

NOVEMBER
2005

Using MDTP Materials for Formative Assessment

Inside this issue:

Using MDTP for Formative
Assessment.....1

D is for Diagnostic
and Yet.....2

Materials in Spanish.....2

The MDTP Workgroup.....3

Upcoming MDTP
Activities.....4

Summer Leadership
Institute.....4

Regional Sites Info.....5

Available Diagnostic
Tests.....6

As you may know, your MDTP Site Director can meet with your mathematics department and/or district mathematics personnel to provide information regarding your school or course's data results as well as training on how to use MDTP materials and results to improve student learning. One such recent collaboration was between our San Diego Site Director, Bruce Arnold, and mathematics teachers and district personnel in the Poway Unified School District. The following is based on Bruce's report of ideas shared there.

What is Formative Assessment?

Assessment becomes formative assessment when the assessment evidence is actually used to adapt teaching and learning activities. A key component of formative assessment that has been shown to improve student learning is the use of feedback highlighting a student's specific strengths and weaknesses. This feedback is then linked with guidance on how to strengthen weaknesses, followed by an opportunity to work toward that improvement.

The practice of formative assessment has been shown to raise the achievement of all students. In fact, it has been shown to create gains in student learning which are larger than those typically associated with educational interventions. These gains are particularly large with low achieving students, possibly because the practice of formative assessment emphasizes to students that they can improve with effort, as opposed to believing their potential is fixed. (1)(2)

In classrooms where formative assessment is practiced, students' MDTP readiness tests are used to diagnose what students know and don't know about topic areas from Prealgebra through Precalculus. MDTP reports indicate the mastery level for each topic area and a student's strengths and weaknesses for each topic area tested. The results of the diagnostic test are then used in a variety of ways to adapt teaching to meet student needs, with the teacher working to provide students ways to close any gaps.

At the Beginning of the School Year

A mathematics department can use the MDTP diagnostic tests to guide several formative assessment activities at the beginning of the year. These may include:

- Determining overall and particular class strengths and weaknesses and using this information to decide which prerequisite topics to review
- Administering the next "lower" test to glean more data if students show weaknesses in a number of topic areas
- In a few chosen topic areas, teaching to address misunderstandings as opposed to simply re-teaching
- Creating before/after school tutorial sessions geared to weak topics
- Grouping students by topics that need improvement
- Creating opportunities for peer instruction
- Giving each student (or parent) his/her student letter and involving students in analyzing results and setting personal goals

During the School Year

While many mathematics departments do not administer MDTP tests during the school year, those departments who do report some distinct advantages. A mathematics department may use MDTP diagnostic tests to guide several

[Continued on page 3](#)

MDTP Relations with Schools Office
2341 Math Sciences Bldg., Box 951555
Los Angeles, CA 90095-1555

NON-PROFIT ORG.
U.S. POSTAGE
PAID
UCLA

MDTP NEWS

“D” is for Diagnostic, and Yet...

Traditionally MDTP has discouraged the use of MDTP tests in ways that might diminish their diagnostic potential, such as in high-stakes situations. When the tests are used in low-stakes situations, teachers can expect a more accurate diagnosis to better guide their classroom instruction.

Yet, the tests are frequently used for placement. This means that the same tests we encourage students to take under low-stakes situations are used in what many students (and their parents) see as high-stakes situations.

Teachers have all witnessed the negative effects of enrolling students who are over or under-prepared for the assigned course content. In either case the student may acquire scholastic and/or affective behaviors that can hinder their ability to learn mathematics. Since MDTP tests can help schools avoid placing students in classes for which they are over or under-prepared in some situations, we have to accept this as an unintended but possibly beneficial use. And so while we encourage the diagnostic use of our tests, we have recommendations for ways to use them when they are used as part of a placement process.

“Placement decisions should be made using multiple indicators of readiness such as teacher recommendation and course grades — not only performance on the appropriate MDTP test.”

