

The ABCs Model for 2005-06

Background

In its 2003-04 session, the General Assembly of North Carolina instructed the State Board of Education (SBE) to evaluate the validity of the ABCs accountability system¹. Staff from the Division of Accountability Services reviewed the current accountability model and conducted analyses. The Chief of the Reporting Section presented findings and proposed new formulas to the Accountability Services' Technical Advisory Committee on January 27, 2005. Committee members offered their input on the proposed formulas and the plan was refined. A summary of the findings, recommendations, and a description of the new formulas follow.

Rationale

Much has changed since the ABCs of Public Education was implemented in the 1996-97 school year. At that time, formula constants were set using values that represented the statewide average growth. Major revisions to the reading and mathematics curricula since the ABCs began required the development of new tests; scores on the new editions of tests were equated back to the original scale to allow comparisons from year to year using the original formulas. Today, due to relational shifts in the intervening years between statewide student achievement, the taught curriculum, and the end-of-grade tests, the original ABCs formulas need revision. A review of the original growth formulas found that:

1. As the editions of the tests changed (in direct response to curriculum revisions), changes in the growth expectations may have been warranted
2. Statewide ABCs growth over time, by grade level, forms a saw-toothed pattern of gains and dips in the percent of schools meeting and exceeding growth targets in reading or mathematics as a cohort of students moves from grade to grade.
3. The percent of schools meeting or exceeding growth expectations in reading or mathematics does not appear to be highly correlated to curricular implementation (i.e., a historically high percent of schools met and exceeded expectations in the first year of testing a new curriculum).

Therefore, a need exists for a measure of student change in performance at the school level that

- a. bases expected student performance on past student performance,
- b. separates reading from mathematics; i.e., a student's reading score can be included in the ABCs calculations, even if that student does not have a score in mathematics,
- c. does not produce the saw-toothed pattern in percentages of schools meeting expectations at consecutive grade levels over time as a cohort moves through a school,

- d. adjusts for the difference in relative difficulty of the curriculum among adjacent grade levels as the curriculum is revised,
- e. can be used over a series of test editions with little or no modification, and
- f. produces valid and reliable results.

A Standardized Scale Model

Division staff, with input from the Technical Advisory Committee, recommended using a standardized scale to measure relative student performance, similar to z-scores², instead of the original developmental scale score. Under the new formulas, student scores are standardized and a student’s performance is considered as a point on the *c-scale* (change scale) relative to standard performance for that grade level in a standard setting year. A student’s developmental scale score is converted to a *c-scale* score.

In the first year of the test edition implementation (called the standard setting year), approximately half of the students in the state will score above “0” and half below. After the standard setting year, a student scoring above “0” on the *c-scale* is performing better than the average student in the standard setting year. Based on historical data, what is different about the *c-scale* from normative scales is that there is no reason why all students in the state could not score above “0” in any year after the standard setting year. On the *c-scale*, if a student performs equally as well in two consecutive years, the *academic change* (AC) will be “0,” meaning that the student is performing equally as well in grade 5 as previously in grade 4.

Using these formulas, schools that have assisted students to achieve as well in the current year as in the previous year will have a change of “0” on the *c-scale*. If the school does not perform as well in the current year, the AC will be negative, and if the school performs better, the AC will be positive.

Growth Expectations

Under the new formulas, the individual student is expected to perform as well, or better, on the end-of-grade (EOG) assessment for the current year as she or he did, on average, during the previous two years when the student’s scores are placed on the *c-scale*. As an indicator of growth, the new model is based on *academic change*. The *academic change* is based on an average of the previous two years’ assessments. If there is only one year’s EOG test data available, the expectation for change will be based on one previous assessment. Like the original formulas, the new formulas factor in an adjustment for regression to the mean (a student who performs above or below the mean score on one EOG will likely score closer to the mean on a subsequent EOG).

