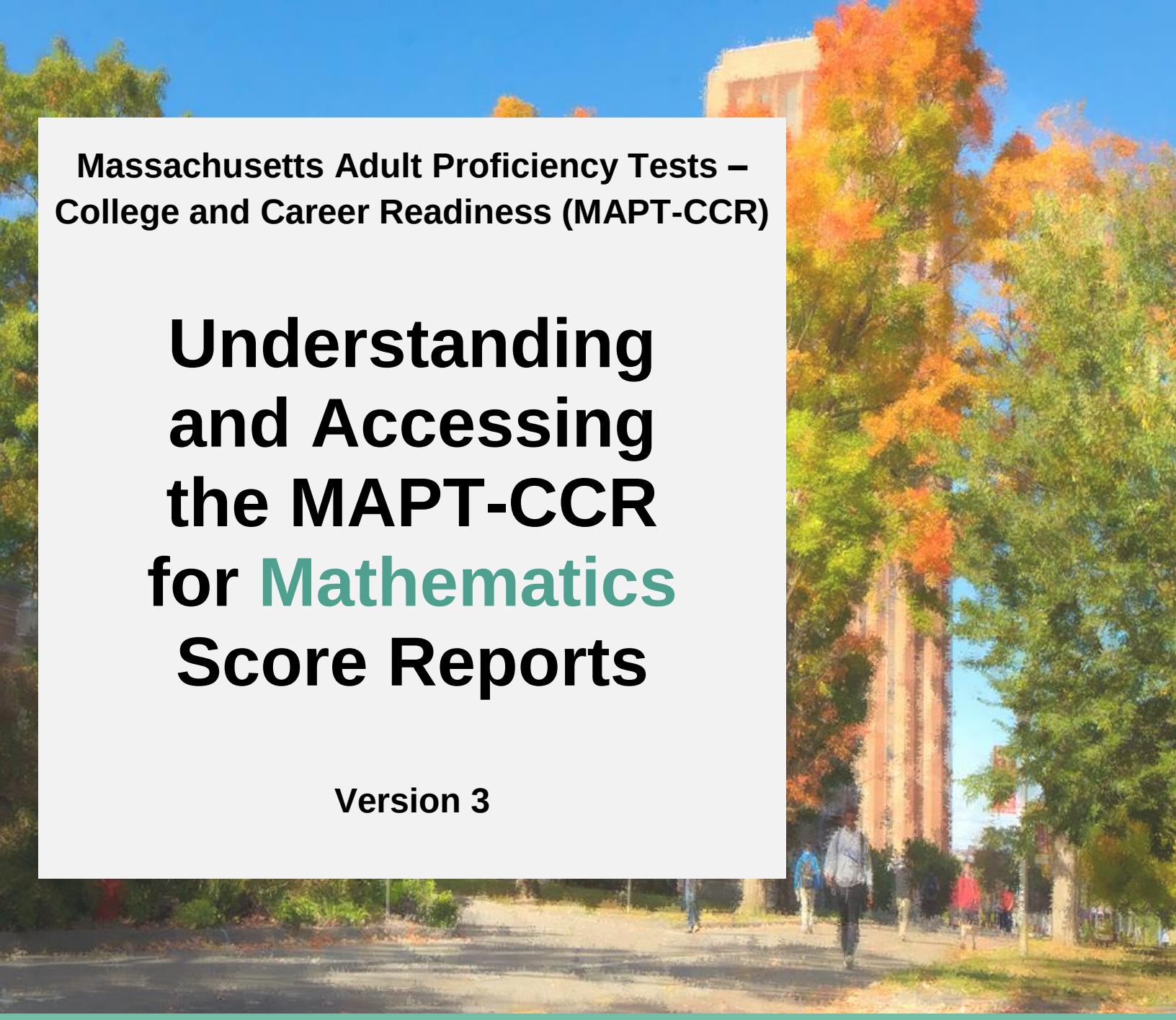


Massachusetts Adult Proficiency Tests – College and Career Readiness (MAPT-CCR)

Understanding and Accessing the MAPT-CCR for Mathematics Score Reports

Version 3

Center for Educational Assessment
University of Massachusetts Amherst

Table of Contents

Resources

In addition to this guide, the following MAPT-CCR resources are available:

Understanding and Accessing the MAPT-CCR for Reading Score Reports
Available at http://www.doe.mass.edu/acls/assessment/

MAPT-CCR Score Report Quick Guides
Available at http://www.doe.mass.edu/acls/assessment/

3-Minute Video introduction to the MAPT-CCR Score Reports
https://www.powtoon.com/embed/greuhvcKUeQ/

MAPT-CCR Test Administrator Online Training
Available 24/7 through the SABES calendar or the following link:
https://umassamherst.co1.qualtrics.com/SE/?SID=SV_cOzTFuhOmYmilX7

MAPT-CCR Test Administrator Manual
Available at http://www.doe.mass.edu/acls/assessment/

MAPT-CCR Frequently Asked Questions
https://blogs.umass.edu/aclstesthelp/faq/

Center for Educational Assessment Help Desk
aclstesthelp@educ.umass.edu

Introduction

The Massachusetts Adult Proficiency Tests – College and Career Readiness (MAPT-CCR) for Mathematics and Numeracy are designed to measure adult education learners' knowledge and skills in math so that their progress in meeting educational goals can be evaluated. Although a primary purpose of the MAPT is to fulfill federal accountability demands under the National Reporting System, adult educators in Massachusetts want to use MAPT results to identify students' strengths and weaknesses and to inform instructional planning. It is with these aims in mind that the current MAPT for Mathematics score reports were designed.

There are two types of MAPT for Mathematics score reports. The first report is the **Individual Student Score Report**, which provides information about how each individual student did on a particular MAPT-CCR for Mathematics test. The second is the **Class Score Report**, which is organized at the class level and gives adult education teachers insight into the performance of groups of students.

All items on the MAPT-CCR for Mathematics are aligned with a benchmark from the College and Career Readiness Standards for Adult Education (CCRSAE; Pimentel, 2013). **It is critical that all adult education math teachers in Massachusetts be familiar with the CCRSAE**, which can be accessed at http://www.sabes.org/CCRStandards. Because all MAPT-CCR items measure a benchmark in the CCRSAE, the student report focuses on the benchmarks measured by each item completed by a student. For each completed item, the individual student report also provides information regarding how difficult the specific item was, as well as whether the student answered the item correctly or incorrectly.

The MAPT-CCR for Mathematics is a computerized-adaptive test, which means that as a student responds to questions (items) on the test, the OWL system keeps track of whether or not the item was answered correctly. If a student is not doing well on a set of items, the computer chooses a slightly easier set to administer next. If the student is doing very well on a set of items, the computer will choose a slightly harder set of items. This adaptation of the test to the examinee is helpful for obtaining an accurate measure of a particular examinee's mathematics proficiency. However, it introduces some complexity for score reporting at the class level because all students within a class do not respond to the same sets of items. Furthermore, the MAPT-CCR tests taken by students within a class are likely to differ with respect to the difficulty of sets of items. Thus, the MAPT-CCR for Mathematics class reports are likely to look very different from score reports from other tests because the MAPT-CCR is distinct from other tests.

You need to understand a few basic points about the MAPT-CCR for Mathematics before you learn about the score reports in detail:

1. All MAPT-CCR items are secure, which means they are confidential and cannot be included on a score report.
2. A MAPT-CCR for Mathematics test contains 35 items that contribute to a student's score. There are also five pilot items included in each test, but these are not included in computing a student's score.
3. Each MAPT-CCR for Mathematics test item measures a specific benchmark in the CCRSAE (http://www.sabes.org/CCRStandards).
4. MAPT-CCR for Mathematics test items differ from one another in terms of difficulty. A relatively easy item is answered correctly by most adult education learners, even those who are at a low learning level. A relatively difficult item is answered correctly by very few learners, most of whom are at the highest learning levels.
5. There is not one single MAPT-CCR for Mathematics test form (e.g., as the TABE has forms 11/12). Instead, the specific 35 items administered to a student are chosen from a large pool of items each time a learner takes the MAPT-CCR. The computer ensures that the items selected (a) represent the intended content dictated by the test specifications and (b) are at the most appropriate difficulty level for the specific student.

Given these points, you can understand the challenges around providing specific information on students' MAPT-CCR performance at both the individual and class levels. We solve the problem somewhat for the Student Score Report by reporting **the benchmark** measured by each item, rather than reporting the item itself. This solution maintains the security of the items yet allows teachers to identify the benchmark measured by the item. We also report the difficulty level of the item so that teachers can better understand why a student may or may not have correctly answered an item.

For the Class Report, it is not possible to report item-level information or to report results at the benchmark level. This is because each MAPT-CCR test is composed of 35 items specifically geared to each individual student. As a result, the number of students within a class who see the exact same item, or different items targeting the same benchmark at about the same difficulty level, is almost never enough to support meaningful reporting. The Class Report addresses this problem by focusing on broader groupings—**Domains** or **Content Strands**—rather than benchmarks. Thus, before interpreting the Student or Class score reports, you must gain an understanding of the "item difficulty" and "domains/content strands" concepts.

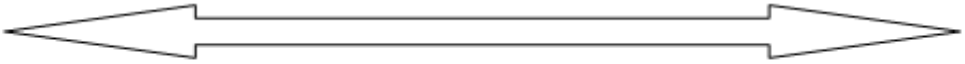
Understanding the MAPT-CCR Score Scale and Item Difficulty

The Score Scale

To explain the difficulty level of an item, we must first discuss the MAPT-CCR score scale, which ranges from 200 to 700. A score of 200 is the lowest possible score and a score of 700 is the highest possible score (see Figure 1).

Figure 1

Illustration of MAPT-CCR for Mathematics Score Scale



200 (lowest possible score) 700 (highest possible score)

After taking the MAPT-CCR for Mathematics, all students are given a score on this scale. How this score is calculated is mathematically complex, but is based on the difficulty of an item and whether the student answered the item correctly. A student who answers many difficult items correctly will earn a higher score than a student who answers the same number of easier items correctly.[1] The mathematical details of this scoring, provided in the MAPT-CCR Technical Manual (Zenisky et al., 2018), are based on a statistical model called *item response theory*. For our current purposes, it is only important to bear in mind these two points:

1. All students receive a score between 200 and 700.
2. Students' scores are determined by the number and the difficulty of the items they answer correctly.

[1] Essentially, this method of scoring gives students more "credit" for answering a difficult item correctly than for correctly answering an easier item.

Understanding Item Difficulty

Item difficulty refers to how easy or hard an item is. Suppose we have two items, item A and item B. If 50% of all students answer item A correctly and 75% of those students answer item B correctly, we say item A is “more difficult” than item B. Unlike the content strand or benchmark an item measures, the difficulty level of an item is not an inherent characteristic of the item. Rather, it is determined by the number and types of students who correctly answer the item. Item difficulty is more specific than just noting that a test-taker got an item written to a benchmark right or wrong. It is possible that two questions written to the same benchmark will differ in their level of difficulty simply because one question is more challenging than the other. A much more detailed explanation of item difficulty is provided in Appendix A.

Individual Student Score Reports

Now that you understand item difficulty, we can take a look at a sample score report for a student. The individual reports can be accessed to show performance by Content Strand or by Cognitive Level. These reports are identical in format, but just differ in how items are grouped and in the information provided about the items. Below, we discuss the Individual Student Score Reports by Content Strand; then, the Individual Student Score Reports by Cognitive Level. Please note that beginning on page 23 of this Guide, we will show you how to produce these reports.