With this in mind, we offer the following guidelines:

- We recommend that a “cut-off” score never be the sole means of determining any student’s placement since raw scores on our tests may indicate various levels of preparation. One student may obtain a score by excelling in a few topics and doing very poorly in several other topics, while another student obtains the same score by performing moderately well in almost all topics. Depending on the specific topics, the two student’s test performance might indicate very different levels of preparation for the same course.
- Placement decisions should be made using multiple indicators of readiness—not only performance on the appropriate MDTP test. Teacher recommendation, grade in the prerequisite course, and California Standards Exam score are some of the other indicators of readiness that might be used.

- When a student is given an MDTP test to aid in placement upon first enrolling in a school, the student’s teacher should be given access to the MDTP report after scoring.
- When students are tested prior to attending a school, MDTP policy requires that the student’s current teacher be provided MDTP test result reports if at all feasible.
- Placement decisions using MDTP results should be based on careful study of several years of school data. Student profiles at the start of a course (MDTP scores, prerequisite course grades, teacher recommendations, etc.) should be analyzed with data measuring the subsequent success of these students in the course. Data used to measure subsequent success might include score on an MDTP test given near the end of the course, course grade, teacher recommendation and California Standards exam score. Profiles strongly correlated with certain performance levels in a course can serve as a guide for future placement decisions.

We hope that these guidelines help mathematics departments make placement decisions. We also hope that teachers will continue to use MDTP tests as intended, namely as a diagnostic tool to help teachers and students strengthen areas of weakness and to guide departmental dialogue around curriculum and instructional decisions.

By Barbara Wells, UCLA MDTP Site Director

Materials in Spanish

MDTP currently provides many of its readiness tests in Spanish as well as English. Spanish versions of the readiness tests for Prealgebra, Algebra (45 and 50 minute versions), Elementary Algebra, Geometry Readiness, Second Year Algebra, and Math Analysis (or Precalculus) are available. These Spanish versions can help teachers evaluate the mathematical background of some students who are not yet proficient English speakers. Teachers can request Spanish versions of the above tests by choosing the test forms indicated in Green on our online order form (available at <http://mdtp.ucsd.edu>).

We also provide our student letters in Spanish. Student letters inform the student and their parents of the strengths and weaknesses indicated by the test taken. In many areas in California, the availability of these letters in Spanish gives teachers an increased ability to communicate with and work with their students’ parents. Teachers can include a request for student letters in Spanish when they submit their student answer sheets for scoring.

The MDTP Workgroup

This summer, the MDTP workgroup convened for their annual working retreat in San Diego. From June 21st through 27th, the workgroup worked and dined together. After breakfast before eight o'clock, the workday started by 8:30 and ended in time for dinner at 6:45. Every evening, some or all of the members regrouped after dinner and continued working together until quite late.

To carry out this summer's work, sixteen members of the workgroup and one visiting site director split into four committees. One committee's charge was to review and revise test specifications for the Algebra Readiness and the Calculus Readiness tests, another's to prepare a new version of the Math Analysis Readiness test that began field testing this Fall, and a third and fourth committee were charged to continue work on new Geometry Readiness and Second Year Algebra Readiness tests.

During 2002, the workgroup aligned the test specifications for both the Geometry Readiness and Second Year Algebra Readiness tests with the California Standards. Those new versions of both tests were field tested in fall 2003. In 2004, the workgroup reviewed the field test results, made improvements to both tests, and field tested the revised tests in fall 2004. It was the 2004 revision of each test that was reviewed this summer with the hope that both could be readied for release this fall. However, when the field test data was analyzed, each committee decided that the MDTP's standards would still not be met with these versions. And so, a second round of revisions was made, and the newly revised versions are being field tested this fall.

The purpose of field testing is to verify that the items used in released versions of the MDTP tests actually and accurately measure the specifications to which they are written, and that the tests accurately indicate the readiness of students for the specified course. The evaluation of the field test results depends on expertise developed in over a quarter century of work on diagnostic testing and the aid of an expert in test construction and evaluation, who was formerly with the Educational Testing Service. During the summer work retreat, as part of their commitment to producing tests that meet these

- ✓ Prealgebra written response items in the works...
- ✓ Revised Math Analysis, Algebra, and Geometry Readiness field testing in the works...

high standards, the workgroup members receive instruction on the statistics used to evaluate test items and on the construction and evaluation of items and tests.

