# 2025 UPDATE OF THE WYOMING EVIDENCE-BASED MODEL

Working Draft
Prepared for the September 4 & 5, 2025 Meeting of the
Committee on School Finance Recalibration

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**August 2025**

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# Chapter 1
# Introduction and Overview

## Introduction

The purpose of this document is to provide the Wyoming Legislature with an update of the Evidence-Based Model that is the basis of the Wyoming Funding Model, as part of the 2025 recalibration effort. Recalibration of the Wyoming Funding Model is required not less than once every five years to comply with the statutory mandate contained in Wyoming Statute 21-13-309(t) and to meet the Wyoming Supreme Court's directive in *Campbell County School District v. State*, 907 P.2d 1238 (Wyo. 1995) (*Campbell I*).

The Wyoming Legislature's obligation is to define a "proper" education, commonly referred to as the educational basket of goods and services; estimate the cost of that basket; and fund the cost required to deliver the basket to all public-school students across Wyoming. In order to remain cost-based, the educational basket of goods and services must keep pace with the changing goals of the Wyoming education system, the changing demographics of students, and changes in the evidence of "what works in education," as included in the Evidence-Based Model.

To avoid confusion throughout this document, the Evidence-Based Model will be referred to as the **EB Model** and the model adopted by the Legislature, and utilized to distribute funds to school districts, will be referred to as the **Wyoming Funding Model**.

Picus Odden & Associates have served as consultants to the Wyoming Legislature for recalibrations conducted in 2005, 2010, 2015 and 2020. In each recalibration the EB Model was used to identify cost-based formulas for each element of the Wyoming Funding Model.[1] This document updates the evidence supporting the recommendations of the EB Model. The report also compares the Wyoming Funding Model both to the 2020 Wyoming Evidence-Based Model and the 2025 Wyoming Evidence-Based Model that results from this updating.

Chapter 2 of this document describes the EB Model and provides a graphic display of the components of the EB Model. Chapter 3 reviews all elements of the Wyoming Funding Model, and compares each element to the 2020 EB Model and to the 2025 Wyoming EB Model.

[1] The EB Model was found to be constitutionally compliant by the Wyoming Supreme Court in 2008. See *State v. Campbell County School District*, 2008 WY 2, 181 P.3d 43 (Wyo. 2008) (*Campbell IV*). Previous recalibration studies are available on both the Legislative Service Office school finance website (https://www.wyoleg.gov/stateFinances/SchoolFinance), and the Picus Odden website (www.picusodden.com).

# Chapter 2
# The School Improvement Model

The intent of the Wyoming School Funding model is to identify the costs of providing the state's basket of educational goods and services and then to provide each school district with adequate funds to provide that basket such that each student is given an equal opportunity to meet Wyoming's student performance standards. Although a direct linkage between funding and student performance does not exist, the Wyoming School Funding Model is designed to allocate adequate resources to provide all students with robust opportunities to meet college and career ready standards. Regardless of whether high school graduates go on to college or enter the workforce, today's global, knowledge-based economy requires a similar set of skills and expertise of each graduate.

No matter what course of studies a high school student completes – college prep or career tech -- all of Wyoming's students are expected to achieve to college and career ready standards. This includes children from low-income homes, students of color, English language learners (ELL) and students with disabilities. The basket of educational goods and services and a cost-based funding model to support that basket must be sufficiently robust to allow students in all 48 school districts in Wyoming to attain these standards.

Before presenting the update of the elements in the EB Wyoming Model, this chapter provides a description of the school improvement model that undergirds the Evidence-Based model. At the school level, all of the individual elements in the EB Model need to be woven into an education improvement strategy designed to dramatically boost student academic performance. We offer both the theoretical underpinnings of the model and follow that with a visualization of the components of the EB Model to facilitate our analysis of the Statutory and EB Model components in Chapter 3.

## The School Improvement Model Embedded in the Evidence-Based Approach to School Finance Adequacy

Odden and Picus developed the EB approach to link strategies and resources in high performance *schools* to state school funding formulas, a goal long sought by policy analysts, legislators and school leaders. Over the past two and a half decades, Odden and Picus have used the EB Model to conduct adequacy studies in over 20 states. The EB Model relies on a school improvement model that allocates resources for educational strategies that current educational research finds are linked to improvements in student learning. More detail on the EB Model can be found in the sixth edition of our school finance text,[2] and in the State Studies tab of the Resource section of our Website (www.picusodden.com).

The model relies on two major types of research:

[2] Allan Odden & Lawrence O. Picus. (2020). *School Finance: A Policy Perspective, 6th edition*. New York: McGraw Hill.

1. Reviews of research evidence on the student achievement effects of the individual educational strategies provided by the EB Model. In recent years this evidence has been strengthened by the growing number of Random Control Trials (RCTs) that have been conducted on the various elements included in the EB Model.

2. Case reports of schools and districts that have dramatically improved student performance on state tests over a 4–6-year period, examples of which are available in "Cases of Improving Schools" in the Resource section of our website (www.picusodden.com) and include Wyoming cases.

The EB school improvement model includes multiple educational programs and strategies that, if implemented by districts and schools, can be expected to lead to large improvements in academic achievement for all students, and substantial reductions in student achievement gaps linked to demographic variables (see for example, Blankstein, 2010, 2011; Chenoweth, 2007, 2009; Duncan & Murnane, 2014; Hoyer, 2020; Odden, 2009, 2012; Olson, 2025; Petrilli et al., 2022). The 10 school improvement strategies that underpin the approach include:

1. Analyze student data to become deeply knowledgeable about performance issues and to understand the nature of the achievement gaps in the school. The test score analysis first includes analysis of state test results and then, over time, uses benchmark and short cycle/interim assessments (sometimes including formative assessments) to help tailor instruction to precise student needs and to identify and monitor interventions for struggling students.

2. Set higher goals, including aiming to educate 95 percent of the students in the school to proficiency or higher on state exams; seeing that a significant portion of the school's students reach advanced achievement levels; and making significant progress in closing the achievement gaps linked to demographics.

3. Review evidence on good instruction and effective curriculum. Successful schools often sunset their previous curriculum and replace it with a different, more rigorous and research-proven, effective curriculum. Over time, they often create their own specific view of the effective instructional strategies needed to deliver that curriculum and expect all teachers to use those school-based instructional strategies.

4. Invest heavily in teacher professional development that includes intensive summer institutes and longer teacher work years. Successful schools provide resources for trainers and, most importantly, fund instructional coaches in all schools. These schools also provide time during the regular school day and week for teacher collaborative work groups to use student data and standards-based curriculum to improve instruction.

5. Provide extra help for struggling students and, with a combination of local, state, and federal Title 1 funds, provide some combination of tutoring in 1:1, 1:3 or 1:5 tutor-student ratio formats. Increasingly high performing schools provide high-dosage tutoring that over time also includes extended school days, summer school and English language development for all English Language Learning (ELL) students.

6. Create smaller classes in early elementary years, often lowering class sizes in grades kindergarten through three to 15 students, citing research from randomized trials.

7. Restructure the school day to provide more effective ways to deliver instruction. This can include multi-age classrooms in elementary schools and block schedules, double periods of mathematics and reading in secondary schools, and intervention blocks of time in elementary schools. This also includes pupil-free time for teachers to work in collaborative teams to create standards-based curriculum units and the instructional strategies to implement them. Schools also protect instructional time for core subjects, especially reading and mathematics.

8. Provide strong leadership support by the superintendent, the principal and teacher leaders around data-based decision making and improving the instructional program.

9. Foster professional school cultures characterized by ongoing discussion of good instruction and by teachers taking responsibility for student performance.

10. Bring external professional knowledge into the school. For example, hiring experts to provide professional development, adopting research-based new curricula, discussing research on good instruction, and working with regional education service agencies, as well as the state department of education.

Table 2.1 briefly summarizes the ten school improvement strategies underpinning the EB approach.

**Table 2.1. School Improvement Strategies Embedded in the EB Model**

| |
|---|
| 1. Analyze student data to become deeply knowledgeable about performance issues and to understand the nature of achievement gaps in the school |
| 2. Set higher goals for student performance |
| 3. Review evidence on good instruction and effective curriculum |
| 4. Invest heavily in teacher profession development including intensive summer institutes and longer teacher work years |
| 5. Provide extra help for struggling students |
| 6. Create smaller classes in early elementary years |
| 7. Restructure the school day to provide more effective ways to deliver instruction |
| 8. Provide strong leadership support from the superintendent, principal and teachers around data-based decision making and improving the instructional program |
| 9. Foster professional school cultures with teachers taking responsibility for student performance |
| 10. Bring external professional knowledge to the school |

Combined, our analysis of current research and our case studies identify a set of resources that we conclude are adequate for schools and districts to produce large gains in overall student achievement and make substantial progress toward the student achievement goals of most states, including those in Wyoming.

In sum, the schools that have boosted student performance that we and others have studied, deployed strategies strongly aligned with those embedded in the EB Model. These practices bolster our claim that if such funds are provided and used to implement these effective and research-based strategies, then significant student performance gains should follow.

**Visualization of the EB Model**

Figures 2.1 and 2.2 offer a graphic approach to understanding the structure of the Wyoming EB Model. Figure 2.1 displays the five major expenditure categories included in the EB Model. The four elements above the "state specific factors" represent the four components we use to describe all of the elements of the EB model, while the "state specific factors" represents the Wyoming specific costs of each element of the model.

Figure 2.2 offers a more detailed graphic display of how all of the components of the EB Model fit together. In chapter 3 we provide a summary table of the core resources of the EB and Statutory Models and describe the differences between element of the two models.

**Figure 2.1: Five Major Elements of the EB Model**

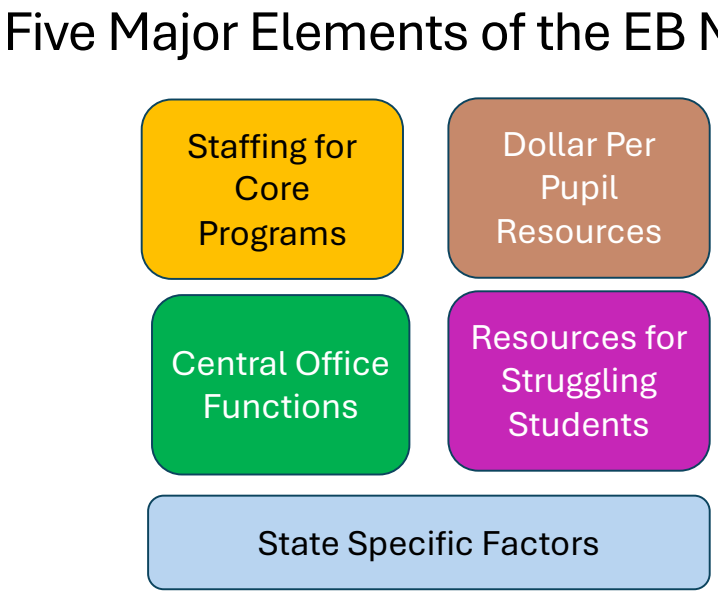
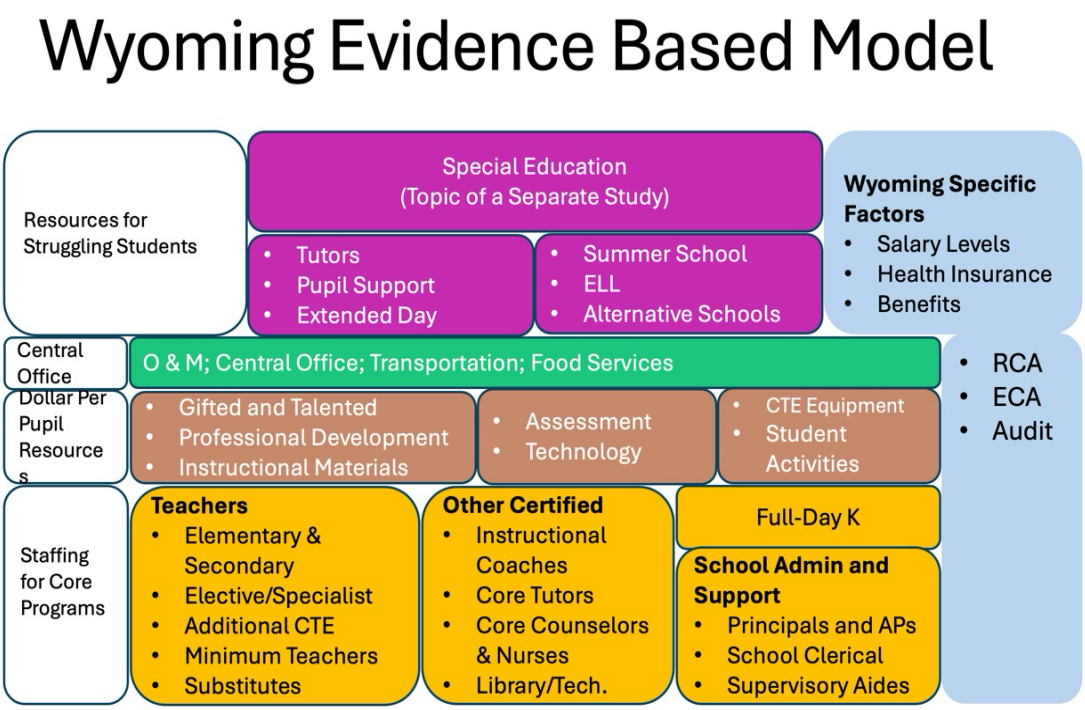


**Figure 2.2. Components of the Wyoming Evidence Based Model**



# Chapter 3
# An Update of the Wyoming Evidence-Based Model and Comparison to the Wyoming Funding Model

This chapter updates the Wyoming Evidence-Based (EB) model and compares it both to the 2020 Evidence Based Model and the 2025-26 Wyoming Funding Model. The four parts of this chapter include the following:

1. Staffing for core programs, which include full-day kindergarten, core teachers, elective/specialist teachers, instructional facilitators/coaches, core tutors, core guidance counselors, core nurses, substitute teachers, supervisory aides, librarians, principals/assistant principals and school secretaries.

2. Dollar per student resources including gifted and talented, professional development, computers and other technology, instructional materials and supplies, benchmark and short cycle assessments, and extra duty/student activities.

3. Central functions that include maintenance and operations, central office including school computer technicians, non-personnel resources, and transportation.

4. Resources for struggling students including tutors, pupil support, extended day, summer school, ELL/ESL programs, alternative schools and special education.

In each section, we show the parameters of the 2020 Wyoming EB Model, the 2025-26 Wyoming Funding Model, and the 2025 Wyoming EB Model.

## Background Issues in the Development of the Evidence-Based Model

### Three Tier Approach

The design of the EB Model reflects the Response to Intervention (RTI) model. RTI is a three-tier approach to meeting student needs.

- Tier 1 refers to core instruction for all students. The EB Model seeks to make core instruction as effective as possible with its modest class sizes, provisions for collaborative time, and robust professional development resources. Effective core instruction is the foundation on which the effectiveness of all other educational programs and strategies depend.

- Tier 2 services are provided to students struggling to achieve to standards *before* being given an individualized education program (IEP) and labeled as a student with a disability. The EB Model's current Tier 2 resources include one core tutor for every prototypical school and additional instructional resources, triggered by at-risk and ELL student counts, for tutoring, extended day, summer school, additional pupil support and ESL services. We further argue that the robust levels of Tier 2 resources allow schools to provide a range of extra help services, that often are funded only by special education programs, that get many modestly struggling students back "on track," and thus reduce the number and percentage of students needing special education services.

- Tier 3 includes all special education services.

The extra program elements included in the core EB Model provide a robust set of resources to provide extra instructional time for struggling students, that should result over time in a reduction in the overall number of students needing special education resources.

*Student Counts*

In addition, student counts used for the formula – ADM – and at-risk students need to be defined. Average Daily Members (ADM) is defined as the greater of the prior year or the three-year average for each school. At-risk students are defined as the unduplicated count of English language learners, free and reduced lunch eligible students in grades K-12, and mobile students in grades 6-12.

*Prototypical Schools*

A key component of the EB model is the use of prototypical schools to generate initial resource allocation strategies followed by prorating resources to actual schools and/or districts. In the Wyoming Funding Model, prototypical school sizes are used as the basis for estimating resource needs and for pro-rating resource generation and thus costs based on the actual enrollment in a school.

In other states we generally have recommended prototypical school sizes of 450 for elementary schools, 450 for middle schools and 600 for high schools, based on research linking school size to student performance (Andrews, Duncombe & Yinger, 2002; Antoniou, Alghamdi & Kawai, 2024; Duncombe & Yinger, 2007; Lee & Loeb, 2000; Lee & Smith, 1997; Leithwood & Jantzi, 2009; Raywid, 1997/98). These align with the EB model class size recommendations, which differ from the class sizes used in the Wyoming Funding Model (see model elements 3 and 4 below) and from larger average school sizes generally found in other states.

In Wyoming the current school size prototypes used in the model are:

- Elementary Schools: 288 students
- Middle Schools: 315 students
- High Schools: 630 students

These prototypes were developed in 2005 following a Legislative decision to establish core class sizes of 16 for grades K-5 level and 21 for grades 6-12. With average class sizes of 16, the 288-student prototypical elementary school has 48 students at each grade level (K-5) resulting in what is typically called a three-section school – three classrooms of 16 students at each grade level. The prototypical middle school (315 students) has 105 students each in grades six, seven, and eight, which equates to five classes of 21 at each grade level. A prototypical high school has 630 students, twice the size of the prototypical middle school, which is an average of 157.5 students at each grade level 9-12.

Because Wyoming has many small schools, these prototypical school sizes make it straightforward to create additional, smaller, prototype schools. These are proportional to the prototypes described above. For example, at the elementary level, 288 students constitute a three-section schools; a 192-student elementary school would be a two-section school with 2/3 the number of students in the prototypical elementary school, and a 96-student elementary school would be a one-section school with 1/3 the number of students in the prototypical elementary school. Similarly, prototypes were created for smaller secondary schools, again with one, two, and three sections (enrollments of 210 and 105 in middle schools and 420 and 210 in high schools). These multiple prototypes reflect the multiplicity of small schools in Wyoming.

**Effect Sizes**

In reviewing the evidence supporting each EB Model recommendation the report discusses the impact of studies in terms of "effect sizes." Effect size is the amount of a standard deviation (SD) in higher performance that the program produces for students who participate in the program versus students who do not. An effect size of 1.0 indicates that the average student's performance would move one SD or from the 50$^{th}$ to the 83$^{rd}$ percentile.

A major issue in education is how to interpret the effect size – is it low, medium or high? Decades ago, when this issue was raised, treatments tended to be small scale interventions in a controlled context – several students in a laboratory environment. At that time estimated effects were often substantial, sometimes greater than 1.0 SD. Benchmarks for understanding the

significance of effect size were established in 1969 (Cohen, 1969). Cohen posited an effect size of 0.2 as Small, 0.5 as Medium, and 0.8 as Large.

Since approximately 2000, when education treatments have been conducted on a much larger scale and in natural settings – often using thousands of students across scores of schools and dozens of districts and sometimes statewide – effect sizes have been smaller (Kraft, 2020). Moreover, studies today compare a new program treatment to an existing program treatment, whereas in the past the new program treatment was compared to no treatment at all; the result predictably has been smaller effect sizes. Hundreds of Randomized Controlled Trials (RCT) RCTs in education have been conducted in recent years with effect sizes almost always below 1.0. Kraft argues that new benchmarks are needed to assess the importance of the effect produced. Kraft proposes the following benchmarks for effect sizes from causal studies of PreK–12 education interventions evaluating effects on student achievement: less than 0.05 is Small, 0.05 to less than 0.20 is Medium, and 0.20 or greater is Large. These proposed benchmarks were based on the distribution of 1,942 effect sizes from 747 RCTs evaluating education interventions with standardized test outcomes. Readers of this document are encouraged to consider these benchmarks in assessing the significance or importance of the various research impacts reported on the elements of the EB Model.

**Staffing for Core Programs**

This section covers full-day kindergarten, core teachers, elective/specialist teachers, instructional facilitators/coaches, core tutors, core guidance counselors, core nurses (the latter three constituting changes and additions to the EB model), substitute teachers, supervisory aides, librarians, principals/assistant principals and school secretaries.

*1. Full Day Kindergarten*

The information below shows that both the EB model and the current Wyoming School Funding Model call for full day kindergarten. The 2025 WY EB Model is the same as the 2020 WY EB Model.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Include full-day Kindergarten | Include full-day Kindergarten | No Change from 2020 |

> **Summary and Recommendation**: The EB Model has always included full-day kindergarten. Research shows that full-day kindergarten, particularly for students from low-income backgrounds, has significant, positive effects on student learning in the early elementary grades. This Research dates from 2000 and includes supporting studies from the Early Childhood Longitudinal Study, a longitudinal data base used to analyze the impacts of several early childhood programs. Further, **multiple Randomized Controlled Trials** (RCT), the gold standard of research, have found students who attend a full-day kindergarten program do better on multiple performance and behavioral measures than students who attend just a half day program. Thus, the 2025 WY EB Model counts kindergarten students as a 1.0 ADM to fund this programmatic recommendation.

*Evidence and Recommendation*

Research shows that full-day kindergarten, particularly for students from low-income backgrounds, has significant, positive effects on student learning in the early elementary grades (Cooper et al., 2000, 2010; Fusaro, 1997; Gullo, 2000; Reynolds, et al., 2023; Slavin, Karweit & Wasik, 1994). In a late 1990s meta-analysis of 23 studies comparing the achievement effect of full-day kindergarten to half-day kindergarten programs, Fusaro (1997) found an average effect size of +0.77. That same year an **RCT** (Elicker & Mathur, 1997) found the effect of full day versus half-day kindergarten to be about +0.75 standard deviations. Cooper, et al.'s (2010) comprehensive meta-analysis reached similar conclusions finding the average effect size of students in full day versus half-day kindergarten to be +0.25.

These findings were supported by research using data from the Early Childhood Longitudinal Study which found that students who experience a full-day kindergarten program versus students who experience only a half-day, perform better in reading and mathematics (Walston & West, 2004) and that the impact continues into higher elementary school grades (Plucker, East, Rapp, et al., 2004). Studies also find that full day kindergarten positively impacts students social and emotional skills (Cryan et al., 1992), as well as easing the transition into upper grades (Elicker & Mathur, 1997).

Research in the past several years has reinforced these findings. Hahn, et al. (2014) concluded that that full-day kindergarten improved academic achievement by an average of 0.35 standard deviations over students receiving only a half day program, with the effect being 0.46 for verbal achievement and 0.24 for math. Thompson and Sonnenschein (2016) concluded that full-day kindergarten students (as compared to half-day students) had a higher chance of having early word reading skills by the end of kindergarten, which also predicted their higher reading scores in elementary schools. Early word attainment also helped to decrease the demographic related reading gaps. Gibbs (2016) studied a natural experiment in Indiana that randomly assigned students to full-day kindergarten. The results showed significant gains in literacy skills associated with students placed in full-day kindergarten, with the impacts being even greater for "Hispanic" students. In a 2018 cost benefit study, Ramon, Barnett and Hahn (2018) calculated that, accounting for both the program costs and calculated economic returns, full-day kindergarten programs had a higher net benefit than half day programs, with net benefits being decreased childcare costs, reduced grade retention and remedial education, and increased maternal employment and income. In 2024, Illinois became the most recent state to mandate that all districts provide a full-day kindergarten program.

As a result of these consistently positive research findings on the impacts of full-day versus half-day kindergarten, the EB Model supports a full-day kindergarten program for all students by counting all kindergarten students as 1.0 ADM.

*2. Elementary Core Teachers/Class Size*

Core teachers are defined as the grade-level classroom teachers in elementary schools. In middle and high schools core teachers are those who teach core subjects such as mathematics, science, language arts, social studies and world language.

The information below shows that both the EB model and the current Wyoming School Funding Model provide for small elementary school classes, but the EB Model provides for smaller class sizes in grades K-3, and larger classes for grades 4-6/6. The 2025 WY EB Model is the same as the 2020 WY EB Model.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Grades K-3: 15:1<br>Grades 4-5: 25:1 | K-5: 16:1<br>Also applies to grade 6 when included in an elementary school. For 5th grade in middle schools, the ratio is 21:1 | No Change from 2020 EB recommendation |

**Summary and Recommendation**: The most important and costly decisions educators make in organizing schools is class size. And there is constant push from parents and teachers to lower class size. However, there is scant research on how class sizes impact student performance. The only **randomized controlled trial** that assessed the impact of class size on student performance was the STAR study in Tennessee. That study found that elementary class size of 15 in grades K-3 positively impacted student performance in grade 1-3. Further studies found continued positive impacts on performance in upper elementary school, middle and high school, and beyond that. Thus, the EB Model has always recommended that class sizes in grades Kindergarten through grades 3 be 15. There have been no randomized controlled trials of class sizes at any other grades, so the EB Model has used 25 as the class size recommendations for the other elementary grades (4 and 5 for a K-5 elementary school and grades 4-6 for a K-6 elementary school). These class size recommendations produce an average class size of 17.3 in a Wyoming K-5 prototypical elementary school, just a bit higher than the Wyoming Funding Model's class size of 16.

*Evidence and Recommendation*

In staffing schools and classrooms, the most expensive decision superintendents and principals make is on class sizes for core teachers. Core teachers are defined as the grade-level classroom teachers in elementary schools.

Class size has always been an issue of interest in both K-12 education practice and research. And the public continually advocates for small classes. In a 1979 meta-analysis of research on class size and its impact on student achievement, Glass and Smith (1979) concluded that class size did matter when class size fell below 20, but particularly 15 or less. This study gave momentum to public and policy interest in reducing class size. But Odden (1990) noted that their analysis had few if any experiments with class sizes around the 15 level and that most of the studies analyzed had class sizes of 25-35 or very small classes of 1-2. He concluded that the finding that class sizes of 15 and lower made a difference was a statistical artifact of combining the results of very different studies (large class sizes of 25 or more and very small class sizes of 1-2) but that the data analyzed actually included virtually no studies of class sizes of 15. Thus, evidence for implementing small classes was still lacking.

Tennessee sought to change this lack of evidence and sponsored a **randomized controlled trial,** the gold standard of research evidence (Mosteller, 1995), of small classes in elementary schools, and it remains the primary evidence for the impacts of small elementary school class sizes. The Tennessee STAR study was a large scale, **randomized controlled trial** of class sizes of approximately 15 students compared to a control group of classes with approximately 24 students in kindergarten through grade 3 (Finn and Achilles, 1999; Word, et al., 1990). The study found students in the small classes of 15 (not a class of 30 with an instructional aide or two teachers) achieved at a significantly higher level (effect size of about 0.25 standard deviations) than those in regular class sizes, and the impacts were even larger (effect size of about 0.50) for low income and minority students (Gerber, Finn, Achilles, & Boyd-Zaharias, 2001; Finn, 2002; Grissmer, 1999; Krueger, 2002; Mosteller, 1995; Nye, Hedges, & Konstantopoulous, 2002). The same research showed a regular class of 24-25 students with a teacher and an instructional aide *did not* produce a discernible positive impact on student achievement (Gerber, Finn, Achilles, & Boyd-Zaharias, 2001), a finding that undercuts proposals and widespread practices that place instructional aides in elementary classrooms.

Subsequent research showed the positive impacts of the small classes in the Tennessee study persisted into middle and high school years, and the years beyond high school (Finn, Gerber, Achilles & J.B. Zaharias, 2001; Konstantopoulos & Chung, 2009; Krueger, 2002; Nye, Hedges & Konstantopoulos, 2001a, 2001b). Related longitudinal research on the Tennessee class size reduction program also found the lasting benefits of small classes included a reduction in the achievement gap in reading and mathematics in later grades (Krueger & Whitmore, 2001).

Although some argue the impact of the small class sizes in the Tennessee study was derived primarily from kindergarten and first grade, Konstantopoulos and Chung (2009) found that not to be the case concluding that the evidence showed that the longer students were in the small classes (i.e., in grades K, 1, 2 and 3) the greater the impact on grade 4-8 achievement. They concluded that the full treatment – small classes in all the first four grades – had the greatest short- and long- term impacts.

Studies of several statewide programs find similar effects of class size reductions in elementary schools, including the Wisconsin program that provided extra dollars for schools to lower class size in grades K-3 to 15 students (e.g., Cho, Glewwe & Whitler, 2012; Molnar et al., 1999). Though the Wisconsin study was a quasi-experimental design, and not an RCT, it is viewed as a solid study showing positive impacts of a statewide reduction in elementary class size (Schanzenbach, 2010, 2015). Indeed, Figlio and Schanzenbach (ND), citing not only the Tennessee and Wisconsin programs, but also studies of elementary class size reduction in several countries around the world, argue that the evidence is unequivocal that small class sizes in elementary schools produce higher levels of student achievement. They also argue that the benefits of class size reduction, including increased wages in later years, outweigh the high costs of such programs.

However, some studies indicate, not only for class size reduction but also for other new programs, that statewide implementation is not as effective as the initial experiments show. The implication is that states should think seriously about how to structure the implementation of new

funds from adequacy studies, particularly funds to reduce class sizes, rather than just providing the dollars to schools without any conditions. To be effective, class size reduction programs need to be implemented with careful attention to increased staffing to ensure that quality teachers are hired to provide instruction in the additional and smaller classrooms (Jepsen & Rivkin, 2009). This should not be a problem for Wyoming as it has supported small elementary class sizes for more than 25 years.

Some policy analysts argue that when school funding is tight the costs of class size reduction might not be worth it (e.g., Barnum, 2022; Whitehurst & Chingos, 2011), and others suggest funds for class size reduction might produce larger impacts if states/districts used them to recruit and retain more effective teachers (e.g., Hanushek, 2002). Both comments have merit. But an adequacy study addresses the issue of how much money is needed, not how to use limited funding, so the EB includes resources for small classes in the early elementary grades as such programs produce large increases in student learning. We urge states and districts to use all EB Model staff resources to recruit, train and retain effective staff in all areas.

In short, studies on class size use different analytic methods, and reach varying conclusions about the benefits, costs, and policy implications of the impact of class size on student (see also Hanushek, 2002; Krueger, 2002;). We concur with those (e.g., Schanzenbach, 2020) who conclude that small elementary class sizes do make a difference and that the benefits outweigh costs. Thus, the EB Model's recommendation is to provide class sizes of 15 for grades K-3, with the related stipulations that the funds be used for classes of 1 teacher and 15 students and not for classes of 30 students with a paraprofessional aide or two teachers.

*The Difference Between Class Size and Staffing Ratios*

The issue of class size and staffing ratios is critical to understanding how the EB Model allocates resources to schools and has a substantial impact on the total cost of the EB Model. In many states and school districts "staffing ratios" are computed by dividing the number of pupils by the number of core *and* elective teachers. The result is that a school may report a staffing ratio of 15, but average class sizes will be higher because the number of pupils was divided by both core and elective teachers. In other states and school districts, there can be even more confusion. These states report "pupil teacher ratios" that are computed by dividing the number of pupils by the number of all certified staff, including core and elective teachers as well as other certificated staff such as instructional coaches and counselors. The result is that a school may report a "pupil teacher ratio" of 12, but average class sizes will be higher because the number of pupils was divided by all certified staff. These figures are often confusing as staffing ratios, pupil/teacher ratios and class size are frequently conflated when in fact, they have different meanings.

The EB Model is different in that it provides resources so that actual class sizes can be 15 or 25, and all other instructional staff are resourced above that level. To show the difference, imagine an elementary school with 300 students. If the school has 20 certified staff members, the pupil teacher (or more accurately pupil/staff) ratio is 15:1. But if five of the instructional staff members are not core teachers, but rather teach electives, are instructional coaches or have other responsibilities, there are only 15 core teachers and the average class size is actually 20, not the 15 that is reported.

For this reason, the EB Model makes a clear distinction between staffing ratio, pupil/teacher ratios and class size. The intent is to provide positions for actual class sizes of 15 in grades K-3 and 25 in higher grades. In the example above, assuming the class size goal is 15, there would be 20 core teachers, and the school would receive additional resources for elective teachers, instructional coaches, and other certificated staff. The logic is similar at middle and high schools.

Confusion on these issues has occurred because the Wyoming funding model in place during the 2005 recalibration, the MAP Model, used a staffing ratio. Specifically, the staffing ratio was 16 for elementary schools and 21 for middle and high schools. Our 2015 recalibration report included a long section that described how the staffing ratios of the MAP model and the class sizes and elective teacher allocations of the EB and Legislative Models produced different numbers of teachers and different class sizes.

Without going into the details, the MAP elementary staffing ratio of 16 actually implied a class size of 19.2 in elementary schools and 25.2 in secondary schools. These are very similar to the average elementary class sizes for the EB model of 17.3 in a K-5 school or 18.1in a K-6 school (15 in grades K-3 and 25 in grades 4-6). The implied middle and high school class size of 25.2 is very close to the EB Model's secondary class size of 25. Put another way, if after the 2005 recalibration, the Legislature had adopted the EB Model class size ratios together with its allocation of elective teachers, which simply made explicit the core and elective teachers of the MAP staffing ratio, it would have been essentially the same as retaining the MAP Model's staffing ratio of 16 and 21. Instead, however, the Legislature turned the "staffing ratios" of 16 and 21 into class size numbers and with elective teachers provided at the ratios of 20 percent more for elementary schools and 33 percent more for secondary schools; this policy ended up providing substantially more teachers – and costing more – than the EB Model.

Further, as noted in both the 2015 and 2020 recalibrations, few large districts since 2005 have actually implemented class sizes of 16 elementary and 21 secondary schools but instead used the additional resources to raise teacher salaries.

*3. Secondary Core Teachers/Class Size*

In middle and high schools, core teachers are those who teach core subjects such as mathematics, science, language arts, social studies and world language. Advanced Placement classes in these subjects are considered core classes.