Individual Student Score Report by Content Strand

Please note the following features of the Individual Student Score Reports by Content Strand:

- The Individual Student Score Report by Content Strand is for a single test administration. Note the test date printed in the upper right-hand corner of the report. The student's score and score range (explained below) are also reported.
- The report is divided into two sections—the benchmarks associated with items the student answered correctly are located on the left side, and the benchmarks associated with items the student answered incorrectly are located on the right side.
- The items are organized by the content strands in the CCRSAE:
    - Numbers and Operations: Base Ten (NBT)
    - Operations & Algebraic Thinking (OA) and Expressions & Equations (EE)
    - Numbers & Operations: Fractions (NF) and Ratios & Proportional Relationships (RP)
    - The Number System (NS)
    - Geometry (G)
    - Measurement & Data (MD) and Statistics & Probability (SP)
    - Functions (F)
- Within each content strand, the items are sorted by difficulty level.
- For each item, the code for the benchmark it measures is reported, as well as a brief description of the benchmark. The full benchmark description can be obtained from the CCRSAE standards document, linked previously.

A sample Individual Student Score Report by Content Strand is presented in Figure 2. This particular student answered 23 items correctly and 12 items incorrectly. Please note that the actual name and site would appear on the score report, but they are blocked in the image to protect confidentiality.

Figure 2

Sample MAPT-CCR for Mathematics Student Score Report by Content Strand

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MAPT Math: Student Score Report by Content Strand

Fiscal Year:	2018-2019	Test Date:	Jan 29, 2019
Site:		Test No:	Second Test
Student:		Student Score (Score Range):	380 (352 - 407)
Class Title:			

MAPT Scale	200<----------->700
Your Score Range	352 - 407

23 Questions Answered Correctly

Benchmark		Item Dif.
Numbers & Operations: Base Ten		
5.NBT.4	Understand the place value system	399
5.NBT.7	Do operations w/multi-digit whole #s & decimals	388
4.NBT.5	Use place value to perform multi-digit arithmetic	378
5.NBT.7	Do operations w/multi-digit whole #s & decimals	373
5.NBT.5	Do operations w/multi-digit whole #s & decimals	360
2.NBT.6	Use place value & number operations to + and -	324
Operations & Algebraic Thinking and Expressions & Equations		
7.EE.3	Solve problems using expressions & equations	389
4.OA.4	Gain familiarity with factors and multiples	363
3.OA.9	Solve +,-,X &÷ problems, ID & explain patterns	358
4.OA.4	Gain familiarity with factors and multiples	330
2.OA.1	Represent & solve problems involving + and -	264
Numbers and Operations: Fractions & Ratios & Proportional Relationships		
4.NF.4	Build fractions by applying knowledge of whole #s	364
7.RP.3	Analyze & use proportions to solve problems	349
The Number System		
6.RP.3	Know ratio concepts & use to solve problems	363
6.NS.3	Compute w/multi-digit #s & find common factors	357
Measurement & Data and Statistics & Probability		
4.MD.2	Solve measurement problems, inc. converting units	430
3.MD.1	Solve & estimate time, volume, & mass problems	409
3.MD.3	Represent & interpret data	374
3.MD.1	Solve & estimate time, volume, & mass problems	363
7.SP.6	Develop, use, & evaluate probability models	297
7.SP.5	Develop, use, & evaluate probability models	270
3.MD.1	Solve & estimate time, volume, & mass problems	253
Geometry		
6.G.3	Solve real-world area, surface area & volume probs	382
Functions		

12 Questions Answered Incorrectly

Benchmark		Item Dif.
Numbers & Operations: Base Ten		
5.NBT.4	Understand the place value system	403
Operations & Algebraic Thinking and Expressions & Equations		
4.OA.2	Solve problems using the 4 operations & whole #s	401
6.EE.2	Apply arithmetic to algebraic expressions	385
Numbers and Operations: Fractions & Ratios & Proportional Relationships		
4.NF.4	Build fractions by applying knowledge of whole #s	423
7.RP.2	Analyze & use proportions to solve problems	371
3.NF.1	Develop understanding of fractions as #s.	362
4.NF.6	Understand&compare decimal notation for fractions	345
The Number System		
Measurement & Data and Statistics & Probability		
5.MD.2	Represent and interpret data	411
3.MD.3	Represent & interpret data	403
6.SP.4	Summarize and describe distributions	403
3.MD.3	Represent & interpret data	387
Geometry		
2.G.3	Reason with shapes and their attributes	335
Functions		

The following is a detailed look at the report.

The top section of the Individual Student Score Report by Content Strand appears as follows in Figure 3. Along the left is listed the fiscal year in which the test was taken, the site name, the student's name, and the class title.

Figure 3

Detail View of the Individual Student Score Report by Content Standard

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MAPT Math: Student Score Report by Content Strand

Fiscal Year:	2018-2019	Test Date:	Jan 29, 2019
Site:		Test No:	Second Test
Student:		Student Score (Score Range):	380 (352 - 407)
Class Title:			

MAPT Scale	200<----------->700
Your Score Range	352 - 407

On the right side of the header is the test date (actual date of the test administration), the number of the test (for example, first and pre-test, second optional test, or third and post-test), and the student's MAPT-CCR score as well as the score range associated with that score.

The student score range acknowledges the fact that all tests are imperfect measures of student performance, and if the student were retested before learning anything new, it is likely they would not earn the exact same score. It is calculated by taking the student's MAPT-CCR score and then adding and subtracting a margin of error based on the reliability of the MAPT-CCR score. How this margin of error is calculated is described in the MAPT Technical Manual (Zenisky et al., 2018), but the important point here is that the score range acknowledges the fact that all tests are imperfect measures of student performance, and if the student were retested before learning anything new, it is likely they would not earn the exact same score. We provide the score range on the Student Score Report to give an idea of how high or low the student's "true" mathematics proficiency is on the MAPT-CCR scale. This is especially important when comparing pre- and post-test scores to determine if a student made learning gains. If the second test score is within the score range of the first test, then the student has not exhibited any learning gains.

After the header text, there is a small table illustrating the MAPT-CCR scale in the top row. The second row provides a graphical representation of the student's score range.

Now, in Figure 4, we'd like to highlight some specific aspects of the full score report shown in Figure 2. (Figure 4 is an extraction of the same report shown in Figure 2.)

Figure 4

Extracted View of Individual Student Score Report by Content Standard

23 Questions Answered Correctly

Benchmark		Item Dif.
Numbers & Operations: Base Ten		
5.NBT.4	Understand the place value system	399
5.NBT.7	Do operations w/multi-digit whole #s & decimals	388
4.NBT.5	Use place value to perform multi-digit arithmetic	378
5.NBT.7	Do operations w/multi-digit whole #s & decimals	373
5.NBT.5	Do operations w/multi-digit whole #s & decimals	360
2.NBT.6	Use place value & number operations to + and -	324
Operations & Algebraic Thinking and Expressions & Equations		
7.EE.3	Solve problems using expressions & equations	389
4.OA.4	Gain familiarity with factors and multiples	363
3.OA.9	Solve +,-,X &÷ problems, ID & explain patterns	358
4.OA.4	Gain familiarity with factors and multiples	330
2.OA.1	Represent & solve problems involving + and -	264
Numbers and Operations: Fractions & Ratios & Proportional Relationships		
4.NF.4	Build fractions by applying knowledge of whole #s	364
7.RP.3	Analyze & use proportions to solve problems	349
The Number System		
6.RP.3	Know ratio concepts & use to solve problems	363
6.NS.3	Compute w/multi-digit #s & find common factors	357
Measurement & Data and Statistics & Probability		
4.MD.2	Solve measurement problems, inc. converting units	430
3.MD.1	Solve & estimate time, volume, & mass problems	409
3.MD.3	Represent & interpret data	374
3.MD.1	Solve & estimate time, volume, & mass problems	363
7.SP.6	Develop, use, & evaluate probability models	297
7.SP.5	Develop, use, & evaluate probability models	270
3.MD.1	Solve & estimate time, volume, & mass problems	253
Geometry		
6.G.3	Solve real-world area, surface area & volume probs	382
Functions		

12 Questions Answered Incorrectly

Benchmark		Item Dif.
Numbers & Operations: Base Ten		
5.NBT.4	Understand the place value system	403
Operations & Algebraic Thinking and Expressions & Equations		
4.OA.2	Solve problems using the 4 operations & whole #s	401
6.EE.2	Apply arithmetic to algebraic expressions	385
Numbers and Operations: Fractions & Ratios & Proportional Relationships		
4.NF.4	Build fractions by applying knowledge of whole #s	423
7.RP.2	Analyze & use proportions to solve problems	371
3.NF.1	Develop understanding of fractions as #s.	362
4.NF.6	Understand&compare decimal notation for fractions	345
The Number System		
Measurement & Data and Statistics & Probability		
5.MD.2	Represent and interpret data	411
3.MD.3	Represent & interpret data	403
6.SP.4	Summarize and describe distributions	403
3.MD.3	Represent & interpret data	387
Geometry		
2.G.3	Reason with shapes and their attributes	335
Functions		

The body of the Individual Student Score Report by Content Strand is divided vertically into two sections. On the left are questions that a student answered correctly. In this example, the student answered 23 items correctly. On the right side of the report is a listing of the questions the student answered incorrectly (here, that is 12). Every one of the 35 scored items on a student's MAPT-CCR for Mathematics test will appear in one of these columns.

Moving down in Figure 4, note that each row represents a test item and lists the benchmark number that test item measures from the CCRSAE standards. It also shows the abbreviated text of the benchmarks, and an item difficulty value (computed as explained in the section on Understanding the MAPT-CCR Score Scale and Item Difficulty). The items here are grouped according to the seven content strands in the CCRSAE, which are:

- Numbers and Operations: Base Ten (NBT)
- Operations & Algebraic Thinking (OA) and Expressions & Equations (EE)
- Numbers & Operations: Fractions (NF) and Ratios & Proportional Relationships (RP)
- The Number System (NS)
- Geometry (G)
- Measurement & Data (MD) and Statistics & Probability (SP)
- Functions (F)

Within each strand, test items are ordered by the item difficulty from most difficult to easiest.

Individual Student Score Report by Cognitive Level

MAPT-CCR for Mathematics items are classified as measuring one of three cognitive levels (also called Components of Rigor)–Conceptual Understanding, Strategic Thinking, and Procedural Understanding. Please note the following features of the Individual Student Score Reports by Cognitive Level/Components of Rigor:

- The Individual Student Score Report by Cognitive Level is for a single test administration. Note the test date printed in the upper right-hand corner of the report. The student's score and score range (explained below) are also reported.
- The report is divided into two sections - the benchmarks associated with items the student answered correctly are located on the left side, and the benchmarks associated with items the student answered incorrectly are located on the right side.
- The items are organized by Cognitive Levels:
    - Conceptual Understanding
    - Strategic Thinking
    - Procedural Understanding.
- Within each cognitive level, the items are sorted by difficulty level.
- For each item, the code for the benchmark it measures is reported, as well as a brief description of the benchmark. The full benchmark description can be obtained from the CCRSAE standards document.

Understanding the Cognitive Levels Measured on the MAPT-CCR

All MAPT-CCR for Mathematics items are classified according to the three components of rigor (cognitive level): (a) Procedural Understanding; (b) Conceptual Understanding; and (c) Strategic Thinking. These levels are included in specifying the content of the test to ensure that items were written to measure skills necessary for the different purposes for which math is used. Brief descriptions of these components follow based on the text that makes up the Components of Rigor, as follows (http://www.p12.nysed.gov/ciai/mst/math/standards/revisedlintro.html).

Procedural Understanding

Procedural understanding is the skill in carrying out procedures flexibly, accurately, efficiently, and appropriately. It includes, but is not limited to, algorithms (the step-by-step routines needed to perform arithmetic operations). Although the word procedural may imply an arithmetic procedure to some, it also refers to being fluent with procedures from other branches of mathematics, such as measuring the size of an angle using a protractor. The use

of calculators need not threaten the development of students' computational skills. On the contrary, calculators can enhance both understanding and computing if used properly and effectively. Accuracy and efficiency with procedures are important, but they should be developed through understanding. When students learn procedures through understanding, they are more likely to remember the procedures and less likely to make common computational errors.