This summer, the workgroup also worked to prepare MDTP's first collection of written response items for Prealgebra Readiness level for field testing, which we expect to begin field testing in 2006.

By Jack Ladwig, CSU Chico MDTP Site Director

Formative Assessment

Cont. from page 1

formative assessment activities midyear. These may include:

- Measuring understanding of particular topic areas, e.g., Fractions, Decimals, and Percents, and using results to inform instruction
- Measuring student progress in course material (as opposed to the prerequisite material) by using the readiness test for the next course
- Diagnosing areas of weakness as standardized testing dates approach (STAR, CAHSEE, etc.) and then conducting tutorials focused on weak topics
- Sharing results with other teachers to guide departmental dialogue
- Sharing results with support class teachers

Near the End of the School Year

A mathematics department can use the MDTP diagnostic tests to guide several formative assessment activities at the end of the year. These may include:

- Giving the same test used at the beginning of the year as a post-test and sharing gains with each student
- Preparing a "summer packet" for parents to give to their children over the summer based on test results
- Sharing results with summer school teachers to guide summer school instruction
- Using topic and item results to focus professional development by reviewing curriculum to strengthen instruction of weak topics

MDTP encourages use of their materials to both diagnose student understanding and to guide departmental dialogue around curriculum and instructional decisions. If your department would like MDTP collaboration on these issues, please contact your regional site office (see p.5).

(1) Black, P. and William, D. (1998) "Inside the Black Box: Raising the Standards Through Classroom Assessment", Phi Delta Kappan, 80 (2): 139-148. Available at: <http://www.pdkintl.org/kappan/kbla9810.htm>
(2) Boston, Carol. (2002) "The Concept of Formative Assessment", Practical Assessment, Research & Evaluation, 8 (9). Available at: <http://pareonline.net/getvn.asp?v=8&n=9>

UPCOMING MDTP ACTIVITIES

Regional Conferences

Each year, MDTP sites hold regional conferences to discuss current issues in mathematics education in California and effective uses of MDTP in the classroom. The conferences often provide an opportunity for dialogue between middle schools and high schools as well as between precollegiate faculty and university faculty. Each year, MDTP Site Directors also speak and maintain booths at some regional California Mathematics Conferences. This year those include the Asilomar and Palm Springs CMC Conferences. Please consider attending the MDTP activities in your area!

UC Davis

When: Wednesday, November 16, 2005 from 4 - 7:30 p.m.
Where: UCD, MU-II
Contact: Trish Ramos, 530-752-2015 or plramos@ucdavis.edu
Note: Session One: Addressing Student Weaknesses Using CAHSEE on Target program materials and MDTP.
Session Two: How a team of math teachers used MDTP results to develop intervention that raised the school's STAR math scores enough to remove the under-performing school status.
Dinner will be served.

Northern California

When: Saturday, December 3, 2005. Session 302 from 11:30 a.m. – 12:30 p.m and Session 416 from 1 – 2 p.m.
Where: CMC North Annual Conference at Asilomar
Contact: <http://www.cmc-math.org/ASIL>
Note: Session 302: "Assessing Students' Written Work for Informed Teaching: MDTP". Presenter: Emiliano Gomez. Session 416: "MDTP's New Prealgebra Readiness Test". Presenters: Wally Etterbeek & Alfred Manaster. Also stop by the MDTP booth where Jack Ladwig & Emiliano Gomez will answer questions the afternoon of Friday, Dec. 2 and on Saturday, Dec. 3.

CSU Fullerton

When: Wednesday, January 25, 2006 from 3:30 – 8 p.m.
Where: CSU Fullerton
Contact: Christine Brackett, 714-278-8320
Note: Sessions may include a focus on Geometer Sketchpad, MDTP, and the new California Framework.
Dinner will be served.