The information below shows that the WY EB Model provides for larger secondary school class sizes, and thus fewer secondary teachers, and thus is less costly than the Wyoming Funding Model. The 2025 WY EB Model is the same as the 2020 WY EB Model.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Grades 5 and above: 25:1 | Grades 6 and above: 21:1<br>Grades 5 in a middle school are also resourced at 21:1 | No Change from 2020 |

**Summary and Recommendation***:* Determining class sizes in upper elementary, middle and high schools are important programmatic and fiscal decisions. Like elementary class size, the public and educators continually press for smaller secondary class sizes. Many professional judgement panels in the past have also proposed class sizes in the high teens or low 20s for secondary grades. However, there is, to our knowledge, **no randomized controlled trail** research on the impact of small class sizes in grades 4-12. It is an area that is ripe for future research. However, given the lack of research evidence for smaller secondary class sizes, the EB Model uses standards and practices taken from various professional groups. All high-performance school models created by the New American Schools postulated class sizes of 25 for middle and high schools. And many high performing Charter School Models have class sizes of 25. Further, NCES (2022a) estimates that the national average secondary grade class size is around 25. Thus, the EB Model provides for class sizes of 25 in grades 4-12.

*Evidence and Recommendation*

Since most of the research on the effects of class size has been conducted at the early elementary level, evidence on the most effective class sizes in grades 4–12 is harder to find than is evidence for the early elementary grades. We have not been able to find any **randomized controlled trails** for small class sizes in grades 4-12. Although many professional judgment panels in several states have recommended secondary class sizes of 20 or less, no individual in a panel we have conducted cited research or best practices to support proposals for secondary class sizes that small.

Further, literature reviews rarely find strong, positive impacts of secondary school class size reduction (e.g., Washington State Public Policy Institute, 2013). Citing a few studies, Whitehurst and Chingos (2011) argued there might be a modest linear relationship between improving student performance and secondary class size when it drops from between 25 and 30 students to 15. Our view of this evidence is that the gains identified were modest at best and insufficient to make an EB Model recommendation for small secondary class sizes. In a study of average class size across middle and elementary schools in North Carolina, Etim, Etim and Blizzard (2020) found no impact in elementary schools but curiously found an inverse relationship for middle schools, hardly evidence for small middle school class sizes. In sum, most analysts argue that the evidence on small secondary class sizes is insufficient to recommend small secondary class sizes (e.g., Figlio & Schanzenbach, ND; Schanzenbach, 2020).

To develop the EB Model, we sought evidence on the most appropriate secondary class size from typical and best practices to identify the most appropriate class size for these grades. The national average class size in middle and high schools is slightly above 25 students in subject matter classes (NCES, 2022). Nearly all comprehensive school reform models of the late 1990s New American Schools initiative were based on a class size of 25 students (Odden, 1997; Stringfield, Ross & Smith, 1996), a conclusion on class size reached by the dozens of experts who created these whole-school design models. Many charter school models have similar class sizes, including, for example, Achievement First, Aspire, Green Dot, IDEA, KIPP and Noble.

The EB Model's middle and high school class size of 25 students is larger than the Wyoming Funding Model's class size of 21 students. It is our understanding that the use of class sizes of 21 students in these grades evolved from an earlier adequacy study conducted by MAP that specified 21 as a "staffing ratio" for secondary schools. The staffing ratio of 21 students per teacher was intended to include all teaching staff and did not distinguish between core teachers and elective teachers. If one assumes 21 is a "staffing ratio" and includes core and elective teachers, and if one further assumes each teacher provides instruction for five of six instructional periods of the regular school day, then the staffing ratio of 21 translates to a core class size of about 25.2, essentially equal to the EB Model ratio of 25. But, as described in the following section, the EB Model adds elective teachers at each school at a rate of 20% for middle schools and 33 1/3% for high schools. It should be noted that the Wyoming Funding Model adds elective teachers at the rate of 33% for both middle and high schools. As a result, both the EB Model and the Wyoming Funding Model provide more teacher resources than the MAP funding model that was in place before the 2005 recalibration.

*4. Elective/Specialist Teachers*

In addition to core classroom teachers, the EB Model provides elective or specialist teachers to support core teachers. Generally, non-core or elective teachers, also called specialist teachers, offer courses in subjects such as music, band, art, physical education, health, career-technical education, etc.

The following displays the allocation of elective or specialist teachers to elementary, middle and high schools through the EB and Wyoming Funding models.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| **Elementary Level** | | |
| 20% of core elementary teachers | 20 % of core elementary teachers | No Change from 2020 |
| **Middle School** | | |
| 20 % of core middle school teachers | 33 % of core middle school teachers | No Change from 2020 |
| **High School** | | |
| 33.33 percent of core high school teachers | 33 % of core high school teachers | No Change from 2020 |

**Summary and Recommendation:** A combination of core and elective teachers has two purposes. The first is to allow schools to offer a full, liberal arts curriculum program with adequate courses outside the core, all of which are needed to cover Wyoming's education basket. The second is to provide time during the school day for *all* – core and elective – teachers to collaborate on instructional strategies, participate in professional development activities and otherwise plan for class instruction.

Adding elective subjects to the curriculum also allows schools to provide pupil-free time for all teachers during the regular school day, time which allows all teachers to engage in planning, preparation and ongoing professional development during the regular school

day. With these staff, schools can design the instructional day so that all teachers can engage in 45-60 minutes of collaborative professional development 4-5 times a week, assuming a 6.5-hour instructional day and a 7.5-hour teacher workday. Importantly, **randomized controlled trial research** shows that such collaborative teacher work can have substantial, positive impacts on both teachers' instructional practice and student academic performance.

For elementary and middle schools, the EB Model provides elective/specialist teachers at the rate of 20% of core elementary and middle school teachers and for high schools at the rate of 33 1/3 % of core high school teachers.

*Evidence and Recommendation*

*A Liberal Arts Curriculum*. The first reason for providing both core and elective teachers is to allow schools to offer adequate courses outside the core, all of which are needed to cover the broad range of subject matter topics addressed by Wyoming's curriculum content standards. Thus, in addition to core classroom teachers, the EB Model provides elective or specialist teachers to complement and support core teachers. Generally, non-core or elective teachers, also called specialist teachers, offer courses in subjects such as music, band, art, physical education, health, career-technical education, typing, business, etc. The April 2017 issue of *Phi Delta Kappan* discusses many issues related to the importance of art and music for public schools. In response to the initial focus on STEM (Science, Technology, Engineering and Mathematics) classes, a STEAM movement began to add Art and Music to the STEM emphasis. Today, virtually all states want schools to provide both core and elective classes.

Furthermore, there is increasing support for multiple versions of "modern" Career and Technical Education (CTE). In part a backlash to the alleged emphasis on high schools' preparing students for college education that emerged after the 1983 *Nation at Risk* report, workplace experts and policymakers today are calling for schools to provide pathways in high schools designed to equip students with more practice skills, that can be enhanced in two-year community or technical colleges rather than four-year colleges or universities. Thus, CTE programs focused on business/ finance and marketing, industry recognized credentials in such areas as precision machining and web-design, and jobs in new fields such as Artificial Intelligence (AI), electronic vehicles (EV), autonomous cars, and clean energy are increasingly provided by districts across the country (see for example, Heubeck, 2025).

Grissmer, et al. (2023) show how one comprehensive elementary school model, Core Knowledge, that provides a classical liberal arts curriculum program, has produced large gains in student performance. To provide that curriculum program, the Core Knowledge model includes both core and elective teachers. In a **randomized controlled trial** of the effectiveness of that comprehensive school reform model, the results showed the Core Knowledge programs increased student achievement in grades three through six in reading, mathematics and science.

In short, though teachers for core subjects are important and necessary as foundational or building blocks for other topics, elective teachers are also needed in order for schools to provide solid instruction in both core subjects and a range of elective subjects.

*Creating a collaborative school culture*. The second purpose of providing elective teachers is to allow schools to design schedules that provide pupil-free time during the school day for *all teachers* – core and elective – to allow them to collaborate on instructional plans, participate in professional development activities and otherwise plan for more effective classroom instruction.

Teachers need pupil-free time during the regular school day to work collaboratively and engage in job-embedded professional development. Assuming the instructional day is divided into six one-hour periods, providing every teacher with one period a day for collaborative planning and focused professional development requires an additional 20% allocation for elective teachers over core teachers. Using this elective staff allocation, every teacher – core and elective – would teach five of six periods during the day, and have one pupil-free period for planning, preparation, and collaborative work.

The 20% additional staff is adequate for elementary and middle schools, but the EB Model establishes a different argument for high schools. If the goal is to have more high school students take a core set of rigorous academic courses and learn the course material at a high level of thinking and problem solving, cognitive research findings suggest that longer class periods, such as those made available through the use of a block schedule, is an effective way to organize the instructional time of a high school. Typical block scheduling for high schools includes four 90-minute blocks a day where teachers provide instruction for three of those 90-minute blocks and have one block – or 90 minutes – for planning, preparation, and collaboration. This schedule requires elective teachers at a rate of 33 1/3% of the number of core teachers. This block schedule would operate with students taking four courses each semester attending the same classes each day, or with students taking eight courses each semester while attending different classes every other day. Such a schedule could also entail a few "skinny" blocks (45-minute periods) for some classes. Each of these specific ways of structuring a block schedule, however, would require an additional 33 1/3% of the number of core teachers to serve as elective teachers to provide the regular teacher with a "90-minute block" for planning, preparation and collaboration each day.

The EB staffing recommendation for high schools are sufficient for high schools to provide all students with a rigorous set of courses throughout grades 9-12. It allows for an appropriate number of credits required for high school graduation and provides sufficient course taking opportunities for students to be admitted into any post-secondary institution in the country, including qualifying for Hathaway scholarships, or to enroll in CTE pathways that lead to high technology, high wage careers that do not require a college degree.

Most school districts today require a 7.5-hour workday for teachers. Instruction would comprises five hours of this time, and lunch 30 minutes, leaving 120 minutes for student arrival and departure and teacher collaborative time. A 7.5-hour teacher day and the core and elective provisions of the EB Model provide ample resources for districts and schools to provide time for teacher collaborative teams to meet regularly (daily) during the normal, 7.5 hour, teacher school day.

When teachers work in collaborative teams, they review student data to design standards-based lesson plans and curriculum units, identify interventions for struggling students, and monitor all

students' progress toward meeting performance standards (DeFour, 2015). Teacher led collaborative teams have been identified as keys to improving student performance in several of our school case studies (see case studies at www.picusodden.com) and case studies provided by others (e.g., Chenoweth, 2007, 2009). In a **randomized controlled trial**, Carlson, Borman & Robinson (2011) found that when collaborative teacher teams engaged in data-based decision making by analyzing student data to improve instruction the result was higher student achievement.

Other research confirms these case study and RCT findings. Labeling teacher collaboration "peer learning," economists Jackson and Bruegmann (2009) found that teacher collaborative activities were related to student learning gains. Ronfeldt et al. (2015) found that teachers working in collaborative groups boosted student learning over a two-year period in the Miami-Dade school district. Johnson, Reinhorn & Simon (2016) found that the six high-poverty schools in one urban district that had achieved the highest state rating, made teacher teams the central component of its schoolwide improvement strategies and that a key condition was ensuring that the school schedule provided regular, reliable meeting times for teams. Studying school improvement strategies across hundreds of low performing schools in Washington, Sun, Shu and LeClair (2019) found that teachers using student data to improve instruction and target interventions produced substantial achievement gains.

Such activities can have other positive spill-over impacts. Using a data base similar to the Miami-Dade data base, Sun, Loeb and Grissom (2017) found that when a more effective teacher becomes part of a teaching team, the performance of other teachers improves, and the performance of the more effective teacher does not drop. This finding suggests that teacher effectiveness can be enhanced when the system strategically ensures that each teacher team has at least one highly effective teacher as a member. In addition, Ingersoll, Audrain and Laski (2025) found that when teachers worked in collaborative groups, teacher retention improved, suggesting that how teachers are organized in schools impacts whether teachers decide to stay at the school, district or in the teaching profession.

Given a combination of core and elective teachers, schools still need to design schedules so that collaborative teacher work can be conducted, and often schools report difficulty in creating such schedules. Steele and Boudett (2007) provide several practical examples of how data-based decision-making teacher groups can be organized and scheduled in schools. Levenson and James (2023) take these suggestions a step further and provide multiple specific ways elementary, middle, and high schools can schedule time during the regular school day to enable such collaborative planning, as well as to provide extra help periods for struggling students. Short and Hirsh (2022) embed these activities into a change process in how teacher teams can function to improve instructional practice focused on implementing new standards-based curriculum programs.

In sum, there is considerable research from scholars across the country documenting how teacher collaborative teams can be organized in schools in ways that allows them to work during the regular school to improve instructional strategies that boost student learning. To provide this time during the regular school week and day requires a combination of core and elective teachers, resources provided by the EB and Wyoming Funding Models.

*Number of Elective Teachers*. The EB Model provides an additional 20 percent of the number of core teachers as elective teachers for elementary and middle schools. At the high school level, the EB Model provides an additional one-third (33 1/3 percent) of the number of core teachers as elective teachers. The Wyoming Funding Model differs from this, providing the same 20 percent additional elective teachers at the elementary level, but an additional 33% (not 33.1/3 percent) of core middle and high school teachers. A comparison of the number of elective teachers generated at each school level under the altlernative assumptons of the EB Model and the Wyoming Funding Model is provided below:

*Elementary Schools*: For the EB model, at the elementary level, 20 percent elective teachers amounts to 3.33 additional teachers at a prototypical 288 student K-5 elementary school. Under the Wyoming Funding Formula, the 20 percent formula for elementary schools provides an additional 3.60 FTE elective teachers at a prototypical 288 grade K-5 student elementary school. The difference is a function of using pupil/teacher ratios of 16:1 in the Wyoming Fundng Model compared to the EB model ratios of 15:1 (grades K-4) and 25:1 in grades five and six).

*Middle Schools*: At the middle school level, the EB model at 20 percent elective teachers provides an additional 2.52 elective teachers for a 315 student school. Under the 33 percent elective teacher allocation for middle schools in the Wyoming Funding Model, a total of 4.95 elective teachers would be generated at the prototypical school, compared to 3.00 elective teachers if the allocation of elective teachers was at the EB Model's 20 percent.

*High Schools*: At a prototypical high school of 630 students, the EB Model provides 8.4 elective teachers, while the Wyoming Funding Model provides 9.90 elective teachers due to the lower pupil/teacher ratio used in the Wyoming Funding Model.

In totaling the core plus the specialist teachers from the EB Model recommendations, the total core and elective *teaching* staff for prototypical schools under the EB Model is 20 teacher positions for a 288-student elementary, 15.12 teacher positions for a 315-student middle school, and 33.6 teacher positions for a 630-student high school.

*5. Additional Vocational/Career Technical Teachers*

Many states now conceptualize career and technical education (CTE) under the broad umbrella of postsecondary readiness[3] rather than as a standalone entity, with an emphasis today is on technical skills needed for employment in a wide array of high wage, high skill jobs that can be entered immediately after high school. Nearly all states recommend that career education begin before high school, even in elementary schools, by exposing younger students to various career options and helping students learn about their own interests, talents, and potential career paths. States approach CTE delivery in various ways: in district-run secondary schools, in CTE centers, through work-based learning, or through dual/concurrent enrollment at postsecondary institutions. Additionally, states provide instruction in a wide array of career content areas that

[3] Postsecondary readiness broadly refers to "how well students are prepared for education and employment beyond high school" (WestEd, 2010, p. 1). It encompasses academic preparation, employability skills, and the personal development necessary to navigate various postsecondary pathways.

span the entire National Career Cluster Framework.[4]

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| No additional teacher staff.<br><br>Provide an amount equal to $10,000 per CTE teacher FTE. Not subject to the ECA, although the state has used the EB supplies ECA to adjust this figure to $13,899.71 | Student-level weight of 1.29<br><br>Provide an amount equal to $14,336 per CTE teacher FTE as adjusted by the statutory supplies ECA.<br>In addition, the state provides funding for a minimum of two FTE CTE teachers for all high schools. | Provide a student-level weight of 1.2 for CTE students in grades 9-12.<br><br>Align with statutory model so $14,336 per vocational education teacher FTE as adjusted by the statutory supplies ECA. |

**Summary and Recommendation**: Career and Technical Education (CTE) equips students with the skills, knowledge, and experiences necessary to enter the labor market or pursue further education or training. Historically, CTE has been viewed as a pathway for non-college-bound students to gain practical, hands-on skills in fields such as woodworking, metalworking, welding, automotive mechanics, typing, and cosmetology. In recent years, however, a growing demand for skilled workers, the rising cost of traditional four-year college degrees, and the public's changing perception of CTE as a viable path to stable, well-paying careers has reshaped the conceptualization and provision of CTE courses in U.S. schools. Schools increasingly offer CTE courses that prepare students for careers in a range of high-skill, high-wage employment sectors—many of which can be entered directly after high school. As such, CTE is emerging as a key strategy for strengthening economic mobility, reducing equity gaps, and filling critical talent pipelines.

> The American College Testing Company and policymakers agree that the skills needed for college are similar to those needed for high-paying jobs in many CTE sectors. Therefore, all students should complete a solid academic high school program to be ready for college or careers upon graduation. For those students who choose to enroll in CTE pathways, this solid academic foundation can exist alongside meaningful career-focused education. Recent research confirms the positive benefits of CTE on student outcomes. In fact, a recent systematic review of 28 **randomized controlled trial** and quasi-experimental studies found that "student participation in CTE had statistically significant positive impacts on students' high school academic achievement, their likelihood of completing high school, their employability skills, and their college readiness" (Lindsay et al., 2024, p. 8).

[4] The most recent version of the National Career Cluster Framework, developed by Advance CTE in 2024, consists of 14 clusters and 72 sub-clusters, which serve as the primary organizational structure for CTE programs. These are supported by five cluster groupings, aligned by the purpose and impact of the careers they include, and three cross-cutting clusters that provide skills and career pathways which both stand alone and intersect with all other clusters. Additionally, twelve career-ready practices ensure that every program includes the essential skills needed for success in both career and life.

A key issue for CTE programs is their costs. The financial resources required to deliver CTE courses can vary widely depending on factors such as the need for specialized materials and equipment, as well as small class size requirements due to safety consideration and limited equipment. While some CTE courses in some settings may require resources that are similar to those required to provide non-CTE instruction (e.g., a marketing course in a traditional district high school), and some technical programs require computer technologies that are provided as part of the regular EB Funding model, other courses require smaller classes and thus additional teacher resources (e.g., a welding course). Because Wyoming's CTE students engage with both higher- and lower-resource course options,[5] we have changed the EB Model to include a student-level weight of 1.2 for CTE students in grades 9-12. The EB Model continues to include $14,336 per vocational education teacher for the high equipment needs of some higher cost CTE programs.

*Evidence*

Most states organize their CTE content offerings using the **National Career Clusters Framework**, which groups careers into **16 broad clusters**[6] based on common knowledge and skills. Each cluster represents a major segment of the modern U.S. economy and includes various **career pathways** that require similar academic and technical competencies, many of which lead to high-wage, in-demand jobs. National data sheds light on the popularity of particular career clusters among CTE students. According to the U.S. Department of Education Office of Career, Technical, and Adult Education (OCTAE), the top four career clusters among secondary CTE concentrators for the 2022-23 school year were health science (13.18 percent); agriculture, food, and natural Resources (12.43 percent); business management and administration (10.87 percent); and arts, A/V technology and communications (9.27 percent).[7]

The Wyoming Department of Education has argued that if the state is serious about educating its youth in career pathways that will allow them to earn a living and support a family, as well as create a quality life, then the state must assure students have access to career exploration in middle and junior high and even elementary schools that leads to high quality CTE programs at the high school and postsecondary level. Indeed, one notable recent trend among states is the push to offer CTE earlier in students' academic careers. Nearly all states' CTE websites and related materials at least provide a high-level statement that career learning should begin before high school. Some state materials discuss starting career education in the middle grades, while others argue for starting career-focused learning in elementary schools. In these earlier grades, the focus for career learning is career awareness and exploration, whereas the focus for career

[5] According to the U.S. Department of Education Office of Career, Technical, and Adult Education (OCTAE) Perkins Collaborative Resource Network, there were 8,085 secondary CTE concentrators (students who successfully completed at least two courses in a particular career pathway or program of study) in Wyoming in 2022-23. The top four career clusters among Wyoming secondary CTE concentrators were manufacturing (17.37 percent), agriculture, food and natural resources (13.42 percent), hospitality and tourism (12.49 percent), and architecture and construction (11.09 percent).

[6] As described in footnote 2, the most recent version of the National Career Cluster Framework, released in late 2024, includes 14 career clusters; however, previous versions of the Framework included 16 career clusters.

[7] OCTAE Perkins Collaborative Resource Network CTE concentrator national enrollment profile.

learning at the high school level shifts to more hands-on experiential instruction and postsecondary readiness.

For CTE to deliver on its promise of postsecondary readiness, it must be high quality. High-quality CTE includes many aspects. A high quality CTE program begins with a CTE or provisional industry certification (PIC) licensed teacher who is current in his or her content area and receives support to remain current in his or her content area. The program must have adequate space and access to equipment/technology that reflects what is currently being used in business and industry. The program must also offer exposure to innovative and emerging technologies while ensuring student safety. Quality programs allow students to participate in work-based learning opportunities, earn college credit through dual or concurrent enrollment while enrolled in high school, and to participate in co-curricular career and technical student organizations. More succinctly, high quality CTE programs offer an integrated sequence of at least three linked courses. Upon completion of a high quality CTE program students should be able to demonstrate skills by attaining an industry recognized credential of value.

Based on research linking CTE participation to improved student outcomes on metrics such as student learning, high school graduation rates, postsecondary employment, and wages, the EB Model has supported high quality CTE programs since 2005. Lindsay et al.'s (2024) metanalysis of 28 CTE studies found that students' participation in CTE courses yielded positive impacts on achievement, high school graduation, career skills, and college readiness. Using data from the 1997 National Longitudinal Survey of American Youth, Kreismanm and Stangem (2020) found that students who took CTE courses at the upper levels – i.e., learned in depth in one area –were more likely to graduate from high school and receive a 2 percent increase in subsequent wages for each additional year of vocational education or CTE courses. Conversely, Kreismanm and Stangem found that students taking only introductory CTE courses did not experience these benefits. These findings support the current CTE emphasis on students' taking a sequence of at least three CTE courses that add up to expertise and certification in a specified area.

Plasman, Gottfried, & Klasik (2020) found that students who enrolled in CTE classes in the earlier years of high school tended to continue to enroll, thus taking more sequences of CTE courses and upping their chances of high school graduation. Similarly, Dougherty's (2016) study of career technical programs in Arkansas (see also Dougherty, Gottfried & Sublett, 2019) found that students who took three or more coherent CTE classes were 21 percentage points more likely to graduate from high school in four years, and 25 percentage points more likely to graduate from high school if the student was from a low-income background. These students also were more likely to attend two- and four-year colleges, to succeed in those college settings, and to earn higher wages after high school. These show the potential power of the CTE approach in a state with many rural districts like Wyoming. Importantly, the studies found that such programs did not track low-income students into low-quality vocational or career-tech programs.

Dougherty (2018) came to similar conclusions after studying the CTE programs in Massachusetts. The study investigated the causal impact of participating in a specialized high-school-based CTE delivery system on high school persistence, completion, earning professional certifications, and standardized test scores, with a focus on individuals from low-income families. The results suggested that participation in a high-quality CTE program boosted the

probability of on-time graduation from high school by seven to ten percentage points for higher-income students, and possibly even larger effects for their lower-income peers. Dougherty notes that these impacts on high school graduation complement previous research findings that participation in high quality CTE programs produces longer term increases in earned income. Dougherty and Smith (2022) further concluded that these programs are cost effective.

While research into the positive effects of CTE on student outcomes has received significant research attention, research into the costs associated with the provision of high quality CTE has received much less attention.[8] Our investigation into this topic identified just one study that estimated comprehensive costs of CTE programs. New York City's Pathways in Technology Early College High Schools (P-TECH schools) discovered that compared to similar non-P-TECH schools, per student costs for the P-TECH schools were higher by $7,564 ($86,531for P-TECH schools versus $78,967 for comparison schools) for the first cohort and $4,522 ($91,014 for P-TECH schools versus $86,492 for comparison schools) for the second cohort (Rosen et al., 2023). According to the authors, the program's additional per student costs were due to "…P-TECH 9-14 schools' smaller size, the dedicated support they received from the district, and the investments of their industry partners, and because P-TECH 9-14 schools also received secondary education funding for supporting students who elected to continue on their schools' postsecondary degree pathways after their senior years of high school" (Rosen et al., 2023, p. 51).

Additional insights into the costs of providing CTE come from studies that report CTE expenditures. A national-level study reported that in fiscal year 2022, federal funds amounted to $77 per student, and state funding averaged $1,152 per student (with a range of $31 to $7,705; Advance CTE, 2023, p. 3). Another study estimated expenditures and benefits of CTE programs in several Northeastern states and reported regression-adjusted increases in per pupil expenditures ranging from approximately $3,000 to $7,500 (Dougherty and Smith, 2022). Explorations of expenditures that account for local contributions suggest even higher outlays. For example, a recent study in Vermont found that regional CTE centers received $27,181 per student and district CTE programs received $30,629 per student in 2022, with more than half of these amounts coming from local sources (Augenblick, Palaich and Associates and National Center on Education and the Economy, 2023).

While cost and expenditure studies are scant, related school finance adequacy research may be instructive in helping to cost out CTE. The 2025 issue of *The Adequacy and Fairness of State School Finance Systems* report by Baker, Di Carlo, and Weber (2025) found that Maine, New Hampshire, New Jersey, New York, North Dakota, and Wyoming evidence relatively high school funding adequacy. When examining the state CTE funding approach for these six high-adequacy states, we find that three of the states (Maine, New Hampshire, and North Dakota) use a cost-based approach wherein the state reimburses all or part of the costs of providing CTE

[8] While information on CTE costs is currently limited, evidence exists that the field can expect additional studies in the future. For example, the Institute for Education Sciences (IES) recently released a tool intended to assist researchers and policymakers determine CTE program costs. See (see Incremental Costs in Career and Technical Education). Additionally, the IES-funded CTE Research Network 2.0 is in the process of conducting a CTE cost study for the state of Delaware (see Career Development Opportunities in Delaware: Implementation, Impact, and Cost | Career and Technical Education Research Network).

instruction. The remaining three states employ a student-based approach (New Jersey, New York, and Wyoming). While New York uses a more complex student-based allocation, New Jersey and Wyoming use a similar direct CTE student weight (1.23 for New Jersey and 1.29 for Wyoming).

Research on CTE safety considerations can help to explain increased resources and, consequently, increased cost associated with many CTE courses. Safety measures, notably small class size requirements, increase the cost of some CTE programs by reducing student to teacher ratios. Studies consistently show that class size in CTE courses is a critical factor in ensuring student safety, particularly in hands-on lab or workshop settings. The most frequently cited safety concern among CTE and STEM educators is overcrowding, which significantly increases the likelihood of accidents (Love, Ramsay, and Dyer, 2023; McKim, Dyer, and Smith, 2024). Multiple studies recommend a maximum of 24 students per instructor in general CTE lab environments, as accident rates rise substantially beyond this threshold—up to a 48 percent increase in incidents when this limit is exceeded (Love et al., 2023; McKim et al., 2024). In more hazardous course areas such as construction, the recommended class size drops to 20 students due to increased risks related to equipment and space constraints (Love et al., 2023). State-level policies reflect these concerns. For example, Virginia's Administrative Code[9] allows for no more than 20 students per CTE class when hazardous equipment is involved. These recommendations are also echoed by professional organizations like the National Science Teaching Association (NSTA)[10] and the American Chemical Society (ACS),[11] which assert that exceeding 24 students in laboratory settings doubles the likelihood of injury.

*Spotlight on Project Lead the Way*

Project Lead the Way[12] (PLTW) provides a nationally prominent exemplar of high quality CTE education delivered in a cost-effective manner. PLTW emphasizes the use of hands-on experience to develop the science, technology, engineering, computer science and mathematics skills essential for achievement in the classroom and success in college or jobs not requiring a four-year college education. The elementary school Launch program is designed to ensure that all students are prepared for the more rigorous PLTW programs in middle school and covers nearly all the standards of elementary school science. The middle school Gateway program is designed to spark interest in various science and technology areas and provides experiences in a range of paths The high school program offers 11 engineering courses, 4 biomedical science courses, and 4 computer science courses. High-scoring students earn college credit recognized in more than 100 affiliated postsecondary institutions.

In 2024, PLTW was offered in more than 12,600 elementary, middle and high schools in all 50 states, enrolled over 2.4 million students, and trained more than 116,000 teachers. Research in several states shows it can have major, positive effects on student outcomes. For example, Schenk et al. (2011) found that PLTW participants in Iowa had higher math and science scores

[9] See 8VAC20-120-150. Maximum class size.
[10] See NSTA class size recommendations.
[11] See ACS class size recommendations.
[12] Project Lead the Way.

on the Iowa Test of Basis Skills. In a recent multiple year study of PLTW in Missouri, Nomi et al. (2024), found that PLTW had a positive impact on students majoring in STEM programs in postsecondary programs. Camburn and Chang (2021) found that students who took PLTW courses, which were offered in over 13 percent of Missouri's schools, outperformed students who did not on all performance measures studied.

Our cost analyses of PLTW in Wyoming found that the program can be successfully implemented without incurring additional CTE-related costs. The major potential cost areas for the PLTW program are class size, professional development, and computer technologies. Most programs recommend class sizes of 25, which is what the core EB Model recommends for high schools. The professional development and most of the computer technologies are covered by the professional development and computer allocations of the EB Model discussed above in this report. Further, PLTW training for teachers now can be accessed in an on-line format so is available to all schools, even remote, isolated rural schools. The program also has a training program for lead teachers who can then train other teachers in the school or district. Some of the PLTW concentration areas, though, require one-time purchase of expensive equipment, which we estimate could be covered by the $14,366 per CTE teacher allocation.

*Final Recommendation*

As noted above, Wyoming's CTE students engage in courses that may require relatively lower resources (for example, courses like those offered via PLTW for which larger class sizes are appropriate) as well as courses whose costs are higher due to limited equipment and the need for safety-related lower class sizes (e.g., construction and welding courses). Additionally, regardless of class size, many CTE courses require specialized, expensive equipment. Based on a review of the literature regarding the costs and benefits associated with providing high-quality CTE, the EB Model recommends allocating $14,336 per CTE FTE and a student-level weight of 1.2 for CTE students in grades 9-12. We believe that the materials allocation operating in conjunction with the 9-12 student-level CTE weight will provide the additional resources required to provide a comprehensive array of career-focused education to students.

*6. Minimum Teachers*[13]

In describing the EB and Wyoming Funding Model staff allocations, most of the language refers to prototypical schools. In most cases, it is appropriate to pro-rate teacher resources down as the number of students drop. So, a three-section elementary school of 288 students is provided with 18 core teachers, a two section 196-student school would be provided with 12 core teachers, and a one section 98-student school would be provided with 6 core teachers, again one for each grade K-5. In other words, the number of core (and elective) teachers falls in the same portion as the overall student population. But an important issue is how to staff schools with enrollments smaller than that of a one-unit prototype school – 96 elementary students and 105 middle and high school students. As is discussed below, schools with 49 or fewer students are provided 1 assistant principal position and 1 teacher for every 7 students. It is for schools with between 49

[13] Note that at the time this draft (August 22, 2025) was written, research related to minimum numbers of teachers and small school size was continuing including getting feedback from two professional judgment panels. The contents of this section and the EB recommendations may change in the course of this study.

and either 96 or 105 students that minimum teacher allocations are included in the model.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| A minimum of 7 teachers provided for elementary schools, a minimum of 7 teachers for middle schools and 9 teachers for high schools with ADM greater than 49. Resourced at the highest-grade band level. | A minimum of 6 teachers provided for elementary schools, a minimum of 8 teachers for middle schools, and 10 teachers for high schools with average daily membership (ADM) greater than 49. Resourced at the highest-grade band level.<br><br>For schools and grade-bands with 49 ADM or fewer ADM, minimum teacher resources are provided on a prorated basis at 1 teacher for every 7 students. | A change to align the EB Model with the WY Funding Model<br><br>A minimum of 3.65 teachers provided for elementary schools, a minimum of 7 teachers for middle schools, and 9 teachers for high schools with average daily membership (ADM) greater than 49. Resourced at the highest-grade band level. |
| For schools and grade-bands with 49 ADM or fewer ADM, minimum teacher resources are provided on a prorated basis at 1 teacher for every 7 ADM. | Small district adjustment provides school districts with 243 or fewer ADM a minimum of one teacher at each school for every grade level ADM where students are enrolled at that school. | For schools and grade-bands with 49 ADM or fewer ADM, minimum teacher resources are provided on a prorated basis at 1 teacher for every 7 ADM. |

**Summary and Recommendation**: Recall that the EB and Wyoming Funding Model recommendations for teachers are applied to a series of prototypical schools, 288 ADM for elementary schools and 315 ADM for middle and high schools and become prorated down to smaller school prototypes with ADM of 96 for elementary schools and 105 fort middle and high schools. But Wyoming has many schools smaller than even these lower numbers. So, the issue is how to staff schools with enrollments smaller than that of a one-unit prototype school – 96 elementary ADM and 105 middle and high school ADM. Based on research on smaller schools, the EB Model argues that the general formulas work (can be prorated down) for schools down to 49ADM if schools would organize instruction via cross grade classroom configurations or teaching some subjects every other year in secondary schools. The general formulas, though do not work for the very smallest schools. Thus, the EB Model provides all schools – elementary and secondary – with 49 or fewer ADM with 1 assistant principal position and 1 teacher position for every 7 ADM.

