Core Function: Curriculum, Assessment, and Instruction Planning

Effective Practice

Engage Instructional Teams in assessing and monitoring student mastery

Overview: Instructional Teams should take an active role in assessing and monitoring student mastery of standards-aligned learning objectives. Formative assessment approaches include administration of a pre-test to provide teachers and students with diagnostic information on what students already know so that instruction within units can address student learning needs appropriately. Post-tests reveal the degree of student mastery of learning objectives following instruction, and results can be used to guide reteaching if necessary. Instructional Teams may want to calculate effect sizes to gauge instructional impact on groups of students and determine why some groups perform better than others, as well as compare student progress to their achievement.

Evaluate Your Practice: Do your Instructional Teams systematically develop and administer formative assessments to be used at the beginning and end of lessons or units? Do teachers use the data to differentiate instruction? Do the teams use the information to modify units of instruction and share the most successful teaching strategies? Would determining effect sizes for some instructional units add valuable information to guide your Instructional Teams?

Introduction

Teaching has long been seen as an individualized practice, with educators acting autonomously within their own classrooms. Darling-Hammond, Wei, Andree, Richardson, and Orphanos (2009) refer to this as an "egg crate model of instruction," alluding to the very separate and independent nature of instructional practice. Recent meta-analyses (e.g., Hattie, 2012) have led researchers to advocate the development of Instructional Teams that regularly collaborate to solve learning dilemmas, examine impact of curricula and teaching on students, and cooperatively plan and critique lessons, objectives, and success criteria. Instructional Teams work to "build the curriculum from learning standards, curriculum guides, and a variety of resources [and] organize the curriculum into unit plans that guide instruction for all students and for each student" (Redding, 2007, p. 95). It is important to include special education teachers on Instructional Teams to allow for the development of standards-aligned individualized education programs (IEPs). IEPs that are standards-aligned lead to higher student expectations and increased exposure to subject matter with focused instruction to meet challenging goals, as well as increased collaboration between special and general education teachers (McLaughlin, Nolet, Rhim, & Henderson, 1999). English Language Learner (ELL) personnel should also be included on Instructional Teams to develop standards-aligned curricula to address students' linguistic needs (Rance-Roney, 2009).

Plans for each standards-aligned unit of instruction, which typically involve three to six weeks of academic work within a given subject area or grade level, are developed by Instructional Teams and shared with all teachers that teach the corresponding unit. Pre- and post-tests are methods of formative assessment that help teachers determine student mastery of objectives prior to the introduction of units or lessons and determine their mastery at the end of the unit or lesson. These tests enable the teacher to adjust his or her approach in teaching the lesson or unit and differentiate assignments and supports for each student and/or modify instructional approach as needed. Relevant research that addresses ways that Instructional Teams can effectively monitor and assess student mastery of standards-aligned objectives is described below.

How can Instructional Teams effectively use formative assessment approaches to assess and monitor student mastery?

Assessing and monitoring student mastery of learning objectives requires that Instructional Teams systematically use formative assessment methods. Black, Harrison, Lee, Marshall, and Wiliam (2004) provide a working definition of "assessment for learning," as opposed to assessment for accountability purposes:

> Assessment for learning is any assessment for which the first priority in its design and practice is to serve the purpose of promoting students' learning. It thus differs from assessment designed primarily to serve the purposes of accountability, or of ranking, or of certifying competence. An assessment activity can help learning if it provides information that teachers and their students can use as feedback in assessing themselves and one another and in modifying the teaching and learning activities in which they are engaged. Such assessment becomes 'formative assessment' when the evidence is actually used to adapt the teaching work to meet learning needs. (p. 10)

Feedback within formative assessment provides information to teachers and students on the gap between a student's current level of understanding and the desired learning objective. This feedback should also help students clarify learning goals and their progress towards these goals, as well as steps they need to take to reach those goals (Hattie & Timperley, 2007). Research addressing the effectiveness of formative assessment approaches on student learning generally shows at least moderate positive effect sizes across most studies, with stronger results obtained for formative assessment strategies learned within professional development initiatives and for computer-aided formative assessment (Hanover Research, 2014; Kingston & Nash, 2012; Rich, Harrington, Kim, & West, 2008; Wiliam, Lee, Harrison, & Black, 2004). Making students aware of learning objectives and assessment criteria for mastery of these objectives can also improve learning outcomes for students (Hanover Research, 2014).

Giving a pre-test to students is a critical part of the formative assessment process because it informs the teacher about each student's level of understanding of the concept(s) about to be taught. Some students will need to catch up or be "red-flagged" for attention. Other stu-

dents are primed and ready for the new information. Still other students may already have a firm grasp of the information about to be taught and need something extra to provide challenge. This information is all captured in a simple pre-test that the Instructional Team uses as data in order to make these decisions. Pre-tests are for diagnostic purposes only and should not be graded (Carnegie Mellon, n.d). Instructional Teams should "set the stage" for students with disabilities or English Language Learners (ELLs) by explicitly explaining the purposes of the pre-test (not for a grade, but to help the teacher determine what students already know so that he/she can plan accordingly) because these students often differ from their classmates in the way they respond to testing/assessment situations (Ainsworth, 2011). Because Instructional Teams have worked together to plan their units of instruction, they also have prepared leveled lessons and materials to address varying student performance on the pre-test so that each student's needs are met.

The post-test then becomes the measure of how well the instruction was able to close the gap between what the student knew prior to the lesson and where the teacher wanted the student to be at the end of instruction. The post-test should use the same questions as the pre-test, and feedback from the post-test should be given to the student as quickly as possible. Instructional Teams can use the results of the post-test to shape how they reteach the lesson for those who did not understand the first time around, or if this is a large number of students, perhaps reexamine how the unit was taught overall. Carefully constructed unit plans that include pre- and post-tests assure that students master standards-based objectives as well as provide opportunities for enhanced learning (Redding, 2007).

How can teachers and Instructional Teams further evaluate the impact of instruction on student mastery?

Instructional Teams may want to explore the use of effect sizes to help them determine the impact of their instruction on students. Effect sizes can be calculated by taking the difference between two mean scores (e.g., Unit 1 post-test mean class score—pre-test mean class score) and then dividing this figure by the average spread of student scores (i.e., average standard deviation). Effect size is a measure of student progress, not a measure of student achievement; effect sizes describe how much students have improved, not how they performed relative to other students in the class (Killian, 2016). Small

sample sizes (e.g., fewer than 30 students) may limit the accuracy of effect sizes, and thus this technique should be used primarily with larger groups of students (Hattie, 2012). Instructional Teams may want to use effect sizes to answer questions such as:

- "How well is what we're doing working for different groups of students each year and why?"

- "What possible reasons could there be for some students or groups of students progressing more or less?" and

- "How does student progress compare with their achievement levels?" (LaPointe, 2014)

Indicators to Support the Effective Practice
Units of instruction include pre-/post-tests to assess student mastery of standards-based objectives.
Unit pre-tests and post-tests are administered to all students in the grade level and subject covered by the unit of instruction.
Unit pre-test and post-test results are reviewed by the Instructional Team.
Teachers individualize instruction based on pre-test results to provide support for some students and enhanced learning opportunities for others.
All teachers reteach based on post-test results.

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