Conceptual Understanding

Conceptual understanding consists of those relationships constructed internally and connected to already existing ideas. It involves the understanding of mathematical ideas and procedures and includes the knowledge of basic arithmetic facts. Students use conceptual understanding of mathematics when they identify and apply principles, know and apply facts and definitions, and compare and contrast related concepts. Knowledge learned with understanding provides a foundation for remembering or reconstructing mathematical facts and methods, for solving new and unfamiliar problems, and for generating new knowledge.

Strategic Thinking

Strategic thinking is the ability to formulate, represent, and solve mathematical problems. Problems generally fall into three types: (1) one-step problems, (2) multi-step problems, or (3) process problems. Most problems that students will encounter in the real world are multi-step or process problems. Solution of these problems involves the integration of conceptual understanding and procedural knowledge. Students need to have a broad range of strategies upon which to draw. Selection of a strategy for finding the solution to a problem is often the most difficult part of the solution. Therefore, mathematics instruction must include the teaching of many strategies to empower all students to become successful problem solvers. A concept or procedure in itself is not useful in problem solving unless one recognizes when and where to use it as well as when and where it does not apply. Many textbook problems are not typical of those that students will meet in real life. Therefore, students need to be able to have a general understanding of how to analyze a problem and how to choose the most useful strategy for solving the problem.

In Figure 5, we present an alternate version of the Individual Student Score Report for the same student as in Figure 2, but organized by Cognitive Level rather than Content Strand. Later in this guide, in the section entitled Accessing the MAPT-CCR for Mathematics Score Reports through LACES on page 23, we show you how to choose which version of the report you would like to view or print.

The header in the Individual Student Score Report by Cognitive Level remains the same as for the Content Strand version. Whereas in Figures 2 and 4 the items were divided into content areas, here in the body of the report the items are broken out by cognitive levels.

Figure 5

Sample MAPT-CCR for Mathematics Individual Student Score Report by Cognitive Level

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MAPT Math: Student Score Report by Cognitive Level

Fiscal Year:	2018-2019	Test Date:	Sep 20, 2018
Site:		Test No:	First Test
Student:		Student Score (Score Range):	479 (453 - 505)
Class Title:			

MAPT Scale	200<----------->700
Your Score Range	453 - 505

20 Questions Answered Correctly

Benchmark		Item Dif.
Conceptual Understanding		
5.G.1	Graph coordinate pts to solve real-world problems	504
4.NF.4	Build fractions by applying knowledge of whole #s	492
6.NS.6	Apply prior knowledge of #s to rational #s.	490
6.EE.1	Apply arithmetic to algebraic expressions	477
4.NF.4	Build fractions by applying knowledge of whole #s	470
7.SP.5	Develop, use, & evaluate probability models	469
2.MD.2	Measure and estimate lengths in standard units	465
Strategic Thinking		
7.G.6	Solve real life & math problems involving geom.	570
6.EE.9	Represent&analyze quant. relationships btw	469
3.MD.3	Represent & interpret data	468
4.OA.4	Gain familiarity with factors and multiples	468
6.EE.6	Reason & solve 1-variable equations & inequalities	453
4.MD.2	Solve measurement problems, inc. converting units	451
5.G.2	Graph coordinate pts to solve real-world problems	443
Procedural Understanding		
6.NS.6	Apply prior knowledge of #s to rational #s.	540
7.RP.3	Analyze & use proportions to solve problems	488
6.SP.5	Summarize and describe distributions	478
3.MD.3	Represent & interpret data	470
7.NS.1	Relate +, -, x, ÷ with fractions to rational #'s	451
8.F.5	Model variable relationships using functions	385

15 Questions Answered Incorrectly

Benchmark		Item Dif.
Conceptual Understanding		
2.G.3	Reason with shapes and their attributes	546
6.EE.2	Apply arithmetic to algebraic expressions	513
6.EE.6	Reason & solve 1-variable equations & inequalities	513
7.NS.1	Relate +, -, x, ÷ with fractions to rational #'s	496
2.MD.10	Represent and interpret data	481
6.EE.3	Apply arithmetic to algebraic expressions	471
Strategic Thinking		
8.F.5	Model variable relationships using functions	510
6.RP.3	Know ratio concepts & use to solve problems	500
5.NF.2	Use equivalent fractions to add & subt fractions	472
Procedural Understanding		
3.MD.7	Grasp area concepts; relate area to add./mult.	552
6.EE.6	Reason & solve 1-variable equations & inequalities	489
4.G.1	Draw&identify lines&angles; classify shapes	487
7.EE.4	Solve problems using expressions & equations	487
6.NS.3	Compute w/multi-digit #s & find common factors	480
4.NF.2	Extend understanding of fraction eq. and ordering.	468

Interpreting the Student Score Reports

As illustrated in the previous figures, a great deal of information is presented in these Content Strand and Cognitive Level versions of the Individual Student Score Report. The reports indicate the numbers of items answered correctly and incorrectly for the student, the benchmark measured by each item, and the difficulty level of the item. Depending on the version of the report chosen by the user, the Content Strand or Cognitive Level measured by the item is also provided. But what does all this information mean, and how can teachers use it to help the student? In this section, we provide some ideas about how to interpret the Student Score report. These ideas focus on (a) the benchmarks, content strands, and cognitive levels measured by the items, (b) the student's score range, and (c) the difficulty levels of the items answered correctly and incorrectly.

It is particularly instructive to focus on items answered correctly and incorrectly that are located outside of the student's score range. If a student gets items wrong that are lower than the lower end of the score range, those benchmarks may be areas for instruction to focus on. Likewise, items answered correctly that are above the upper end may be areas of strength, and items answered incorrectly above the upper end of the score range are also benchmarks that may help to guide instruction as well.

In some cases, it may be helpful to consider the Individual Student Score Reports by Content Strand and Cognitive Levels together, to understand how student performance on certain items might be explained by both the content of the material tested as well as the cognitive complexity of the item.

Understanding "score range"

The student score range acknowledges the fact that all tests are imperfect measures of student performance, and if the student were retested before learning anything new, it is likely they would not earn the exact same score. It is calculated by taking the student's MAPT-CCR score, and then adding and subtracting a margin of error based on the reliability of the MAPT-CCR score. How this margin of error is calculated is described in the MAPT Technical Manual (Zenisky et al., 2008), but the important point here is that the score range acknowledges the fact that all tests are imperfect measures of student performance, and if the student were retested before learning anything new, it is likely they would not earn the exact same score. We provide the score range on the Student Score Report to give an idea of how high or low the student's "true" mathematics proficiency is on the MAPT-CCR scale. For example, within a score range of 548-606, scores of 550, 580 and 600 don't show gain or loss.

The score range is centered around the student's MAPT-CCR score which is a single number. For the student in Figures 2 and 5, the score is 577. Of course, in practice, students do not take the MAPT-CCR for Mathematics multiple times over without any intervening instruction, and the students themselves continue to learn. The best interpretation of the score range then becomes a range of scores that is likely to contain the score that best reflects the actual student proficiency, irrespective of lucky guesses and "having a bad day."

Sample interpretation

Let's take a closer look at the score report for a student presented in Figure 2. The report is arranged by content strand. Note that the test score is 380, and the score range is 352-407. Notice that this student answered only two of the six Fractions & Ratios & Proportional Relationships items correctly. Thus, this content strand may be an area of weakness for the student. On the other hand, we can also see that the student successfully answered six of the seven Base Ten items that were included in this test administration. This content strand may be an area of relative strength.

To better understand the student's performance, we will now consider the score range and the difficulty levels of the items. The student's MAPT-CCR for Mathematics test score was 380. Considering the margin of error, the score range reports that the actual range of test performance this score represents is 352-407. Given this score range, we would generally expect the student to correctly answer items with difficulty levels below 352 (the lower end of the score range), and be less likely to answer items with difficulty levels above 407 (the upper end of the score range). Items with difficulty levels in the middle of the score range are right about where the person scored, and that person will get some of those wrong and some of those right.

When we review the report more closely, we see that all but two of the items the student answered incorrectly were within the score range or above the upper end of score range. As a general interpretation, the student answered relatively harder items incorrectly, and this score report provides some information about what the benchmarks associated with those incorrect answers were. These are benchmarks that a teacher might want to look at and incorporate into instruction for this student.

Within Measurement & Data and Statistics & Probability, benchmark 3.MD.3 appears three times, both on the answered correctly and answered incorrectly sides of the score report. This means the student saw three questions aligned to that benchmark. The student

was able to answer the slightly easier question for the benchmark correctly (mapped to 374), but not the two harder items for that benchmark (mapped to 387 and 403).

Another resource for understanding these reports is to refer to the Quick Reference Guide for MAPT-CCR for Mathematics Individual Student Score Report – Content Strands, included in Appendix B of this Guide.

Class Score Reports

The Class Score Reports are very different from the Individual Student Score Reports in the following areas:

- Individual students within a class do not typically see the same questions on a MAPT-CCR test.
- The range of difficulty on MAPT-CCR tests within a class may be considerable.
- The class-level reports summarize performance at the content strand level rather than for individual benchmarks.

The Class Score Reports can be generated to analyze test scores by Content Strand or Components of Rigor (also known as Cognitive Levels). These options allow teachers to determine what information they would like to see on the report.

Figure 6 provides an example of a Class Score Report by Content Strand. The header of this Class Score Report includes the Fiscal Year, the site name (blocked out here for confidentiality), the Class Title listed in LACES, the number of students in the class, the number of tests the report includes, and the date on which the report was run. Note that in this example, the number of tests (8) is greater than the number of students (7). These numbers do not need to match—some students may have taken the test once, some may have taken it twice, and perhaps some may have taken it a third time (all within the same fiscal year) by the date a class score report is run. Keep in mind that the report may include data on more than one test administration for some students.

Refer to the body of the Class Score Report in Figure 6. Along the left margin of the table are the Content Strands from the CCRSAE. Along the top of the table are ranges of item difficulty on the MAPT-CCR scale (200-299, 200-399, 400-499, 500-599, and 600-700). As described earlier, each item on the MAPT-CCR is located on the MAPT-CCR scale and so falls into one of these score ranges. This is a way of characterizing item difficulty because, in reporting student scores, it is important to note that the adaptive nature of the MAPT-CCR results in different students within a class seeing items of different difficulty. If no students in a class have seen items within a certain range of the scale, that range will not be displayed.

Consider the column headed by 500-599 in Figure 6. In the row labeled F (Functions), there are eight student responses in the 500-599 range, and 75% were answered correctly. This might be reflecting that the same item was seen by all seven students and one students saw two items in that classification, or that eight different items were seen by different

students. The point remains: for this class, in three-quarters of the occasions where Functions items in the 500-5900 range were presented to learners, the items were answered correctly. One thing to note then, is that overall, in this class the students as a group may have a relatively good grasp of the benchmarks associated with Function. When the number of student responses is less than 5–as is the case for other cells in the table–, be aware that and any conclusions to be drawn are likely to be unreliable given the relatively small number of items.

Moving down the 500-599 column, notice under MD&SP (Measurement & Data and Statistics & Probability), eleven items were administered and only 36% were answered correctly. As before, this might reflect the same question seen by eleven different students (if that many students were included in the report) or eleven different questions seen by different students. The takeaway message is that there were six instances of Measurement & Data and Statistics & Probability items administered, and in this class only about one-third of those were answered correctly at the 500-599 level.