The New Formula(s)

Academic change is expressed as the difference between a student’s actual *c-scale* score for the current year and the student’s average of two (in most cases) previous assessments (EOGs and EOCs) with a

correction for regression toward the mean. A positive *academic change* indicates a gain in academic achievement, while a negative *academic change* indicates a loss in academic achievement from the previous two years. The simplified formula to determine *academic change* is:

$$AC = CS_{c-scale} - (0.92 \times ATPA_{c-scale})$$

Where

- AC = academic change
- CS = current score
- ATPA = average of two previous assessment scores

A modification is made to the formula for determining *academic change* in grade 3 and for any instance when only one previous year's EOG score is available or only one previous year's EOC score is required. The formula, adjusted for one previous year's assessment score, is:

$$AC = CS_{c-scale} - (0.82 \times PA_{c-scale})$$

Where:

- AC = academic change
- CS = current score
- PA = previous assessment score

A Sample Calculation for Determining *Academic Change* for 3-8

For our example, Jordan is a student in grade 5 in the 2003-04 school year. Jordan's test scores are:

| | EOG Reading | EOG Math |
|-------------------|-------------|----------|
| Grade 5 (2003-04) | 268 | 271 |
| Grade 4 (2002-03) | 263 | 264 |
| Grade 3 (2001-02) | 157* | 267 |

*Note that these data bridge two different test editions in reading.

Steps in the Operation to Calculate Academic Change:

1. **Convert the developmental scale scores to *c-scale* scores:**
 - a. Subtract the state mean for the standard setting year from the developmental scale score.
 - b. Divide by the standard deviation for the standard setting year.

| Grade Level | Scale score | State mean | Difference | Standard deviation | Actual c-score* |
|-------------|-------------|------------|------------|--------------------|-----------------|
| Reading 5 | 268.0 | 256.9 | 11.1 | 8.03 | 1.382 |
| Reading 4 | 263.0 | 252.3 | 10.7 | 8.68 | 1.233 |
| Reading 3 | 157.0 | 146.9 | 10.1 | 9.29 | 1.087 |
| Math 5 | 271.0 | 260.0 | 11.0 | 9.62 | 1.143 |
| Math 4 | 264.0 | 255.8 | 08.2 | 8.32 | 0.986 |
| Math 3 | 267.0 | 250.6 | 16.4 | 7.75 | 2.116 |

*Full precision will be used in the actual calculations, although the values here are rounded for readability.

2. **Compute the ATPAs (average of two previous assessment scores on the c-scale), for reading and mathematics, and adjust for regression to the mean to determine what is expected for Jordan at grade 5.**

| Grade Level | c-scale | ATPA | Coefficient | Expected c-score |
|-------------|---------|------|-------------|------------------|
| Reading 4 | 1.233 | 1.16 | 0.92 | 1.067 |
| Reading 3 | 1.087 | | | |
| Math 4 | 0.986 | 1.55 | 0.92 | 1.426 |
| Math 3 | 2.116 | | | |

3. **Subtract the expected c-scale score from the actual c-scale score (see step #1) to determine Jordan’s academic change.**

| Grade Level | Actual c-score (from Step # 1) | Expected c-score | Difference = Academic Change | Met Expected Academic Change? |
|-------------|--------------------------------|------------------|------------------------------|-------------------------------|
| Reading 5 | 1.382 | 1.067 | +0.315 | Yes |
| Math 5 | 1.143 | 1.426 | -0.283 | No |

(Caution: Due to the instability of a single student score, an individual Academic Change should be used with a margin of + or – 0.5. This caution notwithstanding, since 30 scores are used when calculating school level academic change, scores will be round to the 0.01 level for use in calculating c-ratios for schools.)

High School Examples

Sample Calculations for Determining Student Academic Change:

As in 3-8, all scale scores will have to be changed to the change scale.