*Evidence and Recommendation*

In the 2005 recalibration, for schools with fewer than 96 students at the elementary level, and 105 students at the secondary level, it was recommended that staffing be simply prorated down from the staffing of a one-unit (96 or 105 student) school. This argument would then pro-rate the 7.2 core and elective teacher positions for the 96-student school down to 3.65 core and elective teacher positions for a school with 49 students. It was argued, particularly for elementary schools, that this provided sufficient elementary school staffing if schools organized classrooms with students of different ages. For elementary schools, it was even argued that multi-age classrooms could be a more effective way to organize classrooms (for example, see Decotis & Tanner, 1995; Gutierrrez and Slavin, 1992; Pavan, 1992; Slavin, 1987). A similar argument was made for secondary schools, with the caveat that some subjects would be teach every other year rather than every year. In response, the Wyoming education community argued that it preferred to have one teacher per grade for elementary, middle and high schools with a student population of between 49 and 96/105.

Initially, the Legislature agreed with these arguments and the Wyoming Funding Model provided for minimum teacher allocations at all school levels that were higher than the EB Model. In 2020, these arguments had the EB Model adopting the same perspective. But since then, the legislature has reduced the minimum teacher allocations in the elementary school to what the EB Model initially recommended, and we have adopted that change for the 2025 WY EB Model.

*In addition to the minimum number of teachers at each school, the Wyoming Funding Model has a "Small District Adjustment" that allocates additional teacher resources for districts with 243 or fewer ADM. Each school with a student enrolled in each grade, receives a minimum of 1.2 elementary school teachers, 1.33 middle school teachers, and 1.33 high school teachers, or at least 16.51 teachers in a school with a student in each grade. That addition has not been adopted by the EB Model.*

Both models use the same formula – 1 assistant principal position and 1 teacher position for every 7 students – for very small schools, i.e., 49 or fewer students. This staffing allocation is to be used by each super small school for all teaching, counseling, secretaries and management functions, the specific combination of staff to be determined individually by each super small school.

*7. Instructional Facilitators/Coaches*

Instructional coaches, or instructional facilitators, coordinate the instructional program. Most importantly, they provide the critical ongoing instructional coaching and mentoring the professional development literature shows is necessary for teachers to improve their instructional practice (Cornett & Knight, 2008; Crow, 2011; Garet, Porter, Desimone, Birman, & Yoon, 2001; Joyce & Calhoun, 1996; Joyce & Showers, 2002). This means that they spend the bulk of their time with teachers, modeling lessons, giving feedback to teachers, working with teacher collaborative teams, and generally helping to improve the instructional program.

Some instructional coaches may also function as school technology coordinators. In that role they provide the technological expertise to fix small problems with personal computer systems, install software, connect computer equipment so it can be used for both instructional and management purposes, and provide professional development to embed computer technologies into a school's curriculum.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Provide 1.5 instructional facilitator/coaches for prototypical 288-ADM elementary school and for every 315 middle and high school ADM, resourced at the highest grade-band level, with a minimum of 1.0 instructional facilitator position for each school district.<br>Fund as a categorical grant. | Provide 0.45 instructional facilitator/coaches for prototypical elementary (288 ADM) and secondary** (315 ADM) schools at the highest-grade band level. Funded in the Wyoming Funding Model. | No Change from 2020 |

**Summary and Recommendation***:* Research in the late 1990s and early 2000s found strong effect sizes for instructional coaches as part of professional development, particularly for reading. Studies in the 2000s have found that coaches provided as part of a data-based decision-making initiative improved both teachers' instructional practice and student achievement. Positive impacts of coaching are not limited to reading instruction and achievement. **Randomized Controlled Trials** of coaching found that instructional coaching can produce significant student achievement gains across all four core subject areas – mathematics, science, history, and language arts. Recent research findings suggest that there is promise in constructing a comprehensive instructional coaching program that uses both individual coaches and online platforms to provide the coaching. Multiple studies have found significant levels of effectiveness for coaching whether it was provided in person or via video technology.

Drawing from this research, the generic EB Model provides one instructional facilitator/coach position for every 200 students. This recommendation has been tailored to Wyoming's prototypical schools and provides 1.5 IF for every 288-ADM prototypical elementary school and 1.5 IF for every 315-ADM prototypical middle and high school, funded at the highest-grade band, and with a minimum of 1.0 IF for each district.

*Evidence and Recommendation*

A few states (i.e., Arkansas, New Jersey, Washington, Wyoming and to a modest degree North Dakota) explicitly provide resources for school-based instructional coaches. Most comprehensive school designs (see Odden, 1997; Stringfield, Ross & Smith, 1996), and Evidence Based Adequacy studies conducted in other states – Arizona, Arkansas, Illinois, Kentucky, Maine, Maryland, Michigan, North Dakota, Vermont, Washington, Wisconsin and Wyoming – call for

school-based instructional facilitators or instructional coaches (sometimes called *mentors, site coaches, curriculum specialists,* or *lead teachers*). Further, several comprehensive school designs suggest that while one instructional facilitator might be sufficient for the first year of implementation of a schoolwide comprehensive improvement program, in subsequent years additional facilitators are needed. Technology school designs recommend at least a half-time as the site's technology expert (for example, see Stringfield, Ross, & Smith, 1996). Drawing from this research, the generic EB Model provides one instructional facilitator/coach position for every 200 students. This recommendation has been tailored to Wyoming's prototypical schools and provides 1.5 IF for every prototypical elementary and 1.5 IF for every 315 prototypical middle and high school, and with a minimum of one IF for each district.

Early research found strong effect sizes (1.25-2.71) for instructional coaches as part of professional development (Joyce & Calhoun, 1996; Joyce & Showers, 2002). Several years later, Sailors and Price (2010) found that professional development combined with coaching increased the deployment of comprehensive instructional practices by between 0.64 and 0.78 standard deviations. Newman and Cunningham (2009) found a similar impact on teachers' instructional impact as well as improved reading achievement, with an effect size about 0.2 standard deviations. A 2010 evaluation of a Florida program that provided reading coaches for middle schools found that teachers who had the benefit of a coach implemented more instructional methods that were linked to improved student performance in reading (Lockwood, McCombs & Marsh, 2010). A related study found that coaches provided as part of a data-based decision-making initiative also improved both teachers' instructional practice and student achievement (Marsh, McCombs & Martorell, 2010). A study published two years later reached the same conclusions about coaching as part of a program to improve reading (Coburn & Woulfin, (2012).

Positive impacts of coaching are not limited to reading instruction and achievement, however. Indeed, a **Randomized Controlled Tria**l of coaching (Allen et al, 2011) found significant, positive impacts in the form of student achievement gains across all four core subject areas – mathematics, science, history, and language arts. A follow up study with a larger sample of schools and students found similar, large gains, with effect sizes of 0.22 (Allen, et al., 2015).

A 2018 meta-analysis of 60 studies of the causal effects of instructional coaches, found the impact of instructional coaching on instruction was 0.49 SD and 0.18 on student achievement, with the largest number of studies on coaching programs for PreK-5 elementary reading programs (Kraft, Blazar & Hogan, 2018). The bulk of the 60 studies were conducted in the first 15 years of this century, many with experimental designs that allowed for causal implications. Cohen, et al.'s (2021) review reached similar conclusions about the effectiveness of coaching.

Recent research findings suggest that there is promise in constructing a comprehensive instructional coaching program that uses both individual coaches and online platforms (Glover et al., 2019). For example, Kraft, Balzar and Hogan found similar levels of effectiveness for coaching whether it was provided in person or via video technology. Allen et al. (2011, 2015) found similar results in two studies of a web-based coaching system, and Knight et al. (2018) found that an online coaching system had positive impacts on teachers' instructional practice as well as student test scores.

In short, instructional coaching has been shown to be a critical element of effective professional, without which teachers' instructional practice does not change. Kraft, Blazar & Hogan (2018) further describe various kinds of instructional coaching practices and discuss how coaching fits into the core elements of overall professional development (discussed more below in the professional development section). Knight (2017, 2021), one of the countries' leading experts on instructional coaching, provides design principles for as well as multiple strategies of effective instructional coaching. Booker & Russel (2022) also provide design principles for recruiting, training, and implementing instructional coaches.

The nearly universal recognition that instructional coaching is key to effective professional development has led to the creation of various "*models"* of instructional coaching. For example, Pianta, R., Lipscomb, D. & Ruzek, D. (2022) in a **randomized controlled trial** of a specific coaching model, My Teaching Partner, showed how coaching that focused on enhanced student-teacher engagement could lead to improve academic outcomes for preschool students. And in another **RCT**, Reddy, Shernoff and Lekwa (2002) examined a specific form of coaching, Classroom Strategies Control Model, and found significant and positive effects of such coaching on teacher behavioral management, quality instruction, student academic engagement and class wide increases in academic achievement. Indeed, instructional coaching has become such an important strategy of professional development that analysts are seeking to develop a "science" of coaching (see for example, Reddy, 2023).

Educators across the country have relied in part on this research by hiring rising numbers of instructional coaches as part of rigorous school improvement strategies and professional development programs. Domina et al. (2015) found that the number of instructional specialists per 1,000 students doubled from 1998 to 2013 (from about 0.7 to 1.4) and that the percent of districts with no such staff declined from 20% to 7%. In 2015-16, the National Center for Education Statistics found that 66% of schools, or nearly 60,000 schools, had subject matter specialists or instructional coaches, most in reading, math and science (U.S. Dept of Education, 2015-16). In a more recent survey, NCES found that 59 percent of America's school have at least one instructional coach (see Table 3.2), 18 percent have two coaches, and 11 percent have more than two instructional coaches (U.S. Dept of Education, School Pulse Panel, 2023-24). The percentages vary by region but more than 50 percent of all schools in every region have at least one instructional coach.

**Table 3.2: Percentage of Instructional Coaches in America's Public Schools: 2023-24**

| | Zero Coaches | One Coach | Two Coaches | More than Two Coaches |
|---|---|---|---|---|
| **All public schools** | 41% | 30% | 18% | 11% |
| **Northeast** | 43% | 22% | 20% | 15% |
| **Midwest** | 44% | 33% | 13% | 10% |
| **South** | 32% | 32% | 24% | 11% |
| **West** | 47% | 31% | 12% | 10% |

**Source**: U.S. Department of Education, Institute of Education Sciences, National Center for Education Statistics, School Pulse Panel 2021–22, 2022–23, and 2023–24.

Though instructional coaching positions are provided as full-time equivalent positions by the EB and Wyoming Funding Models, schools could divide the responsibilities across several individual teachers. For example, the 3.0 positions in a 630-student high school could be structured with six individuals who were half-time teachers and half-time instructional coaches. In this example, each teacher/coach would work 50% time as a coach – perhaps in one curriculum area such as reading, math, science, social studies and technology – and 50% time as a classroom teacher or tutor.

We recommend that the Legislature return funding for instructional facilitators to a categorical program, removing the funding from the Block Grant, AND that the legislature increase funding for instructional facilitators to the full 100 percent recommended in the EB Model (see table above). For over a decade and a half, not only in Wyoming but in other states as well, we have recommended funding IFs as categorical grant program. States that did not establish categorical programs for IFs found that many fewer IFs were actually hired than allotted by the funding formula. In Wyoming, until the recent decision to place IF funding in the block grant, the actual number of IFs employed by districts was substantially the same as the number allotted by the funding Model. We anticipate that by rolling the resources for IFs into the Block Grant, Wyoming school districts will hire fewer IFs in the future.

We note that the level of staffing for instructional coaches recommended in the EB Model, combined with the additional elements of professional development discussed below, is the best way to make Tier 1 instruction (in the RTI framework) as effective as possible, providing a solid foundation of high-quality instruction for everyone, including students who need extra help to learn to proficiency. Support for IFs as part of the EB model is bolstered by the study of special education programs and services that was part of the 2020 recalibration (District Management Group, 2020) recommending that IFs be fully funded as a key element of making the general reading program as effective as possible.

*8. Core Tutors/Tier 2 Intervention*

Tutors are teachers who provide struggling students with extra help to learn to standards. And research shows that the most powerful and effective approach for helping students struggling to meet state standards is individual one-to-one or small group (1-3 or 1-5 maximum) tutoring provided by licensed teachers. In our 2005 and 2010 recalibration reports we recommended allocating tutors to schools solely on the basis of the number of at-risk students, with a minimum of one tutor position for each prototypical sized school. Since then and especially with more rigorous curriculum and student performance standards, the EB Model has recognized that all schools, even those with no at-risk students (ELL, free and reduced lunch eligibility and mobility ADM) have struggling students that need Tier 2 resources. Thus, we augmented the 2015 EB Model to resource each prototypical school with one *core* tutor position based on school ADM **and** additional *at-risk* tutors based on the at-risk count (Element 26).

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Provide 1.0 core tutor position for each prototypical 288-ADM elementary school and for every 315 middle or high school ADM, resourced at the highest grade-band level.<br>Funded as a categorial program. | If the provision of at-risk tutors (element 26) is less than 1.0, additional tutor resources are provided so that a prototypical school receives a minimum of 1.0 tutor. This minimum is prorated down as school ADM decreases. | No Change from 2020 |

**Summary and Recommendation**: For decades, research on both individual and small group tutoring (five maximum) provided by licensed teachers found significant, positive impacts on student achievement. A 2020 comprehensive literature review found that tutoring effects were largest for reading in elementary schools and for mathematics in secondary schools when provided by professionals rather than volunteers, and when provided during the regular school day, not after school. Though most tutoring studies focused on elementary reading, several secondary reading interventions have been developed and shown by RCT research to be effective. Since about 2020, research has shown that a new form of tutoring, called "high dosage" tutoring, has substantial impacts on student achievement and has been scaled up successfully in multiple school districts across the country. For high dosage tutoring, recent college graduates with specific content expertise trained in tutoring strategies provide the tutoring to groups of students – three to five maximum – usually for one period every day of the week, whereas typical tutoring is provided for shorter time periods during the day and not every day during the semester.

The EB Model provides one tutoring position for every prototypical 288-ADM elementary school, and one tutoring position for every 315-ADM middle and high school, funded at the highest-grade band.

*Evidence and Recommendation*

Students who must work harder and need more assistance to achieve to proficiency levels especially benefit from preventative tutoring (Cohen, Kulik, & Kulik, 1982). For decades, research, including several **randomized controlled trials,** showed that tutoring provided by licensed teachers to both individual students and small groups of students (five maximum) produced significant, positive impacts on student achievement (Cook, et al., 2015; Elbaum et al., 2000; May et al., 2013; Nickow, Oreopoulos, & Quan, 2020; Shanahan, 1998; Wasik & Slavin, 1993). Tutoring program effect sizes varied by the components of the approach used, e.g., the nature and structure of the tutoring program, and effect sizes on student learning reported in meta-analyses range from 0.4 to 2.5 with an average of about 0.75 (Cohen, Kulik & Kulik, 1982; Shanahan & Barr, 1995; Wasik & Slavin, 1993). Two 2017 meta-analyses of the impact of tutoring found similarly high effects (Fryer, et al., 2017; Dietrichson, et al., 2017), the former with an average effect size of 0.37.

A July 2020 meta-analysis of tutoring effects also concluded that tutoring had impressive effects on student learning (Nickow, Oreopoulos, & Quan, 2020) as did a 2021 meta-analysis of tutoring in mathematics (Pelligrini et et al., 2021). The Nickow et al., comprehensive literature review found that tutoring effects were largest for reading in elementary schools and for mathematics in secondary schools when provided by professionals rather than volunteers, and when provided during the regular school day, not after school. Tutoring English Language Learners in a specific literacy intervention in early elementary school can also produce large positive impacts on English literacy (Borman, et al., 2024).

Though most past research focused on *individual* tutoring, schools have also created small group tutoring programs. In a detailed review of the evidence on how to structure a variety of early intervention supports to prevent reading failure, Torgeson (2004) showed how one-to-one tutoring, one-to-three tutoring, and one-to-five small group sessions (all Tier 2 interventions) can be combined for different students to enhance their chances of learning to read successfully [see also Elbaum, Vaughn, Hughes & Moody (1999) for a meta-analysis of the structures and impacts of small group tutoring].

Further, over the past five years, schools have created, and analysts have studied, a new type of small group tutoring called “high dosage” tutoring. In high dosage tutoring, recent college graduates, with specific content expertise, are trained in tutoring strategies and tutor groups of students – three to five maximum – usually for one period every day of the week. Studies show that such tutoring produces substantial positive impacts on student achievement and has been scaled up successfully in several school districts (Cohen, 2024; Kraft & Falken, 2021). We expand on high dosage tutoring in Section 26.

The impact of tutoring programs depends on how they are staffed and organized, their relation to the core program, and tutoring intensity. Researchers (Cohen, Kulik, & Kulik, 1982; Farkas, 1998; Fryer et al., 2017; Gordon, 2009; Kraft & Falken, 2021; Shanahan, 1998; Wasik & Slavin, 1993) have found greater effects when the tutoring includes the following:

- Professional teachers as tutors, or trained college graduates who are expert in a subject matter
- Tutoring provided to students on a one-to-one basis or in small group with a maximum of 5
- Tutors trained in specific tutoring strategies
- Tutoring tightly aligned to the regular curriculum and to the specific learning challenges with appropriate content specific scaffolding and modeling
- Sufficient time for the tutoring during the regular school day
- Tutoring provided at least three times a week for 45–55-minute sessions
- Highly structured programming, both substantively and organizationally.

One-to-one tutoring, the costliest tutoring approach, can be reserved for the students with the most severe learning difficulties, such as scoring at or below the 20th or 25th percentile on a norm referenced test, or at the below basic level on state assessments. Intensive instruction for groups of three-to-five students would then be provided for students above those levels but below the proficiency level.

Though most studies of tutoring focused on elementary reading, several effective secondary reading interventions have been developed (e.g., Scammacca, Roberts, Vaughn & Stuebing, 2015) and should be considered by schools as the resources to deploy them are included in the EB funding model. Further, a 2014 **randomized controlled study**, (Cook et al., 2014), found substantial positive impacts of a tutoring program for adolescents in high poverty schools if it was combined with counseling as well. This dual approach is made possible by the EB Model as it includes the additional non-academic pupil support resources (see Element 27 discussion).

Over the past fifteen years, several *online* tutoring programs have been studied. A 2016 meta-analysis of an intelligent, or computer-based, tutoring program found that the average effect size was 0.66 across multiple subjects, increasing student performance from the 50th to the 75th percentile (Kulik & Fletcher, 2016), although the effect varied by type of tutoring. Place et al., (2023) identified several virtual tutoring programs for mathematics that were effective. Ready et al., (2024) describe a 12-week cluster **Randomized Controlled Trial** of BookNook, a virtual tutoring platform focused on reading, and found it produced positive impacts. Robinson, et al. (2024) in a randomized controlled trail found a virtual tutoring program was successful in boosting reading performance of students in grades K-2. Hashim, Miles and Croke (2025) found that there were few differences in the impact of a tutoring program that compared in person to remote, or online, tutoring. These studies show that there is promise that tutoring provided by online programs can be effective in both reading and mathematics. Sal Kahn, creator of the Kahn Academies, argues that AI could be the "silver bullet" for education and tutoring strategies (Barnum, 2024). However, schools are cautioned to find online tutoring programs that have evidence of their effectiveness. As a further caution, Kraft and Lovison (2024) found that an online tutoring program for middle school mathematics worked better in a one-to-one rather than a one-to-three format.

While tutoring and other extra instructional help interventions are often provided only for reading, math interventions are also needed for struggling students and have similar positive impacts when provided (Schwartz, 2024b). The EB Model provides sufficient tutoring resources

to provide needed extra help in both reading and mathematics, particularly given the additional tutoring resource in Element 26.

With the drop in student performance during the COVID pandemic as well as the more rigorous college and career standards that preceded them, educators have argued that substantial numbers of students need extra help. In 2015 we increased the tutor resources in the EB Model from just those triggered by at-risk and ELL student counts, to provide one *core* tutor/Tier 2 intervention position for each prototypical school. We continue that addition recognizing the substantial learning loss cause by the pandemic, in Wyoming as well as most states in the country. And we encourage schools to implement "high dosage" tutoring as one of the most effective and cost-effective tutoring strategies. The support the EB Model provides beyond the first tutor for each prototypical school is discussed again in Element 26 below.

The EB Model provides one tutoring position for every prototypical 288-ADM elementary school, and one tutoring position for every 315-ADM middle and high school, funded at the highest-grade band.

*9. Substitute Teachers*

Schools need support for substitute teachers to cover classrooms when teachers are sick for short periods of time, absent for other reasons, or on long term leave. In many states, substitute funds are budgeted at a rate of about 10 days per teacher.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Provide for 5.715% (10 days) of core teachers, elective teachers, minimum teacher positions, tutors, ELL teachers, instructional coaches and teacher positions for summer school and extended day. Resourced at a daily salary equal to $136.14 plus 7.65% for social security and Medicare benefits ($146.55). Daily salary adjusted by regional cost adjustment. | Provide for 5% (8.75 days) of core teachers, elective teachers, minimum teacher positions, tutors, ELL teachers, instructional coaches and teacher positions for summer school and extended day. Resourced at a daily salary equal to $118.26 plus 7.65% for social security and Medicare benefits ($127.31). Substitute resources are provided for small schools. | Specifies that 10 days of substitute teachers are provided for all teachers, including core teachers, elective teachers, minimum teacher positions, tutors, ELL teachers, instructional coaches and teacher positions for summer school and extended day. |

**Summary and Recommendation**: Schools need some level of support for substitute teachers to cover classrooms when teachers are sick for short periods of time, absent for other reasons, or on long term leave. The Wyoming EB Model provides 10 days (5 percent of a teacher work year of 200 days) of substitute teachers for every teacher, which includes core teachers, elective teachers, minimum teacher positions, tutors, ELL teachers, instructional coaches and teacher positions for summer school and extended day. The EB estimated daily rate for 2025-26 is _____.

*Evidence and Recommendation*

The Wyoming EB Model teacher work year is 200 days, which includes 180 days for instruction, 10 days for professional development, and 10 additional days for opening/closing schools and parent conferences. Thus, under the EB Model, five percent of a teacher work year equals 10 days, so the Wyoming EB Model provides ten days of substitute teacher resources for each teacher. Teacher positions are defined as: core teachers, elective teachers, minimum teacher positions, tutors, ELL teachers, instructional coaches and teacher positions for summer school and extended day. This approach does not mean that each teacher is provided ten substitute days a year; it means the district receives a "pot" of money approximately equal to 10 substitute days per year for all teachers, to cover classrooms when teachers are absent for reasons other than professional development or sports. Professional development recommendations, including pupil free days for professional development, are provided in a separate section below (Element 13).

The Wyoming Funding Model uses the 5 percent figure but applies it to the actual average teacher work year of 175 days so provides 8.75 substitute days for each teacher, slightly below the Wyoming EB Model.

The EB Model recommendation is to provide 10 days of substitute teacher time for every teacher, including core teachers, elective teachers, minimum teacher positions, tutors, ELL teachers, instructional coaches and teacher positions for summer school and extended day. Resourced at an update daily rate).

*10. Core Guidance Counselors and Nurses*

To address the wide range of non-academic needs of students, a school's staff should include school counselors and nurses, as well as other pupil support staff including social workers, psychologists, family liaison persons, etc. This section addresses just core school counselors and nurses. Additional pupil support staff, based on the number of at-risk student counts, are described in Element 27 in the section on struggling students.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| **COUNSELORS** | | |
| Provide 1.0 school counselor position for each prototypical elementary school (288 ADM) and 1.0 school counselor position for every 250 ADM in middle and high schools. | For elementary schools, if the provision of at-risk counselor (element 27) is less than 1.0, additional counselor resources are provided so that a prototypical school receives a minimum of 1.0 counselor. This minimum is prorated down as school ADM decreases. For middle and high schools, provide 1.0 counselor position for every 250 ADM | No change from 2020. |
| **NURSES** | | |

| | | |
|---|---|---|
| Provide 1.0 school nurse position for every 750 ADM. Provide a minimum of half a nurse position for each district. | No nurses resourced directly, but districts can use minimum pupil support resources as nurse positions. | Provide 1.0 nurse for every prototypical school |

NOTE: Additional student support resources are provided on the basis of student at-risk students in Element 27.

**Summary and Recommendation**: The need for school counselors and nurses today is especially urgent given the changing and declining social, health, emotional and mental conditions of children in America and Wyoming, all worsened by the COVID pandemic. Homelessness is high, teenage depression and suicide attempts have been rising since 2007, increasing percentages of students need shots and other medical services during the school day, and there has been a general uptick in variety of mental illnesses. These challenging conditions of children have been exacerbated by social media exposure, argues the psychologist, Jonathan Haidt. The implication of the declining mental health condition of school-aged children is that schools need counselors, nurses, psychologists, and mental health providers.

Research shows that well designed and implemented counseling programs, which provide 1 counselor for every 250 students, can have significant and positive impacts on student learning, progress through elementary, middle, and high school, graduation from high school, and postsecondary enrollment. School nurses are also critical elements of the resources today's schools need to address the rising incidence of medical, health, and physical needs of students.

The Wyoming EB Model provides 1.0 school counselor position for each prototypical elementary school (288 ADM) and 1.0 school counselor position for every 250 ADM in middle and high schools. Further, the model provides 1 nurse for every prototypical school, an increase from the 2020 recommendation of 1 nurse for every 750 students. Additional pupil support staff (Element 27) are triggered by at-risk student counts.

*Evidence and Recommendation*

The need for counselors and nurses today is especially urgent given the changing and declining social, health, emotional and mental conditions of children in America and Wyoming, all worsened by the COVID pandemic. Sparks (2019a) reported that there were nearly 1.36 million homeless children attending schools in 2017, a rapid rise over previous decade. The National Center for Homeless Education estimated that approximately 1.28 million students experienced homelessness during the 2020-21 school year, a slight reduction from 2017.[14] The Wyoming Department of Education reported that in 2022 there were about 1,734 children, or approximately 1.5 percent of Wyoming's children experienced homelessness. Many homeless children live independently, some live with other families, while others live in shelters and tents.

[14] Data on students experiencing homelessness included in this report are collected by the U.S. Department of Education through the EDFacts Initiative. To learn more about the EDFacts Initiative, visit https://www2.ed.gov/about/inits/ed/edfacts/index.html.

Homelessness reflects not only a lack of housing and living in poverty, but also a life full of uncertainty and various forms of trauma.

Homeless students need more academic as well as non-academic (counselor) help. In 2016-17 only 30 percent of children who experienced homelessness were proficient in reading and just 25 percent were proficient in math (Keierleber, 2019). Keierleber also identified a graduation rate of 64 percent for homeless students compared to an average of 77.6 percent graduation rate among other low-income students and a national average of 84.1 percent for all students. More recently, the U.S. Facts Team (2023) found that homeless students graduate from high school at lower rates than students from low-income households who are not homeless.

Beyond homelessness, Blad (2019) reported a rise in depression among American students, an increase in suicide efforts and a general uptick in variety of mental illnesses. To be sure, some of these maladies are a result of social media bullying, but the bulk is due to dysfunctional families, poverty, lack of health services, homelessness, and recent immigration status that in many instances include traumas as well. Blad reports that there has been a significant increase in episodes of deep depression since 2005, with the incidence for school-aged children significantly above the general population. These trends also hold in Wyoming.[15]

Burstein, Agostino and Greenfield (2019) document the doubling of suicide attempts by American teenagers over the last decade. Using data from the National Hospital Ambulatory Medical Care Survey, administered annually by the US Centers for Disease Control and Prevention, the study found that the number of children and teens in the United States who visited emergency rooms for suicidal thoughts and suicide attempts doubled between 2007 and 2015. The findings came as no surprise to child psychiatrists, with most saying they knew that suicide and depression had been rising significantly. The findings sadly show that for America's teens, emotional distress and propensity toward self-harm grew more than for any other age group of Americans over this time period. In 2022, the suicide rate for Wyoming young people aged 15-19 at 25.4 per 100,000 population, ranking Wyoming 44$^{th}$ of the 50 states.[16]

The COVID pandemic focused more attention on these social and emotional issues. Norman (2022) identified increases in students' social, emotional and behavioral issues after the pandemic. Williams and Drake (2022) documented worsening health and physical issues, delayed vaccinations, decreased access to dental care, adolescent increases in stress, eating disorders, drug overdose, self-harm, and a decrease in social interaction and mental health, all leading to social and emotional issues complicating learning as students entered the 2022-23 school year. Forest et al. (2025) showed how U.S. children's health has deteriorated since 2007 including child mortality, chronic physical, developmental, mental health conditions, obesity, sleep health, early puberty, limitations in activity, and physical and emotional symptoms. The study found that a child was 15-20 percent more likely to have a chronic condition in 2023 than 2007, including depression, obesity, anxiety, sleep apnea, behavioral problems and attention-deficit disorder.

[15] https://www.americashealthrankings.org/explore/measures/Depression_a/wy
[16] https://www.americashealthrankings.org/explore/measures/teen_suicide/WY

In other words, the physical and medical needs of students also have changed and worsened in recent decades. Rising numbers of students need medications administered during the school day, requiring staff to administer the medications. Our Professional Judgment Panel meetings with educators in multiple states, including Wyoming, over the past decade confirmed the presence of all the above issues.

Haidt (2024) has written a book on how the current culture in America, including smart phones as well as technology platforms such as Facebook, Twitter and Tik Tok, have damaged the country's youth. He argues that these technologies expose children and teenagers to a series of *adult* experiences that as teenagers they are not prepared to handle and has led to rising episodes of mental illness among the youth of our country. Whether one accepts his main arguments about the pernicious impacts of these technologies, the problematic conditions of children he documents are nevertheless alarming. He documents the rising incidence of mental crises among adolescents from 2010 to 2015, in the United States as well as many other countries. He goes on to show the incidence of depression rose 145 percent to nearly 30 percent for girls from 2010 to 2020 and 161 percent to about 12 percent for boys over the same time period. He further documents a similar rise of mental illness over the same time period for college students, and well as steep increases in anxiety for young people. Linked to these issues are hikes in suicide rates for both boys and girls and a huge increase in emergency room visits by girls for self-harm, e.g., cutting themselves. Though Haidt attributes much of these mental issues to Facebook and mobile phones, as the instrument mostly used by adolescents to access Facebook, his documentation of these psychological issues is sobering. And it is schools that are now dealing with the fall out of these issues, all of which were exacerbated by the isolation of children during the Pandemic.

The implication of the declining conditions of school-aged children is that schools need more counselors, nurses, psychologists, and perhaps even mental health providers. Underscoring Haidt's data, Peterson (2022) reports that since COVID more students are being screened for anxiety, depression and other mental issues, but with insufficient follow-through treatment.

Unfortunately, only three states provide counselors in secondary schools at the rates recommended by the American School Counselor Association of one counselor for every 250 students – the ratio used in the EB Model. Only three states meet the standard of one school psychologist for every 750 students, and few if any states meet the standard of one nurse for every school or one nurse for every 750 students, promulgated by the National Association of School Nurses (2020).[17] But the above data on the conditions of childrenshow that the EB Model's counselor, psychologist and nurse recommendations are crucial to student learning and wellbeing, as are the additional pupil support staff described in Element 22 below, which are triggered by at-risk pupil counts. It is possible that even this level of mental health professionals will be inadequate. In response to this growing need, we recommend that rather than increase EB Model allocations for mental health services, these staff should be provided by the state and county social services and medical and health departments unless a state adopts a specific policy to incorporate them into the education system.

[17] https://www.nasn.org/

*Counselors*: In terms of the specifics of the job itself, school counselors provide multiple functions in schools. School counselors help all students to:

- Apply academic achievement strategies,
- Manage emotions and apply interpersonal skills, and
- Plan for postsecondary options (e.g., higher education, military, work force).

Appropriate duties for school counselors include providing:

- Individual student academic planning and goal setting
- School counseling classroom lessons based on student success standards
- Short-term counseling to students
- Referrals for long-term support
- Collaboration with families/teachers/administrators/community for student success
- Advocacy for students at individual education plan meetings and other student-focused meetings
- Data analysis to identify student issues, needs and challenges.

Research shows that well designed and implemented counseling programs can have significant and positive impacts on student learning; progress through elementary, middle, and high school; graduation from high school; and postsecondary enrollment. Carrell and Carrell (2006) found that counselor to student ratios closer to those suggested by the American School Counselor Association (one counselor for every 250 secondary students) reduce disciplinary referrals and the effect is larger for low income and minority students. Lapan, Gysbers, Bragg, & Pierce (2012) found that Missouri high schools that had lower student-to-counselor ratios (higher counselor to student ratios) had higher student graduation rates, a finding that was strongest for schools with concentrations of Title I eligible students. Wilkerson, Perusse, & Hughes (2013) showed that elementary school counselor programs in Indiana that used the model of school counselors developed by the American School Counselors Association produced significantly higher elementary student proficiency rates in math and English/language arts than schools that did not. Carrell and Hoekstra (2013) found that increasing the number of counselors significantly improves boys' academic achievement, with the increases equivalent to increasing teacher quality by an effect size of 0.3. Studies in Connecticut, Indiana and New York found that school counselor programs that reflected the 1:250 ratio of the American School Counselor Association had significant, positive correlations with lower high school student absenteeism and higher SAT math, verbal and writing scores (Parzych, Donohue, Gaesser, Chiu, 2019).

Other studies have found that well designed and implemented group counseling programs, especially for African American and ELL students, can increase those students' achievement scores as well as reduce demographic related achievement gaps (Bruce, Getch, & Ziomek-Daigle, 2009; Leon, Villares, Brigman, Webb, & Peluso, 2011). Carey & Dimmitt (2012) identified the specific counselor activities that led to improved student performance. Davis, Davis and Mobley (2013) show how specific counselor actions can enhance school offerings of and effective minority participation in AP classes. Castlemen and Goodman, (2018) found causative evidence that an intensive college counseling program in Massachusetts targeted to

lower income students increased those students' selection of four-year colleges that were less expensive and had higher graduation rates than alternatives students otherwise chose. Sparks and Mulhern (2024) found that California's supplemental counseling program that increased counselors in all districts had positive effects on high school graduation and enrollment in postsecondary programs, with the largest effects on low-income and minority students, even though the additional counselors had less experience on average.

In synthesizing, the research on counselor effectiveness, Meyers and Bell (2023) concluded that counselor staffing closer to the ASCA ratios does improve student academic and performance outcomes. In sum, schools that have counselor ratios at or better than the 1:250 figure can produce multiple and positive impacts on students, including increased achievement on state and local assessments, and more success in postsecondary schools.