UC Los Angeles

When: Saturday, February 4, 2006 from 8:30 - 1 p.m.
Where: UCLA, Math Sciences 4000
Contact: Grace Chu, 310-825-8030 or grace@math.ucla.edu
Note: The conference will focus on "Effective Mathematics Instruction: Issues and Answers".
Lunch will be served.

UC San Diego

When: Thursday, March 30, 2006 from 3:30 – 7:30 p.m.
Where: UCSD
Contact: 858-534-3373 or mdtpsandiego@ucsd.edu
Note: The conference will focus on "Global Ways of Thinking About Mathematics".
Dinner will be served.

Leadership Institute

Every couple of years, MDTP holds a summer institute to train experienced MDTP users from around the state to be MDTP presenters. The institute's four-day, intensive residential format provides excellent opportunities for collegial interaction and new learning about uses of MDTP for improving classroom instruction. The 2006 institute begins with dinner on Sunday, August 13th, and continues through the morning of Thursday, August 17th. The institute includes an in-depth look at the structure and development of the MDTP tests and written response items, effective uses of MDTP materials in secondary schools and presentation skills. This year, participants will stay on the UCLA campus at the Sunset Village Conference Center. Room and board is provided and travel will be reimbursed. Participants will also receive a \$500 stipend. A speaker's fee and travel expenses will be paid for any subsequent presentations given at MDTP's request. If you are an MDTP user, please consider applying for this year's institute!

When: Sunday – Thursday, August 13-17, 2006
Where: UCLA, Sunset Village Conference Center
Contact: Heather Calahan, 310-825-1702 or calahan@math.ucla.edu
Note: Please send email to request an application.

CSU/UC
MDTP
Mathematics Diagnostic Testing Project
WVLLI



This newsletter has been provided with the support of the Regents of the University of California, the Trustees of the California State University, and the California Academic Partnership Program.

Produced by the MDTP Relations with Schools Office
Heather Calahan
2341 Math Sciences Bldg., Box 951555
Los Angeles, CA 90095-1555

See the MDTP website at <http://mdtp.ucsd.edu>

MDTP REGIONAL SITE INFORMATION

<p>Berkeley Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Sonoma, and Stanislaus counties.</p>	<p>Director: Emiliano Gomez (510) 642-0752 Admin. Asst.: Judie Welch (510) 642-0846 Fax: (510) 642-6726</p>
<p>Chico Butte, Colusa, Del Norte, Glenn, Humboldt, Lake, Lassen, Mendocino, Modoc, Nevada, Plumas, Shasta, Sierra, Siskiyou, Tehama, Trinity, and Yuba counties.</p>	<p>Director: Jack Ladwig (530) 898-6367 Admin. Asst.: Sandra Mohammed (530) 898-4103 Fax: (530) 898-4363</p>
<p>Davis Alpine, Amador, Calaveras, El Dorado, Placer, Sacramento, San Joaquin, Solano, Sutter, and Yolo counties.</p>	<p>Director: Phil Knox (530) 752-2021 Admin. Asst.: Trish Ramos (530) 752-2015 Fax: (530) 752-7706</p>
<p>Fresno Fresno, Inyo, Kern, Kings, Madera, Mariposa, Merced, Mono, southern San Benito, Tulare, and Tuolumne counties.</p>	<p>Director: Peter Tannenbaum (559) 278-4029 Admin. Asst.: Cindy Douglas (559) 278-2992 Fax: (559) 278-2872</p>
<p>Fullerton Orange County, and schools in Los Angeles and Riverside counties near Fullerton.</p>	<p>Director: David Pagni (714) 278-2671 Admin. Asst.: Christine Brackett (714) 278-8320 Fax : (714) 278-3972</p>
<p>Los Angeles Los Angeles and Ventura counties except for schools near Fullerton.</p>	<p>Director: Barbara G. Wells (310) 206-8360 Admin. Asst.: Grace Chu (310) 825-8030 Fax: (310) 825-8914</p> <p>Shipping & Scoring: John Hoover (310) 825-2495 Fax: (310) 206-7261</p>
<p>San Bernardino Inyo, Mono, and San Bernadino Counties, as well as Schools in and northwest of the city of Riverside in Riverside County and San Bernardino County.</p>	<p>Director: John Sarli (909) 537-5374 Admin. Asst.: Tiffany Hughes (909) 537-7670 Fax : (909) 537-7119</p>
<p>San Diego Imperial, San Diego, and Riverside counties, except for schools close to Fullerton or in or northwest of the city of Riverside in Riverside County.</p>	<p>Director: Bruce Arnold (858) 534-3298 Admin. Asst.: Jean Forsythe (858) 534-3373 Fax : (858) 534-1011</p>
<p>San Luis Obispo San Luis Obispo, Santa Barbara, and southern Monterey counties.</p>	<p>Director: Steve Agronsky (805) 756-1683 Admin. Asst.: Dale Wilbur (805) 756-2206 Fax (805) 756-6537</p>
<p>Santa Cruz Northern Monterey, northern San Benito, Santa Clara, and Santa Cruz counties.</p>	<p>Director: Bruce Cooperstein (831) 459-2150 Admin. Asst.: Karen Quinn (831) 459-2400 Fax: (831) 459-3260</p>