Table 1: Standard Setting Means and Standard Deviations for End-Of-Grade (EOG):

Note: For the accountability year 2004-05, the post-test, pre-test, and pre-pre-test for grades 3 to 7 are all on the second edition of the test:

| EOG | Standard Setting Year | Mean | Standard Deviation |
|---------------------------------------|-----------------------|-------|--------------------|
| Reading (2 nd Edition) | | | |
| Grade 8 | 2003 | 263.9 | 9.05 |
| Mathematics (2 nd Edition) | | | |
| Grade 8 | 2001 | 270.0 | 10.95 |

Table 2: Standard Setting Means and Standard Deviations for End-Of-Course (EOC) and Grade 8 EOG (used as pre-test for EOC):

Note: Grade 8 EOG used as a pre-test can be either first (100-scale) or second edition (200-scale), depending which grade the EOC (post-test) was taken.

| EOG | Standard Setting Year | Mean | Standard Deviation |
|-----------------------------------|-----------------------|-------|--------------------|
| Reading (1 st Edition) | | | |
| Grade 8 | 1997 | 163.1 | 8.04 |
| Reading (2 nd Edition) | | | |
| Grade 8 | 2003 | 263.9 | 9.05 |
| Math (1st Edition) | | | |
| Grade 8 | 1997 | 174.2 | 11.96 |
| Math (2nd Edition) | | | |
| Grade 8 | 2003 | 270.0 | 10.95 |

| EOC | Standard Setting Year | Mean | Standard Deviation |
|------------------|-----------------------|------|--------------------|
| Algebra I | 2001 | 61.1 | 9.31 |
| Algebra II | 2001 | 63.8 | 9.90 |
| Biology | 2002 | 57.9 | 7.61 |
| Chemistry | 2002 | 60.0 | 8.16 |
| ELPS | 1997 | 53.8 | 9.30 |
| English | 2003 | 57.7 | 7.63 |
| Geometry | 2001 | 59.8 | 8.85 |
| Physics | 2002 | 60.7 | 9.24 |
| Physical Science | 2002 | 55.8 | 7.90 |

First example:

Sandra is a 9th grade student at a local school. Sandra’s test scores are:

| Course | Scale Score |
|---|-------------|
| Algebra I (1 st semester) | 59 |
| Geometry (2 nd semester) | 62 |
| Physical Science (2 nd semester) | 72 |
| English I (1 st semester) | 48 |
| Grade 8 Math EOG | 271 |
| Grade 8 Reading EOG | 250 |

Steps in the Operation to Calculate Academic Change:

1. Convert the developmental scale scores to Change Scale Scores (CS) (both the current year’s test and the predictors):

- a. Subtract the state mean for the standard setting year from the developmental scale score.
- b. Divide by the standard deviation for the standard setting year

| EOC Course | Scale Score | State Mean | Difference | Standard Deviation | Actual c-score* |
|------------|-------------|------------|------------|--------------------|-----------------|
|------------|-------------|------------|------------|--------------------|-----------------|

| | | | | | |
|---------------------|-----|-------|-------|-------|-------|
| Algebra I | 59 | 61.1 | -2.1 | 9.31 | -0.23 |
| Geometry | 62 | 59.8 | 2.2 | 8.85 | 0.25 |
| Physical Science | 72 | 55.8 | 16.2 | 7.90 | 2.05 |
| English I | 48 | 57.7 | -9.7 | 7.63 | -1.27 |
| Grade 8 Math EOG | 271 | 270.0 | 1.0 | 10.95 | 0.09 |
| Grade 8 Reading EOG | 250 | 263.9 | -13.9 | 9.05 | -1.54 |

**Full precision will be used in the actual calculations, although the values here are rounded for readability*

2. Compute the Academic Change (AC) for each of the End of Course Test

Algebra 1:

The predictor is Grade 8 EOG Math.

$$Algebra1_AC = Algebra1_CS - .82 * Grade8EOGMath_CS$$

| Algebra I c-score | Grade 8 Math EOG c-score | Coefficient | Target Score* | Academic Change | Met expected academic change? |
|-------------------|--------------------------|-------------|---------------|-----------------|-------------------------------|
| -0.23 | 0.09 | 0.82 | 0.07 | -0.30 | No |

**Target Score = Predictor * Coefficient*

Geometry:

The predictors are Grade 8 EOG Math and Algebra 1 EOC. If the Grade 8 EOG Math is not available, Algebra 1 will be used. If Algebra 1 not available, the AC will not be computed (even if grade 8 EOG Math available). The Algebra 1 EOC has to be administered at the latest during the semester preceding the administration of the Geometry EOC.