Figure 6

Class Score Report by Content Strand

MAPT Math Class Score Report by Content Strand

Fiscal Year: 2018-2019
Site:
Class Title:
Number of Students: 7
Number of Tests: 8
Report Date: 05/10/2019

	200-299		300-399		400-499		500-599		600-700	
	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct
F			6	100%			8	75%	1	0%
G	1	100%	1	100%	18	78%	16	50%	1	0%
MD&SP	1	100%	4	100%	39	79%	11	36%		
NBT	1	100%	1	100%						
NF&RP	1	100%	2	100%	38	58%	2	0%		
NS					20	60%	15	47%		
OA&EE	2	100%	3	100%	58	62%	11	9%	1	0%
Total	**6**	**71%**	**17**	**86%**	**173**	**48%**	**63**	**31%**	**3**	**0%**

Note: Total Sums the number of student responses based on the total number of student-item combinations

Number of Items per Difficulty Level Seen by Students

200-299	300-399	400-499	500-599	600-700
6	12	73	27	3

To interpret this Class Score Report, the logic outlined in the previous paragraph applies throughout. Look at the item difficulty range along the top, and then choose a content strand to focus on. Then, evaluate how many items within that difficulty range/strand were presented and were answered correctly. This gives you a sense of the extent to which students in a class were able to answer questions on a given strand correctly at a specific difficulty level.

In the example provided in Figure 6, the class overall did very well on items in the 200-299 and 300-399 range across Content Strands. However, there is room for improvement when it comes to more challenging items in several Content Strands, including NF&RP and OA&EE.

The bottom table in Figure 6 provides the number of unique items per difficulty level that were presented to the class. The counts of items in the main body of the table are higher because some items are seen by more than one test-taker.

In Figure 7, the Class Score Report is segmented by Cognitive Level. Interpretation of this Class Score Report by Cognitive Levels much the same as described in Figure 6 for the Class Score Report by Content Strand. Notice here that the row categories represent each of the three Cognitive Level groupings (also known as Components of Rigor).

There are a number of patterns that teachers can look for in these Class Reports by Cognitive Level. For example, look for cells with high numbers of student responses and comparatively low percent corrects. For example, in the 500-599 range, there were thirty-four responses recorded to the Conceptual Understanding component, but only 37% of those answers were correct. This might be something to work on. Similarly, for the Procedural Understanding component in the same range, there were fifteen responses recorded and only 40% of those answers were correct.

Figure 7

Class Score Report by Topic and Cognitive Level

MAPT Math Class Score Report by Topic and Cognitive Level

Fiscal Year: 2018-2019
Site:
Class Title:
Number of Students: 7
Number of Tests: 8
Report Date: 05/10/2019

	200-299		300-399		400-499		500-599		600-700	
	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct
Conceptual Understanding	2	100%	3	100%	53	64%	35	37%	2	0%
Procedural Understanding	3	100%	10	100%	70	64%	15	40%	1	0%
Strategic Thinking	1	100%	4	100%	50	72%	13	54%		
Total	**6**	**100%**	**17**	**100%**	**173**	**67%**	**63**	**44%**	**3**	**0%**

Number of Items per Difficulty Level Seen by Students

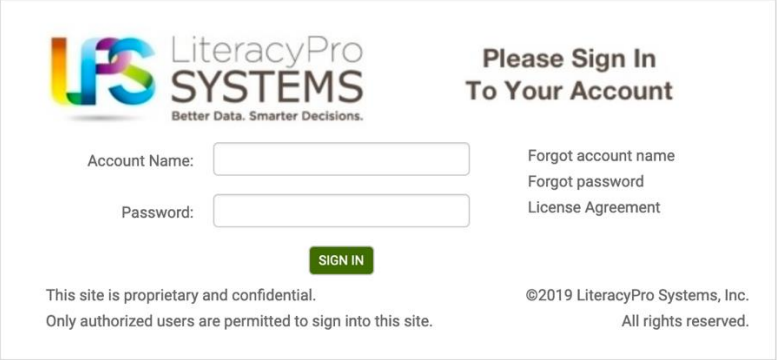
200-299	300-399	400-499	500-599	600-700
6	12	73	27	3

Accessing the MAPT-CCR for Mathematics Score Reports through LACES

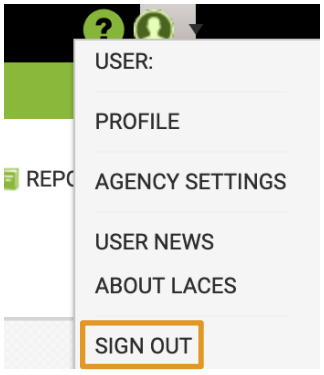
Please note that the score reports for MAPT-CCR for Mathematics tests that are completed each day will be available in LACES by 5 AM the next morning.

You can access LACES at: https://laces.literacypro.com/laces

On the “log on” screen, type your LACES ID into the “Account Name” field and type your password into the “Password” field.



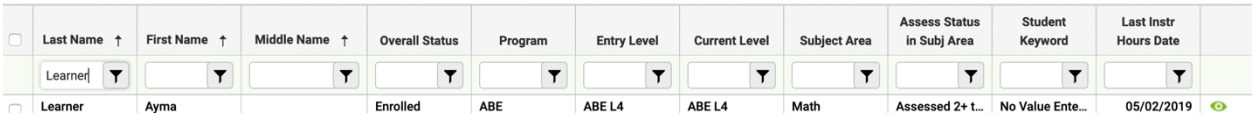
Reminder: When you are finished reviewing data, make sure you sign out—do not just close the browser. Click on the user icon shown on the upper right corner and select “Sign out.”



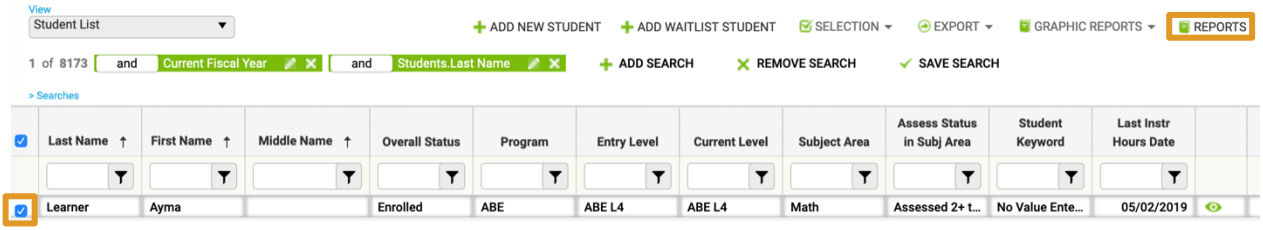
Generating Score Reports for an Individual Student

1. Click “Student” in the green bar at the top of the screen.

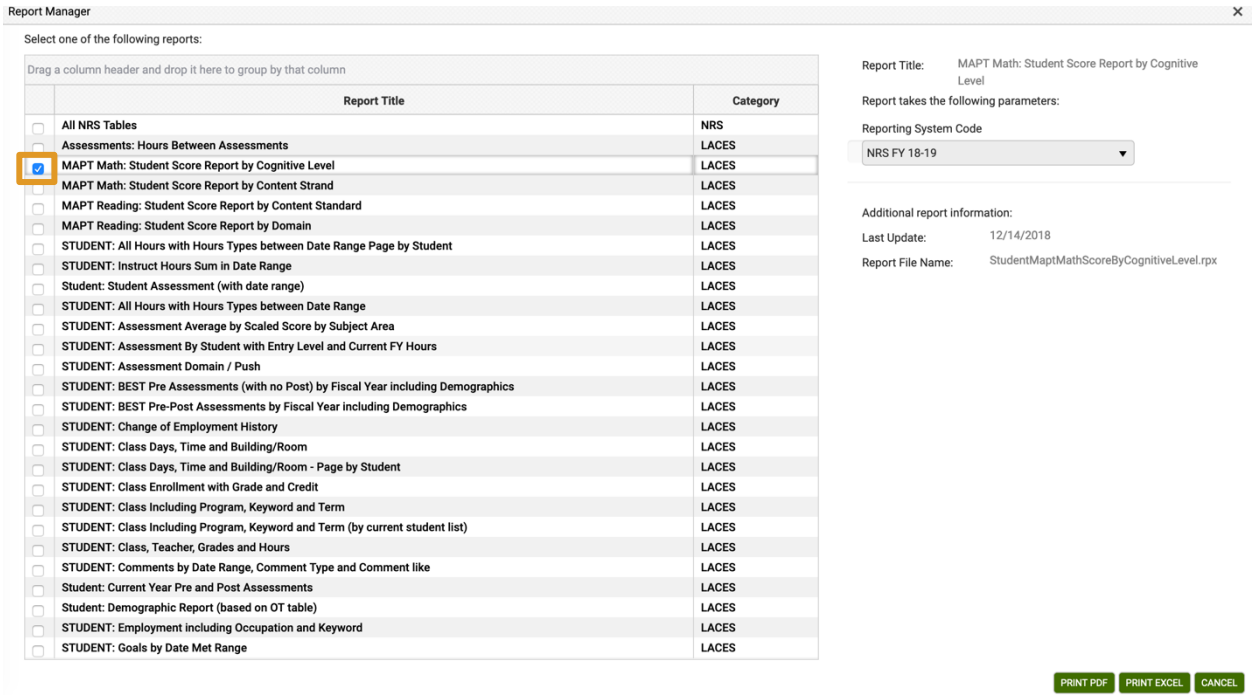
2. Use the column header filters to find the learner’s record. In this example, we found Ayma Learner’s record by searching for the last name “Learner.”



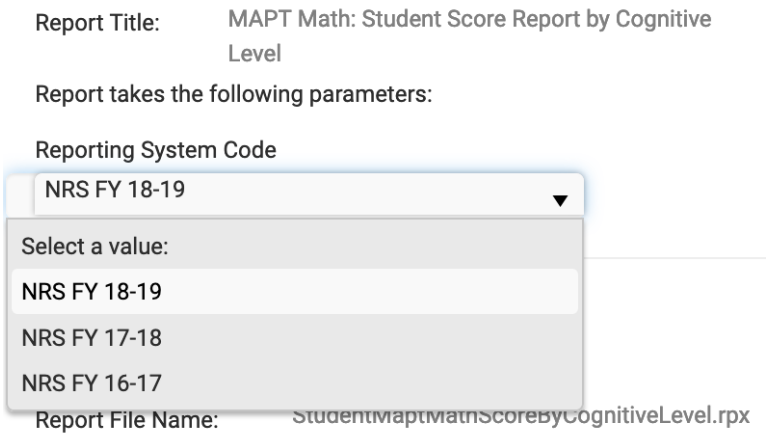
3. Click the checkbox next to the learner’s name and then click “Reports.”



4. Select the type of report you would like to download. There are two options for Math: “Student Score Report by Cognitive Level” and “Student Score Report by Content Strand.” Only one type of report can be downloaded at a time.