MDTP AVAILABLE DIAGNOSTIC TESTS

Test Name	Description	Calculator Prohibited	Calculator Optional	Calculator Required
PR Prealgebra Readiness	Assesses some concepts needed for success in a course immediately preceding a first year algebra course and subsequent success in that first year algebra course. This test is often given near the beginning of a course immediately preceding a first year algebra course. Spanish version available.	PR40A04 0814004		
AR Algebra Readiness	Assesses some concepts needed for success in a first course in algebra. Calculator prohibited and calculator required versions available. 40 question and 50 question versions available. Spanish versions available.	AR50/90 0715090 AR45A00 0714500		AR50X92 0775092
EA Elementary Algebra	Assesses some concepts needed for success in a second course in algebra. Appropriate when the second course follows immediately after first-year algebra course and students have not been exposed to a year of geometry. Spanish versions available.		EA50A90 0315090	Scientific EA45X91 0374591
GR Geometry Readiness	Assesses some concepts needed for success in geometry after a year of algebra. Includes some informal geometry students should have encountered prior to and during algebra. Spanish versions available.		GR45A93 0414593	GR45X94 0474594
SR Second Year Algebra Readiness	Assesses some concepts needed from first-year algebra and geometry for success in intermediate algebra following a course in geometry. Spanish versions available.		SR45A93 0314593	Scientific SR45X94 0374594
IS Integrated Second Year Readiness	Assesses some concepts needed for success in the second year of an integrated algebra curriculum. This test was based on the common content of two of the integrated curricula in use in California.		IS45A00 0414500	
IT Integrated Third Year Readiness	Assesses some concepts needed for success in the third year of an integrated algebra curriculum. This test was based on the common content of two of the integrated curricula in use in California.		IT45A00 0314500	
MR Mathematical Analysis Readiness	Assesses some concepts needed for success in a course following two algebra courses and a geometry course. This course is often called trigonometry, precalculus, or mathematical analysis. Spanish versions of some forms available.		MR45A92 0214592	Scientific MR45X94 0274594
CR Calculus Readiness	Assesses some concepts needed for success in a first calculus course. 40 question and 55 question versions available, with suggested times of 60 and 90 minutes respectively.		CR40A97 0114097 CR55A97 0115597	Scientific CR40X96 0174098 CR55X96 0175596
BC Beginning Calculus Readiness	Assesses some concepts and facility with graphing calculators needed for success in a first calculus course requiring graphing calculators. Some questions require the use of a graphing calculator.			Graphing BC30X97 0173097

MDTP tests were developed to provide students and teachers with diagnostic information. This information can help students identify specific areas where additional study or review is needed, and help teachers identify topics and skills that need more attention in courses. MDTP tests are diagnostic, not comprehensive, and so should not be used as final exams or as the single measure for placement. MDTP provides written response materials to supplement most of its diagnostic tests. Order forms are available at <http://mdtp.ucsd.edu> or through your Site (see p.5).