In our example, both Algebra 1 and Grade 8 EOG Math are available:

$$Geometry_AC = Geometry_CS - .92 * \frac{Algebra1_CS + Grade8EOGMath_CS}{2}$$

| Geometry c--score | Algebra I c-score | Grade 8 EOG c-score | Coefficient | Target Score | Academic Change | Met expected Academic change? |
|-------------------|-------------------|---------------------|-------------|--------------|-----------------|-------------------------------|
| 0.25 | -0.23 | 0.09 | 0.92 | -0.06 | 0.31 | Yes |

** Target Score = $\frac{Predictor1 + Predictor2}{2} * Coefficient$*

Physical Science:

The predictor is Grade 8 EOG Math. The Grade 8 EOG Math has to be administered in the year preceding the administration of the Physical Science EOC.

$$PhysicalScience_AC = PhysicalScience_CS - .82 * Grade8EOGMath_CS$$

| Physical Science c-score | Grade 8 Math EOG c-score | Coefficient | Target Score* | Academic Change | Met expected academic change? |
|--------------------------|--------------------------|-------------|---------------|-----------------|-------------------------------|
| 2.05 | 0.09 | 0.82 | 0.07 | 1.98 | Yes |

**Target Score = Predictor * Coefficient*

Second example:

Kenneth is a 10th grade student at a local school. Kenneth’s test scores for the current year are:

| Course | Scale Score |
|------------|-------------|
| Algebra II | 68 |
| Biology | 54 |

Steps in the Operation to Calculate Academic Change:

1. Convert the developmental scale scores to c-scale scores (both the current year’s test and the predictors):

- a. Subtract the state mean for the standard setting year from the developmental scale score.
- b. Divide by the standard deviation for the standard setting year

| EOC Course | Scale Score | State Mean | Difference | Standard Deviation | Actual c-score* |
|---------------------|-------------|------------|------------|--------------------|-----------------|
| Algebra I | 59 | 61.1 | -2.1 | 9.31 | -0.23 |
| Algebra II | 68 | 63.8 | 4.2 | 9.90 | 0.42 |
| Biology | 54 | 57.9 | -3.9 | 7.61 | -0.51 |
| English I | 48 | 57.7 | -9.7 | 7.63 | -1.27 |
| Grade 8 Math EOG | 271 | 270.0 | 1.0 | 10.95 | 0.09 |
| Grade 8 Reading EOG | 250 | 263.9 | -13.9 | 9.05 | -1.54 |

**Full precision will be used in the actual calculations, although the values here are rounded for readability.*

2. Compute the Academic Change.

Algebra 2:

The predictor is Algebra 1 EOC. The Algebra 1 EOC has to be administered at the latest during the semester preceding the administration of the Algebra 2 EOC.

$$Algebra2_AC = Algebra2_CS - .82 * Algebra1_CS$$

| Algebra II c-score | Algebra I c-score | Coefficient | Expected c-score* | Academic Change | Met expected academic change |
|--------------------|-------------------|-------------|-------------------|-----------------|------------------------------|
| 0.42 | -0.23 | 0.82 | -0.19 | 0.61 | Yes |

$$*Target\ Score = Predictor * Coefficient$$

Biology:

The predictors are Grade 8 Reading EOG and English 1 EOC. If the English 1 EOC is not available, Grade 8 EOG Reading will be used. If Grade 8 EOG Reading is not available, the AC will not be computed (even if English 1 EOC is available). The English 1 EOC has to be administered at the latest during the semester preceding the administration of the Biology EOC. If the Biology EOC was administered before, or at the same time as the English 1 EOC then only the Grade 8 Reading EOG is used. If the Biology EOC was administered in 8th grade, Grade 7 EOG Reading is used as predictor.