5. Next, select the fiscal year that you are interested in.

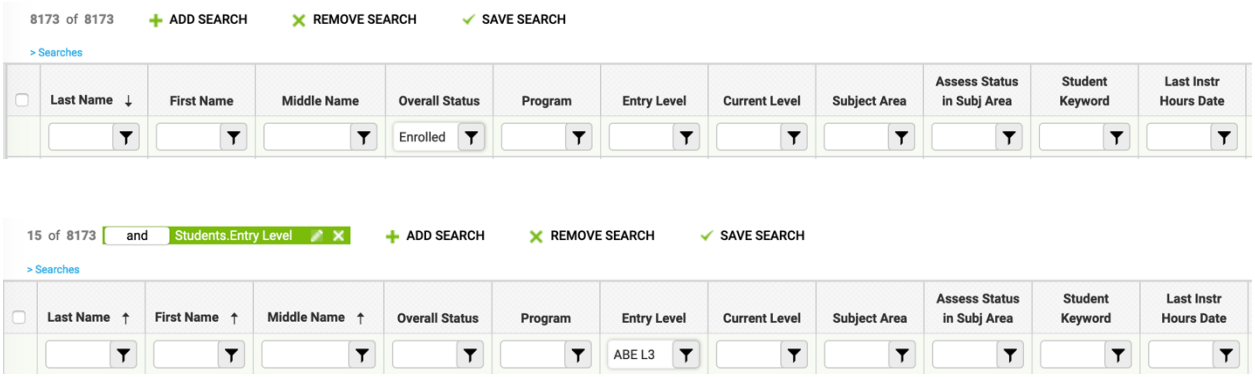


6. Click “Print PDF” or “Print Excel,” depending on your preferred format.

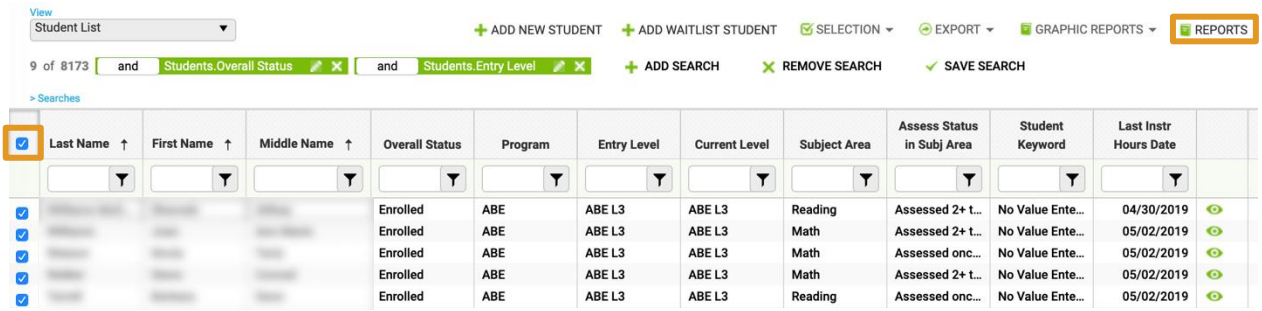
7. Once the document is generated, a window will pop up and you will have the option to open it or save it (recommended).

Generating Score Reports for Multiple Students

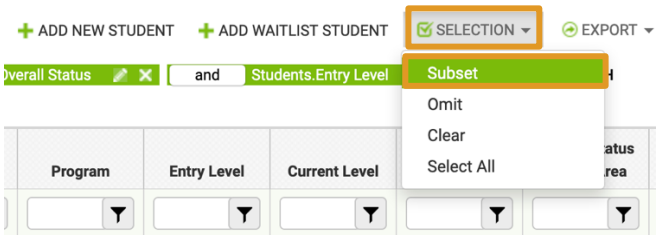
1. In the ‘Student’ tab, use the column header filters to limit the view to the group of students whose score reports you would like to access. In this example, we typed “Enrolled” in the “Overall Status” field and “ABE L3” in the “Entry Level” field to see only the records of currently enrolled students who started at ABE L3.



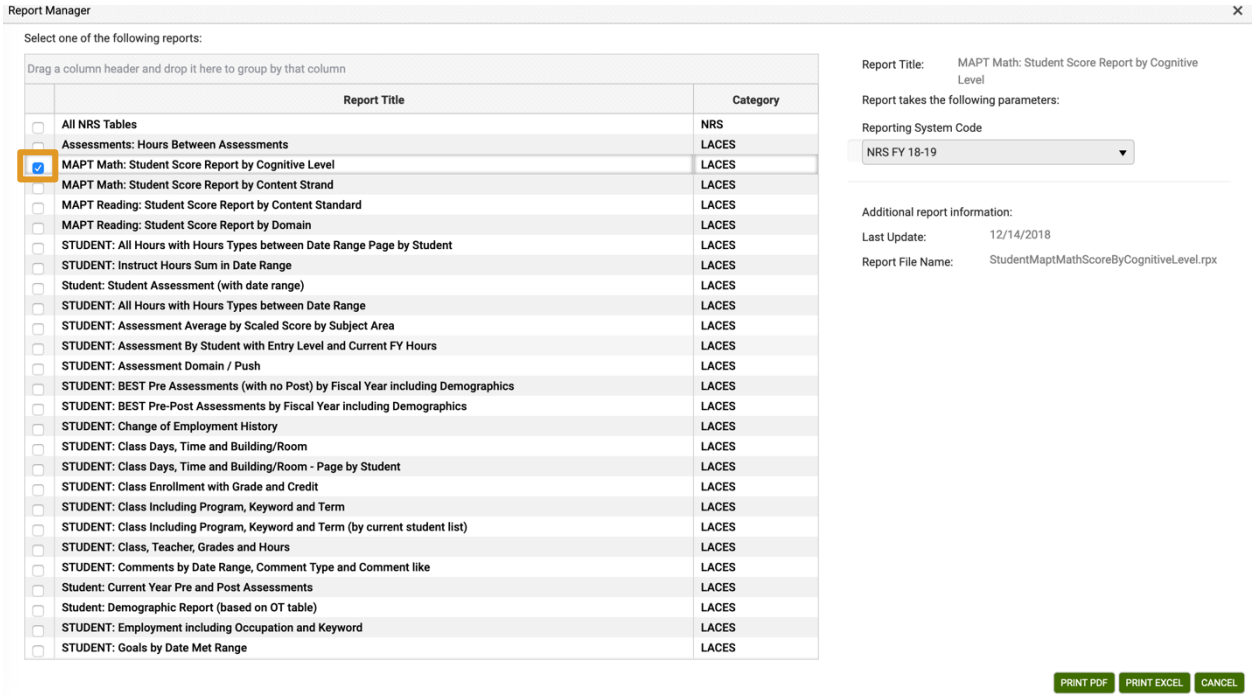
2. To access the score reports of all learners whose records match the filter criteria, click the checkbox to the left of “Last Name” to select all records and click “Reports.”



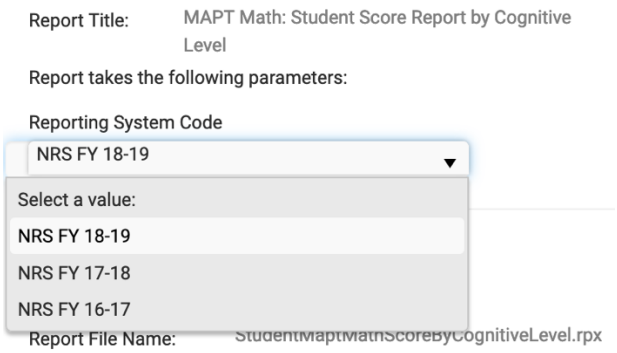
Alternatively, to access the score reports of only a few learners within the group, click the checkboxes for those learners, click “Selection”, and then click “Subset.” After the screen updates to show only those learners’ records, click “Reports.”



3. Select the type of report you would like to download. There are two options for Math: “Student Score Report by Cognitive Level” and “Student Score Report by Content Strand.” Only one type of report can be downloaded at a time.



4. Next, select the fiscal year that you are interested in.



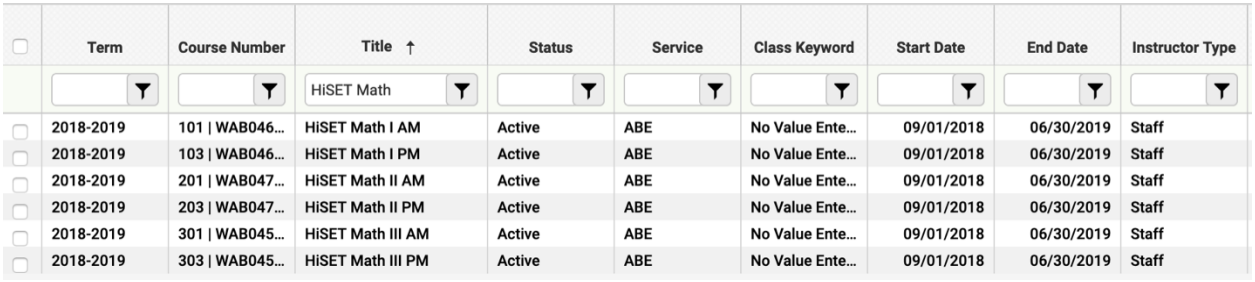
5. Click “Print PDF” or “Print Excel,” depending on your preferred format.

6. Once the document is generated, a window will pop up and you will have the option to open it or save it (recommended).

Generating Class Score Reports

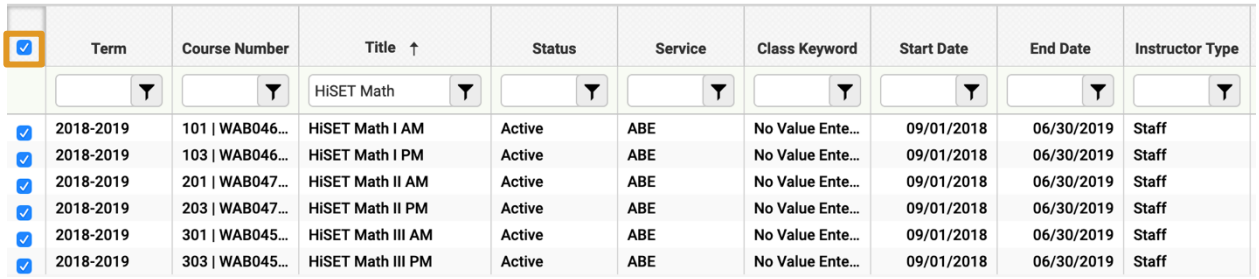
1. Click “Class” in the green bar at the top of the screen.

2. Use the column header filters to find the class or classes that you are interested in. In this example, we found all HiSET Math classes (AM and PM) by typing “HiSET Math” in the “Title” field.



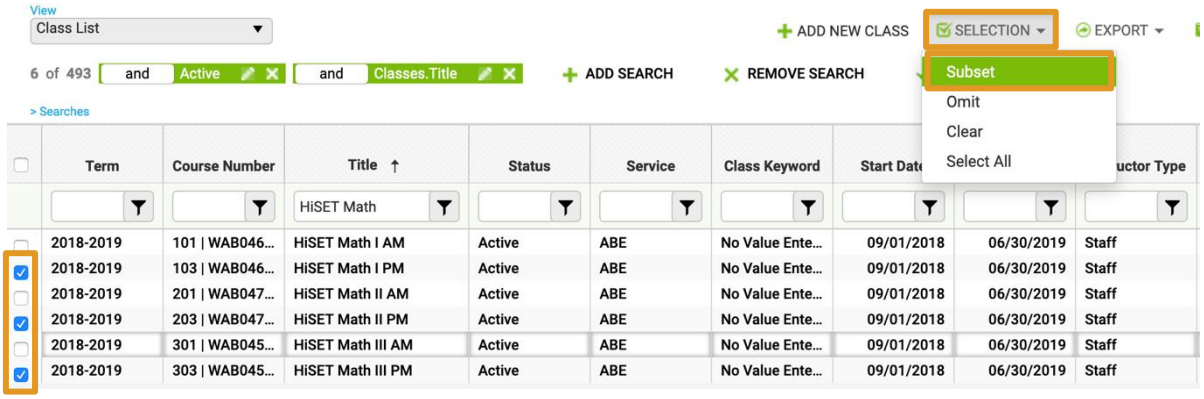
Term	Course Number	Title	Status	Service	Class Keyword	Start Date	End Date	Instructor Type
		HiSET Math						
2018-2019	101 | WAB046...	HiSET Math I AM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	103 | WAB046...	HiSET Math I PM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	201 | WAB047...	HiSET Math II AM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	203 | WAB047...	HiSET Math II PM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	301 | WAB045...	HiSET Math III AM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	303 | WAB045...	HiSET Math III PM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff

3. To obtain score reports for all classes that meet the criterion (or criteria), click the checkbox to the left of “Term” to select all records in the current view. Next, click “Reports.”