As a cautionary note, Mulhern (2022), who studied the causal effects of counselors on Massachusetts high school students, found that counselors have varying impacts on students in terms of graduation rates, college selection and persistence. Though, overall, she found that counselors have positive impacts on these variables, she argued that providing effective counselors is more important than just providing more counselors.

Brown and Knight (2024) provide a comprehensive description of the history of school counselors, the linkage of school counselor ratios to student performance, the wide disparity in student-to-counselor ratios across the county, particularly for schools with large concentrations of at-risk students. They argue that enhanced funding for school counselors, akin to those recommended by the EB Model, is needed everywhere, with even more funding for schools with larger numbers of at-risk students.

Meyer and Bell (2023) report that 30 states mandate counselors for secondary students and reinforce the research findings that secondary school counselors can have significant impacts on students, including more success in postsecondary school. The EB Model uses the standards from the American School Counselor Association[18] that recommend one counselor for every 250 secondary (middle and high school) students.

Though fewer states today require counselors in elementary schools, a growing number of schools in states that do not require counselors at the elementary level have begun to employ them, including Wyoming. Meyer and Bell (2023) report that 23 states mandate counselors for elementary students. Further, they identify research that finds that increasing counselors in elementary schools positively impacts student behavior and academic outcomes. Consequently, the EB Model today includes one school counselor for the 288-student prototypical elementary school.

*Social Emotional Learning*: Counselors can also take the lead in developing a school's approach to social and emotional learning, a set of strategies to strengthen students' emotional health, relationship building, behavioral practices and mental health. Though social emotional learning should be thought of more as a schoolwide issue and a characteristic of a school's culture (Mehta, 2020), there are multiple programs and strategies that are known to be effective in

[18] https://www.schoolcounselor.org/

improving students social-behavioral competence and mental health (Durlak, et al., 2011; Sheridan, et al., 2019). Levenson (2017) identifies 10 best practices in designing social emotional learning programs. With the robust overall school staffing provided by the EB Model, including core school counselors and additional pupil support staff triggered by at-risk pupil counts in Element 27, schools have the resources to mount comprehensive strategies addressed to enhancing students' social and emotional learning and competencies.

*Nurses*: School nurses are also critical elements of the variety of pupil support staff today's schools need to address the rising incidence of health, physical, emotional and mental health needs of students. Consequently, the EB Model provides nurses as core positions. Drawing from the staffing standard of the National Association of School Nurses,[19] the EB Model initially provided core school nurses at the rate of one nurse position for every 750 students. But after working in multiple states and interreacting with dozens of educator panels, we have increased the nurse allocation to 1.0 school nurse for every prototypical elementary, middle and high school, with additional pupil support staff provided by at-risk student counts as a way for the EB Model to provide even more resources for the social, emotional, health and mental health needs of today's students.

The Wyoming EB Model provides 1.0 counselor position for every 288-ADM elementary school and for every 250 middle and high school ADM and provides 1.0 school nurse position for each prototypical elementary, and 315-student middle and high school.

*11. Supervisory Aides*

Elementary, middle and high schools need staff for non-academic duties that include lunch supervision, hallway monitoring, before and after school playground supervision, monitoring entrances and exits, and others. Covering these duties generally requires an allocation of supervisory aides. These staff are provided to cover the non-academic tasks that must be performed in schools but are not intended to be used for instructional purposes, such as a teacher's aide.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Provide funding at an amount equal to 2.0 supervisory aide positions for each prototypical elementary school (288 ADM); 2.0 supervisory aide positions for each prototypical middle school (315 ADM); 3.0 supervisory aide positions each prototypical high school (630 ADM); resourced at the highest-grade prototype using total school ADM. | Provide funding at an amount equal to 2.0 supervisory aide positions for each prototypical elementary school (288 ADM); 2.0 supervisory aide positions for each prototypical middle school (315 ADM); 5.0 supervisory aide positions each prototypical high school (630 ADM); resourced at the highest-grade prototype using total school ADM. | No change from 2020. |

[19] https://www.nasn.org/

**Summary and Recommendation**: Elementary, middle and high schools need staff for non-instructional responsibilities that include lunch duty, hallway monitoring, before and after school playground supervision, and other non-instructional tasks. Covering these duties generally requires an allocation of supervisory aides.

The Wyoming EB Model provides two supervisory aides for the 288-ADM prototypical elementary school, two supervisory aides for the prototypical 315-ADM middle school and 3 supervisory aides for the prototypical 630-ADM high school. The EB Model provides no instructional aides.

*Evidence and Recommendation*

Elementary, middle and high schools need staff for non-instructional responsibilities. These can vary by school level and district but include such tasks as lunch duty, hallway monitoring, before and after school playground supervision, monitoring school entrances and exits, and other non-instructional tasks. Covering these duties generally requires an allocation of supervisory aides.

The EB Model provides resources for supervisory aides so that teachers do not have to cover non-academic duties, which in the past has been the practice of some districts. The EB Model provides an array of resources – elective teachers and supervisory aides – to provide teachers with pupil-free time but the major purpose of this pupil-free time is to enable teachers to engage in collaborate work over the curriculum program during this pupil-free time during the regular school day and not engage in non-academic tasks.

The Wyoming EB Model provides two supervisory aides for the prototypical 288-student elementary school, two supervisory aides for the prototypical 315-student middle school and 3 supervisory aides for the prototypical 630-student high school.

*Instructional Aides*. Research does not support the use of instructional aides to improve student performance. As noted above (Element 2), the Tennessee STAR study, which produced solid evidence through a field-based **RCT** that small classes work in elementary schools, also produced evidence that instructional aides in a regular-sized classroom do not add instructional value, i.e., do not positively impact student achievement (Gerber, Finn, Achilles & Boyd-Zaharias, 2001). Indeed, the study had three groups that were randomly created: small classes with 14-17 students, regular classes of about 24 students with a teacher's aide, and a regular class of about 24 students. The study found no significant positive impact for the class of 24 students with a teacher and a teacher aide.

At the same time, districts may want to consider a possible use of instructional aides that is supported by research. Two studies show how instructional aides could be used to tutor students. Farkas (1998) has shown that *if* aides are selected according to clear and rigorous literacy criteria and *if* aides are trained in a specific reading tutoring program, and after that provide individual tutoring to students in reading and are supervised, then they can have a significant impact on student reading attainment. Some districts have used Farkas-type tutors for students still struggling in reading in the upper elementary grades. Another study by Miller (2003) showed

instructional aides could also have an impact on reading achievement if used to provide individual tutoring to struggling students in the first grade. Neither study supports the typical use of instructional aides as general teacher helpers. And both find that aides have a smaller impact than a licensed teacher. Nickow et al. (2020) also found that paraprofessionals, appropriately trained and supervised, can provide effective tutoring instruction, but their impacts are less than those of teachers.

An even better tutoring approach that does not include certified teachers is that of "high dosage" tutoring (Discussed in Elements 2 and 26) which uses trained, college graduates (so not the non-college graduate that is the typical paraprofessional) with a subject matter major, to provide tutoring to small groups of students for three to five periods every week.

Tutors with sufficient academic preparation, including toady a degree in a subject area, and training in specific tutoring strategies, could be funded through the tutoring positions in Elements 2 and 26, but should not resourced from the supervisory aide allocation, unless all non-academic duties are covered by the supervisory aide allocation, and there are funds left over.

*12. Librarians and Library Media Technicians*

Most schools have a library. Staff resources must be sufficient to operate the library and to incorporate appropriate technologies into the library system.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| Librarian Positions:<br>Fund at the district level, 1.0 librarian for every 315 K-8 ADM and 1 librarian for every 630 9-12 ADM, | Librarian Positions:<br>Provide 1.0 librarian position for prototypical elementary schools (288 ADM) prorate up and down, below and above 288 ADM. For middle or high schools with ADM between 105 and 630 ADM, 1.0 librarian position. Below 105 ADM prorate down and above 630 ADM prorate up. | Librarian Positions:<br>Provide 1.0 librarian position for every 288 elementary ADM, for every 315 middle school ADM) and for every 630 high school ADM, prorating up library aides for schools with more than those number of students, and providing a minimum of a 0.5 librarian for each district. |
| School Computer Technician:<br>Position directed by District:<br>Provide 1.0 school computer technician position for every 630 district ADM, with a minimum of a 0.5 position for each district. | Library/Media/Computer Technician Position:<br>Provide 1.0 library media/computer technician position for every 315 middle and high school ADM, prorated up and down. | School Computer Technician:<br>Position directed by District:<br>Provide 1.0 school computer technician position for every 630 district ADM, with a minimum of a 0.5 position for each district. |

The following section discusses library staffing in a manner that distinguishes library staff – librarians, library media staff and library aides– from school computer technicians who provide

computer technical help to schools. This analysis clarifies how computer technicians evolved from library media aides – individuals who set up audio-visual equipment for teachers – to individuals who became the first line computer technical helpers and should be considered a separate staff category. School computer technicians typically operate out of the district's technology office and not the library, though they are often supervised when on campus by school principals in schools large enough to generate a full position or more.

*Librarians*

> **Summary and Recommendation**: Though research on the impact of libraires and librarians on student achievement is mixed (due mainly to separating the specific impact of librarians), multiple research studies conclude that libraries and librarians can play a role in increasing student achievement. Research shows that libraries, certified librarians and operating hours are generally associated with higher academic outcomes.
>
> The WY EB Model provides 1.0 librarian position for every 288 elementary ADM, for every 315 middle school ADM, and for every 630 high school ADM.

*Evidence and Recommendation*

The importance of the school library as a resource-rich learning center has developed and evolved over time, especially with the addition of technology. In libraries, students can explore and individualize their learning experience, using all modalities of learning, through access to both electronic and print materials that enhance the curriculum. In the past, both electronic and print materials were located primarily in the library, but that has changed. Most digital library resources today have moved from being available only over library networks to being available anytime and anywhere through the internet. This allows students to access the "library" from any place if they have a computer and an internet connection. With this shift, the value of the library as a physical location that provides access to electronic resources has declined, yet this same change enhances the librarian's role as a guide to digital resources, a teacher of digital media literacy, and an important member of the school's instructional literacy teams. The library experience becomes more valuable to students and staff when libraries are staffed with certificated librarians that help students effectively search, cull, and synthesize information found in books, magazines, and myriad internet resources.

Although the methodology and rigor used in school library research varies, an increased number of library staff and operating hours are generally associated with higher academic outcomes. There is considerable anecdotal data about how librarians may enhance student learning and achievement. Some studies demonstrate positive benefits; yet many of these benefits could be attributed to other sources or resources; it is often difficult to establish direct causality (American Association of School Librarians, 2014).

Despite these challenges, various research sources report that libraries and librarians can play a role in increasing student achievement. In a 1992 review of the literature, Lance, Welborn & Hamilton-Pennell (1992) concluded that libraries and librarians do positively impact student achievement. In 2003, six states conducted studies of the impacts of librarians on student

achievement: Florida, Minnesota, Michigan, Missouri, New Mexico and North Carolina. The general finding was, regardless of family income, children with access to certified librarians working full time performed better on state reading assessments (Rodney, Lance & Hamilton-Rennell, 2003; Lance & Hofschire 2012). The Michigan study found that a school librarian, whether certified or not, was associated with better low-income student achievement, but having a certified librarian was associated with higher achievement gains (Rodney, Lance & Hamilton-Rennell, 2003). Each state examined the issue differently, but library staffing and the number of operating hours were generally associated with higher academic outcomes.

Statewide studies the following decade also found that school libraries and certified librarians have an impact on student achievement including increasing standardized test scores and student mastery of academic performance standards regardless of school funding levels or demographics (Coker, 2015; Curry & Kachel, 2018; Lance & Hofschire 2012; Lance, Schwarz & Rodney, 2014; Scholastic, 2016;). Lance and Schwarz (2012) in a study of the impact of certified librarians in Pennsylvania came to the same conclusion and argued that results of 22 other studies documented the positive impact of certified librarians on student performance. Other research emphasizes that the role that the school librarian plays within the school can be more impactful when the librarian is an integral part of the school faculty and acts as a member of the "literacy instruction team" [grade or subject collaborative teams] or as a technology coach (Lewis, 2016; Reed, 2018; U.S. Department of Education, 2017).

In a meta-analysis of multiple studies, Wine (2020) found that most studies found a positive impact of certified librarians on student performance, with effect sizes ranging from 0.03 to 0.25. She concluded that research finds that full time certified librarians have a positive impact on both students' reading and mathematics achievement scores. Wine et al. (2023) confirmed this conclusion with a study of the impact of librarians on student math and reading scores in North Carolina.

National longitudinal research utilizing data from the years 2005 and 2011 indicated that states that increased the number of librarians over time had greater gains in fourth grade reading scores on the National Assessment of Educational Progress (NAEP) than states that lost librarians (Lance & Hofschire, 2012). This finding is particularly important given that Lance and Kachel (2022) show that there were 20 percent fewer librarians in 2020 than in 2010!

Libraries must be adequately staffed and be open to students. Research is silent on the number of staff members required to provide adequate service to school staff and students. Because of the lack of literature on library staffing numbers, it is appropriate to examine general practices across states to understand library staffing across America.

Using data from the 2020-21 school year, NCES (2022b) found the average number of school librarians/media staff was 0.9 FTE across all schools. For elementary schools with less than 150 students, the average number of librarians/media staff was 0.6. As the number of students in an elementary school increased to 750 students and higher, the average number of librarians only grew to about one librarian. While the student population more than tripled, total librarians only increased by approximately 50 percent. In middle and high schools, however, schools of all sizes, except those with less than 150 students, had about 1.0 librarian/media staff, and larger

schools hired additional librarian/media aides rather than additional librarians. The data imply that once a library has sufficient staff to meet the basic demands such as opening the doors and running the counter, additional personnel are hired at a much slower rate and in many cases not at all, except for very large secondary schools. These practices suggest that providing a full-time librarian for each of the EB prototypical schools would follow average national practice.

The 2025 WY EB recommendation provides 1.0 librarian for every 288 elementary ADM, 1.0 librarian for every 315 middle school ADM, and 1.0 librarian position for every 630 high school ADM, prorating up library aides for schools with more than those number of students, and providing a minimum of a 0.5 librarian for each district.

*School Computer Technicians*

> **Summary and Recommendation**: School computer technicians evolved from what years ago used to be library media aides to full time computer technicians who now spend all their time keeping the school's teachers' and students' computers running, installing new software, updating the systems over time, and solving computer glitches at the school level. The demand for these individuals has increased as technology is integrated into the curriculum and instructional programs, requiring every teacher and student to use a computer daily.
>
> The EB Model provides 1.0 school computer technicians for every 630 ADM, with a minimum of a 0.5 position for each district.

The school computer technician position has evolved. Decades ago, these individuals generally were library media aides and set up film strip and movie projectors and portable screens. Their responsibilities evolved into configuring computers and showing teachers how to set up tricky new peripherals like printers and LCD projectors and connecting them directly to classroom computers. As in-school networks were built, these technicians helped create local login names for students who accessed resources on local school servers. Now as network connections among schools, the district, and the Internet have gained capacity and matured, these technicians configure PCs, tablets, Chromebooks and servers to facilitate access to cloud-based educational resources that exist at the district, state, or national level. Computer operating systems have progressed to the point where computers can discover network-available projectors and printers through wireless connections allowing technicians to focus on more difficult issues and to manage the larger local school inventory of computers and devices.

For teachers and other staff to take full advantage of the benefits technology can provide, they need to feel support is close by or a phone call or email away. Having a school computer technician on campus, or a phone call away, can generate a sense of technological security. The work of the computer technician is cyclical; they are busiest at the beginning of a school year or during the deployment of a new resource or software. After peak demand cycles, technicians can address routine maintenance and other technological housekeeping. Even when moving to a one-to-one computer to student program, with the improvements to hardware, cloud software, and operating systems that have evolved over the last 10 years, the number of school computer

technicians generated by the EB Recommendation is common in other states and districts and should be adequate to provide the necessary technical support to students and staff.

General support for computers and for their maintenance and configuration has traditionally been district-based. School sites submit service requests to the district and wait to see when a technician will come. In the EB recommendation, central district technology staff still handle the more difficult issues, while school computer technicians have most of their time scheduled by a district administrator to be at specific campuses. When a site has the pupils to generate a full technician, these individuals may participate at a particular site like a staff member and can be directed during their scheduled time by the principal and/or other site administrators. However, even though these individuals may be at a specific site, the district should be able to redirect them for specific deployments or other cyclical technical needs.

The EB Model provides 1.0 computer technician position for every 630 ADM. Because Wyoming educators felt strongly about the need for school computer technicians, this allocation is larger than the typical EB Model, which provides 1.0 computer technician for every 1,000 students.

The major differences between the EB and Wyoming Funding Models are:

- The EB recommendation renamed the Wyoming Funding Model's library media technician to a school computer technician because technology has proliferated and, to be operational, requires staff who have expertise to support both the hardware and software aspects of electronic resources,
- The EB Model recommendation provides computer technician resources at the district level rather than the school level although the district may assign a specific technician to a larger school for consistency,
- The Wyoming Funding Model provides school computer technicians at the rate of one for every 315 middle and high school students, whereas the EB Model provides one position for every 630 ADM, with a minimum of 0.50 position for district with 500 or fewer ADM. (Note: these positions are meant to provide schools with individuals who can provide first line computer technical assistance). These recommendations are quite similar as one position for every 315 secondary students produces approximately the same number of school computer technician positions as one position for every 630 total ADM. Given this, we suggest simplifying the Wyoming Funding Model for clarity to one position for every 630 total ADM.

*13. Principals and Assistant Principals*

Every school unit needs a principal. There is no research evidence on the performance of schools with or without a principal. All comprehensive school designs, and school designs from all professional judgment studies around the country include a principal for every school unit.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| Provide 1.0 principal position for all schools down to 96 ADM for elementary schools and 105 ADM for middle and high schools.<br><br>Provide 1.0 assistant principal position for every 288 elementary ADM beginning at 289 ADM and for elementary schools below 96 ADM; 1.0 assistant principal for every 315 middle and high school ADM beginning at 316 ADM and for middle and high schools below 105 ADM<br><br>Resourced at the highest-grade band level. | Provide 1.0 principal position for all schools down to 96 ADM for elementary schools and 105 ADM for middle and high schools, prorated by ADM below 105 ADM down to 49 ADM, resourced at the highest-grade band level.<br><br>Provide 1.0 assistant principal position for every 288 elementary ADM beginning at 289 ADM;1.0 assistant principal for every 315 middle and high school ADM beginning at 316 ADM. | No Change from 2020. |

**Summary and Recommendation**: Much has been written about the importance of school principals. Studies of schools that boost student learning always identify the important role played by the school's principal in managing the school building, creating a culture of respect and high expectations, organizing the multiple school elements needed to improve teachers' instructional expertise, managing the demands on teacher and principal time, handling the politics of the community, and managing the school. Nearly all high performing schools, including those we have studied as part of state adequacy projects, including those in Wyoming, have strong principal leaders.

The EB Model provides for 1.0 principal position for every prototypical elementary, middle and high school, prorates up assistant principals for schools larger than the prototypes, and provides a 1.0 assistant principal position for elementary schools with fewer than 96 ADM and middle and high schools with fewer than 105 ADM.

*Evidence and Recommendation*

Much has been written about the importance of school principals. Studies of schools that boost student learning always identify the important role of the principal. Nearly all high performing schools, including those we have studied as part of state adequacy projects, including schools in

Wyoming, have strong principal leaders. Chenoweth and Theokas (2011) provide one of the most readable descriptions of the various role's principals play in creating and leading effective schools. These roles include instructional leadership, managing the building, creating a culture of respect and high expectations for students and teachers, and managing outside relationships. Principals who want to "get it done," meaning produce large gains in student learning while also reducing achievement gaps, would be wise to read this helpful book.

Neumerski (2012) and Sebastian, Huang, & Allensworth. (2016) review the knowledge about the principal's role in instructional leadership and update that knowledge base in relation to current findings on the emerging roles of teachers and instructional coaches – individuals who also provide instructional leadership inside schools. Their studies identify ways the multiple roles play can be integrated to ensure that a robust set of coordinated, direct and indirect instructional leadership functions exist in schools – all of which are compatible with the EB Model's leadership resources. Chenoweth's (2017) book on cases of schools that improve student achievement provides additional details on the management and leadership tasks of principals who have successfully turned around schools, started effective schools from scratch, or led schools to even higher levels of performance.

Liebowitz and Porter's (2019) review of the impact principals have on several critical elements of schools – including student performance – found that principals have large and significant effects on all aspects of schools including: student achievement (effect size up to 0.16 SD); teacher well-being (~0.35); teacher instructional practice (0.35); and school organizational health (0.72-0.81). In a review of numerous studies of the impact of principals on student learning, Grissom, Egalite, & Lindsay (2021) find that the effect of a principal at the 75$^{th}$ percentile of effectiveness is as great as that of a teacher at the 75$^{th}$ percentile. The implication is that principals can have large impacts on student learning but that they need a high level of skills and competencies to produce those effects. These results provide evidence that principals positively impact both instructional leadership and overall school management, so both skills are important for their schools to be effective.

Studies by the Chicago Consortium on School Research (e.g., Gordon & Hart, 2022) agree with these findings. The Wallace Foundation's work on how principals lead and manage schools for success today extend these findings and contextualizes them to the changes that have occurred in the principalship over the past ten years: increasing numbers of female principals, a decline in the years of experience of principals, and the changing demographics of students and teachers (Grissom, Egalite, & Lindsay (2021). Theoharis (2024) reaffirms these conclusions with a series of case studies showing how principals lead and manage schools to improve learning conditions for all students, which leads to improved student performance and reduced achievement gaps.

There is no research evidence on the performance of schools without a principal. The fact is that essentially all schools have a principal. All comprehensive school designs, and all prototypical school designs from all professional judgment and Evidence-Based studies around the country, and nearly all charter schools include a principal for every school unit (Aportela, Picus, Odden & Fermanich, 2014).

The EB Model provides for 1.0 principal position for every prototypical elementary, middle and high school, prorates up assistant principals for schools larger than the prototypes, and provides a 1.0 assistant principal position for elementary schools with fewer than 96 ADM and middle and high schools with fewer than 105 ADM.

*14. School Site Secretarial Staff*

Every school site needs secretarial support to provide clerical and administrative support to administrators and teachers, to answer the telephone, greet parents when they visit the school, help with paperwork, etc. In the current Wyoming Funding Model, but not the EB Model, secretary positions are distinguished from clerical positions, the fundamental difference being secretaries have a 12-month appointment and clerical staff school year appointments.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| Simplify the formula to provide just secretary staff.<br><br>Provide 2.0 secretary positions for every prototypical elementary school, prorated down to 1.5 at 192 ADM, then prorated down to 1.0 at 96ADM and prorated by ADM below this level. Prorated up above 288 ADM at rate of 1.0 for every 144 elementary students.<br><br>Provide 2.0 secretary positions for every prototypical middle school, prorated down to 1.5 at 210 ADM, then prorated down to 1.0 at 105 ADM and prorated by ADM below this level. Prorated up above 315 ADM at rate of 1 for every and 157.5 middle school students.<br><br>Provide 3.0 secretary positions for all high schools reduced to two for 315 ADM prorated down to 1.5 at 210 ADM, then prorated down to 1.0 at 105 ADM and prorated by ADM below this level. Prorated up above 630 at rate of 1 for every 210 high school ADM. | Provide 1.0 secretary for all schools down to 96 ADM for elementary and 105 ADM for middle and high schools, prorated by ADM below these ADM levels.<br><br>Provide 1.0 secretary for 105 to 315 middle school ADM, prorated down below 105 ADM and prorated up for 316 ADM and above.<br><br>Provide 1.0 FTE secretary for 105 to 630 high school ADM, prorated down below 105 ADM and prorated up for 631 ADM and above. Resourced at the highest-grade prototype using total school ADM.<br><br>Provide1.0 clerical for 288 ADM prototypical elementary school.<br><br>Provide 1.0 clerical for ADM prototypical middle school.<br><br>Provide 2.0 clerical for 315 ADM prototypical high school | No Change from 2020. |

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| All FTE positions prorated up or down from prototypical level and resourced at the highest-grade prototype using total school ADM. | (total of 4.0 secretaries for 630 students).<br><br>All FTE positions prorated up or down from prototypical level and resourced at the highest-grade prototype using total school ADM. | |

*Evidence and Recommendation*

The secretarial ratios included in the EB Model generally are derived from common practices across the country. We conducted a search of education literature on school performance for a 2020 adequacy study in Wyoming and our research assistants confirmed that they could not find any research on the impact secretarial staff have on student outcomes; yet it is impossible to have a school operate without adequate staff support.

The EB Model generally provides 2.0 secretary positions for the prototypical 288-ADM elementary school, 2.0 secretaries for the prototypical 315-ADM middle and 3.0 secretarial positions for the prototypical 630-ADM high school, with prorations as described in the above table to ensure that all schools have 1.0 secretary at the 96-ADM (elementary) and 105-ADM level (middle and high school).

**Dollar per Student Resources**

This section addresses areas that are funded by dollar per student amounts, including gifted and talented, professional development, computers and other technology, instructional materials and supplies, extra duty/student activities.

*15. Gifted and Talented Students*[20]

A complete analysis of educational adequacy should include the gifted, talented, able, ambitious and creative students, most of who perform above state proficiency standards. Gifted and talented programs are important for all states whose citizens desire improved performance for students at all levels of achievement. Wyoming law (W.S. 21-9-101(c)(ii) requires the following: … each school district within this state shall provide programs designed for the special needs of those student populations defined within this subsection … (ii) Gifted and talented students identified by professionals and other qualified individuals as having outstanding abilities, who are capable of high performance and whose abilities, talents and potential require qualitatively differentiated educational programs and services beyond those normally provided by the regular school program in order to realize their contribution to self and society."

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| Provide an amount equal to $55.60 per ADM, inflated annually by the EB ECA for supplies | Provide an amount equal to $61.26 per ADM, inflated annually by the statutory ECA for supplies | Provide an amount equal to $61.26 per ADM, inflated annually by the EB ECA for supplies. |

**Summary and Recommendation**: Research shows that developing the potential of gifted and talented students requires: 1) efforts to discover all gifted and talented students including focused efforts to identify talented low income and/or culturally diverse students, 2) curriculum materials designed to meet the needs of talented learners, 3) acceleration of the curriculum, and 4) teacher training in how teachers can work effectively with talented learners. Overall, research on gifted programs indicates the effects on student achievement vary by the strategy of the intervention. Enriched classes for gifted and talented students, the costliest approach, produce effect sizes of about +0.40 and accelerated classes for gifted and talented students, which require little if any extra cost, produce larger effective sizes of +0.90.

At the elementary and middle school levels, best practices are to place gifted students in special classes comprised of all gifted students and accelerate their instruction because such students can learn much more in a given time period than other students. When the pull out and acceleration approach is not possible, an alternative is to have gifted students skip grades. The main approach to serve gifted students in high schools is to enroll them in advanced courses, such as Advanced Placement (AP) and the International Baccalaureate (IB), to participate in dual enrollment in postsecondary institutions, or to have them take courses through distance learning mechanisms. These strategies have

[20] This section draws from an unpublished literature review written by Dr. Ann Robinson, Professor, University of Arkansas at Little Rock.

little or no cost, except for teacher training, resources provided by professional development (Element 14).

The EB Model dollar per pupil recommendation, $25 per ADM, can provide access for all students to an internet-based program that addresses a range of giftedness characteristics including such things as entrepreneurial and related activities.

*Evidence and Recommendation*

Research shows that developing the potential of gifted and talented students requires the following (National Association for Gifted Children (2025) and National Center for Research on Gifted Education (https://ncrge.uconn.edu/):

- Efforts to discover the gifted and talented student including efforts specifically to identify the talents of low income and/or culturally diverse students
- Curriculum materials designed specifically to meet the needs of talented learners,
- Acceleration of the curriculum, and
- Special teacher training in how teachers can work effectively with talented learners.

*Discovering Hidden Talents in Low-Income and/or Culturally Diverse High Ability Learners*

Providing services to gifted and talented students has become controversial across the country. One major controversy seems to be over the demographics of enrollments in specialized schools in urban and suburban districts, which often have a lower percentage of low income and minority students than the broader population. Another controversy in many districts is a disinclination to provide services for the gifted, on the assumption that doing so detracts from providing extra help for struggling students. The EB Model recognizes the need to provide extra services for students with high levels of gifts and talents, but in a way that all such students, including those from low income and minority backgrounds, have access to such services. The EB Model also provides a robust set of extra services for students struggling to meet standards, the bulk of whom are from low income or minority backgrounds.

Research studies show the use of performance assessments, nonverbal measures, open-ended tasks, extended try-out and transitional periods, and inclusive definitions and policies produce increased and more equitable identification practices for high ability culturally diverse and/or low-income learners. A 2019 survey of 800 teachers of gifted and talented students and an additional number of district coordinators of gifted and talented programs found that 60 percent of respondents reported that African American and ELL students were still underrepresented in gifted education; over 50 percent of respondents felt the same was true for children from lower income backgrounds as well as for children with disabilities (Mitchell, 2019). The results suggest the country, and probably Wyoming as well, still has a long way to go to meet the needs of all gifted children, especially these subgroups (Harwin, 2019).

The implication is that schools must use multiple strategies to identify students with gifts and talents, including particular attention to identifying gifted students from low income and minority backgrounds (see also National Center for Research on Gifted Education

(https://ncrge.uconn.edu/). Access to specialized services for talented learners in the elementary years is especially important for increased achievement among vulnerable students. For example, high-ability, culturally diverse learners who participated in three or more years of specialized elementary and/or middle school programming had higher achievement at high school graduation, as well as other measures of school achievement, than a comparable group of high ability students who did not participate (Struck, 2003).

*Access to Curriculum*

Overall, research shows curriculum programs specifically designed for talented learners produce greater learning than regular academic programs. Increased complexity of the curricular material is a key factor. Large-scale curriculum projects in science and mathematics in the 1960s, such as the School Mathematics Study Group (SMSG), the Biological Sciences Curriculum Study (BCSC), the Physical Science Study Committee (PSSC), and the Chemical Bond Approach (CBA), benefited academically talented learners (Gallagher, 2002). Further, curriculum projects in the 1990s designed to increase the achievement of talented learners in core content areas such as language arts, science, and social studies produced academic gains in persuasive writing and literary analysis (VanTassel-Baska, Johnson, Hughes & Boyce, 1996; VanTassel-Baska, Zuo, Avery & Little, 2002), scientific understanding of variables (VanTassel-Baska, Bass, Ries, Poland & Avery, 1998), and problem generation and social studies content acquisition (Gallagher & Stepien, 1996). STEM (Science, technology, engineering and mathematics) programs in the 21st century have produced multiple curriculum programs for advanced students.

*Access to Acceleration*

Because academically talented students learn quickly, one effective option for serving them is acceleration of the curriculum. Many educators and members of the general public believe acceleration means skipping a grade. However, there are multiple types of acceleration, ranging from curriculum compacting (which reduces the amount of time students spend on material) to subject matter acceleration (going to a higher-grade level for one class) to high school course options like AP or concurrent college credit (Davidson Institute, 2025; Southern, Jones & Stanley, 1993). In some cases, acceleration means *content* acceleration, which brings more complex material to the student at his or her current grade level. In other cases, acceleration means *student* acceleration, which brings the student to the material by shifting placement. Reviews of the research on different forms of acceleration have been conducted across several decades and consistently report the positive effects of acceleration on talented student achievement (Gallagher, 1996; Kulik & Kulik, 1984), including AP classes (Bleske-Rechek, Lubinski & Benbow, 2004). Multiple studies also report participant satisfaction with acceleration and benign effects on social and psychological development (Davidson Institute, 2025: Renzulli & Reis, 2021).

*Access to Trained Teachers*

Research and teacher reports indicate general classroom teachers make very few, if any, modifications for academically talented learners (Harwin, 2019), even though talented students have mastered 40 to 50 percent of the elementary curriculum before the school year begins. In

contrast, teachers who receive appropriate training are more likely to provide classroom instruction that meets the needs of talented learners. Students report differences among teachers who have had such training, and independent observers in the classroom document the benefit of this training as well (Hansen & Feldhusen, 1994). Curriculum and instructional adaptations require the support of a specially trained coach at the building level, which could be embedded in the instructional coaches recommended (Element 7). Overall, learning outcomes for high ability learners are increased when they have access to programs whose staff have specialized training in working with high ability learners (Delcourt, Loyd, Cornell, & Golderberg, 1994), which could be accomplished with the professional development resources recommended (Element 16).

*Impact of Gifted Programs*

Overall, research on gifted programs indicates the effects on student achievement vary by the strategy of the intervention (see Plucker & Callahan, 2021). Enriched classes for gifted and talented students produce effect sizes of about +0.40 and accelerated classes for gifted and talented students produce somewhat larger effectives sizes of +0.90 (Gallagher, 1996; Kulik & Kulik, 1984; Kulik & Kulik, 1992). A 2007 review of the research on gifted and talented education reached similar conclusions, finding that in addition to improving achievement among children identified as gifted, many gifted and talented programs also benefit non-gifted and talented students as well as students with disabilities (Field, 2007). A 2016 meta-analysis of 100 years of research on the effects of ability grouping and acceleration on the academic achievement of K-12 students reached similar conclusions about the positive impacts on gifted as well as non-gifted students (Steenbergen-Hu, Makel & Olszewski-Kubilis, 2016). Most of these studies focused on specific gifted and talented programs.

Redding & Grissom (2022) identify several more recent studies using large scale data bases, including the Early Child Longitudinal Study, that find mixed if any positive impacts of gifted and talented services on student performance. The "issue" with these studies is that they rarely analyze specific gifted and talented programs but use a variable in the data set that represents whether or not a student has participated in a gifted and talented program. The problem is that there is no definition of gifted and talented programs, nor indicators of what participation means, which could be from a few hours of enrichment a month to acceleration in a content area over an entire year. Thus, we view these kinds of studies with some skepticism, as nearly all studies of specific gifted and talented interventions find significant and positive impacts.

