Wyoming Department of Education

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MEMORANDUM NO. 2011-140

TO: School District Superintendents
School Business Managers

FROM: Drew Dilly, Director
Information Management

DATE: November 7, 2011

SUBJECT: Calculation of 16-to-1 Student-to-Teacher ratios under W.S. 21-13-307

INPORTANT INFORMATION TO SHARE

The Wyoming Department of Education has prepared additional information regarding 16-to-1 student-to-teacher ratio analysis following discussion of Wyoming statute 21-13-307 at the October 18, 2011, Joint Education Committee meeting in Casper.

Calculation of the ratio will carry forward using the methodology employed in the development of the "Continued Review of Educational Resources in Wyoming, 2005-06 through 2009-10" report (as published on the School Finance page of the Legislative Service Office website).

At its core, this student-centric approach consists of identifying the observed student-to-teacher ratio experienced by each K-3 student, and then calculating the average of these observations (additional detail provided in the two examples at the end of this memo). This ratio provides the most realistic single measure of the environment in which Wyoming's students are educated, as well as the most accurate district-level comparison of funded vs. actual teacher staffing levels.

The Department will initially identify student-teacher relationships via the course/section data submitted in the WDE684 - Teacher/Course/Student Enrollment data collection. The WDE638 - Course Inventory and WDE602 - WISE Fall School District Staff Member collections will be cross-referenced during this process to ensure all state-funded core-subject teachers are included in the analysis.

Additional information regarding team-teaching scenarios will be requested from districts as needed (primarily as it relates to teachers reported on the WDE602 without any course/section data present on the WDE684). The Department will also contact districts to ensure concurrently enrolled, home-schooled, and virtual education students are included or excluded appropriately when not apparent via analysis of submitted data.

Districts are encouraged to provide any additional insight into classroom environments where there is concern that course/section data submitted on the WDE684 may not provide the full picture. Situations in which students are pulled out of the regular classroom for portions of the school day (e.g., to receive special education instruction or to work with a speech pathologist) may be considered in secondary analysis (when needed).

Please contact Susan Williams at Susan.Williams@wyo.gov or 307-777-6252 regarding submission of corrections to the WDE602 or to provide supplemental information about core-subject teachers reported on the WDE602 that do not have any course/section records on the WDE684.

Please contact Brian Wuerth at Brian.Wuerth@wyo.gov or 307-777-6748 regarding submission of corrections to the WDE684 or to provide supplemental information about the educational environments of concurrently enrolled, home-schooled, or virtual education students (and/or about other unique situations) that you feel may not be clear on the WDE684.

Please contact Vince Meyer at Vince.Meyer@wyo.gov or 307-777-6232, if you have questions about class size ratio analysis and calculation or to provide additional insight into submitted data that you believe will aid in analysis.

Attachment: Student-to-Teacher Ratio Calculation Examples

Student-to-Teacher Ratio Calculation Examples

Example 1

Excerpt/example from the source cited in the "Continued Review of Educational Resources in Wyoming, 2005-06 through 2009-10" report – Title: Calculus, Author: Gilbert Strang, Publisher: Wellesley-Cambridge Press, Copyright 1991, Page 211.

A CONFUSION ABOUT "EXPECTED" CLASS SIZE

A college can advertise an average class size of 29, while most students are in large classes most of the time. I will show quickly how that happens.

Suppose there are 95 classes of 20 students and 5 classes of 200 students. The total enrollment in 100 classes is 1900 + 1000 = 2900. A random professor has expected class size 29. But a random student sees it differently. The probability is 1900/2900 of being in a small class and 1000/2900 of being in a large class. Adding class size times probability gives the expected class size *for the student*:

$$(20)\left(\frac{1900}{2900}\right) + (200)\left(\frac{1000}{2900}\right) = 82 \text{ students in the class.}$$

Example 2

Suppose a district consists of the following K-3 classes:

- Six classes each with 1 teacher and 22 students
- Three classes each with 1 teacher and 5 students (e.g., rural school classrooms)

In this district, 132 students are observed as being educated in a 22-to-1 student-to-teacher ratio environment and 15 students are observed as being educated in a 5-to-1 ratio environment. Stated alternately, 90% of the students in this district are educated in a 22-to-1 ratio environment, and 10% are educated in a 5-to-1 environment. The observed average student-to-teacher (s:t) ratio from a student perspective (student-centric) is then calculated as follows:

$$\frac{\left(132\ students \times \frac{22}{1}\ s{:}t\ ratio\right) + \left(15\ students \times \frac{5}{1}\ s{:}t\ ratio\right)}{147\ students} = \frac{(132 \times 22) + (15 \times 5)}{147} = 20.3\ \checkmark$$

This average of 20.3 is the most accurate single representation of the educational environment in this district, given that 90% of the district's students are educated in a 22-to-1 student-to-teacher ratio setting. Alignment of the student perspective average with actual student experience and funding intent is further illustrated when contrasted against the average ratio taken from a teacher perspective, calculated as follows:

$$\frac{\left(6\ teachers \times \frac{22}{1}\ s{:}t\ ratio\right) + \left(3\ teachers \times \frac{5}{1}\ s{:}t\ ratio\right)}{9\ teachers} = \frac{(6 \times 22) + (3 \times 5)}{9} = 16.3\ \times$$