Number of policies developed or revised that incorporate elements of standards and assessment

- Training of government officials, lecturers, school principals, and teachers
    - Number of decision-makers and other high-level officials trained
    - Number of regional and district officials trained
    - Number of lecturers at teacher's colleges trained
    - Number of school principals trained
    - Number of teachers trained (pre-service and in-service)

- Development and implementation of guides, materials, and assessments
    - Number of teacher's guides produced and distributed
    - Number of materials produced and distributed (posters, training guides, videos, CDs, parent guides)
    - Number of formative assessments developed and administered that are aligned with standards
    - Number of summative assessments developed and administered that are aligned with standards

- Improvements in student learning outcomes
    - Increase in student achievement scores on public examinations
    - Increase in student achievement scores on national assessments
    - Increase in student achievement scores on international assessments
    - Increase in student completion rates

    - Number of assessment reports developed and disseminated to stakeholders

- Improvements in teacher skills and knowledge
    - Improved pedagogical classroom practices
    - Improved teacher skills measured through assessments

Essential Reading

Kuan, L. (2011). *What does it take to develop and implement standards-based assessments?* Washington, DC: U.S. Agency for International Development and the American Institutes for Research.

Hamilton, L. S., Stecher, B. M., & Yuan, K. (2008). *Standards-based reform in the United States: History, research, and future directions.* Los Angeles, CA: RAND Corporation.

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First Principles: Designing Effective Education Program Using Standards and Assessment 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
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- Gender
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