*Practice Implications*

At the elementary and middle school levels, our understanding of the research on best practices is to place gifted students in special classes comprised of all gifted students and accelerate their instruction because such students can learn much more in a given time period than other students. When the pull out and acceleration approach is not possible, an alternative is to have gifted students skip grades to be exposed to accelerated instruction. Research shows neither of these practices systemically produces social adjustment problems. Many gifted students get bored and sometimes restless in classrooms that do not have accelerated instruction. The primary approach to serve gifted students in high schools is to enroll them in advanced courses, such as Advanced Placement (AP) and the International Baccalaureate (IB), to participate in dual

enrollment in postsecondary institutions, or to have them take courses through distance learning mechanisms (see also National Center for Research on Gifted Education at https://ncrge.uconn.edu and Davidson Institute at www.davidsongifted.org). All of these strategies have little or no cost, except for scheduling and training of teachers, resources for which are provided by professional development (Element 16).

Over the past two decades, we confirmed our understanding of best practices for the gifted and talented *defined as high achievers* with the directors of three of the gifted and talented research centers in the United States: Dr. Elissa Brown, Director of the Hunter College Gifted Institute and previously the Director of the Center for Gifted Education, College of William & Mary; Dr. Joseph Renzulli, The National Research Center on the Gifted and Talented (NRC/GT) at the University of Connecticut; and Dr. Ann Robinson, Director of the Center for Gifted Education at the University of Arkansas at Little Rock.

Future-Ed has outlined an approach to gifted and talented that can be adopted with all the resources provided by the EB Model (Tyre, 2024). Some of the programmatic approaches require extended day and summer school programming, resources provided by the EB Model. Tyre's report outlines three very different approaches to providing programs for the gifted, all of which can be implemented with EB resources.

*A Broader Approach to Giftedness*

To broaden gifted and talented education practices, however, the University of Connecticut's Center on the Gifted and Talented developed an internet-based platform, Renzulli Learning, which provides a wide range of programs and services for gifted and talented students. In 2005, Renzulli stated that such an approach was undoubtedly the future for the very creative student. Field (2007) found that after 16 weeks, students given access to an internet-based program, such as Renzulli Learning to read, research, investigate, and produce materials, significantly improved their overall achievement in reading comprehension, reading fluency and social studies.

Renzulli (2019) argues that underrepresentation of low income, minority, ELL and students with disabilities in gifted and talented programs begins at the word and definition of "gifted," which usually means identifying very high achieving students. Renzulli argues that many high performing students are different from students who have more creative and productive giftedness, but the latter have the kind of giftedness and special skills and attitudes that are needed for innovation in the evolving global economy, e.g., the types of entrepreneurial skills associated with Bill Gates, Steve Jobs and Jensen Huang, among others.

Renzulli (2019) and Renzulli & Reis (2021) describe a different kind of gifted assessment that addresses these characteristics of creativity and productivity. These characteristics include curiosity, interests, learning styles, expression styles, enjoyment and high engagement learning in particular areas. Equally important are co-cognitive skills such as collaboration, empathy, creativity, planning, self-regulation, and other executive functions skills. Renzulli Learning is a program that responds to these wide varieties of giftedness.

And its cost is modest. We contacted the leaders of Renzulli Learning to understand its costs. Our understanding is that $15 per student would cover the cost of accessing the Renzulli Learning program. Renzulli also offers professional development, and its on-line professional development offerings have become popular. If a figure of $25 per pupil were included in the EB Model, all districts would be able to allow interested gifted, talented, and otherwise creative students to sign up for this program with teacher's being able to access some of its professional development. [21]

The EB Model provides $61.26 per pupil for Gifted and Talented programs we well as endorses acceleration as a cost-effective way to address the needs of gifted and talented students.

*16. Intensive Professional Development*

Professional development (PD) includes a number of important components. This section describes the specific dollar resource recommendations the EB model provides for PD. In addition to the resources listed here, PD includes the instructional coaches described in Element 7 and the collaborative planning time provided by the provisions for elective or specialist teachers in Element 4. This enables teachers to engage in a range of collaborative activities focused on implementing standards-based curriculum programs and the instructional practices needed for implementation success. Research shows professional development that includes teacher collaboration (Weddle, 2022) leads to improved teacher knowledge and instructional effectiveness. Those staff positions are critical to an adequate PD program along with the resources identified in this section.

Over time professional development has addressed the key curriculum and instructional issues facing education. Historically that has meant a focus on the core subjects of mathematics, science, reading/English/language arts and history, characteristic of the 1990s and early 2000s. Given the wide number of languages spoken by students, professional development should have included pedagogy linked to "sheltered English" equipping teachers to simultaneously teach the English language along with curriculum content for ELL students. From 2020 onward, professional development in Wyoming needed to equip teachers with the content and pedagogical skills to address computational learning and algorithmic thinking at all grade levels and to teach computer science as an elective course in middle and high schools, topics added to the state's curriculum standards Today, there is intense need to provide professional development in the wide array of ways Artificial Intelligence (AI) is impacting the schooling process. Since robust professional development resources have been included in the EB and Wyoming Funding Models for over 20 years, districts should be able to continue training in the traditional core subjects and also address evolving issues such as algorithmic thinking and AI.

[21] https://renzullilearning.com/

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| Provide 10 days of student free time for training embedded in salary levels.<br><br>Provide $180.70 per ADM for trainers, inflated annually by the EB ECA for supplies. | Provide 10 days of student free time for training embedded in salary levels.<br><br>Provide $191.43 per ADM for trainers, inflated annually by the statutory ECA for supplies. | No change in number of days but increase the dollar amount to $191.43 per ADM. |

**Summary and Recommendation***:* This element includes the dollar resource recommendations the EB model provides for PD. Systemic deployment of effective instruction for a high-quality curriculum program is the key aspect of an education system that improves student learning. High quality, ongoing professional development is the prime strategy for producing these systemic effective instructional practices.

In addition to the resources listed here, professional development includes the instructional coaches described in Element 7 and the collaborative planning time provided by the provisions for elective or specialist teachers in Element 4. The combined resources enable teachers to engage in a range of collaborative activities focused on implementing standards-based curriculum programs and the instructional practices needed for effective implementation. Research shows professional development that includes teacher collaboration and instructional coaching leads to improved teacher knowledge, instructional effectiveness and increased student achievement.

In addition to instructional coaches and time for teacher collaborative work, the EB Model provides 10 pupil free days for professional development (embedded in the annual teacher salary) and $191.43 per ADM for training and supplies.

*Evidence and Recommendation*

Better and more systemic deployment of effective instruction, and related state and local policy supports, are key aspects of an education system that improves student learning (Kirst, 2024; Masters, 2023; Odden, 2011a; Raudenbusch, 2009; Rowan, Correnti, & Miller, 2002; Sanders & Rivers, 1996). To effectively implement today's more rigorous curriculum standards, all school faculty members need continuous professional development. Improving curriculum and teacher effectiveness through high quality professional development is arguably one of the most important strategies for enabling students to perform to high standards (Short & Hirsh, 2022).

Thus, all the instructional resources included in the EB Model over time need to be transformed into high quality instruction to increase student learning (Chetty, Friedman, & Rockoff, J., 2014; Cohen, Raudenbush, & Ball, 2002; Hill & Papay, 2022; Short & Hirsh, 2022). Effective professional development is the primary way those resources get so transformed. Further, though the key focus of professional development is better instruction in the core subjects of mathematics, reading/language arts, writing, history, science, and world languages, the

professional development resources in the EB Model are adequate to address the instructional needs for gifted and talented, special education, sheltered-English for teaching ELL students, for embedding technology into the curriculum, and for elective teachers as well. Today professional development is needed to help teachers incorporate AI into the curriculum and ongoing instructional practices. In addition, all beginning teachers need intensive professional development, first in classroom management, organization and student discipline, and then in instruction. The most effective way to "induct" and "mentor" new teachers is to have them work in functional collaborative teacher teams (Ingersoll et al., 2025).

There is substantial research on the key elements of effective professional development and its costs (e.g., Crow, 2011; Cohen, et al., 2021; Didion, et al., 2020; Guskey, 2010; Joyce & Showers, 2002; Kraft, Blazar, & Hogan, 2018; Lynch, et al., 2019; Miles, Odden, Fermanich, & Archibald, 2004; Odden, 2011b; Short & Hirsh, 2022; Sims, et al., 2025). Effective professional development is defined as professional development that produces change in teachers' classroom-based instructional practice that can be linked to improvements in student learning. The practices and principles researchers and professional development organizations use to characterize "high quality" or "effective" professional development draw upon a series of empirical research studies that linked program strategies to changes in teachers' instructional practice and subsequent increases in student achievement. Combined, these studies and reports from Learning Forward, the national organization focused on professional development (see Crow, 2011; see also Darling Hamond, et al., 2017), identified six structural features of effective professional development:[22]

1. The *form* of the activity – that is, whether the activity is organized as a study group, teacher network, mentoring collaborative, committee or curriculum development group. Research suggests effective professional development should be school-based, job-embedded, focused on the curriculum taught and ongoing rather than a one-day workshop.

2. The *duration* of the activity, including the total number of contact hours participants are expected to spend in the activity, as well as the span of time over which the activity takes place. Research has shown the importance of continuous, ongoing, long-term professional development that totals a substantial number of hours each year, at least 100 hours, and closer to 200 hours, when counting PLC hours devoted to instructional practice.

3. The degree to which the activity emphasizes the collective participation of teachers from the same school, department, or grade level. Research suggests effective professional development should be organized around groups of teachers from a school that over time includes the *entire faculty*.

4. The degree to which the activity has a content focus – that is, the degree to which the activity is focused on improving and deepening teachers' content knowledge as well as how students learn that content (i.e., pedagogical content knowledge). Research concludes teachers need to know the content they teach, the common student miscues or problems students typically have in learning the content, and effective instructional strategies linking the two. The content focus today should emphasize the content for Wyoming's curriculum standards,

[22] The more theoretical framework of Sims et al, 2025 align with these six elements.

including algorithmic thinking and computer programming and embedding AI in the curriculum. Further, the most effective professional development is structured around teachers' developing standards-based curriculum units that they all implement in their classrooms (Short & Hirsh, 2022).

5. The extent to which the activity offers opportunities for active learning, such as opportunities for teachers to become engaged in the meaningful analysis of teaching and learning for example, by scoring student work or developing, refining and implementing a standards-based curriculum unit. Research has shown professional development is most effective when it includes opportunities for teachers to work directly on incorporating the new techniques into their instructional practice *with the help of instructional coache*s (see also Joyce & Showers, 2002).

6. The degree to which the activity promotes coherence in teachers' professional development, by aligning professional development to other key parts of the education system such as student content and performance standards, teacher evaluation, and the development of a professional community. Research supports tying professional development to a comprehensive change process focused on improving student learning.

Form, duration, and active learning together imply that effective professional development includes some initial learning (e.g., a two-week – 10 day – summer training institute) as well as considerable longer-term work in which teachers work to embed the new methodologies in their actual classroom practice, with instructional coaches providing support. Active learning implies some degree of collaborative work and coaching during regular school hours to help the teacher incorporate new strategies into his/her normal instructional practices. It should be clear that the longer the duration, the more time is required of teachers as well as trainers and coaches.

Content focus means effective professional development focuses largely on subject matter knowledge, what is known about how students learn that subject, and the actual curriculum that is used to teach the content. Today this means a curriculum program to ensure students are college and career ready when they graduate from high school. Collective participation implies professional development includes groups of and at some point, all teachers in a school, who then work together to implement the new strategies, engage in data-based decision making (Carlson, Borman & Robinson, 2011) and build a professional community.

Coherence suggests professional development is more effective when the signals from the policy environment (federal, state, district, and school) reinforce rather than contradict one another or send multiple, confusing messages. Coherence also implies professional development opportunities should be given as part of implementing new curriculum and instructional approaches, today focusing on Wyoming's curriculum standards. There is little support in this research for the development of individually oriented professional development plans; research implies a much more systemic approach.

Each of these six structural features has cost implications. Form, duration, collective participation, and active learning require various amounts of both teacher and trainer/coach/mentor time, during the regular school day and year and, depending on the specific

strategies, outside of the regular day and year as well. This time costs money. Further, all professional development strategies require some amount of administration, materials and supplies, and miscellaneous financial support for travel and fees. Both the above programmatic features and the specifics of their cost implications are helpful to comprehensively describe specific professional development programs and their related resource needs.

In a 2016 review of the research on effective professional development, Kennedy (2016) generally identified the same structural features of effective professional development as outlined above. She also noted that when effective, the impact of a professional development program is usually stronger in the year following the program and the impact can increase even after that [for examples, see Horn (2010) and Allen et al., (2011, 2015) and Yoon et al., (2007)]. Her review included only programs lasting at least a year, whereas many less effective professional development programs are much shorter in duration. The take-away, we believe, is that professional development needs all the programmatic features identified above, should last at least a year long, and should include intensive coaching of individual teachers in their classrooms – resources for all of which are included in the EB Model.

We also refer readers to three documents that provide more detail on how to use the EB identified resources to design and implement all the elements of an effective teacher professional development system (Hill & Papay, 2022; Short & Hirsh, 2022: Masters 2022). These new documents provide more details about the design of an effective teacher learning system. The Short and Hirsh article identifies the professional learning processes needed to implement new and more rigorous curriculum programs into the various phases of the "change process" that are needed to move teachers from what and how they are now teaching to the more rigorous curriculum programs and related instructional strategies needed to effectively implement them.

In support of these findings, we reference an important analysis of the kinds of professional development that work for implementing STEM classes in schools, a national priority. Lynch et al., (2019) assessed results from 95 experimental and quasi-experimental studies of PreK-12 science, technology, engineering and mathematics professional development and curriculum programs. They found an average effect size of 0.21 standard deviations on student performance when the professional development specifically:

- Helped teachers learn to use the new curriculum materials,
- Focused on improving teachers content knowledge, pedagogical content knowledge and/or understanding of how students learn that content,
- Included summer workshops, and
- Included time during the school year for teacher groups to trouble shoot and discuss classroom implementation.

These findings provide specific support for several of the key elements of effective professional development outlined above plus the need for teacher collaborative groups during the school day/year. Finally, the meta-analysis also found wide variation in professional development program implementation and stressed that "fidelity" of implementation of all the elements of professional development is key to having the program produce the desired impacts on teachers' instructional practice and then student achievement (see also Lynch, et al., 2025).

From this research on the features of effective professional development, the EB Model includes the following for a systemic, ongoing, comprehensive professional development program:

- Ten days of student free time for training embedded in the salary level, and
- Funds for training and miscellaneous costs at the rate of $191.43per student.

The resources for student free time and cost of training are in addition to instructional facilitators/coaches (Element 7) and collaborative work with teachers in their schools during planning and collaborative time periods (Element 4).

*17. Instructional and Library Materials*

Instructional materials include textbooks, supplemental materials for any textbook or curriculum program, workbooks, library materials and subscribed data bases, and the digital form of all printed materials. The EB Model provides such resources so districts can update all materials on a six-year rotating basis.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Provide $200.00 per ADM for elementary, middle and high schools. | Provide $290.97 per ADM. | Provide an amount for instructional and library materials equal to $300 per ADM for SY 2026-27. [$245 instructional materials, $35 library materials and subscriptions, $20 AI development] for elementary, middle and high schools. |

**Summary and Recommendation**:

Provide an amount for instructional materials and Library materials equal to $300 per ADM for SY 2026-27. [$245 instructional materials, $35 library materials and subscriptions, $20 AI development.

The need for up-to-date instructional and library materials is paramount for student-centered learning. Newer materials, whether digital or print, contain more accurate information and incorporate the most contemporary pedagogical approaches. Common standardized materials offer a structure, an order, and a progression in the teaching and learning process that allow teachers to pace instruction and work together as collaborative teams and as professional learning communities. Today, almost all publishers have created digital versions of their materials, and many require the purchase of the digital copy of the text as well as the paper-based book, and they also are creating AI applications.

The EB Model provides an amount for instructional materials and Library materials equal to $300 per ADM for SY 2026-27, $245 for instructional materials, $35 for library materials and subscriptions, and $20 AI development, which also allows for a six-year adoption cycle.

*Analysis and Evidence*

The need for up-to-date instructional and library materials is paramount for student-centered learning. Newer materials, whether digital or print, contain more accurate information and incorporate the most contemporary pedagogical approaches. Common standardized materials offer a structure, an order, and a progression in the teaching and learning process that allow teachers to pace instruction and work together as collaborative teams and as professional learning communities. Prior to the pandemic, there was discussion regarding the benefits of digital versus printed textbooks; however, with lessons learned from forced remote learning, almost all publishers have created digital versions of their materials, and many require the purchase of the digital copy of the text as well as the paper-based book. Publishers are working diligently to add small mini-applications and artificial intelligence to their digital offerings to distinguish them from their textbooks and to interactively scaffold and reinforce difficult subject-matter concepts. With recent AI advances, valuable student-centered, timely feedback has increased. In addition, many Internet sites provide free digital resources to all. To ensure that materials are current, 20 states have instituted material adoption cycles to ensure that materials represent current knowledge. Wyoming, like 32 other states, leaves course material selection to the school districts. (Education Commission of the States, 2022, Wyoming Statutes Title 21. Education 21-2-304(a)(iii)) While Wyoming does not regiment textbook adoption choices, it does require that content and performance standards be reviewed on a regular cycle. Wyoming should leverage this standards review requirement to encourage districts to reassess their selected materials periodically, such as at least every six years, to ensure they are up-to-date and reflect the latest knowledge.

This analysis addresses two issues: instructional materials and library materials.

*Instructional Materials*

Access to standards-aligned instructional resources is critical for teachers and students. In 2024, under Chapter 10 Rules, Wyoming adopted content and performance standards for Math, Science, Computer Science, Physical Education, Health & Safety, and Fine & Performing Arts. Notwithstanding, standards do not delineate any particular teaching practice, curriculum, or assessment method. Wyoming should consider encouraging districts to review the corresponding content materials as these districts implement updated standards. Without state encouragement, decisions to acquire updated materials may be delayed by districts for extended periods, and both the EB and Wyoming Funding Models allow districts to refresh curriculum materials on a six-year basis.

Up-to-date textbooks and materials, whether digital or print, are expensive. The type and cost of instructional materials differ across elementary and secondary levels. Textbooks at the secondary level are more complex and thus more expensive. Elementary grades, on the other hand, use

more workbooks, worksheets and other consumables. Both elementary and secondary levels require extensive pedagogical aides such as math manipulatives and science supplies that help teachers demonstrate or present concepts using different pedagogical approaches.

Textbook prices range widely. At the high school level, textbooks can cost from $100 to $250. Major textbook companies now offer electronic versions of their texts; however, contrary to popular belief, these versions are only marginally discounted, so are just as expensive, or more expensive, than their paper-based counterparts. Some digital versions are offered with time-bound contracts, much like library database subscriptions. The advantage offered by electronic versions is they can be continually updated.

Following the pandemic, all school districts in Wyoming provide one-to-one student computers. Moreover, the Court ruling in WEA v. Wyoming can be interpreted as expecting a one-to-one ratio for student computers. The EB cost model presented in this report assumes a one-to-one ratio making it possible for school districts to rely less heavily on printed textbooks. For this to be successful, internet access for those who cannot afford must also be provided and the costs thereof are estimated in this chapter.

Districts should focus on purchasing curriculum and instructional materials that will assist teachers to drive student-centered learning and achievement. Content standards require more reading from information texts across all curricular subject areas. This necessitates the purchase of additional materials that have not been required prior to the implementation of more rigorous curriculum standards. The EB model provides $245 per student for instructional materials , which is an amount sufficient to allow school districts to use a six-year rotating content refresh by content area.

The EB Model recommendation is to create one unified support amount for instructional materials at all schools regardless of school level. Resources of $245 per student per year for instructional materials will support the purchase of instructional materials that are best organized to reflect Wyoming teaching strategies. This funding level will also allow the purchase of digital access to some textbooks if districts desire.

*A comment on curriculum.*

It goes without saying that textbook selection substantially determines the specific curriculum a school will teach. And the fact is that some curriculum and instructional programs are more effective than others. Though a complete review of curriculum programs is beyond the scope of this report, which is focused identifying adequate resources to purchase needed curriculum materials, it is important that districts and schools use the funds for instructional materials to select textbooks, curriculum, and instructional programs that research finds effective. The What Works Clearinghouse (https://ies.ed.gov/ncee/wwc/) provides evidence-based guidance for how various subjects can be taught at different school levels, as well as identifies research-based effective curriculum programs.

Further, having a content-rich curriculum across all core areas is increasingly seen as a key to higher levels of student performance (Davidson, 2024). Put differently, a school's curriculum

program is not a neutral element of schools; it is a critical element that plays a significant role in what students will learn. Research on the impact of the Core-Knowledge comprehensive school model documents the positive impact of a broadly-based, knowledge-rich curriculum program (Grissmer et al., 2023).

*Reading is a special issue*. There is nearly universal agreement that reading is key to learning in *all* subject areas. But despite broad agreement on the recommendations of the 2000 National Reading Panel (National Institute of Child Health and Human Development, 2000) that provide the outlines for a science-based reading program, studies and surveys over the years have found that science-based reading practices are not evident in the bulk of the nation's classrooms. For example, in a study of whether teachers were implementing science-based reading practices in Tier 1 instruction, Kretlow and Helf (2013) found that most teachers were not using those practices. In a 2019 survey conducted by Education Week's Research Center, Sawchuk (2019) also found that most teachers were not using science-based reading practices. Sawchuk further found that the non-science-based practices teachers used were often deployed under the banner of "balanced literacy" *an approach often* recommended by mentors, coaches, professional groups and teacher training institutions.[23] Lucy Calkins, one of the country's leading reading experts who supported balanced literacy, has recently admitted that such an approach to reading needs to be changed and that successful reading programs must systematically include phonics and phonemic awareness, particularly at the early grades (Education Week, 2020). Moreover, the need for schools to use a science-based approach to reading has been discussed in several articles in *Education Week*, in the *New York Times*, *Educational Leadership* (2020), and even in the international journal *The Economist* (2021).

Goldstein (2020) also noted the resurgence of interest in improving reading scores via the "science of reading." She argued that lagging reading achievement on the National Assessment of Education Progress (NAEP) – only a third of America's children are proficient in reading – and new attention to the science of reading has led to a resurgence of attention to phonics and phonemic awareness. She further argued:

> The "science of reading" stands in contrast to the "balanced literacy" theory that many teachers are exposed to in schools of education. That theory holds that students can learn to read through exposure to a wide range of books that appeal to them, without too much emphasis on technically complex texts or sounding out words.
>
> Eye-tracking studies and brain scans now show that the opposite is true, according to many scientists. Learning to read, they say, is the work of deliberately practicing how to quickly connect the letters on the page to the sounds we hear each day.
>
> The evidence "is about as close to conclusive as research on complex human behavior can get," writes Mark Seidenberg, a cognitive neuroscientist and reading expert at the University of Wisconsin, Madison….

[23] Balanced Literacy has become the modern way for many former proponents of the "whole language" approach to acknowledge the importance of phonics and phonemic awareness, but too often "balanced literacy" in practice provides only a cursory and unsystematic use of instruction in phonemic awareness and phonics.

> Phonics boosters say they now know more about what works, and that phonics alone isn't the answer. Alongside bigger doses of sounding out, they want struggling students to grapple with more advanced books, so they won't get stuck in a cycle of low expectations and boredom. Some schools are devoting more time to social studies and science, subjects that help build vocabulary and knowledge in ways that can make students stronger readers. (Goldstein, 2020)

Goldstein also cited NAEP results that showed that over several years before the pandemic only two states had boosted third grade reading scores on recent NAEP assessments – Mississippi and Washington – and both states had adopted a statewide approach to systemically teaching phonics and phonemic awareness as well as the other elements of the science of reading.

Given the importance of ensuring that all students read proficiently by the third grade, which. is also the goal of Wyoming's K-3 Literacy Initiative, it is important to know not only the core elements of what comprises a science-based reading program, but also some specific classroom organizational and teacher instructional issues needed to implement the program. *Educational Leadership* (2020), a professional journal of the Association for Supervision and Curriculum Development, published an issue that summarized this science, making this knowledge easily accessed by all educators. In that issue, Benjamin Riley (2020:17-19) provided an excellent summary of the science of reading:

> There are certain things we learn "naturally," that is, as the result of millions of years of human evolution. The most obvious example is understanding spoken language. Absent cognitive or hearing impairment, virtually all human children will learn what words mean simply by being around and listening to other humans.
>
> Reading is another matter entirely. …it is not accurate to call reading, and the process by which we learn to read, "natural." It's a modern human innovation—arguably the most powerful in our species' history.
>
> Virtually all children can learn to read through formal education (again, absent some cognitive or physical impairment). What's more, the process by which humans learn to read has been well-researched, to the point that we can describe our knowledge of this process as a science. Here are just a few reading-science principles that aren't in dispute among English-language literacy experts:
>
> - Children can learn to understand how written letters relate to sounds–to decode text– through explicit phonics instruction (Castles, Rastle & Nation, 2018). They should receive explicit instruction that teaches the sounds that letters and combinations of letters represent, and the relationships of spelling patterns and pronunciations. Teachers need to be explicit in such instructing; this isn't the place for being a "guide on the side."
> - The key factor in helping young children transition from decoding text to becoming fluent readers is lots of reading practice with varied texts (Stanovich & West, 1989). Teachers should make books and other texts readily available in different parts of the classroom. But "independent reading" shouldn't supplant direct reading instruction.

- Explicit strategies designed to improve reading comprehension cannot, on their own, compensate for lack of vocabulary or content knowledge on a particular subject. It's fine for teachers to teach a few comprehension strategies (like making predictions) to students, but they shouldn't overdo it.

Schmoker (2019) caution against one classroom organizational strategy that dominates elementary reading instruction: multiple, reading level-based student groups. Even though literacy instruction usually consumes a large portion of the instructional day for elementary students, Schmoker finds that literacy instruction rarely includes the most essential elements of science-based reading instruction – whole class direct instruction, even when educators agree with those practices! The culprit: multiple ability leveled reading groups rather than whole class, direct instruction. Schmoker, who is one of the country's top professional development consultants, says,

> The most successful K-3 teachers … use small groups sparingly! That is because their *whole class instruction* consistently incorporates the proven effective, but rarely used, elements of successful teaching. They master simple techniques for ensuring that all students are attentive, and conduct frequent, ongoing assessments of the class's progress through the lesson and reteach accordingly.

Relatedly, in a 2018 meta-analysis of a half century's research on the impact of whole-class "direct instruction," Stockard, et al. (2018) found significant positive effects on: 1) reading, language, spelling, mathematics, and other academic subjects, 2) ability measures, and 3) affective outcomes. The results showed that such impacts were maintained over time *and* were even greater when students had more exposure to such direct instructional programs.

To spur the use of science-based reading programs sincer the pandemic, states are creating statewide initiatives to help teachers, schools and districts adopt and implement science-based reading programs (Olson, 2023). Mississippi, Tennessee, North Carolina, and Arkansas have been leading these state efforts. These state programs include curriculum materials, summer training institutes, ongoing professional development with instructional coaches, and extra-help strategies to help struggling students perform to grade level standards. Massachusetts, New York and Maryland are the most recent states to launch science-based reading initiatives (Schwartz, 2024a). Moreover, teachers and their unions have concluded that it is critically important for districts and schools to adopt elementary reading materials that allow teachers to implement a *science-based* reading program (see for example, Moats, 2020).

Similar pedagogical advice applies to tutoring. For example, Torgeson (2004) argues that structured reading programs, which specifically, systematically, and directly address phonemic awareness and phonics, have been shown by multiple researchers to be more effective than other approaches, especially for children from lower income and ELL backgrounds. Pedagogy also matters for mathematics programs and instructional practices. Many effective schools have used textbooks that integrate problem solving with concept instruction together with an emphasis on arithmetic basics. Further, a 2015 study concludes that early elementary children with mathematics difficulties are best served by teachers who provide substantial direct mathematical

instruction and routine practice and drill on math facts (Morgan, Farkas & Maczuga, 2015). The fact is that some instructional materials are more effective with some or all students than others, and districts and schools should select specific programs only after careful analysis and review to ensure that funds for instructional materials are spent wisely and address the specific needs of their students.

*Library Materials*

The NCES reports, now over a decade old, reported the average national expenditure for library materials was $16 per pupil (NCES, 2015). Over 90% of the $16 was spent on book titles and the remainder on other resources such as subscription databases. The use of electronic databases has declined in recent years as many instructional resources are offered free to the public on the Internet (e.g. online encyclopedias, newspaper subscriptions, search databases).

Some electronic subscriptions still require membership, such as archived newspapers, or pay research databases. Electronic database services vary in price and scope and are usually charged to school districts on an annual per student basis. In addition, the library is usually the hub for textbook distribution which in facilitated in larger schools with a textbook management system. Depending on the content of these databases and tools, costs can range from $3-7 per database per year per student.

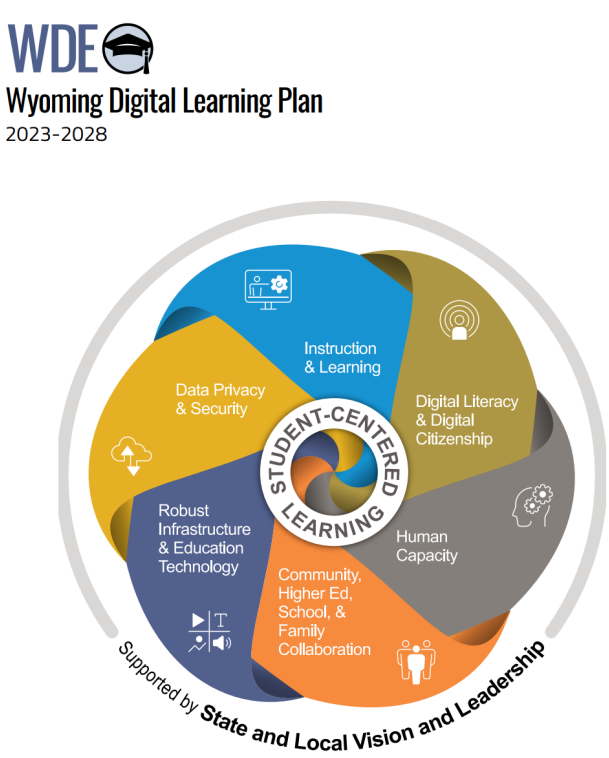
Inflating the above cost estimates to meet the needs of school libraries, we recommend funding of $35 per student to pay for library texts and electronic services.

Adding this $35 per student for library materials to the $245 per student amount for instructional materials brings the 2025 EB Model recommendation to $280 per student for instructional and library materials.

*Artificial Intelligence*

Artificial Intelligence (AI) creates one of the most significant innovations in student-centered learning, and conversely, one of the biggest dangers. Teachers and students can summarize research and create reports and presentations that would have previously required hours of work and painstaking analysis. States and districts across the country are working to catch up with the rate of change to positively impact how students ultimately use AI to prepare them for higher education or the workforce. This is both a policy and an instructional issue that must be addressed now by educators. The Wyoming Digital Learning Plan provides a basis for digital learning and citizenship that will assist educators and students prepare for effective AI use.

**Figure 3.x: *Wyoming Digital Learning Plan*, Wyoming Department of Education (2023).**




The Wyoming Digital Learning Plan created an AI toolkit that suggests policies, processes, procedures, and professional development to facilitate the safe and positive use of AI in Wyoming school districts. Currently, there are many artificial intelligence products offered free to the public, and therefore to schools. Free versions commonly have less advanced tools or are the earlier-released versions of the product. In most cases, the latest versions of many products are subscription-based.

When queried, almost all AI models use data input to help their systems "learn." Some companies, such as Open AI (ChatGPT), realize the sensitivity of personally identifiable data residing in school systems and the company is working to "containerize" this data, protecting it from being used for data base learning.

The EB model recommends funding $20 per student per year for the next five years for the development of policies, processes, procedures, and/or professional development to help create safe and student-centered methodologies for the use of AI in classroom instruction and student academic work. After five years, these dollars should be reassessed, based on the evolution of AI use both in and out of the classroom.

**2025 Evidence-Based recommendation:** Provide an amount for instructional materials and Library materials equal to $300 per ADM for SY 2026-27. [$245 instructional materials, $35 library materials and subscriptions, $20 AI development]

*18. Short Cycle/Formative Assessments*

All states, including Wyoming, administer summative assessments in the spring of each school year (Education Commission of the States, 2020 and ecs.org for possible updates). These assessments indicate the level of student performance in select core subjects, usually English language arts, mathematics, and science. Summative assessments – necessary tools to help schools make high-level decisions about the school improvement process – exist alongside a series of other types of assessment data that serve other, more targeted, ongoing instructional improvement purposes. The Wyoming Test of Proficiency and Progress (WY-TOPP) system, which includes summative and interim and modular assessments, was designed to provide districts, schools and teachers with the full complement of assessment data needed to engage in data-based decision-making to foster continuous improvement in student performance.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| $25 per ADM and not subject to an ECA. | Not funded through the Model, assessment costs fully paid by the state through the TOPP portfolio of assessments | No change |

**Summary and Recommendation**: Data-based decision making has become a core and important element in school reform and improvement over the past two decades. Research on collaborative teacher teams engaged in data-based decision making has documented significant, positive impacts on student learning. To engage in data-based decision making, schools typically use four types of assessment data:1) state summative assessments such as the WY-TOPP assessments, 2) benchmark assessments, 3) short cycle or interim assessments, and 4) formative assessments.

Schools often start their improvement processes by analyzing the summative assessment data. Analyses of the state accountability (end-of-the-year summative assessments) tests provide a good beginning basis for schools to redesign their overall curriculum and instructional program. But, to plan and implement detailed instructional change efforts and monitor progress toward higher levels of performance, schools need more detailed assessment data, including benchmark and short cycle/interim assessments. The EB Model provides $25 per ADM to give teachers access to digital, computer adaptive interim assessments from several companies, including Renaissance Learning Star, NEWA Map and DIBLES from Amplify.