In our example, both Grade 8 EOG Reading and English 1 EOC are available:

$$Biology_AC = Biology_CS - .92 * \frac{Grade8EOGReading_CS + English1_CS}{2}$$

| Biology c-score | Grade 8 Reading EOG c-score | English I c-score | Coefficient | Target Score* | Academic Change | Met expected academic change? |
|-----------------|-----------------------------|-------------------|-------------|---------------|-----------------|-------------------------------|
| 0.42 | -1.54 | -1.27 | 0.92 | -1.29 | 1.71 | Yes |

$$*Target\ Score = \frac{Predictor1 + Predictor2}{2} * Coefficient$$

Third example:

Yuen is an 11th grade student at a local school. Her test scores are:

| Course | Scale Score |
|-----------|-------------|
| Chemistry | 56 |
| Physics | 52 |

Steps in the Operation to Calculate Academic Change:

1. Convert the developmental scale scores to c-scale scores (both the current year’s test and the predictors):

- a. Subtract the state mean for the standard setting year from the developmental scale score.
- b. Divide by the standard deviation for the standard setting year

| EOC Course | Scale Score | State Mean | Difference | Standard Deviation | Actual c-score* |
|------------|-------------|------------|------------|--------------------|-----------------|
| Chemistry | 56 | 60.0 | -4.0 | 8.16 | -0.49 |
| Physics | 52 | 60.7 | -8.7 | 9.24 | -0.94 |
| Biology | 54 | 57.9 | -3.9 | 7.61 | -0.51 |
| Geometry | 62 | 59.8 | 2.2 | 8.85 | 0.25 |

*Full precision will be used in the actual calculations, although the values here are rounded for readability.

3. Compute the Academic Change.

Chemistry:

The predictor is Biology EOC. The Biology EOC has to be administered at the latest during the semester preceding the administration of the Chemistry EOC.

$$\text{Chemistry}_{AC} = \text{Chemistry}_{CS} - .82 * \text{Biology}_{CS}$$

| Chemistry c-score | Biology c-score | Coefficient | Target Score* | Academic Change | Met expected academic change? |
|-------------------|-----------------|-------------|---------------|-----------------|-------------------------------|
| -0.49 | 0.42 | 0.82 | 0.34 | -0.83 | No |

*Target Score = Predictor * Coefficient

Physics:

The predictors are Chemistry EOC and Geometry EOC. Both EOCs have to be available and have to be administered at the latest during the semester preceding the administration of the Physics EOC.

$$\text{Physics}_{AC} = \text{Physics}_{CS} - .92 * \frac{\text{Chemistry}_{CS} + \text{Geometry}_{CS}}{2}$$

$$\text{Biology}_{AC} = \text{Biology}_{CS} - (.92 * \frac{\text{Grade8EOG Reading}_{CS} + \text{English1}_{CS}}{2})$$

| Biology c-score | Grade 8 Reading EOG c-score | English I c-score | Coefficient | Target Score* | Academic Change | Met expected academic change? |
|-----------------|-----------------------------|-------------------|-------------|---------------|-----------------|-------------------------------|
| 0.42 | -1.54 | -1.27 | 0.92 | -1.29 | 1.71 | Yes |

*Target Score = $(\frac{\text{Predictor1} + \text{Predictor2}}{2}) * \text{Coefficient}$

4. Compute the Academic Change.

Chemistry:

The predictor is Biology EOC. The Biology EOC has to be administered at the latest during the semester preceding the administration of the Chemistry EOC.

$$Chemistry_AC = Chemistry_CS - (.82 * Biology_CS)$$

| Chemistry c-score | Biology c-score | Coefficient | Target Score* | Academic Change | Met expected academic change? |
|-------------------|-----------------|-------------|---------------|-----------------|-------------------------------|
| -0.49 | 0.42 | 0.82 | 0.34 | -0.83 | No |

**Target Score = Predictor * Coefficient*

Physics:

The predictors are Chemistry EOC and Geometry EOC. Both EOCs have to be available and have to be administered at the latest during the semester preceding the administration of the Physics EOC.

$$Physics_AC = Physics_CS - (.92 * \frac{Chemistry_CS + Geometry_CS}{2})$$

| Physics c-score | Chemistry c-score | Geometry c-score | Coefficient | Target Score* | Academic Change | Met expected academic change? |
|-----------------|-------------------|------------------|-------------|---------------|-----------------|-------------------------------|
| -0.94 | -0.49 | 0.25 | 0.92 | -0.11 | -0.83 | No |