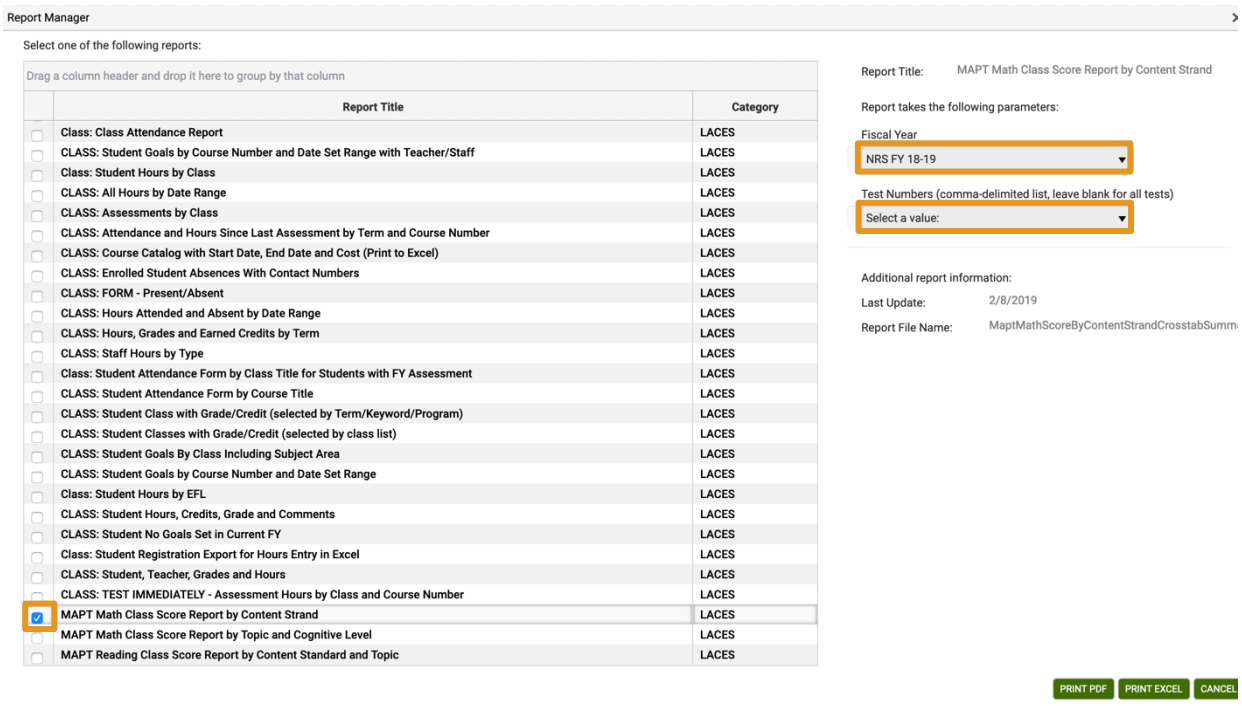


Term	Course Number	Title	Status	Service	Class Keyword	Start Date	End Date	Instructor Type
		HiSET Math						
2018-2019	101 | WAB046...	HiSET Math I AM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	103 | WAB046...	HiSET Math I PM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	201 | WAB047...	HiSET Math II AM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	203 | WAB047...	HiSET Math II PM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	301 | WAB045...	HiSET Math III AM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff
2018-2019	303 | WAB045...	HiSET Math III PM	Active	ABE	No Value Ente...	09/01/2018	06/30/2019	Staff

Alternatively, to obtain score reports for only a selection of the classes that meet the criterion, click the checkboxes for those classes, click “Selection,” and then click “Subset.” In this example, only the PM classes were selected. Next, click “Reports.”



4. Select the type of class report you would like to download. There are two options for Math: “MAPT Math Class Score Report by Content Strand” and “MAPT Math Class Score Report by Topic and Cognitive Level.” Next, select the fiscal year that you are interested in and make a selection under “Test Numbers” depending on which tests you would like included in the report (leave that selection blank to include all tests).



5. Click “Print PDF” or “Print Excel,” depending on your preferred format.

6. Once the document is generated, a window will pop up and you will have the option to open it or save it (recommended).

References

Goodman, D. P., & Hambleton, R. K. (2004). Student test score reports and interpretive guides: Review of current practices and suggestions for future research. *Applied Measurement in Education, 17*(2), 145-220.

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Zenisky, A. L., Sireci, S. G., Lewis, J., Lim, H., O'Donnell, F., Wells, C. S., Padellaro, F., Jung, H. J., Banda, E., Pham, D., Hong, S. E., Park, Y., Botha, S., Lee, M., & Garcia, A. (2018). Massachusetts Adult Proficiency Tests for College and Career Readiness: Technical Manual. *Center for Educational Assessment research report No. 974*. Amherst, MA: Center for Educational Assessment.

Appendix A

Understanding Item Difficulty

Item difficulty refers to how easy or hard an item is. Suppose we have two items, item A and item B. If 50% of all students answer item A correctly and 75% of those students answer item B correctly, we say item A is "more difficult" than item B. Unlike the Content Standard or benchmark an item measures, the difficulty level of an item is not an inherent characteristic of the item. Rather, it is determined by the number and types of students who correctly answer the item.

Now let's consider a more complicated example, illustrated in Table A1.

Table A1

Differences in Item Difficulty

Item A	Item B
Completed by Low Intermediate students (Level 3, GLE 4.0-5.9)	Completed by High Intermediate students (Level 4, GLE 6.0-8.9)

As before, we again have two items, A and B. This time, however, different groups of students complete each item. Group 1 is a group of Low Intermediate students (i.e., Intermediate Mathematics students, sometimes referred to as Level 3 or GLE 4.0–5.9). Group 2 is a group of High Intermediate students (i.e., Pre-GED students, sometimes referred to as Level 4 or GLE 6.0–8.9). We expect a larger percentage of the High Intermediate students to answer these items correctly than of the Low Intermediate students, so, in determining the difficulty level of an item, we have to account not only for the numbers of examinees who answer it correctly, but also for the skill level of those students. Item difficulty is more specific than just noting that a test-taker got an item written to a benchmark right or wrong. It is possible that two questions written to the same benchmark will differ in their level of difficulty.

To determine item difficulty, we calibrate all items onto the same scale on which students are placed—the 200 to 700 MAPT-CCR score scale. Figure A1 displays an *item characteristic curve* (ICC), which shows the probability that an examinee at a given MAPT-

CCR score will answer an item correctly. The horizontal axis in the figure is the 200-to-700 MAPT-CCR score scale. The vertical axis is probability, which ranges from zero (no chance of answering the item correctly) to 1.0 (a certainty that the item will be answered correctly). The difficulty level of an item is determined by finding the point on the MAPT-CCR score scale where a student has a 50% chance of answering the item correctly. For the item displayed in Figure A1, this point is 501. A horizontal line is drawn where probability = 0.50. The arrow perpendicular to this line illustrates the location on the MAPT-CCR score scale where probability = 0.50. This point represents the difficulty level of the item.

Figure A1

Illustration of MAPT-CCR Item with Difficulty Level of 501

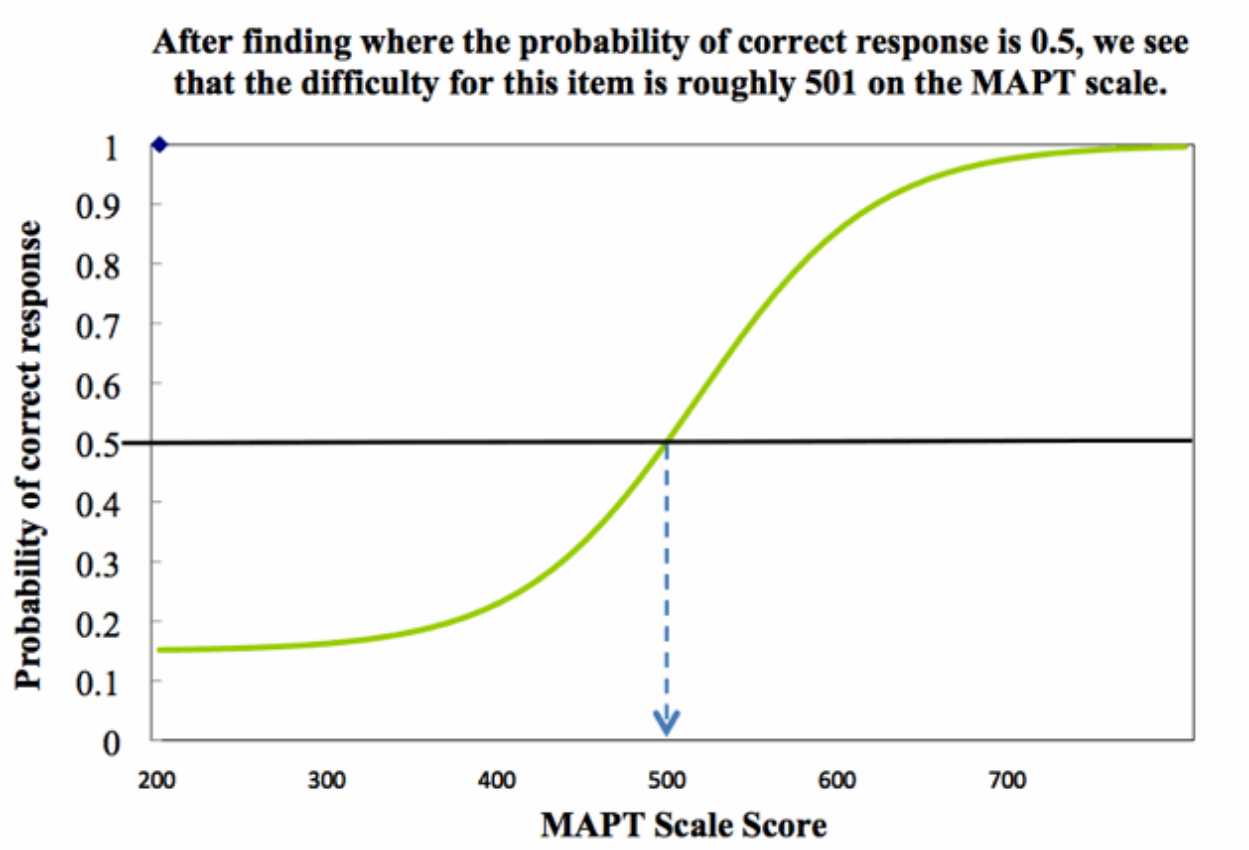


Figure A2 depicts the probability that a student with a MAPT-CCR score of 400 will correctly answer the item in Figure A1, which has a difficulty level of about 500. The probability is determined by starting on the horizontal MAPT-CCR scale axis, locating the examinee score of 400. A perpendicular line is drawn beginning on the MAPT-CCR scale, then intersecting with the item characteristic curve. The probability is found by starting at the

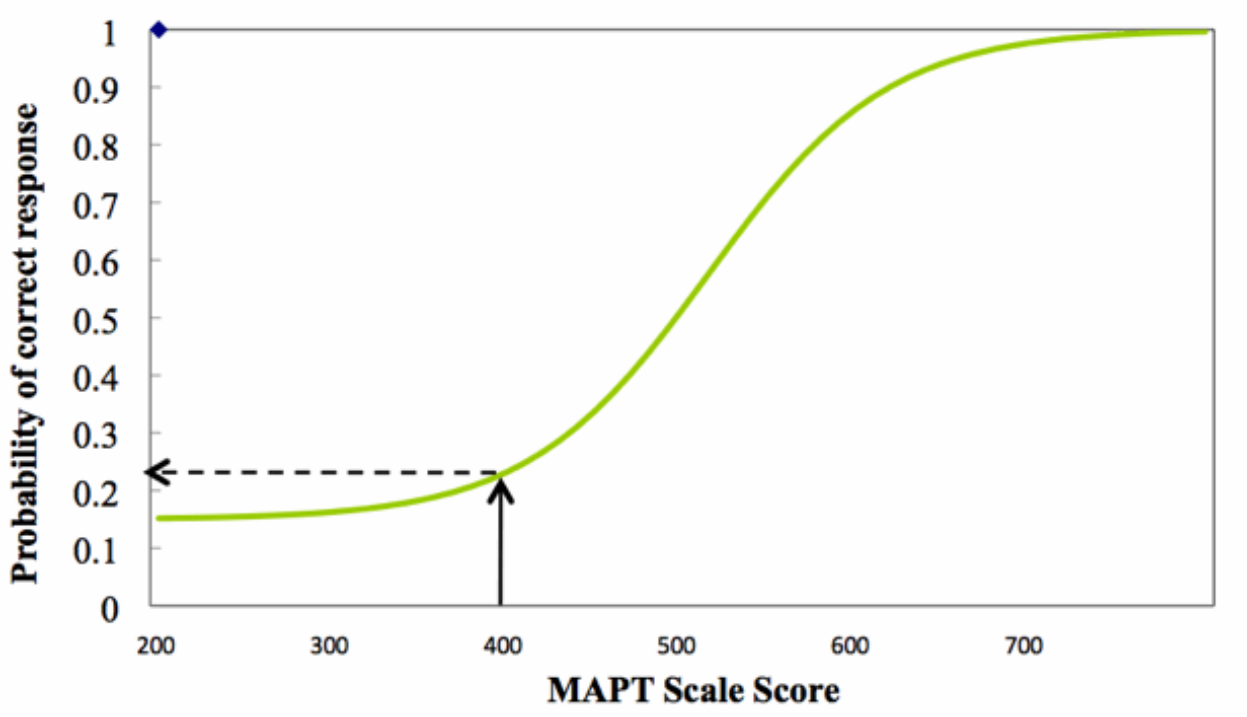
new intersection, then drawing another perpendicular line to the vertical axis where probabilities are labeled.