*Evidence and Recommendation*

Data-based decision making has become a prime element in school reform and improvement over the past two decades. It began with the seminal work of Black and William (1998) on how

teachers can use ongoing data on student performance to frame and reform instructional practice, and continued with professional learning communities using student data to improve teaching and learning (DuFour, 2015; DuFour, et al., 2010; Hamilton, et al., 2009; Steiny, 2009). The objective is to have teachers use student performance data to inform and improve their instructional practices, identify students who need interventions, progress monitor the effectiveness of those interventions, with the goal of increasing overall student performance (Boudett, City & Murnane, 2007). As a result, data-based decision making has become a central element of schools moving the student achievement needle (Odden, 2009, 2012; Kirst, 2024).

Research on data-based decision making has documented significant, positive impacts on student learning. For example, a 2011 **RCT** of such efforts showed that engaging in data-based decision making using interim assessment data improved student achievement in both mathematics and reading (Carlson, Borman & Robinson, 2011).

Several researchers -- Datnow and Park, 2015; Hamilton et al., 2009; the late Richard DuFour (2015), one of the country's experts on teacher collaborative work using student data; and the Carnegie Corporation (Short & Hirsh 2022) – have summarized the research on, and structures of, effective data-based decision-making mechanisms. All rely on access to comprehensive interim and short-cycle assessment data.

To engage in data-based decision making, teachers typically need and use four types of assessment data:

- State summative assessments
- Benchmark assessments
- Interim or short cycle assessments, and
- Formative assessments.

State *summative assessments* indicate the performance level of students at the end of each year. At the beginning of the next school year, teachers start their improvement processes by analyzing these summative assessment data. Such analyses indicate the overall achievement level of students at the end of the previous year – where achievement was strong and where achievement was below expectations – and provide general guidance to the teaching and achievement challenges going forward. But, to plan and implement week by week instructional changes and monitor progress toward higher levels of performance, schools need additional assessment data.

One of those additional assessment tools is generally called a "*benchmark" assessment*. Benchmark assessments are closely aligned with the state's summative testing system and are usually administered in the fall and winter as well as the spring of each year. Fall assessments give more detail than the summative assessments on where students start the year in terms of performance in state content areas. Winter assessment results show progress half-way through the year toward proficiency, which then is measured by the end-of-the-year summative assessment. Benchmark assessments give feedback on each semester of instruction and are often used to determine which students need interventions or extra help.

A third assessment tool providing information on student performance is referred to as a "*short cycle" or "interim" assessments*. These interim assessments are often computer adaptive tests that are given in shorter cycles (every three to five weeks), provide immediate feedback to teachers and teacher teams, and often include suggestions for instructional improvement. Short-cycle assessments provide the bulk of the data teachers use when engaging in collaborative, data-based decision making. Short-cycle assessments generally include screeners, or micro-diagnostic tools, that identify student knowledge with respect to specific reading and math skills. Short-cycle interim assessments are also frequently linked to a "learning progression" of specific content areas, with test results providing teachers with micro-information on how to lesson plan for specific curriculum units and thus enable teachers to deliver instruction specifically tailored to the exact learning status of the students in their individual classrooms. These assessments are used to show whether each curriculum unit was successful in producing student achievement, as well as to progress monitor the effectiveness of interventions for students, including those special education students with Individual Education Programs (IEPs).

A fourth assessment tool, called a "*formative" assessment*, is administered over shorter time periods, usually several times during the teaching of a curriculum unit – sometimes daily. Often, teachers themselves create formative assessments. Used in addition to the previous assessment tools, formative assessments provide teachers with information to help identify additional student learning needs so teachers can improve their instruction. All of these additional assessment tools are used by schools that are successful in moving the student achievement needle.

Examples of "short-cycle" or "interim" assessments include STAR Enterprise from Renaissance Learning (www.renaissance.com), an online, computer adaptive system that provides data in reading/ literacy and mathematics for grades preK-12. Many Reading First schools and many schools we have studied (Odden & Archibald, 2009; Odden, 2009) use the Dynamic Indicators of Basic Early Literacy Skills (DIBELS) assessments (http://dibels.uoregon.edu). The digital version of DIBELS is now available from Amplify at amplify.com. Fast Bridge is a third example of a short-cycle assessment. The NWEA MAP program, used by numerous states and districts across the country as a benchmark assessment, has been expanded to provide short-cycle assessment data. These examples include screeners for both reading and mathematics. The Galileo Assessment system as well as the Diagnostic Reading Assessment (DRA) are further examples of interim assessments. Several of these possibilities have aligned their assessments to the Wyoming Topp student testing program [see for example, Renaissance Learning (2025) and NWEA-MAP at https://www.nwea.org/state-solutions/wyoming/].

The costs of these assessments are modest and have changed very little over time. The EB Model provides $25 per pupil for such assessment capabilities. These resources enable teachers to obtain interim assessment data for PLCs, screeners, progress monitoring, and/or overall instructional improvement. This figure also allows for some vendor provided professional development.

In 2020, Wyoming was in the process of expanding its WY-TOPP assessment system to include short cycle assessments. But teachers in many school districts still use and feel they need some form of external short cycle assessments. Thus, the EB Model continues to recommend $25 per ADM to provide teachers access to for interim assessments from a digital platform.

*19. Technology and Equipment*

We continue to conduct analyses for this section to ensure that in addition to funding for 1:1 computers for students, there is adequate funding for technology infrastructure, security, ransomeware insurance, and resources for technology used in schools for various operations

*20. Career Technical Education Equipment/Materials*

The EB Model provides extra CTE resources based on the number of CTE teachers.
In addition to the additional teachers generated by the student weight of 1.2 for CTE courses as described under element 5 above, the EB provides resources to purchase specialized equipment for each vocational education teacher.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| Provide an amount equal to $10,000 per vocational education teacher FTE for specialized equipment. Not subject to the ECA, although the state has used the EB supplies ECA to adjust this figure to $14,336 | Provide an amount equal to $14,336 per vocational education teacher FTE for specialized equipment as adjusted by the statutory supplies ECA.<br>In addition, the state provides funding for a minimum of two FTE CTE teachers for all high schools. | Align with statutory model so $14,336 per vocational education teacher FTE as adjusted by the statutory supplies ECA. |

*21. Extra Duty Funds/Student Activities*

Elementary, middle and high schools typically provide an array of non-credit producing after-school programs, such as clubs, bands, sports, and other activities. Teachers supervising or coaching in these activities usually receive small stipends for these extra duties.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| For districts with 2,000 or more ADM provide $599 for each high school ADM, $322 for each middle school ADM and $25 for each elementary ADM. For districts with 500 ADM provide $1,497.50 per high school ADM, $805 per middle school ADM and $62.50 for every elementary ADM (2.5 times the number | For elementary grades, provide an amount equal to $36.17 per ADM. For middle and high schools, use inverse sliding scales based on ADM. Middle school funding levels range from $1,189.81 for 1 ADM and $307.41 per ADM for a school of 1,260 ADM. High school funding levels range | Same as 2020 EB Model |

| 2020 WY EB Model | Wyoming Funding Model | 2025 WYEB Model |
|---|---|---|
| for a district with 2,000 or more ADM). Prorate the per ADM amount between 2,000 and 500 students. For districts with 150 or fewer ADM provide $1,797 per ADM for high school ADM, $996 per middle school ADM, and $75 per elementary school ADM (3.0 times the amount for a district with 2,000 or more ADM). Prorate the per ADM amounts between 500 and 150 students. Adjust these figures by an annual ECA. | from $3,067.10 for 1 ADM and $904.11 per ADM for a school of 1,260 ADM. Sixth grade elementary students funded using the elementary per ADM amount and ninth grade students included in the high school ADM for the schools they would attend. | |

**Summary and Recommendation**: Multiple policy analyses show that large numbers of students participate in extracurricular activities, from clubs to sports. Further, the studies find that, in general, such participation increases engagement in the academic side of education. That enhanced engagement results in higher student academic performance and greater participation in post-high school education, though the impacts can vary by the nature of the extracurricular activities, school supports for them, as well as by the demographics of students.

For 15 years prior to 2020, the EB Model provided between $200 and $314 per pupil for student activities, including intramural sports. These figures generally were in line with average amounts spent on such activities in many states (Odden & Picus, 2020). However, our research did not find a common model for allocating state support for student activities. As a result, in our 2020 recalibration study in Wyoming (see www.picusodden.com) we developed sports and activities prototypes for the EB Model's prototypical 450-student middle school and 600-student high school. The high school is virtually the same size as the Wyoming prototypical 630 student high school although the middle school is larger than the Wyoming prototype. We used the EB Model prototypes of 600 and as a starting point for assessing the costs of funding student activities in Wyoming.

The E2025 B Model uses the 2020 prototypes to fund student activities, with figures updated by the ECA. The LSO funding model estimates that on average this provides $833 per ADM for high school, $447 per ADM for middle school and $35 per ADM for elementary schools.

*Evidence and Recommendation*

*Participation in Student Activities*

A 2009 national survey (Aud, et al., 2012) asked high school seniors about their participation in high school activities including school newspaper, yearbook, music, performing arts, athletics, academic clubs (e.g., world language, science), student government and other school activities. Student respondents indicated 38 percent participated in athletics, followed by other school activities at 32 percent and music and performing arts at 24 percent. Female students participated in other school clubs at a rate of 40 percent, athletics 31 percent and music and performing arts 30 percent. Male students participated in activities as follows: athletics 46 percent, other social clubs 24 percent, music and performing arts 18 percent, and other activities 12 percent. Other than athletics, female students participated in activities at higher rates than male students.

About a decade later, Knop and Siebens (2018) used U.S. Census data to estimate the percentage of children aged 6 to 17 who participated in sports, lessons, and clubs between 1998 and 2014. After 1998, the percentage of children participating in sports was higher than participation in lessons or clubs. An increase in sports involvement occurred between 2011 and 2014, increasing by nearly 7 percentage points from 35 percent to 42 percent. Between 1998 and 2014, participation in clubs declined from 35 percent to 28 percent. Participation in lessons remained about 30 percent over these years. Children in poverty were less likely to participate in these three extracurricular activities.

The Census updated these figures in 2022 (Mayol-Garcia, (2022). Mayol-Garcia shows that the percent of boys and girls participating in sports grew between 1998 and 2020, with a higher percent (44) of boys participating in sports compared to 31 percent of girls. By contrast, the report shows that 29 percent of girls participated in clubs or took lessons in music, dance, etc., compared to just 24 percent of boys. All these percentages dropped for children from lower income families. The report also cites several studies that show, overall, that participation in such non-academic activities is linked to higher academic performance, greater academic aspirations, strong self-esteem and resiliency and lower levels of risky behavior.

*Impact of Participation in Student Activities*

Research shows, particularly at the secondary level, that students engaged in student activities tend to perform better academically than students not so engaged (Feldman & Matjasko, 2005), although too much extra- curricular activity can be a detriment to academic learning (Committee on Increasing High School Students' Engagement and Motivation to Learn, 2004; Steinberg, 1996, 1997). Feldman and Matjasko (2005) found participation in interscholastic (as compared to intramural) sports had a positive impact for both boys and girls on: grades, postsecondary education aspirations, reducing dropout rates, lowering alcohol and substance abuse, and led to more years of schooling. The effect was particularly strong for boys participating in interscholastic football and basketball. One reason for these impacts is participation in interscholastic athletics places students in new social groups that tend to have higher scholastic

aspirations and those aspirations "rubbed off" on all the participants. But the effects differed by race and gender and were not as strong for African Americans.

Fredericks & Eccles (2006) found that secondary students who participated in afterschool activities had higher academic outcomes, increased safety and higher participation in civic activities, and conversely reduced negative behaviors such as use of drugs and alcohol. Other research shows that participation in high school athletics has positive impacts on educational attainment and wages (Barron, Ewing & Waddell, 2000; Eoide & Ronan, 2001; Stevenson, 2010).

In addition, a U.S. Census Report (Knop & Siebens, 2018) found that that children tend to have higher levels of school engagement when involved in one or more activities, like sports, lessons or clubs. The report found that 42 percent of children who took lessons (i.e., music, dance, etc.) were highly engaged compared to 33 percent of children who did not. Children in poverty were less likely to participate in each of the three extracurricular activities (sports, lessons and clubs) than those not in poverty, and had less school engagement. Similarly, Crispin (2017) used multiple methods to analyze data from a 1988 longitudinal study and found that for both at-risk and non-at-risk students' participation in extracurricular activities reduced the likelihood of dropping out of high school by 14 to 20 percentage points. *In short, greater engagement in extra-curricular activities produces greater overall engagement in schools that in turn leads to better student academic performance and lower school drop-out rates.*

Thus, the positive impact of student extra-curricular activities on student performance is viewed by many as an integral component of a student's education. Across the country schools invest in student activities and studies show that students who participate in extracurricular activities from grades 8 to 12, attend college, vote in national and regional elections and volunteer at a higher rate (Zaff, et al., 2003). Despite the many positive impacts on academic achievement of students engaging in extracurricular activities. Balaguer, et al., (2022) caution that the specifics of impact depend on gender, age, duration, and breadth of extracurricular activities. Some activities benefit girls more than boys, some activities have positive impact in early adolescence but negative impacts in later adolescence, etc. The implication is that schools should seek to tailor extracurricular activities to each student individually and not assume a "one size fits all."

*The EB Model's Approach to Student Activities*

Previous to 2020, the EB Model developed in other states allocated between $200 and $314 per pupil for student activities, including intramural sports. These figures generally were in line with average amounts spent on such activities in many states (Odden & Picus, 2020). However, our research has not found a common model for allocating state support for student activities.

Thus, in our 2020 study in Wyoming (see www.picusodden.com) our consultant, Dr. Donald Schloman, developed sports and activities prototypes for the EB Model's prototypical 450-student middle school and 600-student high school. The high school is virtually the same size as the Wyoming prototypical 630-student high school although the middle school is larger than the Wyoming prototype. We used the EB Model prototypes of 600 and as a starting point for assessing the costs of funding student activities in Wyoming. The prototypes produced a figure of $600 per pupil for the high school and $322 per pupil for the middle school. Averaging these

figures by weighting them for the different numbers of grade levels covered, together with $25 for elementary school, produced an overall figure of $284 per pupil, close to the EB Model's previous figure of $300 per pupil (Odden & Picus, 2020).

The 2025 Wyoming EB Model uses the 2020 prototypes to fund student activities, with figures updated by the ECA. The LSO funding model estimates that on average this provides $833 per ADM for high school, $447 per ADM for middle school and $35 per ADM for elementary schools.

**Central Office Functions**

In addition to school-based resources, education systems also need resources for district level expenditures including operations and maintenance, the central office and transportation. These are outlined below.

*22. Operations and Maintenance*

The EB Model uses professional staffing formulas to compute the number of personnel needed for custodial, maintenance and grounds workers, and the EB and Wyoming Funding Models have used those formulas to estimate staffing for operations and maintenance costs since the 2005 recalibration. Additionally, funding is provided for utilities.

We continue to review alternatives, but no changes are recommended at this point in the study

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| **CUSTODIANS** | | |
| The EB Model relies on a formula that estimates the number of custodians needed in a facility on the basis of: 1) model generated teachers; 2) school ADM; 3) number of classrooms; and 4) gross square footage (GSF) and takes an average of the four computations. Adjustmensts are made for secondary schools and small schools (<49 ADM)<br>Details in following text. | Statutory model is the as the EB Model for allocating custodians | Same as 2020. |
| **MAINTENANCE WORKERS** | | |
| The number of maintenance workers is calculated based on three factors: 1) type of building; 2) square footage; and 3) school ADM.<br>Details in following text. | Statutory model is the as the EB Model for allocating maintenance workers | Same as 2020. |
| **GROUNDSKEEPERS** | | |
| Computed by site based on standards for work hours per year per acre, adjusted for intensity of use based on school level. Salary is same as for custodians<br>Details in following text. | Statutory model is the as the EB Model for allocating Groundskeepers except the salary is computed separately from custodians | Same as 2020. |
| **SUPPLIES AND UTILITIES** | | |
| Supplies funded at $1.25 per gross square foot of educational space plus 10% more for non educational space.<br><br>Utilities funded at actual costs for 2018-19 updated by the utilities ECA | Supplies funded at $1.02 per gross square foot of educational space plus 10% more for non educational space<br><br>Utilities funded at actual costs for 2009-10 updated by the utilities ECA | Update using 2024-25 actual costs and then by the utilities ECA in future years |

**Summary and Recommendation:** The EB Model first finds that multiple elements of facilities impact student learning, which makes adequate and clean buildings, with appropriate temperatures and air flow, important for effective teaching and learning.

The EB Model uses professional staffing formulas, based on multiple factors (e.g., square footage, numbers of students, teachers and classrooms, types of space such as bathrooms or gyms, etc.) to compute the number of personnel needed for custodial, maintenance and

grounds workers. The Wyoming Funding Model has used those formulas to estimate staffing for operations and maintenance staff since the 2005 recalibration. Additionally, funding is provided for supplies ($1.25 per gross square footage) and utilities (based on 2024-25 utilities expenditures).

*Evidence and Recommendation*

Computation of operations and maintenance costs is complicated. States vary widely in how this function is resourced. Some school finance models allocate a percentage of current expenditures to operations and maintenance. In other states operations and maintenance costs are part of the foundation expenditure level, without a dollar specified amount. The EB and Wyoming Funding Models use professional staffing standards to compute the number of personnel needed for custodial, maintenance and grounds workers. Additional funding is provided for utilities.

This section has two parts. Part 1 reviews the literature on the linkage between facilities and student performance. The next part describes how the models provide staffing for operations and maintenance.

*Review of Literature on School Facilities/Operations and Maintenance*

There is increasing evidence on the link between school facilities, the operations and maintenance of schools, and student performance. This is important because the average public school is about 50 years old, with almost 40 percent built before 1971 (NCES, 2024). Further, in 2021, the American Society of Civil Engineer (2021) gave a D+ to the condition of public-school facilities in the United States; most needed some kind of major renovation, with over 50 percent needing new or updated HVAC systems. Because of the work Wyoming has done in the past two decades both building and renovating schools, it is likely that its schools are much newer and in better shape than these national reports find for average American school. The importance of operating and maintaining this investment is clear regardless of the strength of the relationship between them. Supporting this, Milhouse (2025) references Harvard's School of Public Health that wrote, "The evidence is unambiguous that the school building influences student health, thinking, and performance."

It took several years for the accumulated evidence to support this conclusion. In the mid-90s, Earthman and Lemasters (1996) reviewed over two hundred studies seeking to find a linkage between the conditions of school facilities and student academic performance. Unfortunately, their review found no consistent connections. However, several years later Earthman (2002) essentially reversed this conclusion and underscored the importance of school facility conditions, noting at the time that researchers had consistently found a deficit of between 5 and 17 percentile points in student performance in poorly maintained buildings compared to students in buildings maintained to a professional standard. The research Earthman cites also suggests, via correlational analysis, that teacher effectiveness decreases in schools with poor facilities. These findings led Earthman, who was for many years the leading researcher on school facilities in the United States, to argue not only for the importance of clean facilities, but also for the importance of quality thermal and acoustic materials in the learning environment of students.

In the years after the 2002 Earthman report, multiple studies also concluded that the quality and condition of school facilities did importantly impact both teacher and student performance. The Center for Evaluation and Policy Analysis (~2004) at Pennsylvania State University concluded in about 2004 that a growing body of literature was showing that school facilities had profound impacts on teacher and student performance.

For example, work completed by The Tennessee Advisory Commission on Intergovernmental Relations (Young, et. al., 2003) showed a statistically significant relationship between the condition of a school or classroom and student achievement. Students attending schools in up-to-date facilities scored higher on standardized tests than those in substandard buildings. The committee concluded that policy makers should consider the relationship between school facilities and student learning outcomes, not only because of safety and welfare responsibilities to the students and staff, but also because a lack of adequate funding for facilities repair and maintenance can undermine spending in other areas focused on educational reform. The study showed positive educational outcomes were correlated with the following facility factors:

- New facilities
- Well-maintained buildings
- Thermal regulations to avoid excessive temperatures
- Appropriate lighting levels
- Utilizing relaxing shades of paint, and
- Limited external noise.

A 2007 Virginia study of the link between school facilities and student performance (Bullock, 2007) found that multiple elements of school facilities impact school performance. Interestingly, the study found that student performance was higher in new and newly renovated schools, a finding of particular importance to Wyoming as it has been building new and renovating school buildings for the past 20 years. Drawing on this study, the Texas Association of School Boards (2022) argued that Texas needed to pay more attention to school facilities across the state, citing the Virginia study's finding that the difference between standard and substandard buildings produced a 6+ percent difference in students passing English tests, which, it argued, was "noteworthy because English affects all other academic areas." Both groups noted that the school environmental elements that mattered included acoustics and noise, air quality, lighting, temperature and classroom size and space.

The Netzed Lab (2021) at the University of Oregon expanded on these more specific findings by concluding that the indoor quality of schools – thermal comfort (temperature), indoor air, lighting, views and acoustics – significantly impacted teacher and student performance: the better the air flow inside classrooms and the greater the amount of daylight in classrooms, the better student performance. Sadrizadeh, et al. (2022) state that air quality in schools is critical for student learning, which is an issue since most schools were built decades ago and have "natural" (windows to open and close) rather than HVAC ventilation systems. Sadrizadeh et al. argued that "natural" ventilation systems are inadequate for students as they expose students to pollutants that negatively impact their learning and make it more complicated to control temperature.

Interestingly, for optimal learning, students need cooler classrooms than teachers would prefer, temperatures usually not possible if schools have only "natural" and not HVAC ventilation systems. Combined, such environmental realities in many schools – poor air quality and overly warm classroom temperatures – negatively impact student cognitive activity. Bolstering these findings about temporal and air quality conditions in classrooms, Sorensen, Hwang and Radia (2024) found that improvements in HVAC systems in New York City schools reduced student absenteeism, reduced student suspensions and moderately increased student performance in mathematics and reading. Indeed, replacing school's heating and cooling systems was associated with increased math achievement. They concluded that such efforts not only increase student comfort and well-being but also their academic performance.

Contrary to these findings on the positive relationships between specific elements of school facilities and teacher and student performance, Picus, Marion, Calvo and Glenn (2005) studied the correlation between the quality of Wyoming school facilities and student outcomes. School quality was measured with a 100-point scale developed specifically for Wyoming schools and used to assess every school. These scores were correlated with measures of student outcome controlling for student characteristics, and no statistically significant relationships emerged. Similarly, Brooks and Weiler (2018) in a study in Colorado found little or no link between facilities conditions as determined by a Colorado School Facilities Index and student scores on Colorado summative state tests. But these studies are outliers in the last two decades of research on the link between facilities and teacher and student performance. And it could be the case that an overall school facilities "index" or "score," which was used in each study, was insufficiently detailed to identify the specific factors that do impact student and teacher performance, as shown by the studies discussed in the preceding paragraphs.

Whatever research concludes on the link between facilities and student performance, and we now argue that the bulk of research shows that there are important linkages, students and educators deserve and need adequate, clean, temperature-controlled, and well-maintained buildings (see also Baker, 2019). The challenge is how to provide such resources. The EB Model uses professional staffing standards to address this challenge for the *maintenance and operation* of school facilities. *Building and renovating school* facilities is addressed by a different program in Wyoming and not addressed by this report.

*Operational Guidelines for Educational Facilities*

The Association of Physical Plant Administrators, now called APPA, over the years developed a series of booklets providing guidelines for the operation and maintenance of educational facilities (APPA, 2020, 2022, 2023). Though the focus of APPA's work is on facilities in community colleges, four-year colleges and research universities, its principles, details on levels of cleanliness and maintenance, and how to conduct cost analyses of operation and maintenance can provide substantial guidance on state-of-the-art approached to the operations and maintenance function in elementary and secondary schools. Though its books do not provide formulas for staffing custodians, maintenance workers and groundskeepers in public schools, its approach is similar to that used below, which derived from work done in California decades ago.

*Professional Standards for Operations and Maintenance Staff*

Drawing on professional standards in the field, we have developed a cost basis for staffing maintenance and operations (Odden & Picus, 2020). The discussion below uses these standards to identify the needs for custodians (school level), maintenance staff (district level) and groundskeepers (school and district level), as well as the costs of materials, supplies and utilities to support these activities. Standards for facilities operation and maintenance are quite varied, and depend on multiple issues, such as for example, the level of cleanliness needed (hospitals have more restrictive needs than office buildings), the structures of the buildings (facilities with many small rooms like schools require more custodial staff than facilities with large spaces like convention centers), and when used (only during the day, only at night, or night and day). The following standards fall within national practice as indicated by a national survey of maintenance and operation staffing standards conducted by Facilities.net (2017).

*Custodians*

Custodians are responsible for the cleanliness of school classrooms and hallways as well as for routine furniture set ups and takedowns. In addition, custodians often manage routine and simple repairs like minor faucet leaks and replacing light bulbs, and are expected to clean restrooms, cafeterias/multipurpose rooms, lockers and showers. Custodial workers' duties are time-sensitive, structured, and varied. Many schools see custodians as front-line employees who often interact with teachers and students daily. Custodians are also often responsible for ensuring that major mechanical equipment within the facility is running well and identifying appropriate services to make repairs when needed.

The U.S. Department of Education (ND) has established five levels of cleanliness for school facilities, including how many square feet can be cleaned by a custodian in an eight-hour shift. The California Association of School Business Officers (CASBO) used the same cleanliness levels as do other states and school districts (e.g., Arkansas (2009), Omaha, Anaheim (2014) and the APPA (2023) for post-secondary facilities):

- Level 1 cleaning results in a "spotless" and germ-free facility as might normally be found in a hospital or corporate suite. At this level, a custodian with proper supplies and tools can clean approximately 10,000 to 11,000 square feet in eight hours.

- Level 2 cleaning is the uppermost standard for most school cleaning and is generally reserved for restrooms, special education areas, kindergarten areas, or food service areas. This service level for classrooms includes vacuuming or mopping floors daily and sanitizing all surfaces. A custodian can clean approximately 18,000 to 20,000 square feet in an eight-hour shift at this level.

- Level 3 cleaning is the norm for most school facilities. It is acceptable to most interested parties and does not pose any health issues. Classrooms are cleaned daily, which includes dumping trash and cleaning common area surfaces such as sinks and door handles. Carpets are vacuumed and surfaces used by students are sanitized every other day. A custodian can clean approximately 28,000 to 31,000 square feet in eight hours at this level

- Level 4 cleaning is not normally acceptable in a school environment. Classrooms would be cleaned every other day, carpets would be vacuumed every third day, and dusting would occur once a month. A custodian can clean 45,000 to 50,000 square feet in eight hours at this level.

- Level 5 cleaning can very rapidly lead to an unhealthy situation. Trash cans might be emptied and carpets vacuumed only weekly. One custodian can clean 85,000 to 90,000 square feet in eight hours at this level.

The custodial staffing standards we found were targeted to the Level 2 standard of cleanliness. Often custodial staffing numbers were determined mainly by cleanliness levels and square footage. But other factors should be considered, such as the number and type of rooms, intensity of use, etc.

Indeed, in work several years ago, Zureich (1998) developed staffing standards for public schools in California that used multiple factors. Zureich's standards were updated by Nelli (2006) as part of a Wyoming adequacy study. The factors include the number of teachers, students, classrooms and gross square feet (GSF) in the school and are as follows. Variations of this approach have been used in the Anaheim School District, CA (2014), Arkansas (2009),[24] and Arlington, VA (Hanover Research, 2009):

- One custodian for every 13 teachers, plus
- One custodian for every 325 students, plus
- One custodian for every 13 classrooms, plus
- One custodian for every 18,000 allowable GSF, and
- The total divided by four to calculate a base FTE school level custodian position.

This base FTE position is further adjusted by an additional 0.5 FTE for secondary schools. Custodian positions for non-educational buildings are based solely on gross square footage (GSF). Schools with 49 or fewer ADM do not generate custodial FTE positions. Custodian positions for non-educational buildings are based solely on the gross square footage (GSF) factor, which is limited to 10% of a district's total allowable educational GSF divided by the Zureich factor (18,000 GSF).

The formula calculates the number of custodians needed at prototypical schools and the district. The advantage of using all four factors for the school custodians is it accommodates growth or decline in enrollment and continues to provide the school with adequate coverage for custodial services over time.

During the 2020 recalibration, we found three other staffing standards for determining custodians for school buildings:

[24] Downloaded June 2025 at https://dese.ade.arkansas.gov/Files/Custodial_Information_FAS.docx

1. A public formula used in Pennsylvania (Pennsylvania Association of School Business Officials (PASBO)
2. A private sector formula used by Aramark and other private providers of cleaning for schools, and
3. A public formula used by Florida to suggest M & O staffing for schools (Florida Department of Education, 2014).

To compare the four different approaches, we used a simulation for the generic EB Model that comprises a 3,900-student prototypical school district, with four 450-student elementary schools, two 450-student middle schools and two 600-student high schools. The EB Model yields a total of 23.3 custodians for this prototype.

The Pennsylvania formula for staffing custodians uses the same four factors as the EB Model – number of teachers, students, classrooms and GSF as well as the additional factor of the number of washroom fixtures (sinks, urinals, toilets) – but has different benchmarks for each of these five elements. Pennsylvania's model is as follows:

- 1 custodian for every 9 teachers
- I custodian for every 300 elementary/200 secondary students
- 1 custodian for every 12 classrooms
- 1 custodian for every 16,000 Gross Square Feet (GSF)
- 1 custodian for every 35 washroom fixtures (sinks, urinals, toilets)
- All the above summed and divided by 5.

The Pennsylvania model yields a total of 27.3 custodians for the EB prototypical district or four additional custodians.

The private sector model employs a simpler formula for cleaning, using only Gross Square Footage (GSF) of the building. It then takes 80 percent of the GSF as Cleanable Square Footage (CSF) and provides one custodian position for every 22,000 CSF for elementary schools and one custodian position for every 28,000 CSF for secondary schools. The private sector model yields just short of 20 custodians for the EB prototypical model, about 3.3 fewer custodians than the EB Model and 7.3 fewer than the Pennsylvania model.

The Florida model is similar to the private sector model but uses 19,000 CSF instead of 22,000 CSF. This would allow for more custodians than the private sector model but fewer than the Pennsylvania model putting it very close to the current EB Model. The Florida model would produce 25.8 custodians, 2.5 more than the current EB Model.

All four models are relatively close in their calculation of custodial staffing. The Pennsylvania model, though, assumes a higher level of cleanliness that is often associated with hospitals and nursing homes. The private sector model assumes that cleaning is largely a nighttime function provided by part time workers. Schools, however, need custodial support during the day so the leaner private sector model would place at most one custodian at the school during the day. The Florida model produces somewhat more custodians. We conclude that the current EB Model,

which provides a level of custodial staff in between these three alternative standards, is the most appropriate choice for staffing custodians for the education sector and Wyoming.

*Maintenance Workers*

Maintenance workers function at the district level, rather than at individual schools. Core tasks provided by maintenance workers include preventative maintenance, routine maintenance and emergency maintenance response activities. Individual maintenance worker accomplishment associated with core tasks are (Zureich, 1998):

- HVAC systems, HVAC equipment, and kitchen equipment
- Electrical systems, electrical equipment
- Plumbing systems, plumbing equipment, and
- Structural work, carpentry and general maintenance/repairs of buildings and equipment.

Zureich's standards for maintenance workers for instructional facilities are as follows:

- Calculated on the basis of four factors:
    - An initial 1.10 maintenance worker FTE, plus
    - One maintenance worker for every 60,000 allowable educational GSF at factor of 1.2, plus
    - One maintenance worker for every 1,000 School ADM at factor of 1.3, plus
    - One maintenance worker for every $5 million of general fund operating expenditures from SY 2004-05 at a factor of 1.2.
- These four FTE factors are added together and divided by four to arrive at a base maintenance worker FTE.
- The base FTE is further adjusted for:
    - School level (base FTE is multiplied by 0.80 for elementary schools, 1.0 for middle schools, and 2.0 for high schools)
    - Building age, where schools under 10 years old are multiplied by a factor of 0.95 and over 30 years old by a factor of 1.10, and
    - Small district size where the base FTE is multiplied by a factor of 1.10 for districts with ADM under 1,000.

We think it makes sense to either adjust the $5 million general fund operating factor to a number relevant to today's general fund levels, or consider eliminating it from the calculation. The size of school district general fund budgets has increased considerably over the past years since this formula was developed, and we have been unable to identify an empirical basis for an alternative number. The impact of eliminating this computation produced a modestly higher number of maintenance workers in a recent state adequacy study; it provides modestly fewer workers for the prototypical district. We also assume that the maintenance worker FTEs determined based on a district's total allowable educational GSF for schools are sufficient to service all buildings in a district, both educational and non-educational.

Florida has a simpler formula to determine the number of maintenance workers (Florida Department of Education, 2014):

- One Maintenance FTE for every 45,000 sq. ft
- One Support FTE for every six maintenance workers.

The current EB Model formula produces 9.88 maintenance staff in a prototypical school district of 3,900 students while the Florida formula produces 13.8 maintenance staff plus 2.3 support staff to support the maintenance workers – this amounts to 3.9 more maintenance workers and 2.3 more support staff.

The current EB Model uses the standard recommended by Zureich (1998). In our search for how other states provided for maintenance workers, we found the above Florida standards that provide more staff than the EB Model. We also found an Arkansas formula[25] that provided fewer staff. Thus, the EB Model provides staff in between these two other states. Most states simply do not reach this level of detail in their school funding models. We did find some districts that used a similar maintenance staffing formula (e.g., Anaheim School District, 2014); its formula included both educational square footage as well as the number of students in the district. In the end, we concluded that the EB Model's formula was adequate.