**Target Score = ($\frac{Predictor1 + Predictor2}{2}$) * Coefficient*

Sample Calculations for Determining School Academic Change:

Calculating Academic Change Academic Change at the School-level

For elementary schools with 30 or more scores, *academic change* at the school level is calculated using only those students who actually have the appropriate historic scores and scores for the current year. A mean *academic change* is computed for the school. Unlike the original growth formulas that needed to be combined using a standardization coefficient, all academic change using the new formulas is already standardized on the *c-scale*, so direct comparisons can be made. It is also important to remember that in the formulas, scores can be calculated using only one previous year’s subject or course assessment if necessary. (A student with an EOG score in reading but not in math will contribute to the mean *academic change* for reading only.) *Academic Change* for schools with fewer than 30 total scores will not be calculated. In the example provided above, to determine if Jordan’s school met the expected

academic change, Jordan’s *academic changes* in reading and mathematics are averaged with all others for the school.

For high schools, other weighted components (change in the passing rate on the competency test, change in the dropout rate, and change in the percent of students in the college/university prep or college tech prep courses of study) are included in the school’s *academic change* composite, just as they have been included in the prior ABCs growth composite. Performance expectations for students taking EOC tests in a current year are based on EOGs and EOCs from previous years, as indicated in the following example.

High Academic Change

Only schools that meet the standard for expected growth (expected academic change) are eligible to meet the *high change* (growth) standard. *High change* will be calculated as a *c-ratio* (change ratio). This is the ratio of students in the school who have a “0” or greater *academic change* to those who have an *academic change* that is less than “0.” To determine *high change*, divide the number of students with an *academic change* of “0.00” or greater by the number who have an *academic change* less than “0.” If the result is 1.50 or greater, and the school has met expected *academic change*, the school has met high change. As directed by SBE policies, change in dropout rate will be multiplied by ¼ the ADM of the school and added to the denominator such that an increase in dropouts will appear the same as more students not meeting the *academic change* target of “0.” Also, change in percent of students graduating in the College Tech Prep Curriculum and College University Prep Curriculum will be multiplied by the number of graduates and added to the numerator such that this change will appear like students who meet the standard. Likewise, change in Competency pass rate will appear in the numerator.

Step 1: High School Academic Change

Once you know all of your students’ academic change scores, you can compute the school’s academic change score. Compute the academic change for the EOG and EOC tests for the school by summing the academic changes for all tests administered during the accountability year 2004-05.

$$School_AC = \sum_{EOC} AC$$

Count the number of Academic Change Scores computed = Totalcount

High School Example:

Below is a table containing academic change scores for each EOC in a school.

| EOC | Total Academic Change | Number of Students in Course | Number of Students that Met | Number of Students that did not meet |
|------------|-----------------------|------------------------------|-----------------------------|--------------------------------------|
| Algebra I | 53.1 | 100 | 80 | 20 |
| Algebra II | -7.6 | 76 | 33 | 43 |
| Biology | 10.2 | 146 | 79 | 67 |

| | | | | |
|------------------|-------------|------------|------------|------------|
| Chemistry | 0.9 | 50 | 27 | 23 |
| English I | 39.6 | 165 | 111 | 54 |
| Geometry | -16.5 | 90 | 34 | 56 |
| Physics | -5.9 | 10 | 1 | 9 |
| Physical Science | -6.1 | 145 | 60 | 85 |
| | | | | |
| Total | 67.7 | 782 | 425 | 357 |

Step 2: Other High School Components:

Change in percent passing the Competency Test from grade 8 to grade 10:

After computing the academic change for the school, see above, you must compute the change in percent passing.

