

# Methodologies for Alignment of Standards and Assessments

Betsy Case, Ph.D.

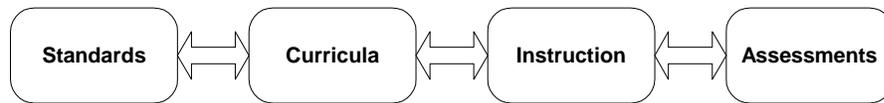
Sasha Zucker

*Presentation by Betsy Case, Ph.D., in Beijing, China at the China–US  
Conference on Alignment of Assessments and Instruction*

July 2005

# Methodologies for Alignment of Standards and Assessments

Alignment can be broadly defined as the degree to which the components of an education system work together to achieve the desired goals of stakeholders. These components include the academic content standards; the curricula for the state, school, or district; and classroom instruction (see Figure 1). In the United States, the main purpose of studying and applying alignment has been to strengthen educational systems. Today, policymakers in the United States are using alignment methodologies to meet the rigorous technical standards for accountability that are mandated by the *No Child Left Behind Act* of 2001 (NCLB). These methodologies have become more sophisticated in response to more complex goals for the education system.



**Figure 1. Components of Alignment**

## Background History of Alignment

Alignment is not particularly new to the field of educational assessment (Bloom, Madaus, Hastings, 1981; Impara, 2001; Tyler, 1949; Webb, 1999). Typically, test developers analyze the alignment between an assessment and a set of content standards that the assessment is supposed to measure. This analysis has been used to provide evidence of an assessment’s *validity*, which is the accuracy of interpretations made using an assessment’s results (AERA, APA, and NCME, 1999; Ananda, 2003; Impara, 2001; Resnick, Rothman, Slattery, and Vranek, 2003; Webb, 1997b). For example, a valid mathematics achievement test will make it possible to identify students with varying levels of achievement in mathematics. Therefore, the developers of the test must ensure that the items align with the grade-level standards for what the students are expected to know and be able to do in mathematics.

## Methodologies for Alignment of Standards and Assessments

---

Until relatively recently, the method for obtaining evidence of alignment has not been carefully defined. The enactment of NCLB established rigorous requirements for alignment between a state's standards and assessments used for accountability. Because of this law, as well as the previous reforms that promoted standards-based education, researchers have developed more detailed procedures for aligning standards and assessments.

### Methods for Alignment

There are three common methods for systematically evaluating and documenting the alignment between standards and assessments: sequential development, expert review, and document analysis.

#### Sequential Development

In sequential development, the standards and assessments are produced in a serial manner. This method is perhaps the easiest to understand because it follows a logical process (Webb, 1997a). First, the academic content standards are established with input and scrutiny from educators, experts, and the public (La Marca, Redfield, Winter, Bailey, and Despriet, 2000; Resnick et al., 2003; Webb, 1997a). Then, the standards are used to design the blueprint for the structure and content of the assessment. This methodology ensures that each standard has an adequate number of items corresponding to it. The link between each standard and item can be easily documented for evidence of alignment.

#### Expert Review

This methodology is used to analyze the alignment between standards and assessments after both have been developed. A panel of experts compares the standards to the assessment. These experts are knowledgeable about the content covered by the standards and about the process for developing tests (Webb, 1997a). The process may include educators, administrators, parents, and other members of the public, in addition to content and assessment experts. Frequently, expert review occurs after sequential development to provide evidence of alignment between standards and an assessment.

#### Document Analysis

In this methodology, the standards and assessment documents (such as test forms) are analyzed using a system for encoding their content and structure. The alignment of the documents can then be quantified and systematically compared. This methodology is especially suited to complex alignment studies. For example, the respective development of the Third International Mathematics and Science Study (TIMSS) and the Programme for International Student Assessment (PISA)

## Methodologies for Alignment of Standards and Assessments

relied on the document analysis to compare the curricula of different nations. As in the expert review methodology, a panel of content experts carries out the encoding and analysis.

### Conclusion

The three alignment methodologies discussed in this report have been used successfully in education systems around the United States. Moreover, education research continues to strengthen the understanding and practical application of these methodologies. The methodologies can be used independently or in a combination of the three. To align standards and accountability assessments as required by NCLB, policymakers may then select the combination that is suited to their education system's needs and resources. By producing a system of assessments that are tightly aligned with academic content standards, teachers and policymakers will have accurate information about student achievement. With this information, educators will be able to improve instruction in the classroom. Policymakers will have information to improve the education system as a whole.

### References

- American Educational Research Association (AERA), American Psychological Association (APA), & National Council on Measurement in Education (NCME). (1999). *Standards for educational and psychological testing*. Washington, DC: Author.
- Ananda, S. (2003). *Rethinking issues of alignment under No Child Left Behind*. San Francisco: WestEd.
- Bloom, B. S., Madaus, G. F., & Hastings, J. T. (1981). *Evaluation to improve learning*. New York: McGraw-Hill.
- Impara, J. C. (2001). *Alignment: One element of an assessment's instructional unity*. Paper presented at the 2001 annual meeting of the National Council on Measurement in Education, Seattle, WA. Retrieved from <http://www.unl.edu/BIACO/NCME/Alignment%20revised.pdf> on September 21, 2004.
- La Marca, P. M., Redfield, D., Winter, P. C., Bailey, A., & Despriet, L. (2000). *State standards and state assessment systems: A guide to alignment*. Washington, DC: Council of Chief State School Officers.
- Resnick, L. B., Rothman R., Slattery, J. B., & Vranek, J. L. (2003). Benchmarking and alignment of standards and testing. *Educational Assessment*, 9(1 & 2), 1–27.



**Methodologies for Alignment of Standards and Assessments**

---

- Tyler, R. W. (1949). *Basic principles of curriculum and instruction*. Chicago, IL: University of Chicago.
- Webb, N. L. (1997a, April). *Research monograph No. 6. Criteria for alignment of expectations and assessments in mathematics and science education*. Washington, DC: Council of Chief State School Officers.
- Webb, N. L. (1997b, January). Determining alignment of expectations and assessments in mathematics and science education. *NISE Brief 1(2)*. Retrieved from <http://facstaff.wcer.wisc.edu/normw/1997alignmentbrief.htm> on April 23, 2004.
- Webb, N. L. (1999). Research monograph No. 18. Alignment of science and mathematics standards and assessments in four states. Washington, DC: Council of Chief State School Officers.

**Additional copies of this and related documents are available from:**  
Pearson Education, Inc.  
19500 Bulverde Road  
San Antonio, TX 78259  
1-800-211-8378  
1-877-576-1816 (fax)  
<http://www.pearsonassess.com>