Unlike custodians, there is some uncertainty in projecting staffing loads and maintenance costs without assessing the individual needs of each district and its composite buildings. For example, one district that has a centralized HVAC control system might be able to monitor and project motor or condenser failures well in advance and thus hold down costs, while this possibility is not available to another district that does not have a centralized HVAC monitoring system. Private sector companies that provide services in this area use sophisticated software that calculates staffing needs and costs based on the individual inventory of the district.

*Groundskeepers*

The typical goals of a school grounds maintenance program are generally to provide safe, attractive, and economical grounds maintenance (Mutter & Randolph, 1987). This, too, is a district level function. We have estimated that an elementary school needs 62 days per years of groundskeeper support, a middle school 140 days and a high school 388 days per year. Groundskeepers are determined at the site rather than building/program level. The number of groundskeepers for all sites, both educational and non-educational, is based on the following:

- The number of acres of the site and the standard for the number of annual work hours per acre (93 hours). The FTE calculation assumes a 2,008-hour work year for groundskeepers.
- The initial FTE is adjusted for the primary school level or use of the site, with non-educational and elementary school sites receiving no additional adjustment, middle school sites receiving an adjustment factor of 1.5 and high school sites an adjustment factor of 2.5

[25] Downloaded June 2025 at https://dese.ade.arkansas.gov/Files/Custodial_Information_FAS.docx

- The Wyoming Funding Model has added additional requirements for groundskeeper FTE calculations for acreage acquired by a district after July 1, 1997. These sites' acreages are based upon the lesser of the actual site acreage on which the facility is situated or the School Facilities Department's (SFD) guidelines:

    - Elementary schools, four acres plus one acre for every 100 ADM
    - Middle schools 10 acres plus one acre for every 100 ADM
    - High schools, 20 acres plus one acre for every 100 ADM
    - In instances where districts acquired acreage after July 1, 1997 through an exchange of land with another government entity, and the acreages involved in the exchange were originally acquired by the district and the government entity on or before July 1, 1997, the acreage is not subject to the SFD guidelines. The entire acreage will be used in the calculation of groundskeeper FTEs. If a district has acquired a site after July 1, 1997, and the site is without a facility situated on it or has a facility under construction, groundskeeper FTEs will not be generated for the acreage.

Florida has a suggested staffing formula for groundskeeper positions for schools, that is simpler than the EB Model:

- Total acreage divided by 40
- Add one FTE
- Plus, one FTE per 500,000 gross square feet (GSF) of athletic fields.

This formula produces more groundskeeper positions than the EB Model. The Arkansas formula[26] also seems to provide more grounds workers, though it is difficult to make comparable calculations. All formulas seem to use acreage with multiple types of modification. But we see no compelling rationale to adopt either for Wyoming and thus retain the historical EB standard.

*Supplies/Materials*

The current funding model provides $1.02 per GSF for operation and maintenance supplies and materials. For educational space, GSF is equal to the lesser of actual educational GSF or allowable educational GSF adjusted up by 115%. Funding for non-educational space is equal to 10% of a district's total allowable educational GSF.

*Utilities*

Utilities funding in the Wyoming Funding Model is based on actual fiscal year 2009-10 expenditures, as adjusted by the ECA enacted by the Legislature. EB Model utility costs are based on the actual fiscal year 2018-19 expenditures, as adjusted by the EB model ECA. Given changes in utilities costs over the past several years, we recommend that Wyoming reset the base and use the actual districts expenditures for utilities in 2024-25 adjusted by the ECA in subsequent years.

[26] Downloaded June 2025 at https://dese.ade.arkansas.gov/Files/Custodial_Information_FAS.docx

*23. Central Office Staffing and Non-Personnel Resources*

This section is under continued peer review both for accuracy and consistency and will be part of the next draft of this report

**Resources for Struggling Students**

The staffing for core programs section contains positions supporting both teachers and students in addition to the core classroom teachers. Those positions include elective or specialist teachers, core tutors, instructional facilitators, substitute teachers, core counselors and nurses, supervisory aides, librarians, school computer technicians, school administrators, and school secretarial and clerical staff.

In many instances, struggling students need additional instructional support in order to meet performance expectations. The resources described in this section extend the learning time for struggling students in focused ways. The key concept is to implement the maxim of standards-based education reform: keep standards high for all students but vary the instructional time to give all students multiple opportunities to achieve to proficiency or higher levels. The EB Model elements for extra help are also embedded in the RTI schema described earlier in this chapter.

It is important to note the Wyoming Funding Model uses two specific counts of pupils used to generate resources for struggling students. The EB Model uses these same pupil counts. Wyoming Statute and WDE rules and regulations provide the specifics on how these counts are generated, but in general they are defined as:

1. At-risk count: defined as the unduplicated count of students eligible for free and reduced-price lunch, ELL students and mobile students in grades 6-12
2. ELL count: The number of students defined as ELL.

It should be noted that the Wyoming at-risk pupil count includes all ELL students, so *all* of the resources triggered by the number of at-risk students provide extra resources for ELL students, as well as non-ELL students from poverty backgrounds and secondary students who are mobile.

The EB model provides substantial additional resources for students based on the at-risk student counts – tutoring, extended day, summer school, and pupil support. These resources for students struggling to achieve to academic standards should be viewed in concert with resources for students with identified disabilities. Districts sometimes over identify students for special education services as the "only" way to trigger more resources for some struggling students. The EB goal in expanding resources for struggling students triggered by at-risk counts is to provide adequate resources for all struggling students, with or without a diagnosed disability, and to reduce the incidence of students needing special education students.

This section includes discussion of seven categories of services: tutoring, additional pupil support, extended day, summer school, programs for ELL students, Alternative Schools, and special education. Remember, that ELL students trigger the tutors, pupil support, extended day and summer programs, as well as the additional ELL resources.

*26. Tutors*

Students struggling to achieve to standards need additional instruction and the first and most effective strategy is to provide some combination of 1-1 or small group tutoring. In addition to the one core tutor position provided to every prototypical school discussed above for Element 8, the EB Model provides additional tutor position at the rate of one for every 100 at-risk students.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| 1 tutor position for every 125 at-risk students | 1 tutor position for every 100 at-risk students, with a minimum of one tutor position in each prototypical school<br>Not provided for small or alternative schools | 1 tutor position for every 100 at-risk students, and $65 per at-risk student for tutoring program materials. |

**Summary and Recommendation**: The discussion for Element 8 above provided the general evidence for tutors as an effective strategy for helping struggling students to achieve to higher performance standards. And although the bulk of the evidence addressed one-to-one tutoring, Section 8 also discussed research on small group tutoring, up to groups of 5 students. Most research on tutoring was conducted prior to the COVID 19 pandemic, which led to dramatic learning loss across large numbers of students in the country. This reality led some analysts to conduct research on the impact of a new form of tutoring, called High Dosage Tutoring (HDT). HDT uses one person to tutor one, two or up to five students at a time for one period a day and usually for five days a week. HDT provides substantially more time than the traditional 20-30 minutes of tutoring previously studied. Rather than a licensed teacher, HDT is usually provided by a recent college graduate who has training in a specific math or reading tutoring program, or other content area linked to the school's curriculum. The tutors are not volunteers, nor traditional paraprofessionals, but full-time employees who have earned a bachelor's degree in a content area and are typically paid at a rate close to a new teacher.

In addition to the one tutor position for every prototypical school, the EB Model provides additional tutoring staff at the ration of one tutor position for every 100 at-risk students, as well $65 per at-risk student for tutoring program materials.

*Evidence and Recommendation*

One of the most effective strategies to provide extra help for students struggling to achieve to performance standards is tutoring, as described in Element 8 above. Section 8 above provided the general evidence for tutors as an effective extra help strategy for such struggling students. And although the bulk of the evidence addressed one-to-one tutoring, Section 8 also addressed research on small group tutoring, up to groups of 5 students. However, most research prior to 2020 addressed the impact of "standard" tutoring that generally provided 20-30 minutes of tutoring three times a week. When Covid hit, that was considered insufficient for the pandemic induced learning loss across many subjects and many students in the country.

This led experts and schools to create and then analysts to assess the impacts of a new form of tutoring, called High Dosage Tutoring (HDT). Brown University Professor Matthew Kraft and the late Johns Hopkins University Professor Bob Slavin recommended the development of a national effort of "high dosage tutoring" as the strategy to reverse the learning loss caused by COVID (see also Barshay, 2020). Rather than a licensed teacher, HDT is usually provided by a recent college graduate who has been trained in a specific math or reading tutoring program, or other content area (e.g., science) linked to the school's curriculum. Tutoring is usually provided for one period a day every day of the week, for groups of up to 5 students. The tutors are not volunteers, nor traditional paraprofessionals, but full-time school employees who have earned a bachelor's degree in a content area and paid at a rate close to a new teacher.

Research, much of it **Randomized Controlled Trials**, suggests this HDT approach has larger effect sizes than found in the studies of more traditional tutoring programs described above (see Baye et al., 2019; Cook et al., 2015; Dietrichson, et al., 2017; Freyer, 2016; Fryer & Noveck, 2017; Nickow et al., 2020, 2024). Guryan, et al.'s (2021) **RCT** research showed that HDT positively impacts adolescents as well as elementary students, thus arguing that HDT is an effective, and cost-effective K-12 strategy for improving academic outcomes for students at all levels. Robinson & Loeb (2021) provide additional research on the significant, positive effects of HDT. Kortecamp and Peters (2023) report on an effective **RCT** of tutoring for early readers. Cortes, Loeb and Robinson (2024) document the impressive results of a scalable, high dosage tutoring program for reading in elementary schools. The Illinois Tutoring Initiative (2024) found that students who received high dosage tutoring made significantly larger gains in reading and mathematics during the 2022-23 than those who did not receive tutoring. Importantly, the evaluation also found that students with disabilities and ELL students who experienced tutoring produced even larger gains in reading and math scores, on both the Illinois state test and local assessments. Further, Lee, Loeb and Robinson (2024) found the high dosage tutoring increased student attendance, thus amplifying the effect of high dosage tutoring itself on student achievement. The study underscored the dual positive impacts of high dosage tutoring.

Scaling such programs is complicated. Kraft and Falken (2021). White, Groom-Thomas and Loeb (2023) synthesize the research on the factors associated with effective implementation of tutoring, particularly high dosage tutoring. Drawing on this and other research, Makori, Burch and Loeb (2024) outline how the country could scale up HDT programs: the concepts and ideas these analysts put forth could also be adopted by a state, such as Wyoming. Careful attention needs to be given to scaling, as Kraft, Scheuler and Falken (2024) outline, or the results will be less than expected.

Kraft, Schueler and Falken (2024) report that by December of 2022, 37 percent of schools in the country reported offering high dosage tutoring, and 59 percent of schools provided some type of tutoring, high dosage or "standard" tutoring. These data suggest that tutoring has become a key part of the educational landscape and critical for both enhancing the ability of all students to learn to standards and reducing learning loss caused by the pandemic.

Creating a corps of HDT tutors could be one powerful strategy for making up for the loss of learning caused by COVID-19 and, going forward, simply providing extra help for students struggling to meet performance standards, Further, this approach to tutoring could be funded by

the tutoring resources included in the EB Model. HDT tutors hopefully could boost achievement by significant amounts for any group of students achieving below expectations. We recommend Wyoming and other states to adopt it as an effective and efficient strategy.

In addition to the one core tutor position provided to every prototypical school discussed above for Element 8, the EB Model provides additional tutor/Tier 2 interventionist positions at the rate of one for every 100 at-risk students, as well as $65 for tutoring program materials.

*27. Pupil Support*

Core pupil support positions for guidance counselors and nurses are discussed above in core resources as Element 10. At-risk students, however, generally have more non-academic needs that should be addressed by additional pupil support staff, which include additional counselors, as well as social workers, family liaison staff, mental health professionals, and psychologists. Thus, in addition to the core guidance counselor and nurse positions provided to every prototypical school discussed above for Element 10, the EB Model provides additional pupil support positions at the rate of one for every 100 at-risk students, and $65 per eligible student for program costs.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Provide 1.0 at-risk pupil support position for every 125 at-risk students | Provide 1.0 at-risk pupil support position for every 100 at-risk students. Not provided for small or alternative schools. | 1.0 at-risk pupil support position for every 100 at-risk students, and $65 per at-risk student for tutoring program materials. |

**Summary and Recommendation**: Core pupil support positions for guidance counselors and nurses are discussed in Element 10 above in the core staffing section. At-risk students, however, generally have more non-academic needs that should be addressed by additional pupil support staff. This can include additional counselors, social workers, family liaison staff, mental health professionals and psychologists.

Students social and emotional conditions began to deteriorate around 2012, with the advent of social media, and worsened during the pandemic. The need for additional pupil support personnel, including mental health professionals, emerged in all 2025 professional judgement panels. In addition to private and group counseling sessions, addressing these needs usually requires interactions with families and parents. Indeed, the Ed Trust argues that effective school, family and community engagement can result in increased student attendance, boost student academic performance, incentivize more robust career aspirations, reduce mental health issues and dropout rates, *and*, when done at the early elementary grades, can be more strongly correlated with student academic success than family income.

In terms of level of resources, the more disadvantaged the student body, the more comprehensive the strategy needs to be, a reality recognized by the EB Model's resources for these activities. The EB Model provides additional pupil support staff at the ratio of

1.0 additional pupil support position for every 100 at-risk students, so the greater the number of at-risk students in a school, the greater the additional pupil support staff. The EB Model also provides $65 per student for program materials.

*Evidence and Recommendation*

Core pupil support positions for school counselors and nurses are discussed in Element 10. At-risk students, however, generally have more non-academic needs that must be addressed by additional pupil support staff, which include additional school counselors, as well as social workers, family liaison staff, mental health professionals and psychologists. Students social and emotional conditions worsened during the pandemic further bolstering the need for those services in many schools.

ELL students and students from low-income backgrounds, and many other students traumatized by the COVID pandemic, tend to have a multiplicity of non-academic needs that schools should address. This usually requires interactions with families and parents as well as more counseling in school. Research shows that schools with a higher concentration of at-risk students often have fewer and often less supportive school/family/community interactions even though the need for these interactions is greatest in such schools (Wriston & Duchesneau, 2024). As a result, the greater the concentration of at-risk students, the more intensive these family and student outreach efforts need to be. The EB Model addresses this by providing additional pupil support staffing resources based on the counts of at-risk student that include students from low-income backgrounds, ELL students and mobile students.

In the late 1990s, and early 2000s, various comprehensive school designs suggested multiple ways schools could provide more intensive family and student outreach programs (Stringfield, Ross, & Smith, 1996; for further discussion, see Brabeck, Walsh, & Latta, 2003). More recently, the Ed Trust and The National Association for Community and Family Engagement have provided guidelines for designing and implementing effective school, community and family engagement programs. In terms of level of resources, the more disadvantaged the student body, the more comprehensive the strategy needs to be, a reality recognized by the EB Model's resources for these activities.

According to the Ed Trust, effective school, family and community engagement can improve student attendance, boost student academic performance, incentivize more robust career aspirations, reduce mental health issues and dropout rates, *and*, when done at the early elementary grades, can be more strongly correlated with student academic success than family income (Wriston & Duchesneau, 2024). As we describe below, there are many ways schools can ensure that students, families, and communities remain engaged, including home visits and community walks; at its core, meaningful engagement is about building personal relationships, trust, and mutual respect among students, educators, families, and communities.

Although there are multiple ways schools can and often do provide outreach to parents or involve parents in school activities – from fund raisers to governance – research shows school sponsored programs that have an impact on achievement address what parents can do at home to help their children learn. For example, parent outreach that explicitly and directly addresses what

parents can do to help their children be successful in school, and to understand the standards of performance that the school expects, are the types of school-sponsored parent activities that produce discernible impacts on students' academic learning (Steinberg, 1997).

At the secondary level, the goal of parent outreach programs is to have parents learn about what they should expect of their children in terms of course taking and academic performance. If a district or a state requires a minimum number of courses for graduation, those requirements should be made clear. Secondary schools need to help parents understand how to more effectively assist their children to identify an academic pathway through middle and high school, understand standards for acceptable performance, and be aware of the course work necessary for high school graduation and college entrance. If either an average score on an end-of-course examination or a cut-score on a comprehensive high school test is required for graduation, they too should be discussed. This is particularly important for parents of students in the middle or lower end of the achievement range, as often these students know very little about the requirements for transition from high school to postsecondary education (Kirst & Venezia, 2004).

At the elementary level, the focus for parent outreach and involvement programs should concentrate on what parents can do at home to help their children learn academic work from school. Too often parent programs focus on fund raising through parent-teacher organizations, involvement in decision making through school site councils, or other non-academically focused activities at the school site. Although these school-sponsored parent activities might impact other goals – such as making parents feel more comfortable at school or involving parents more in some school policies – they have little effect on student academic achievement. Elementary student parent actions that impact student learning would include: 1) reading to them at young ages, 2) discussing stories and their meanings, 3) engaging in conversations with open ended questions, 4) setting aside a place where homework can be done, and 5) ensuring that their child completes all homework. Recent research shows that simply *texting* these activities to parents can result in improved student performance (Smith, 2021).

Given the changes in how students are assessed and graded, another important school outreach activity includes strategies for how to communicate grades and student assessment results to parents, and how parents can support students in response to those data (Levitan & Munyan-Penne, 2024). Most parents are familiar with the typical letter grades of A, B, C, D and F, but reporting student scores relative to various level of performance – Basic, Proficient and Advanced, in relation to a variety of curriculum standards, and linking that to the old letter grades or college admission requirements – is not straight forward and needs careful attention, definition, and planning.

For actionable guidance on how educators can create strong school, family and community partnerships, schools can reference a series of guidebooks created by the Alliance for Resource Equity[27] – a partnership between the Ed Trust and Education Resource Strategies. The Alliance provides multiple tools for using school dollars in the most effective and efficient manner, The guidebooks they have developed provide concrete suggestions for creating effective school and family partnership and engagement strategies, but also have suggestions for creating effective,

[27] https://educationresourceequity.org/

equitable and mission driven school cultures. The resources needed to deploy these strategies are provided in the EB Model.

Moreover, the resources in the EB Model are adequate to create and deploy the ambitious and comprehensive parent involvement and outreach programs that are part of two, earlier comprehensive school designs: Success for All Program and the Comer School Development Program. The Success for All Program includes a family outreach coordinator, a nurse, a social worker, a counselor and an education diagnostician for a school of about 500 students. This group functions as a parent outreach team for the school, serves as case managers for students who need non-academic and social services, and usually includes a clothing strategy to ensure all students, especially in cold climates, have sufficient and adequate clothes, and coats, to attend school.

The Comer School Development Program was created on the premise of connecting schools more to their communities. Its Parent-School team has a somewhat different composition and is focused on training parents to raise expectations for their children's learning, to work with social service agencies and to work with the school's faculty to raise their expectations for what students can learn. Sometimes the team co-locates on school site premises to provide a host of social services. The need for robust family outreach programs and the efficacy of the Comer designed School Development Program today was reinforced by Linda Darling Hammond and colleagues (2019) who argued that the program is as relevant in current times as when it was created in the late 1990s.

A program called Communities in Schools (www.communitiesinschools.org), which now operates in 26 states and the District of Columbia and can be resourced by the additional staffing provided by this element, has been successful in raising school attendance rates, a percussor to improved student academic performance. The program adds a caseworker, often trained in social work, to a school's pupil support team to help match social services provided by non-educational agencies to students who need them. KIPP Charter schools also have robust parent involvement strategies, which also can be supported by these extra pupil support resources.

These additional pupil support staff can also be used to provide some of the mental health services educators in several states increasingly argue many students need. At the Professional Judgment Panels we conducted over the past several years in Maryland, Michigan, Vermont and Wyoming in 2020 and even more so in 2025, one of the overwhelming findings was the increasing need for staff to meet the social, emotional, and mental health needs of students and their families. The COVID-19 pandemic and the changes required to maintain personal physical and mental health further increased the need for school staff to help students and their families cope with a wide range of challenges, including mental health challenges. Levenson (2017) identifies ten best practices schools can deploy to provide a range of social and emotional supports for students, all of which can be provided by the pupil support resources provided by the EB Model, both the core pupil support resources and the additional resources provided by at-risk pupil counts. Finally, the Education Commission of the States has outlined how states can support the mental health issues of students (e.g., Slease, 2025) and track state laws that have mandated mental health education in schools.

In recognizing all these non-academic needs of students, the EB Model provides additional pupil support staff at the ratio of 1.0 additional pupil support position for every 100 at-risk students. The EB Model also provides $65 per at-risk students for program materials.

*28. Extended-day programs*

At both elementary and secondary school levels, some struggling students are likely to benefit from after-school or extended-day programs, even if they receive Tutoring/Tier 2 interventions during the regular school day. Extended day programs are an environment for children and adolescents to spend time after the school day ends but during the regular school year.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Provide 1.0 teacher position for every 120 at-risk students. Provide resources outside the block grant as a categorical grant.* | For both extended-day and summer school programs, funding was rolled into the block grant and provides a 0.15 teacher FTE for every 30 at-risk students. Not provided for small or alternative schools.** A minimum 0.50 FTE is provided for school districts that do not generate that amount based upon the district's at-risk count. In 2017, the funds remained the same but were "rolled into" the block grant and are no longer a categorical program. | Provide 1.0 teacher position for every 120 at-risk students. Provide resources outside the block grant as a categorical grant.* Also $65 per at-risk student for program materials. |

*This formula equates to funding for one teacher position for every 30 at-risk students or 4.0 teacher positions per 120 at-risk students, paid at the rate of 25% percent of a teacher's annual salary, enough to pay a teacher for a two-hour extended-day program, five days per week.
**This equates to 0.6 FTE for every 120 at-risk students.

**Summary and Recommendation**: Extended-day programs provide environments for children and adolescents to spend time in school *after* the regular school day ends, but during the *regular school year*. Reviews of research have found that well designed and administered after-school programs yield numerous improvements in academic and behavioral outcomes. Long term studies of the 21st Century Community Learning Centers Program found it produced significant, positive impacts on student academic performance. A 2017 RAND Corporation review of multiple studies of after school programs found positive effects on both behavioral and academic outcomes if the eligible students actually attended the programs and the programs had an academic focus. Since then, multiple studies and several research reviews have documented positive effects of extended-day programs on the academic performance as well as behavioral outcomes of students who participated in select after-school programs. Both program quality (e.g., teacher qualifications) and student attendance impact results – students who regularly attend academically oriented after school programs experience the largest positive

academic results. Further, guidance from the U.S. Department of Education (ED) on evidence-based uses of ESSER III (COVID) funds identified structured after school programs, like those that have the features identified by the EB Model. To work, such programs need qualified staff, small group size, a focus on academics, a culture of mastery, consistent student participation and funding for the long term.

The EB Model provides for a year-long after-school program. It provides resources for a fully certified teacher to serve 15 at-risk students each day for two hours and paid an additional 25 percent of salary. The EB Model also assumes half of the at-risk students will participate in the program, so a school with 120 at-risk students would receive funding for four individuals to serve 60 students after school in groups of 15 for two hours (25 percent FTE) a day. Simplified, the EB Model provides one teacher position for every 120 at-risk students, as well as $65 per student for extended-day program materials.

*Evidence and Recommendation*

Extended-day programs provide environments for children and adolescents to spend time in school *after* the regular school day ends, but during the *regular school year*. Reviews of research found that well designed and administered after-school programs yield numerous improvements in academic and behavioral outcomes (Fashola, 1998; Peterson & Vandell, 2021; Posner & Vandell, 1994; Vandell, Pierce & Dadisman, 2005).

In 2005, the first year evaluation of the 21st Century Community Learning Centers Program (James-Burdumy et al., 2005), **an RCT**, cast some doubt on these positive findings. Though hotly debated, the initial results indicated that for elementary students, extended-day programs did not appear to produce measurable academic improvement. Critics of this study (e.g., Vandell, Pierce & Dadisman, 2005) argued the control groups had higher pre-existing achievement, which reduced the potential for finding program impact. Critics also argued the small impacts identified had more to do with the lack of full program implementation during the initial years than with the strength of the program. However, subsequent analyses of the 21st Century learning centers found that, over a longer, multiple-year period, this program was effective and did produce significant, positive impacts on student academic performance (Peterson, 2013; Weiss, 2013).

Studies of two statewide programs, one in Massachusetts and the other in Florida, found extended day programs had modest or no significant effects on student academic programs (Checkoway, et al, 2013; Folsom, et al., 2017). But, Auger, Pierce & Vandell (2013) found that participation matters, and that low-income students who consistently participated in an after school elementary program caught up to other students in 5th grade mathematics. Kraft (2015) describes how individual tutoring programs in extended day programs can have significant impacts on student learning.

In a review of the effects of multiple extended day programs, McCombs et al., (2017) further support the efficacy of after school programs as well as the key structural elements discussed below. The study concluded that academically oriented after school programs positively impact student performance in the subjects addressed. Vandell et al. (2022) found that students participating in high quality after school programs combined with participation in extracurricular

activities were reported by teachers have higher academic performance, work habits, and task persistence, and less aggression.

In sum, multiple studies and several research reviews have documented positive effects of extended-day programs on the academic performance as well as behavioral outcomes of students who participated in select after-school programs (e.g., Vandell et al., 2020; Wu, 2020). Both program quality (e.g., teacher qualifications) and student attendance impact results – students who regularly attend academically oriented after school programs experience the largest positive academic results.

Further, guidance from the U.S. Department of Education (ED) for evidence-based uses of ESSER III (COVID) funds identified structured after school programs, like those that have the features identified below, as one such program. In a related handbook, Peterson and Vandell (2021) further review the substantial evidence of the impact of after school programs on student academic learning and identify the structural features of the afterschool programs that work. Those structural features are very similar to those the EB Model has identified for several years. These conclusions and recommendations further support the EB Model's after school resources.

After school, extended day programs can help improve student learning but it depends on multiple features of the programs, and the participation behaviors of students. In practical terms, program evaluators have identified several structural and institutional supports necessary to make after-school programs effective:

- Staff qualifications and support (staff training in child or adolescent development, after-school programming, elementary or secondary education, and content areas offered in the program; staff expertise; staff stability/turnover; compensation; institutional supports).
- Program/group size and configuration (enrollment size, ages served, group size, age groupings and child staff ratio).
- A program *culture of mastery*, i.e., having students engage in activities to become more proficient and/or to meet various standards of performance.
- Consistent participation in a structured program.
- Financial resources and budget (dedicated space and facilities that support skill development and mastery, equipment and materials to promote skill development and mastery; curricular resources in relevant content areas; location that is accessible to youth and families).
- Program partnerships and connections (with schools to connect administrators, teachers and programs; with larger networks of programs, with parents and community).
- Program sustainability strategies (institutional partners, networks, linkages; community linkages that support enhanced services; long term alliances to ensure long term funding).

The EB Model includes resources for an extended-day program for all school prototypes to meet these structural supports. The resources can be used to provide students in all elementary and all secondary grades with additional help during the school year, but *after* the normal school day, to meet academic performance standards.

Because not all at-risk students will need or will attend an after-school program, the EB Model

provides extended day resources for half of the at-risk students in a school. This reflects a need and participation rate identified by Kleiner, Nolin, and Chapman (2004). More recent data generally confirm the assumption that not all students who need an after-school program will attend one. NCES (2023) found that 64 percent of schools across the country provided after school programs with an academic emphasis. Licensed teachers tended to work in the programs. The study also found, however, that only about 22 percent of students eligible for the programs participated in them, although the study did find that the participation rate was slightly higher for students in urban schools serving students of color.

The EB Model provides for a year-long after-school program. It provides resources for a fully certified teacher to serve 15 at-risk students each day for two hours and paid an additional 25 percent of salary. The EB Model also assumes half of the at-risk students will participate in the program, so a school with 120 at-risk students will receive funding for four individuals to serve 60 students in groups of 15 for two hours (25 percent FTE) a day. Simplified, the formula equates to one teacher position for every 120 at-risk students.

*29. Summer School*

Many students need extra instructional time to achieve the state's high proficiency standards. Thus, summer school programs should be part of the set of programs available to provide struggling students the additional time and help they need to achieve to standards and earn academic promotion from grade to grade (Borman, 2001). Providing additional time to help all students master the same content is an initiative that is grounded in research (National Education Commission on Time and Learning, 1994). It should be noted that summer school services are provided during the summer months so outside of the regular school year.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| Provide 1.0 teacher position for every 120 at-risk students. Provide resources outside the block grant as a categorical grant.* | For both extended-day and summer school programs, funding was rolled into the block grant and provides a 0.15 teacher FTE for every 30 at-risk students. Not provided for small or alternative schools.** A minimum 0.50 FTE is provided for school districts that do not generate that amount based upon the district's at-risk count.<br>In 2017, the funds remained the same but were "rolled into" the block grant and are no longer a categorical program. | Provide 1.0 teacher position for every 120 at-risk students. Provide resources outside the block grant as a categorical grant.*<br>Also $65 per at-risk student for program materials. |

*This formula equates to funding for one teacher position for every 30 at-risk students (assuming only half will attend so a class size of 15) or 4.0 teacher positions per 120 at-risk students, paid at the rate of 25% percent of a teacher's annual salary, enough to pay a teacher for an 8-week summer school program, five days per week.
**This equates to 0.6 FTE for every 120 at-risk students.

**Summary and Recommendation**: Evidence dating back many decades shows students, on average, lose a little more than a month's worth of skill or knowledge over the summer break. Summer breaks have a larger negative impact on low-income children's reading and mathematics achievement. This loss can reach as much as one-third of the learning during a regular nine-month school year. Studies show these income-based summer learning differences accumulate over the elementary school years, such that poor children's achievement scores – without summer school – fall further and further behind the scores of middle-class students as they progress through school grade by grade.

A 2000 meta-analysis of 93 summer school programs found the average student in summer programs outperformed about 56 to 60 percent of similar students not receiving the programs. Since then, **several RCTs** of summer school reached positive conclusions about how summer programs can positively impact student learning. The studies also show that students who attend summer programs for longer times experienced larger gains in reading and math scores than students who attended for less than four weeks. In 2018, the National Academy of Sciences (2019) convened a panel of top experts to review the evidence of the impacts of summer experiences on child and adolescent development. Their first conclusion was quite definitive: 6-8 week summer experiences, appropriately designed, have significant, positive effects on cognitive, social, and physical development.

The EB Model provides resources for a program of eight weeks in length with a six-hour day. This allows for at least four hours of instruction in core subjects and for up to two hours of non-academic activities each day. The formula for staffing summer school programs equates to one teacher position serving 15 students and paid at 25 percent of annual salary or 4.0 FTE teachers per 120 at risk students (assuming only half or 60 of the 120 students are estimated to enroll in summer school). This position is paid at the rate of 25 percent of the annual teacher salary. The EB Model also provides $65 per at-risk student for program costs.

*Evidence and Recommendation*

Evidence dating back to 1906 shows students, on average, lose a little more than a month's worth of skill or knowledge over the summer break (Cooper, Nye, Charlton, Lindsay, & Greathouse, 1996). Summer breaks have a larger deleterious impact on low-income children's reading and mathematics achievement. This loss can reach as much as one-third of the learning during a regular nine-month school year (Cooper et al., 1996). A longitudinal study by Alexander and Entwisle (1996) showed these income-based summer learning differences accumulate over the elementary school years, such that poor children's achievement scores – without summer school – fall further and further behind the scores of middle-class students as they progress through school grade by grade. As a result of this research, there has been a consensus for decades that what happens (or does not happen) during the summer can significantly impact the achievement of students from low-income and at-risk backgrounds (see Heyns, 1978). Further, summer school programs were identified as one evidence-based use of Covid funds to help students regain learning loss from the pandemic (Peterson & Vandell, 2021).

A meta-analysis of 93 summer school programs (Cooper, Charlton, Valentine, & Muhlenbruck, 2000) found the average student in summer programs outperformed about 56 to 60 percent of similar students not receiving the programs. However, the certainty of these conclusions was compromised because only a small number of studies used random assignment, and program quality varied substantially (Borman, Rachuba, Hewes, Boulay & Kaplan, 2001; Borman & Boulay, 2004).

**RCTs** of summer school reached more positive conclusions about how summer programs can positively impact student learning (Borman & Dowling, 2006; Borman, Goetz & Dowling, 2009). Roberts (2000) found an effect size of 0.42 in reading achievement for a randomized sample of 325 students who participated in the Voyager summer school program. A 2016 randomized control trial of summer school, found that summer programs that focused on academics, provided small classes of 15, and lasted for several weeks, produced significant positive impacts on elementary student academic achievement (Augustine, et al., 2016). Not surprisingly, the study found that students who attended these summer programs for longer times experienced larger gains in reading and math scores than students who attended for less than four weeks. A more recent meta-analysis of summer programs that specifically addressed math achievement found positive impacts on student performance (Kraft, et al., 2021).

Researchers (Browne, 2019; McCombs, et al., 2011; Peterson & Vandell, 2021; Pitcock & Seidel, 2015.) noted several program components related to improved achievement effects for summer program attendees, including:

- Early intervention during elementary school
- A full 6-8-week summer program
- A clear focus on mathematics and reading achievement, or failed courses for high school students
- Small-group or individualized instruction
- Careful scrutiny for treatment fidelity, including monitoring to ensure good instruction in reading and mathematics is being delivered, and
- Monitoring student attendance.

Summer programs that include these elements hold promise for improving the achievement of at-risk students and closing the achievement gap. For example, Kim and Quinn's (2013) meta-analysis of 41 school- and home-based summer school programs found students in kindergarten through grade 8 who attended summer school programs with teacher directed literacy lessons showed significant improvements in multiple areas including reading comprehension. Moreover, the effects were much larger for students from low-income backgrounds. Browne (2019) found that voluntary summer school programs in five large districts, with class sizes of 15 and that provided both academics and enrichment, increased student test scores the next year 20-25 percent of the typical annual gain for frequent attenders but smaller gains for those students who were not frequent attenders. About 60 percent of program participants were frequent attenders. One implication, clearly, is to enhance strategies to get more students to attend summer school more often. And Borman et al. (2020) found similar significant impacts on student's reading

performance, for a replicable summer reading program, Kids Read Now, with the effect size rising to 0.19 for students who read the most books over the summer.