- Tot10 = total number of 10th graders in the school
 - Comp8 = number of 10th graders who passed the Competency Test in grade 8. A 10th grade student passed competency in grade 8 if he/she scored a proficient score in both grade 8 Math and Reading.
 - Comp10 = number of 10th graders who passed competency by grade 10. For a student to have passed the Competency Test by grade 10, the competency flags for Reading and Math have to both be “P”.
 - STD = 12.8 (State Standard deviation for competency)
 - Percent who passed competency in grade 8: $pct8 = \frac{comp8}{tot10} * 100$
 - Percent passing competency by grade 10: $pct10 = \frac{comp10}{tot10} * 100$
 - Weighted Competency Component: $COMP = \frac{(pct10 - pct8 - .1)}{STD} * Tot10$ ¹
- ¹subtract .1 in order for 0 to represent growth
- The total number of scores for competency is **Tot10**

High School Example:

| | |
|--------|--------|
| Tot10 | 135 |
| Comp8 | 132 |
| Comp10 | 134 |
| STD | 12.8 |
| pct8 | 97.78% |
| pct10 | 99.26% |
| COMP | 14.5 |

Change in the percent of Graduates in the College Prep, College Tech Prep (CUPCTP) courses of study:

After computing the percent passing for the school, see above, you must compute the change in the percent of graduates in CUPCTP courses.

- Obtain the following variables:
 - Gradyr1 = number of school graduates, year 1 (02-03)
 - Gradyr2 = number of school graduates, year 2 (03-04)
 - Gradyr3 = number of school graduates, year 3 (04-05)
- Note: The students who are in the Occupational course of study are not included in those counts.*
- Cupctpyr1 number of graduates in the CUPCTP course of study, year 1 (02-03)
 - Cupctpyr2 number of graduates in the CUPCTP course of study, year 2 (03-04)
 - Cupctpyr3 number of graduates in the CUPCTP course of study, year 3 (04-05)

- The baseline is the average of the 2 first years percentages:
- STD=10.0 (State Standard Deviation for CUPCTP)
- Weighted CUPCTP component:

$$CUPCTP = \frac{(cupctpyr3\ pct - Baseline - .1)}{STD} * Gradnumber$$

^lsubtract .1 in order for 0 to represent growth

- The total number of scores for CUPCTP is **Gradnumber**
- High School Example:

| | |
|--------------|-------|
| cupctpyr2pct | 73.9% |
| cupctpyr3pct | 76.7% |
| baseline | 76.3% |
| STD | 10.0 |
| gradnumber | 122 |
| CUPCTP | 3.7 |

Change in drop out rate over 3 years:

Note: the drop out data lags a year as it is collected in October

Now you must compute the change in your school's drop out rate over the past 3 years.

- $baseline = \frac{year1rate + year2rate}{2}$

- STD = 2.1 (State Standard Deviation for Drop out)
- Weighted Drop Out Component:

$$DO = \frac{(baseline - currentyearrate)}{STD} * \frac{1}{4} * thebestofthefirstthreemonthsADM$$
- The total number of scores for Drop Out is $\frac{1}{4} * thebestofthefirstthreemonthsADM$

High School Example:

| | |
|-----------------|-------|
| currentyearrate | 6.3 |
| baseline | 5.5 |
| STD | 2.1 |
| DO | -63.5 |

Step 3. Compute the Academic change for school:

The Average Academic Change for the School is computed by adding the Academic change for EOG and EOC tests, the Weighted Competency Component, the Weighted CUPCTP Component and the Weighted Drop Out Component and dividing by the sum of the total number of Academic Changes computed for EOG and EOC tests, the total number of scores for Competency, the total number of scores for CUPCTP and the total number of scores for Drop Out.

School Average Academic Change:

$$School_Average_AC = \frac{School_AC + COMP + CUPCTP + DO}{Totalcount + Tot10 + Gradnumber + \frac{1}{4} * ADM}$$

High School Example:

| | |
|---------------------|--------|
| School_AC | 67.7 |
| COMP | 14.5 |
| CUPCTP | 3.7 |
| DO | -63.5 |
| Totalcount | 782 |
| Tot10 | 135 |
| Gradnumber | 122 |
| $\frac{1}{4} * ADM$ | 166.75 |
| School_Average_AC | 0.02 |

Step 4: Determine if the School met expected growth.

If the Average School Academic Change is greater or equal to 0, then the school is said to have **Met Expected Growth**.

If the Average School Academic Change is less than 0, then the school is said to **Not Have Met Expected Growth**

High School Example:

Since the school's Average Academic Change was greater than 0, 0.02, the school has met expected growth.