By following the two arrows from the 400 point on the MAPT scale to the ICC and then to the probability axis, you can see that students who score 400 are only roughly 23% likely (i.e., probability = 0.23) to get this item correct. Therefore, this item must be more difficult than the 400 level of performance. On the other side of the spectrum, students at the 600 score level (not shown) are more than 50% likely to get this item correct, so the item is too easy to be at the 600 level. These results are reasonable considering that the actual item difficulty is 501.

Test-development norms suggest that the best place to locate an individual item on the scale is at the point where students have a 50% chance of answering the item correctly (e.g., see Goodman & Hambleton, 2004). Therefore, a student who earns a score of 501 on the MAPT-CCR for Mathematics has a 50% chance of correctly answering the item depicted in Figures 2 and 3, and that item is assigned a difficulty level of 501.

Figure A2

Illustration of the Probability of an Examinee with a MAPT-CCR Score of 400 Answering an Item Correctly at a MAPT-CCR Score of 400



Appendix B

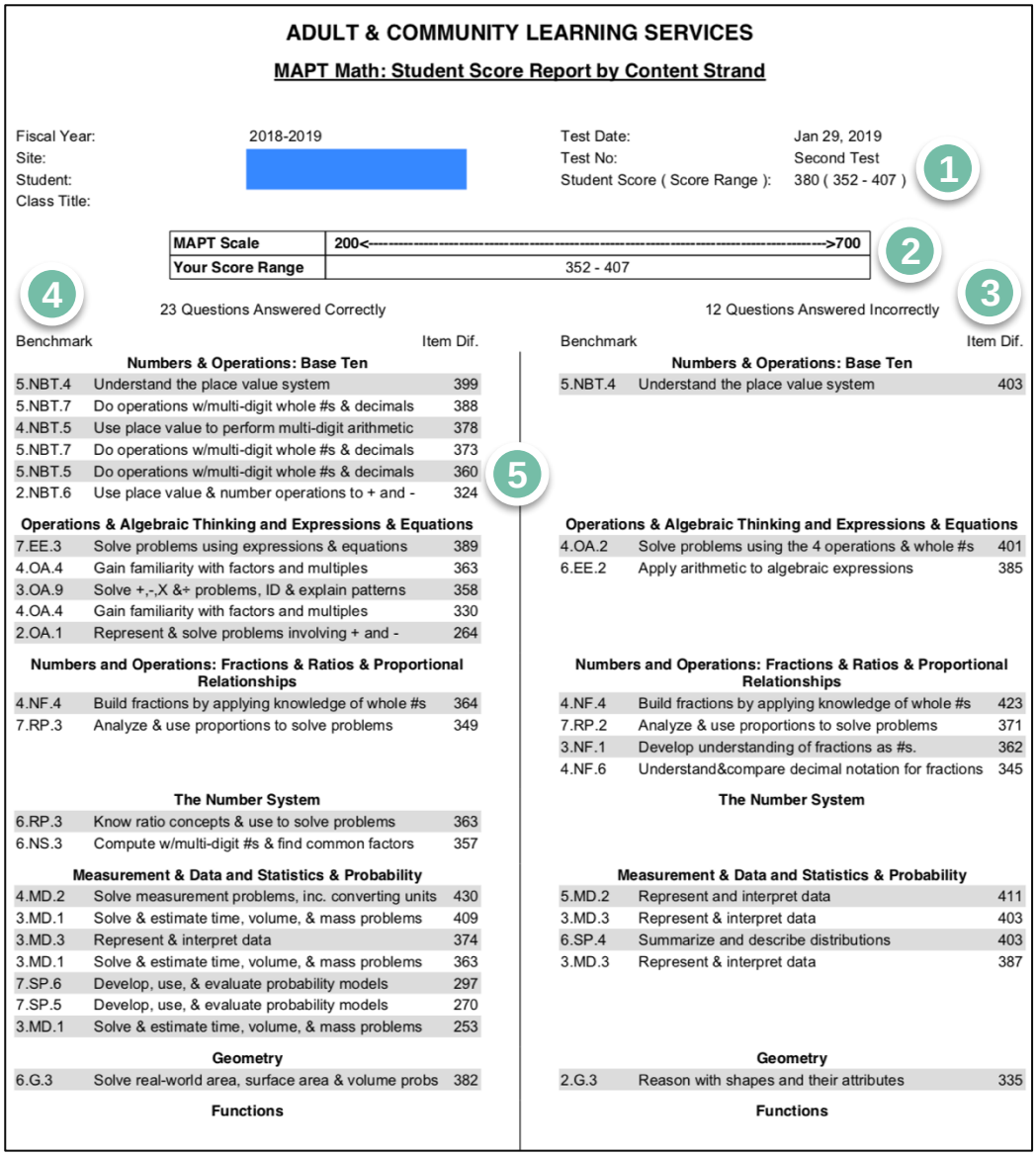
Quick Guides for Interpreting the Reports

In the following pages are the Quick Guides that have been developed to assist in the interpretation of the score reports. Four Quick Guides have been developed, and are included here in this order:

- Individual Student Score Report by Content Strand
- Individual Student Score Report by Cognitive Level
- Class Score Report by Content Strand
- Class Score Report by Topic and Cognitive Level

These Quick Guides are also available on the ACLS Test Help blog.

Quick Reference Guide to the MAPT-CCR for Mathematics: Student Score Report by Content Strand



ADULT & COMMUNITY LEARNING SERVICES

MAPT Math: Student Score Report by Content Strand

Fiscal Year: 2018-2019
Site:
Student:
Class Title:

Test Date: Jan 29, 2019
Test No: Second Test
Student Score (Score Range): 380 (352 - 407)

MAPT Scale	200<----------->700
Your Score Range	352 - 407

23 Questions Answered Correctly

Benchmark		Item Dif.
Numbers & Operations: Base Ten		
5.NBT.4	Understand the place value system	399
5.NBT.7	Do operations w/multi-digit whole #s & decimals	388
4.NBT.5	Use place value to perform multi-digit arithmetic	378
5.NBT.7	Do operations w/multi-digit whole #s & decimals	373
5.NBT.5	Do operations w/multi-digit whole #s & decimals	360
2.NBT.6	Use place value & number operations to + and -	324
Operations & Algebraic Thinking and Expressions & Equations		
7.EE.3	Solve problems using expressions & equations	389
4.OA.4	Gain familiarity with factors and multiples	363
3.OA.9	Solve +,-,X &÷ problems, ID & explain patterns	358
4.OA.4	Gain familiarity with factors and multiples	330
2.OA.1	Represent & solve problems involving + and -	264
Numbers and Operations: Fractions & Ratios & Proportional Relationships		
4.NF.4	Build fractions by applying knowledge of whole #s	364
7.RP.3	Analyze & use proportions to solve problems	349
The Number System		
6.RP.3	Know ratio concepts & use to solve problems	363
6.NS.3	Compute w/multi-digit #s & find common factors	357
Measurement & Data and Statistics & Probability		
4.MD.2	Solve measurement problems, inc. converting units	430
3.MD.1	Solve & estimate time, volume, & mass problems	409
3.MD.3	Represent & interpret data	374
3.MD.1	Solve & estimate time, volume, & mass problems	363
7.SP.6	Develop, use, & evaluate probability models	297
7.SP.5	Develop, use, & evaluate probability models	270
3.MD.1	Solve & estimate time, volume, & mass problems	253
Geometry		
6.G.3	Solve real-world area, surface area & volume probs	382
Functions		

12 Questions Answered Incorrectly

Benchmark		Item Dif.
Numbers & Operations: Base Ten		
5.NBT.4	Understand the place value system	403
Operations & Algebraic Thinking and Expressions & Equations		
4.OA.2	Solve problems using the 4 operations & whole #s	401
6.EE.2	Apply arithmetic to algebraic expressions	385
Numbers and Operations: Fractions & Ratios & Proportional Relationships		
4.NF.4	Build fractions by applying knowledge of whole #s	423
7.RP.2	Analyze & use proportions to solve problems	371
3.NF.1	Develop understanding of fractions as #s.	362
4.NF.6	Understand&compare decimal notation for fractions	345
The Number System		
Measurement & Data and Statistics & Probability		
5.MD.2	Represent and interpret data	411
3.MD.3	Represent & interpret data	403
6.SP.4	Summarize and describe distributions	403
3.MD.3	Represent & interpret data	387
Geometry		
2.G.3	Reason with shapes and their attributes	335
Functions		

1. The header of the report contains basic identifying information as well as the student's MAPT-CCR score and score range, which represents the range of scores we would expect if we tested the student over and over again without additional learning.

2. Below the header is an illustration of the student's score range as it connects to the MAPT-CCR scale.

3. The item difficulty level is a value on the MAPT-CCR scale associated with a 50% chance of answering the item correctly.

4. Every item is aligned to a benchmark in the CCRSAE Standards.

5. Each of the 35 items a student takes will be in one of these columns: Questions Answered Correctly or Questions Answered Incorrectly. MAPT-CCR items are confidential and cannot be included on score reports. Therefore, we report the benchmark measured by each item rather the item itself.

The items in this report are organized by Content Strand.

To interpret this report

- Note the student's MAPT-CCR score (in this example, 380)
- Note the score range associated with the MAPT-CCR score (in this example, 352-407)

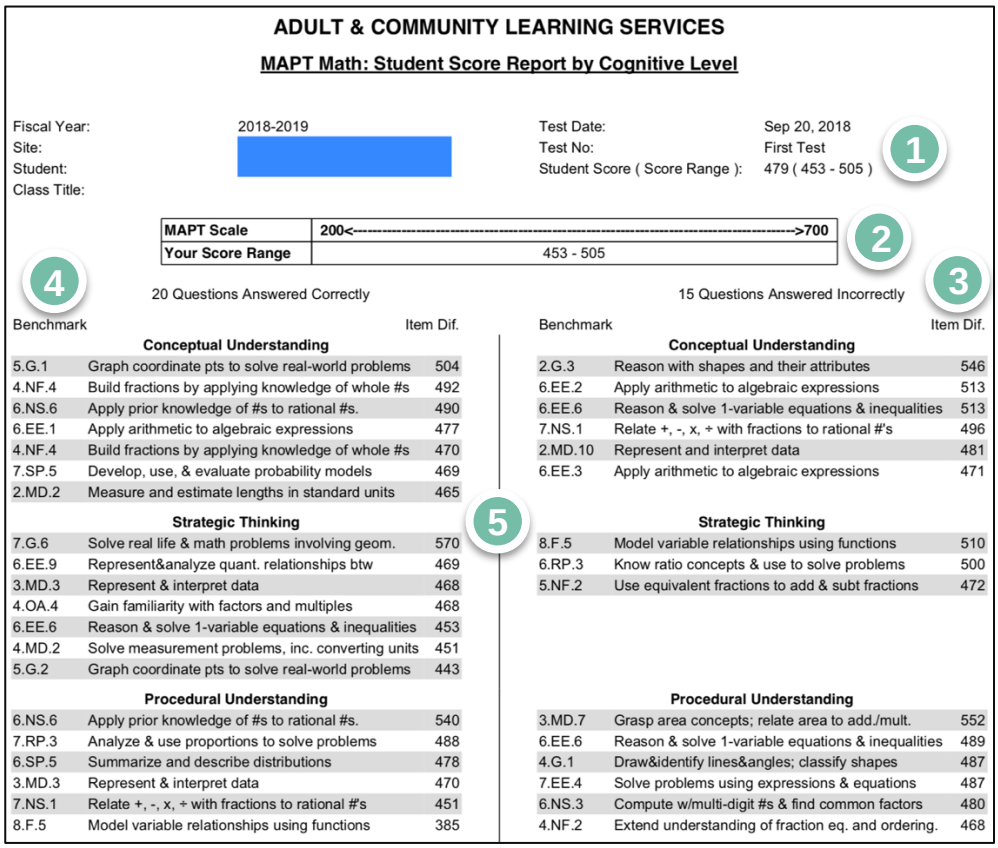
Using this information

- Look for items answered incorrectly with item difficulty values lower than the students' score range (in this example, the last item on the incorrect side and the last item under "Fractions & Ratios & Proportional Relationships"). These were expected to have been easy for the student based on their difficulty level, but were not answered correctly.
- Look also for items answered incorrectly with item difficulty values higher than the student's score range. These were relatively hard for the student given the student's performance and are benchmarks to work on.
- Look for items answered correctly with item difficulty values lower than the student's score range. These were answered correctly and were relatively easy for the student.
- Look for items answered correctly with item difficulty values higher than the student's score range. These were relatively hard for the student given the student's performance, but were answered correctly.

Questions to consider

- How does this information align with what content/skills were taught to students in the class?
- What benchmarks represent material covered that was mastered?

Quick Reference Guide to the MAPT-CCR for Mathematics: Student Score Report by Cognitive Level



ADULT & COMMUNITY LEARNING SERVICES

MAPT Math: Student Score Report by Cognitive Level

Fiscal Year: 2018-2019
Site:
Student:
Class Title:

Test Date: Sep 20, 2018
Test No: First Test
Student Score (Score Range): 479 (453 - 505)

1

MAPT Scale	200<----------->700
Your Score Range	453 - 505

2

4

20 Questions Answered Correctly

3

15 Questions Answered Incorrectly

Benchmark		Item Dif.
Conceptual Understanding		
5.G.1	Graph coordinate pts to solve real-world problems	504
4.NF.4	Build fractions by applying knowledge of whole #s	492
6.NS.6	Apply prior knowledge of #s to rational #s.	490
6.EE.1	Apply arithmetic to algebraic expressions	477
4.NF.4	Build fractions by applying knowledge of whole #s	470
7.SP.5	Develop, use, & evaluate probability models	469
2.MD.2	Measure and estimate lengths in standard units	465
Strategic Thinking		
7.G.6	Solve real life & math problems involving geom.	570
6.EE.9	Represent&analyze quant. relationships btw	469
3.MD.3	Represent & interpret data	468
4.OA.4	Gain familiarity with factors and multiples	468
6.EE.6	Reason & solve 1-variable equations & inequalities	453
4.MD.2	Solve measurement problems, inc. converting units	451
5.G.2	Graph coordinate pts to solve real-world problems	443
Procedural Understanding		
6.NS.6	Apply prior knowledge of #s to rational #s.	540
7.RP.3	Analyze & use proportions to solve problems	488
6.SP.5	Summarize and describe distributions	478
3.MD.3	Represent & interpret data	470
7.NS.1	Relate +, -, x, ÷ with fractions to rational #'s	451
8.F.5	Model variable relationships using functions	385

5

Benchmark		Item Dif.
Conceptual Understanding		
2.G.3	Reason with shapes and their attributes	546
6.EE.2	Apply arithmetic to algebraic expressions	513
6.EE.6	Reason & solve 1-variable equations & inequalities	513
7.NS.1	Relate +, -, x, ÷ with fractions to rational #'s	496
2.MD.10	Represent and interpret data	481
6.EE.3	Apply arithmetic to algebraic expressions	471
Strategic Thinking		
8.F.5	Model variable relationships using functions	510
6.RP.3	Know ratio concepts & use to solve problems	500
5.NF.2	Use equivalent fractions to add & subt fractions	472
Procedural Understanding		
3.MD.7	Grasp area concepts; relate area to add./mult.	552
6.EE.6	Reason & solve 1-variable equations & inequalities	489
4.G.1	Draw&identify lines&angles; classify shapes	487
7.EE.4	Solve problems using expressions & equations	487
6.NS.3	Compute w/multi-digit #s & find common factors	480
4.NF.2	Extend understanding of fraction eq. and ordering.	468

1. The header of the report contains basic identifying information as well as the student's MAPT-CCR score and score range, which represents the range of scores we would expect if we tested the student over and over without additional learning.

2. Below the header is an illustration of the student's score range as it connects to the MAPT-CCR scale.

3. The item difficulty level is a value on the MAPT-CCR scale associated with a 50% chance of answering the item correctly.

4. Every item is aligned to a benchmark in the CCRSAE Standards.

5. Each of the 35 items a student takes will be in one of these columns: Questions Answered Correctly or Questions Answered Incorrectly. MAPT-CCR items are confidential and cannot be included on score reports. Therefore, we report the benchmark measured by each item rather the item itself.

The items in this report are organized by Cognitive Level.

To interpret this report

- Note the student's MAPT-CCR score (in this example, 479)
- Note the score range associated with the MAPT-CCR score (in this example, 453-505)

Using this information

- Look for items answered incorrectly with item difficulty values lower than the students' score range (there are no such items in the sample report). These were expected to have been easy for the student based on their difficulty level, but were not answered correctly.
- Look also for items answered incorrectly with item difficulty values higher than the student's score range. These were relatively hard for the student given the student's performance and are benchmarks to work on.
- Look for items answered correctly with item difficulty values lower than the student's score range. These were answered correctly and were relatively easy for the student.
- Look for items answered correctly with item difficulty values higher than the student's score range. These were relatively hard for the student given the student's performance, but were answered correctly.

Questions to consider

- How does this information align with what content/skills were taught to students in the class?
- What benchmarks represent material covered that was mastered?

Quick Reference Guide to the MAPT-CCR for Mathematics: Class Score Report by Content Strand

1. The header of the report contains identifying information about the class. Note that in a given class, the number of students may not equal the number of tests recorded because individual students may have taken the test multiple times within the same fiscal year.

2. Each item on the MAPT-CCR is mapped to the MAPT-CCR scale, and so falls into one of five score ranges.

MAPT Math Class Score Report by Content Strand

Fiscal Year: 2018-2019
Site:
Class Title:
Number of Students: 7
Number of Tests: 8
Report Date: 05/10/2019

1

2

3

Content Strand	200-299		300-399		400-499		500-599		600-700	
	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct
F			6	100%			8	75%	1	0%
G	1	100%	1	100%	18	78%	16	50%	1	0%
MD&SP	1	100%	4	100%	39	79%	11	36%		
NBT	1	100%	1	100%						
NF&RP	1	100%	2	100%	38	58%	2	0%		
NS					20	60%	15	47%		
OA&EE	2	100%	3	100%	58	62%	11	9%	1	0%
Total	**6**	**71%**	**17**	**86%**	**173**	**48%**	**63**	**31%**	**3**	**0%**

Note: Total Sums the number of student responses based on the total number of student-item combinations

Number of Items per Difficulty Level Seen by Students

200-299	300-399	400-499	500-599	600-700
6	12	73	27	3

3. The "# Student Responses" and "% Correct" columns present information about how many student responses were provided, and the percent of these that were correct. Within each cell, these may or may not represent the same item seen by more than one student, or different items seen by different students.

The items in this report are organized by Content Strand.

To interpret this report

- Note the Difficulty Range of Items (along the top of the table)
- Identify a Content Strand you want to look at:
    - Numbers and Operations: Base Ten (NBT)
    - Operations & Algebraic Thinking (OA) and Expressions & Equations (EE)
    - Numbers & Operations: Fractions (NF) and Ratios & Proportional Relationships (RP)
    - The Number System (NS)
    - Geometry (G)
    - Measurement & Data (MD) and Statistics & Probability (SP)
    - Functions (F)
- Note the number of student responses and the percent of these that were answered correctly for the cell you are interested in.

Using this information

- If the number of student responses is less than 5, be aware that this is a relatively small number of items and any conclusions to be drawn are likely to be unreliable.
- Where the number of student responses is greater than 5, look at the percent correct.
    - If the percent correct is high, that represents higher numbers of correct answers to those items in that difficulty range and greater mastery of skills among members of the class as a group.
    - If the percent correct is low, that represents lower numbers of correct answers to those items in that difficulty range and a lower degree of mastery of skills among members of the class as a group.

Quick Reference Guide to the MAPT-CCR for Mathematics: Class Score Report by Topic and Cognitive Level

1. The header of the report contains identifying information about the class. Note that in a given class, the number of students may not equal the number of tests recorded because individual students may have taken the test multiple times within the same fiscal year.

2. Each item on the MAPT-CCR is mapped to the MAPT-CCR scale, and so falls into one of five score ranges.

Fiscal Year: 2018-2019
Site:
Class Title:
Number of Students: 7
Number of Tests: 8
Report Date: 05/10/2019

1

2

3

Cognitive Levels	200-299		300-399		400-499		500-599		600-700	
	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct	# Student Responses	% Correct
Conceptual Understanding	2	100%	3	100%	53	64%	35	37%	2	0%
Procedural Understanding	3	100%	10	100%	70	64%	15	40%	1	0%
Strategic Thinking	1	100%	4	100%	50	72%	13	54%		
Total	**6**	**100%**	**17**	**100%**	**173**	**67%**	**63**	**44%**	**3**	**0%**

Number of Items per Difficulty Level Seen by Students

200-299	300-399	400-499	500-599	600-700
6	12	73	27	3

3. The "# Student Responses" and "% Correct" columns present information about how many student responses were provided, and the percent of these that were correct. Within each cell, these may or may not represent the same item seen by more than one student, or different items seen by different students.

The items in this report are organized by Topic and Cognitive Level.

To interpret this report

- Note the Difficulty Range of Items (along the top of the table)
- Identify a cognitive level you want to look at:
    - Conceptual Understanding
    - Procedural Understanding
    - Strategic Thinking
- Note the number of student responses and the percent of these that were answered correctly for the cell you are interested in.

Using this information

- If the number of student responses is less than 5, be aware that this is a relatively small number of items and any conclusions to be drawn are likely to be unreliable.
- Where the number of student responses is greater than 5, look at the percent correct.
    - If the percent correct is high, that represents higher numbers of correct answers to those items in that difficulty range and greater mastery of skills among members of the class as a group.
    - If the percent correct is low, that represents lower numbers of correct answers to those items in that difficulty range and a lower degree of mastery of skills among members of the class as a group.