Step 5: Compute the C-Ratio in order to determine if the School met High Growth

- Count the number of Academic Change Scores that are greater or equal to 0
= **NumberACGreater0**
- Count the number of Academic Change Scores that are smaller than 0
= **NumberACLess0**

C-Ratio:

$$C - Ratio = \frac{NumberACGreater0 + COMP + CUPCTP}{NumberACLess0 - DO}$$

*Note: DO is computed by subtracting the current year drop out rate from the baseline, dividing by the state standard deviation for drop out and multiplying by $\frac{1}{4} * ADM$, therefore an **increase** in drop out rate leads to $DO \leq 0$, by subtracting DO from the denominator, the C-ratio is decreased. On the other hand, a **decrease** in drop out rate leads to $DO \geq 0$, by subtracting DO from the denominator; the C-Ratio is increased. Therefore, a decrease in drop out rate helps the school towards making High Growth.*

2 conditions are needed for a school to **Meet High Growth**

- The school must **Meet Expected Growth**
- C-Ratio ≥ 1.5

High School Example:

| | |
|------------------|-------|
| NumberACGreater0 | 425 |
| NumberACLess0 | 357 |
| COMP | 14.5 |
| CUPCTP | 3.7 |
| DO | -63.5 |
| C-Ratio | 1.1 |

The school has only met one criteria. Since their c-ratio is less than 1.5, it did not meet High Growth.

EOC Predictors:

Expected performance in:

English I

Biology

EOG Reading Grade 8 (if English I is not available)

Physical Science

Physics

Chemistry

Algebra II

Algebra I

Geometry

Based on previous performance in:

EOG Reading Grade 8

EOG Reading Grade 8 and English I, if available, or

EOG Mathematics Grade 8

Chemistry and Geometry

Biology

Algebra I

EOG Mathematics Grade 8³

Algebra I and EOG Mathematics Grade 8 (if available), or Algebra I only

Technical Notes

Technical notes are available at: www10.ncschoolcats.com/technotes/

NOTES:

¹EVALUATE VALIDITY OF ABC ACCOUNTABILITY SYSTEM

SECTION 7.12.(a) *G.S. 115C-105.35 reads as rewritten:*

"§ 115C-105.35. Annual performance goals.

(a) The School-Based Management and Accountability Program shall (i) focus on student performance in the basics of reading, mathematics, and communications skills in elementary and middle schools, (ii) focus on student performance in courses required for graduation and on other measures required by the State Board in the high schools, and (iii) hold schools accountable for the educational growth of their students. To those ends, the State Board shall design and implement an accountability system that sets annual performance standards for each school in the State in order to measure the growth in performance of the students in each individual school. During the 2004-2005 school year and at least every five years thereafter, the State Board shall evaluate the accountability system and, if necessary, modify the testing standards to assure the testing standards continue to reasonably reflect the level of performance necessary to be successful at the next grade level or for more advanced study in the content area.

As part of this evaluation, the Board shall, where available, review the historical trend data on student academic performance on State tests. To the extent that the historical trend data suggest that the current standards for student performance may not be appropriate, the State Board shall adjust the standards to assure that they continue to reflect the State's high expectations for student performance.

(b) For purposes of this Article, the State Board shall include a "closing the achievement gap" component in its measurement of educational growth in student performance for each school. The "closing the achievement gap" component shall measure and compare the performance of each subgroup in a school's population to ensure that all subgroups as identified by the State Board are meeting State standards.

(c) The State Board shall consider incorporating into the School-Based Management and Accountability Program a character and civic education component which may include a requirement for student councils."

SECTION 7.12.(b) *The State Board shall complete its initial evaluation and any necessary modifications to the testing standards required under G.S. 115C-105.35, as rewritten by subsection (a) of this section, so that the modified standards are in effect no later than the 2005-2006 school year.*

²*A z-score is a standardized score showing how far and in what direction a test score deviates from the mean, or average, of the distribution. The z-score is especially useful in comparing standings of test scores from differing measures that have different scales or standards.*

³*In cases where middle school students are taking Algebra I, the previous year's EOG is used.*