A comprehensive book on the "summer slide," written by several of the analysts cited above, expands on these points (Alexander, Pitcock & Boulay, 2016). The book describes what is known about learning loss over the summer and what can be done to prevent it. The authors' suggestions for how to structure effective summer school programs echo the recommendations above.[28]

Callen et al., (2023) studied the impact of summer programs in several school districts that were created as a strategy to improve learning loss caused by the COVID pandemic. The findings were modest: small impacts on mathematics performance but no impact on reading. However, the study included students who attended for just one day as well as those who attended for the entire summer school period; clearly, those who barely attended would be unlikely to have improved math or reading achievement. The programs themselves also varied, from providing only a small amount of academic instruction to providing several hours a day of academic instruction. Students who received little academic instruction, even with high attendance, would not likely improve achievement scores substantially. In other words, the study did not assess the impact of structured summer school programs in the districts. The study could more appropriately be termed a study of "natural variation" in summer school experiences, and "natural variation" studies usually produce modest if any positive results. The findings from this study should not be interpreted to mean summer school programs do not work, but rather as other research shows, to work, summer school programs need the core elements discussed above: a 6–8-week program, several hours a day of academic instruction, and high student attendance.

In 2018, the National Academy of Sciences convened a panel of top experts to review the evidence of the impacts of summer experiences on child and adolescent development (National Academy of Sciences, 2019). Their first conclusion was quite definitive: summer experiences, appropriately designed, have significant effects on cognitive, social, and physical development. The second conclusion was that summer experiences were unequally distributed and that children from low-income backgrounds were most in need of such experiences. Further, guidance from the U.S. Department of Education for evidence-based uses of ESSER III (COVID) funds identified summer school programs, like those that have the features identified above, as one such program. In a related handbook, Peterson and Vandell (2021) further reviewed the substantial evidence of the impact of summer school programs on student academic learning and noted the structural features of the summer school programs that work; and those structural features are very similar to those the EB Model has identified for several years. These conclusions and recommendations further support the EB Model's summer school resources.

Because summer school can produce powerful impacts, the EB Model provides resources for summer school for classes of 15 students, for 50 percent of all at-risk students in all grades K-12. This reflects a need and participation rate identified by (Capizzano, Adelman & Stagner, 2002). More recent data generally confirm the assumption that not all students who need a school

[28] Lynch and Kim (2017) report that an RCT of an *on-line* summer school program for mathematics had no impact on student learning but could not determine whether it was the on-line curriculum itself, or some other programmatic element – like monitoring of students engaging in the online instruction – that diminished the impact.

program will attend them. NCES (2023) found that 78 percent of schools across the country provided summer school programs with an academic emphasis in summer 2023. Licensed teachers tended to work in the programs. The study also found that only about 19 percent of students who had the opportunity to attend the programs did so, although the participation rate was higher for students in urban schools serving students of color.

The EB Model provides resources for a program of eight weeks in length with a six-hour day. This allows for at least four hours of instruction in core subjects. A six-hour day also allows for up to two hours of non-academic activities each day. The formula for staffing summer school programs equates to one teacher position serving 15 students and paid at 25 percent of annual salary or 4.0 FTE teachers per 120 at risk students (recall that only half or 60 of the 120 students are estimated to enroll in summer school). This position is paid at the rate of 25 percent of the annual teacher salary. Simplified, the formula equates to one full time teacher position for every 120 at-risk students. The Model also provides $65 per at-risk student for program costs.

As the discussion to this point shows, the EB Model's resources for at-risk students are a sequenced set of connected and structured programs that begin in the early elementary grades and continue through the upper elementary, middle, and high school levels. The EB Model provides resources so that the most academically deficient at-risk students receive Tier 2 interventions that include tutoring, an extended-day program with an academic focus, and a summer school program that is structured and focused on academics. ELL students receive all of these services *as well as* the additional ELL resources discussed in the next section. Further, these enhanced instructional resources are supplemented by additional pupil support staff as well (Element 27).

*30. English Language Learner (ELL) Students*

Research, best practices and experience show that English language learners (ELL) need assistance to learn English, in addition to instruction in the regular content classes. This can include some combination of professional development for teachers to help them teach "sheltered English classes, English as a second language classes, and "reception" centers for districts with large numbers of ELL students who arrive as new immigrants to the country and the school throughout the year.

ELL is a separate program from the at-risk programs described above in the sections on tutors, extra pupil support, extended day and summer school. Funding is provided for *all* ELL students for these additional services.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| 1.0 teacher position for every 100 identified ELL students. | 1.0 teacher position for every 100 identified ELL students. | Same as 2020 Model but $65 per ELL student for program materials. |

**Summary and Recommendation**: Regardless of the evidence on the effectiveness of bilingual education, is difficult if not impossible to provide bilingual education in most

schools today because students come from multiple language backgrounds. And even if teachers could be found with multiple language proficiencies, it would be impossible to use a bilingual approach if there were multiple non-English languages spoken by students in the class, the situation in most schools today. Consequently, many schools have adopted the Sheltered English approach, and the EB Model argues that all schools with ELL students should adopt the Sheltered English approach.

Sheltered instruction is an approach to teaching English language learners that integrates language and content instruction. Sheltered instruction has two prime goals: to provide access to mainstream, grade-level content, and simultaneously to promote the development of English language proficiency, including the academic language specific to the content area. One specific sheltered English approach is the Sheltered Instruction Observation Protocol (SIOP) Model. SIOP is a research-based and validated instructional model that has proven effective in addressing the academic needs of English learners throughout the United States. The Sheltered English approach does not cost anymore as it requires just one teacher, but a teacher skilled in using Sheltered English.

Providing a classroom aide that speaks some of the languages of the ELL students does not result in improved student performance. And co-teaching ELL classes is not cost-based because, even if it works (and it often does not work), it is twice expensive as it requires two teachers.

The EB Model provides 1.0 teacher position for every 100 ELL students. Given this, it is important to understand that the EB Model provides all ELL students with additional language resources ***as well as*** tutoring, additional pupil support, extended day, and summer school.

*Evidence and Recommendation*

Good ELL programs work, whether the approach is structured English immersion (sometimes called sheltered English) or initial instruction in the native language, often called bilingual education (Clark, 2009). Bilingual programs have been studied intensively. A best-evidence synthesis of 17 studies of bilingual education (Slavin & Cheung, 2005) found ELL students in bilingual programs outperformed their non-bilingual program peers. Using studies focused primarily on reading achievement, the authors found an effect size of +0.45 for ELL students. A **2011 RCT** also produced strong positive effects for bilingual education programs (Slavin, et al., 2011) but concluded the language of instruction was less important than the approaches taken to teach reading.

Addressing the important issue of learning to read in *The Elementary School Journal,* Gerstein (2006) concluded ELL students can be taught to read in English if, as shown for monolingual students, the instruction covers phonemic awareness, decoding, fluency, vocabulary and reading comprehension, in other words, follows the current science of reading instruction discussed in Element 17. Gerstein's studies also showed ELL students benefit from instructional interventions initially designed for monolingual English-speaking students, the resources for which are included in the four at-risk student triggered programs: tutoring, extended-day, summer school

and pupil support. The positive impacts of a recent **random controlled trial** of a Spanish literacy tutoring program reinforce this assertion (Borman, et al., 2024).

Bilingual education is difficult to provide in most schools today because students come from multiple language backgrounds, and it is difficult to find teachers who are fluent in the many languages represented by small groups of students. And even if teachers could be found with such language proficiency, it would be impossible to use a bilingual approach if there were multiple non-English languages spoken by students in the class, the situation in most schools today. Consequently, many schools have adopted the Sheltered English approach. The EB Model argues that all schools with ELL students should adopt the Sheltered English approach. Thus, the EB Model uses the Sheltered English model for estimating ELL resources in schools.

Brown University's Education Alliance Project defines sheltered instruction as an approach to teaching English language learners that integrates language and content instruction. Sheltered instruction has two prime goals: to provide access to mainstream, grade-level content, and to promote the development of English language proficiency, including the academic language specific to the content area (The Education Alliance, 2020). Sheltered English instruction combines subject matter instruction with language learning, ensuring that students engage with both the content and the language simultaneously. Teachers adjust their speech, use visuals, and incorporate hands-on activities to enhance understanding. Teachers also incorporate students' backgrounds and experiences to make learning more relatable and effective.

One specific sheltered English approach is the Sheltered Instruction Observation Protocol (SIOP) Model. SIOP is a research-based and validated instructional model that has proven effective in addressing the academic needs of English learners throughout the United States. The SIOP Model consists of eight interrelated components: lesson preparation, interaction, building background, practice and application, comprehensive input, lesson delivery, strategies and review and assessment [for more detail, see Echevarria, Vogt and Short (2017); Echevaria & Short (2022)]. Three studies by Short, Echevarria and Richards-Tutor (2011) found that students with teachers who were trained in the SIOP Model of sheltered instruction and implemented it *with fidelity* performed significantly better on assessments of academic language and literacy than students with teachers who were not trained in the model, underscoring the importance of professional development in implementing this instructional approach. Further, Le and Polikoff (2020) found that schools that adopted specific English language development curriculum produced larger impacts on students' English proficiency, suggesting that English language development needs to be a structured and systemic aspect of instruction for ELL students.

In focus groups we conducted as part of EB studies in several states, many educators also argued that sheltered instruction represents high-quality, effective instruction and is effective not only for ELL students but also all students, and particularly non-ELL, at-risk students (e.g., Odden & Picus, 2018). This suggests training all teachers in Sheltered English instruction can have the side benefit of improving the performance of all students, not just ELL students.

For Sheltered English instruction, districts and schools of education should provide professional development and training for the pedagogical skills needed by teachers to implement this approach. The EB Model has recommended the Sheltered English approach for two decades and

includes substantial professional development resources to aid in its implementation. Indeed, given the prevalence of ELL student from scores of countries across U.S schools as well as the nearly 50 percent of students from low-income backgrounds, Sheltered English instruction would be an appropriate instructional strategy in most classrooms in America, as well as Wyoming.

Providing a classroom aide that speaks some of the languages of the ELL students does not result in improved student performance. And co-teaching classes with ELL students is not cost-based. Sheltered English programs, by being cost-based, supersede the practice in many districts of having two teachers provide instruction to a class of ELL students – one content knowledgeable teacher speaking English, and a second teacher who has expertise in the second language represented in the classroom, but often does not know the content. Co-teaching, moreover, is twice as expensive as Sheltered English Instruction and, even if it were effective, would not be cost-based because of its high cost (District Management Group, 2020).

In addition to being the most cost-effective general structure for providing instruction to ELL students, research shows ELL students need a solid and rigorous core curriculum as the foundation on which to provide both core instruction and any extra services (Gandara & Rumberger, 2008; Gandara, Rumberger, Maxwell-Jolly, & Callahan, 2003). This research suggests ELL students need (and the EB Model provides):

- Effective teachers – a core goal of all the staffing in the EB Model.
- Adequate instructional materials and good school conditions.
- Good assessments of ELL students so teachers know in detail their English language reading and other academic skills.
- Less segregation of ELL students
- Rigorous and effective curriculum and courses for all ELL students, including college and career ready, and affirmative counseling of such students to take those courses, and
- Professional development for all teachers, focused on sheltered English teaching skills as well as the content and pedagogical content knowledge needed for teaching any subject.

Torff and Murphy (2019, 2020) emphasize these important points by arguing that a major reason for the ELL achievement gap is that ELL students often are not offered a rigorous curriculum, even when it is recommended as appropriate. And when used, teachers often choose less rigorous activities and expectations when teaching ELL students. The result, not surprisingly, is lower ELL academic achievement. Tarff and Murphy argue this creates a self-fulfilling prophecy: ELL students receive less than rigorous instruction, which limits their performance, which justifies the lower expectations, all the while non-ELL students receive more rigorous instruction and achieve at a higher level.

The solution, Torff and Murphy argue, is knowing the difference between the academic demands of a curriculum and the linguistic demands – and then for teachers to provide the linguistic supports that allow the ELL students to meet the same rigorous achievement standards in all content areas as other, native English-speaking students. This is also the approach and goal of Sheltered English instruction. Teachers need to teach both academic content and the academic language that is part of that content, which is a more demanding challenge for ELL students. Intensive PD is needed to help teachers acquire these language support skills.

Educators know that ELL students from lower income and less educated backgrounds struggle most in school and need extra help to learn both academics, regular English and content-related academic English. The EB Model addresses this need by ensuring the ESL resources triggered by ELL counts are *in addition to* other Tier 2 intervention resources including tutoring, pupil support, extended day and summer school.

The EB Model provides 1.0 teacher position for every 100 ELL students. These resources are in addition to the at-risk resources for tutors, pupil support, extended day, and summer school for all ELL students. Specifically, the EB Model provides one teacher position for every 100 ELL students for tutoring, one teacher position for every 100 ELL students for extra pupil support, one teacher position for every 120 ELL students for summer school, one teacher position for every 120 ELL students for extended day programming, *and in addition*, one teacher position for every 100 ELL students for additional language support. This represents a robust set of additional resources beyond core staff for ELL students.

*31. Alternative Schools*

Alternative schools are secondary schools (usually but always high schools) that provide educational as well as other services, such as counseling for students who have been unable to succeed in regular school settings. They are typically small schools with no more than approximately 50 students and campuses often located in a corner of a larger school building, or close by in a separate facility. Since 2015 the Wyoming EB Model has recommended resourcing these schools exactly the same way as all other schools based on their ADM enrollment, assuming that most would be resourced as a small school with 49 or fewer ADM.

| 2020 WY EB Model | Wyoming Funding Model | 2025 WY EB Model |
|---|---|---|
| No separate formula: assumes all alternative schools have 49 or fewer students and thus qualify for the small school formula of 1 AP plus 1 teacher position for every 7 ADM. | Provide funding for all staff at a ratio of 1 assistant principal and 1 teacher position for every 7 ADM. | No change from 2020 recommendation. |

**Summary and Recommendation**: A small number of students have difficulty learning in the traditional school environment. The alternative learning environment (ALE) students this section addresses are those that have some combination of significant behavioral, social and emotional issues, often including alcohol or drug abuse. These students often do much better in small ALEs. It is important to note this rationale for an ALE does not consider alternative schools as a placement for students who simply prefer a different approach to learning academics, such as project-based learning, or more applied learning strategies similar to strategies that can be deployed in new CTE programs like computer assisted engineering. The EB Model conceptualizes alternative schools as schools for troubled youth who need counseling and therapy embedded in the school's instructional program. Our understanding is that the state's concept of the

purpose of alternative schools aligns with the EB Model, but applies the formula to all schools identified as "alternative," regardless of the number of students.

The EB Model's ALE funding applies only to schools with 49 or fewer ADM. As such, for over ten years, the EB Model has resourced alternative schools using the small school formula that is part of that regular funding model approach. Specifically, the "regular" EB Model's small school approach in Wyoming provides one administrative (assistant principal) position and one teacher for every seven students in the school up to an enrollment of 49 students. For schools larger than 49 the EB model relies on the EB model elements described above. This funding approach is intended to provide resources for a range of staff – teachers, guidance counselors, secretaries, etc. – the specifics of which to be determined by each school. The school also receives the per pupil allocations (instructional materials, computers and technologies, etc.) in the funding model as well as all at-risk counts triggered resources.

The EB model assumes that ALE Schools are small, generally 49 or fewer students, so the "regular" funding formula for small schools of one AP position and one teacher for every seven ADM provides adequate staffing resources (plus all per pupil and all at-risk allocations).

In addition, the definition of alternative schools could include "**welcome programs**" for ELL students who have recently entered this country, often from an environment of refugee status, refugee camps, and who have had little access to formal schooling. As those programs are small and transitory, the current EB and Legislative Model formulas for small schools of 1 assistant principal and 1 teacher position for every 7 students could be used to provide the needed resources for such centers. To do so, Wyoming would need to create regulations to define Welcome Programs.

*Evidence and Recommendation.*

A small number of students have difficulty learning in the traditional school environment. The alternative learning environment (ALE) students this section addresses are those that have some combination of significant behavioral, social and emotional issues, often including alcohol or drug abuse. These students often do much better in small ALEs. Alternative schools or alternative learning environments for these students are educational setttings designed to meet the multiple and varied needs of students who struggle in traditional school settings. These schools often focus on providing a supportive environment that simultaneously addresses behavioral and emotional issues as well as academic challenges. The key characteristics of ALEs including the following:

- **Target Population:** Students with behavioral issues, learning disabilities, or those at risk of dropping out.
- **Curriculum:** Often includes individualized education plans (IEPs) and may integrate therapeutic support.
- **Teaching Approach:** Emphasizes smaller class sizes, personalized attention, and alternative teaching methods.

- **Goals:** Aims to improve academic performance, social skills, and emotional well-being.

It is important to note this rationale for an ALE does not consider alternative schools as a placement for students who simply prefer a different approach to learning academics, such as project-based learning, or more applied learning strategies similar to strategies that can be deployed in new CTE programs like computer assisted engineering. The EB Model conceptualizes alternative schools as schools for troubled youth who need counseling and therapy embedded in the school's instructional program. Our understanding is that the state's concept of the purpose of alternative schools aligns with the EB Model.

Alternative school funding approaches can also be used to fund "welcome programs" for students who have recently entered this country, often from an environment of refugee status, refugee camps, and who have had little access to formal schooling. As those programs are small, the current EB and Legislative Model formulas for small schools of 1 assistant principal and 1 teacher position for every 7 students provides the needed resources for such centers.

One of the major issues states face in creating funding programs for alternative schools is defining them. Our 2010 review of literature and state practice on alternative education provided little guidance for developing a clear definition of alternative education. In 2014, as part of implementing its compulsory attendance laws, Maryland commissioned a study to review state definitions of ALE programs (see Porowski, O'Conner & Luo, 2014). Maryland needed a definition because attendance in an ALE program was an exemption in its compulsory attendance law and the state did not have a clear definition of such programs. The study found great variation across the states in both defining and structuring alternative education programs. Because individual states or school districts defined and determined the features of their alternative education programs, they tended to differ in key characteristics, including target populations, setting, services, and structure.

A formal definition of an ALE program would need to consider the target population (including both grade levels served and types of students), program setting (within a public school or outside such a structure), program offerings (academic, behavioral, counseling, social skills, career counseling, etc.) and structure (how programs are scheduled, staff responsibilities, etc.). The Porowski, O'Conner & Luo (2014) study found wide variation across states (and districts) across all of these elements.

We have concluded the Urban Institute's (Aron, 2006) definition of alternative education closely follows our understanding of alternative programs:

> Alternative education refers to schools or programs that are set up by states, school districts, or other entities to serve young people who are not succeeding in a traditional public-school environment. Alternative education programs offer students who are failing academically or may have learning disabilities, behavioral problems, or poor attendance an opportunity to achieve in a different setting and use different and innovative learning methods. While there are many different kinds of alternative schools and programs, they are often characterized by their flexible schedules, smaller teacher-student ratios, and modified curricula.

The Institute for Education Sciences at the United States Department of Education published statistics on alternative schools and programs for SY 2007-08 (Carver & Lewis, 2010). That study identified 558,300 students in 10,300 district-administered alternative education schools and programs across the United States. Although the report did not provide data on the size of these schools or on staffing ratios, the data suggest an average alternative school size of 54 students. Most of the programs served students in grades 9-12. The main reasons students were enrolled in alternative programs – all of which meet our initial definition of multiple emotional and/or behavioral problems – included:

- Possession or use of firearms or other weapons
- Possession, distribution, or use of alcohol or drugs
- Arrest or involvement with the criminal justice system
- Physical attacks or fights
- Disruptive verbal behavior
- Chronic truancy
- Continual academic failure
- Pregnancy/teen parenthood, and
- Mental health needs.

A 2022 report by the Urban Institute (Kho & Rabovsky, 2022) found that there were about 640,000 students enrolled in alternative schools, as defined in this report, in the 1990s.[29] ALE school enrollment then increased by about 56 percent, peaking by 2012 at close to a million students. The study found that ALE then dropped a bit to about 800,000, about 1.6 percent of national enrollment, where it has hovered for several years. The study also found that ALE enrollments vary substantially by state, ranging from less than 0.1 percent in states such as Vermont, New Hampshire and Maine, to 7 percent in Delaware. They study found Wyoming's ALE enrollment to be at the low end, about 0.2 percent of overall enrollment.

In 2010, we also reviewed state standards – where they existed – for alternative schools, but we only identified one state, Indiana, that established standards for ALE programs, and those standards hold today. The Indiana Department of Education's (2025) website states:

> While each of Indiana's alternative education programs is unique, they share characteristics identified in the research as common to successful alternative schools.
>
> - Student to teacher ratio of 15:1 or less
> - Operate for a minimum of three continuous hours per day
>   - Instructional time requirements for students still apply
> - Clearly stated mission and discipline code
> - Caring faculty that has chosen to work in the alternative program
> - Continual staff development

[29] Many studies and reports include charter schools, specialized schools for students with disabilities, or schools with a specific academic approach such as project-based learning, as alternative schools. The definition of alternative schools this report uses what is often called "typical" alternative schools and excludes charter schools and specialized schools for students with disabilities or with a particular academic approach.

- High expectations for student achievement
- Learning program tailored to the students' needs and learning style
    - Each student must have an Individualized Service Plan (ISP) that guides the student toward academic and behavioral goals
- Community involvement and support.

These characteristics align with the EB Model's view of ALE programs.

Funding formulas for alternative schools differ substantially (Griffith, 2019). In a few states, the typical staffing ratio for an alternative school is one administrative position for the school plus one teacher position for every so many students. Other states provide an extra dollar per pupil amount for each student enrolled in an ALE program. Still other states provide a weight for each ALE student. Many states have no specific funding formula for ALE students. Illinois provides a varying level of funding depending on the costs of different ALE programs.

Though Wyoming could consider developing a more formal definition of its ALE system, and a set of standards for ALE programs, it does not need to do so for funding purposes. The 2015 and 2020 EB Models do not have a specific alternative school formula for staff resources. Rather, the 2015 and 2020 EB Models fund alternative schools via the small school formula that is part of that regular funding model approach. Specifically, the "regular" EB approach in Wyoming provides one administrative position and one teacher for every seven students in the school up to an enrollment of 49 students. For schools larger than 49 the EB model relies on the EB model elements described above. This funding approach for EB Model ALE schools is intended to provide resources for a range of staff – teachers, guidance counselors, secretaries, etc. – the specifics of which would be determined by the school. The school also receives the per pupil allocations (instructional materials, computers and technologies, etc.) in the funding model as well as all at-risk counts triggered resources. The Legislative Model uses the small school of fewer than 49 student model of one assistant principal position plus one teacher position for every seven students for all staff in the building regardless of the size of the alternative school. That funding approach is also intended to provide resources to be spent on a range of staff not only on teachers. An additional caveat about the EB Model's recommendation is it did not envision large alternative schools, even though the Legislative Model provides the alternative school staffing to larger alternative schools.

In short, the EB model assumes that ALE Schools are small, generally 49 or fewer students, so the "regular" funding formula for such schools of one AP position and one teacher for every seven ADM (plus all per pupil and all at-risk allocations) provides adequate staffing resources.

*32. Special Education*

Wyoming has maintained a reimbursement model for special education since the late 1990 and despite numerous studies, the Legislature has not identified a formula option that it believes is preferable to the current reimbursement model. The latest study of special education in Wyoming was conducted by the District Management Group as part of our 2020 recalibration. The study identified several cost saving options for special education delivery, but did not offer an alternative funding formla to replace the reimbursement approach in use then and now. Special Education was not a part of the 2025 recalibration study.

**Additional Issues Related to the Wyoming Funding Model**

There are several other issues related to the Wyoming Funding system that are not individual elements of the EB Model, but integral aspects of costing the model. These issues include salary levels, health insurance, other fringe benefits, regional cost adjustments, and external cost adjustments.

*33. Salary Levels*

**Note: This section will be updated once Dr. Stoddard's salary report for the 2025 recalibration is complete.**

A major element in the overall cost of the Wyoming Funding Model is the salary and related benefit levels used to price each staff position in the model. In the 2005 recalibration, the Wyoming Legislature directed the analysis to establish model salaries and adjustments for experience, education and span of control, where appropriate, and use school district actual salaries from school year 2005-06. Over the past decade, Dr. Christiana Stoddard has monitored the factors that influence salaries over time and compared them to appropriate figures in the broader labor market. More specifically, Dr. Stoddard has compared the Wyoming Funding Model salaries and salaries paid by Wyoming school districts of various staff to average salaries of individuals with similar skills in the private, i.e., non-education sector. She specifically sought to determine whether the Wyoming Funding Model salaries and school district paid salaries were "at market," i.e., at the same level of salaries in the private sector, with appropriate adjustments for the shorter education year. For several years, the Wyoming Funding Model salaries and school district paid salaries were above market, but that is no longer true.

*34. Health Insurance*

Health Insurance is a benefit provided to staff in the education system, just like it is provided as a benefit to all state workers. The issue is the approach to determining the cost of this benefit.

| 2020 Evidence-Based Recommendation | Wyoming Funding Model | 2025 Wyoming EB Model |
|---|---|---|
| Compute a health insurance composite amount for each generated FTE based upon prior year statewide average district weighted actual participation in district health insurance plans as to the proportion of employee only, split contract, employee plus spouse or children and | Compute a health insurance composite amount for each generated FTE based upon prior year average. Health insurance calculations are based upon prior year statewide average district weighted actual participation in district health insurance plans as to the proportion of employee only, split contract, employee plus spouse or children and family coverage for the State's health insurance contribution amounts | No change from 2020 with updated data from the state health insurance system |

| 2020 Evidence-Based Recommendation | Wyoming Funding Model | 2025 Wyoming EB Model |
|---|---|---|
| family coverage for the State's health insurance contribution amounts paid on behalf of State employees as of January 1 of the preceding school year. For SY 2020-211 the per FTE amount is $17,746. No health insurance for summer school or extended day positions. | paid on behalf of State employees as of January 1 of the preceding school year. For SY 25-26 the per FTE amount is $17,746. | |

*Evidence and Recommendation*.

Wyoming has taken a clear and substantive approach to addressing the costs of health insurance that is part of education staff compensation. Further, the EB and Wyoming Funding Models generally are in agreement on the approach to supporting health insurance. The agreement is that the state will support health insurance benefits for educators at the same level as for state employees. Specifically, the Wyoming Funding Model has included a dollar amount for health insurance benefits for each eligible employee. That dollar amount equals the average amount Wyoming provides for its State employees. The implicit signal is the State encourages school districts to provide health insurance support for every employee, just as the State does for its employees, and at the same rate as the state. This dollar amount is provided for every staff position in the EB Model except positions for summer school and extended day. The assumption is that staff providing summer school and extended day services are staff members working during the year and already have health insurance.

The amount for health insurance for each FTE in the funding model has represented approximately 82 percent of health insurance costs and assumes employees – both State and local school district employees –pay the remaining 18 percent. Wyoming's policy on health insurance also includes a provision allowing any school district to opt into the State health insurance plan, the costs of which would be covered by the Legislative Model funding formula amount. The only additional stipulation is if a district opts into the State plan, then eligibility requirements to participate in the health insurance plan are no longer controlled by the school district, but by the State's plan and the school districts must adhere to the State's insurance requirements for participation. Generally, this makes more employees eligible for health care insurance.

The EB Model Computes a health insurance composite amount for each generated FTE based upon prior year statewide average district weighted actual participation in district health insurance plans as to the proportion of employee only, split contract, employee plus spouse or children and family coverage for the State's health insurance contribution. These are amounts

paid on behalf of State employees as of January 1 of the preceding school year. In 2020, this per FTE amount was $18,298 and would need to be updated for SY 2025-26.

To be sure, districts do not offer all staff health care insurance (such as part time aides), and some staff access health insurance through their spouse. Thus, the Wyoming Funding Model has limited this health insurance subsidy only to those FTE in the districts that choose take such health insurance. Nevertheless, the EB Model continues to provide this health insurance subsidy for all FTE in the model.

We recommend continuing this approach which would mean there is a cost difference between the statutory and EB models, with the EB costing more as it covers all staff in the model.

*35. Benefits*

In determining staff costs, the Wyoming Funding Model uses a base salary for various positions and adds to it benefit costs. Benefits have included health care (discussed above), Social Security and Medicare, retirement, worker's compensation, disability and unemployment insurance.

For 2025-26, the costs for these benefits, which are funded inside the model, are as follows:

| Benefit Element | Percent of salary |
|---|---|
| Social Security and Medicare | For Social Security 6.2% employers' share up to the maximum income taxed by Social Security and 1.45% for Medicare at all income |
| Retirement | Beginning with FY 2026-27 total rate will be 19.12% (12.69% paid through the model, 2.501% of employer share paid outside of the model and 3.929% will be the employee's responsibility) |
| Worker's Compensation | 0.70% |
| Unemployment Insurance | 0.06% |

*36. Regional Cost Adjustments*

In a state the size of Wyoming, it is no surprise that there are differences in prices across the state. Regional cost adjustments are designed to compensate districts for the varying purchasing power of the education dollar across geographic regions of the state, particularly for professional staff salaries. Wyoming uses two indices, the Wyoming Cost-of-Living Index (WCLI) and the Wyoming Hedonic Wage Index computed in 2005 (2005 HWI). Both have a state average value of 100, and each district's RCA is computed as the largest of the WCLI, the HWI or 100.

| 2020 EB Model | 2025 Wyoming Funding Model | 2025 /Wyoming EB Model |
|---|---|---|
| Adjust model salaries for regional differences by using the | Adjust model salaries for regional differences by using the greater of the Wyoming Cost of Living Index (average | Use updated RCA as computed by state consultant (Taylor) |

| 2020 EB Model | 2025 Wyoming Funding Model | 2025 /Wyoming EB Model |
|---|---|---|
| comparable wage index as calculated by state consultants (Taylor). | of the past 6 semiannual calculations) or the 2005 hedonic wage index as calculated by state consultants (Baker via LOP & Associates), with a minimum index value of 1.00. | |

*Evidence and Recommendation*

Economists and the school finance policy community generally agree that the purchasing power of the education dollar varies across geographic regions of a state. Over the past 30-40 years, therefore, the policy community has developed a variety of approaches to quantify these cost differences to facilitate the use of a "cost index" to adjust state aid allocations to ensure the equal purchasing power of each school district's personnel dollars. For many years, the hedonic wage index (HWI) approach was used to develop such cost indices. During the past 15 years, however, a "comparable wage" approach was also developed and has assumed more support among the school finance community.

The hedonic wage approach seeks to identify various elements in regions/school districts that produce cost increases (dis-amenities) or decreases (amenities) for school districts. These include things like cultural resources (theaters, symphonies, museums, etc.), the cost of living in a specific area, demographic characteristics of the community, etc. The variables that are found to represent the amenities and dis-amenities tend to be controversial, making consensus difficult to reach on what variables and equations should be used to develop the index. The hedonic approach also produces indices for each district.

The comparable wage index (CWI) approach takes a different tact and avoids the debate over appropriate amenity and dis-amenity variables. The CWI identifies actual wages individuals have accepted to work in various regions of the state, in jobs different from but with similar skills and competencies to education. The notion is that these wages represent the salary differences that must be provided in order to have workers take jobs at fair salaries across regions. These actual comparable wages theoretically incorporate all the amenities and dis-amenities in the various regions. The CWI approach posits that these comparable wages can be used to quantify wage differences needed across regions to ensure equal purchasing power of compensation dollars for education. However, the computation of a CWI would not produce an index for each county in Wyoming, so counties would be grouped into regional labor markets.

In addition, Wyoming has developed a "cost of living" index (the Wyoming Cost of Living Index or WCLI) across regions and districts. Though a cost-of-living index reflects the variable costs to families of the market basket of goods families purchase across geographic areas, it does not reflect the market basket of goods that school districts purchase. As a result, it has not received support from the school finance policy community for use as a regional cost adjustment. Despite this, the WCLI continues to be used in the Wyoming Funding Model.

Both the hedonic and comparable wage approach produce an index, with an average of 1.0. Districts with indices below 1.0 would have their personnel resources reduced to adjust for lower costs and districts with indices above 1.0 would have their personnel resources increased to adjust for higher costs. These adjustments have led to debate on the efficacy of the indices not only in Wyoming but also other states. The WCLI also has values below and above 1.0.

The Wyoming Funding Model uses a cost adjustment factor that is the greater of the HWI that was developed in 2005 or the WCLI, with a minimum index of 1.0. We view this approach as more a compromise policy than a clean regional cost adjustment.

*37. External Cost Adjustments*

One of the challenges in estimating a cost-based funding model is that the prices of the components included in the basket of educational goods and services change over time. To make sure the cost estimates remain accurate, Wyoming recalibrates the Wyoming Funding Model at least every five years. However, the prices of the goods and services in the basket are likely to change from year-to-year. To keep the model cost-based, adjustments for inflation are needed. This adjustment, referred to as the External Cost Adjustment (ECA), adjusts the prices of the goods and services in the basket on the basis of appropriate inflation figures. Since 2012 Wyoming has used four separate indices to monitor inflations pressures recommended by Dr. Lori Taylor, one each for:

- Professional staff resources,
- Non-professional staff resources,
- Utilities, and
- Educational materials.

The challenge the state faces with the ECA is that the Legislature has not always appropriated an ECA equal to the ECA computations for these four indices. In some years, the Legislature has not appropriated an ECA, in other years, the Legislature has sunset the ECA after one or two years. An analysis conducted by LSO and reviewed by Picus shows that for FY 2025-26, the cumulative ECA appropriated by the Legislature since the 2020 recalibration exceeds that ECA estimagted by Taylor for those years. Specifically the analysis shows:

| Category | Legislaltive ECA (%) | Taylor Estimated ECA (%) |
|---|---|---|
| Professional staff | 17.495 | 13.447 |
| Non-professional staff | 19.029 | 15.639 |
| Educational Materials | 47.138 | 38.996 |
| Energy | 47.945 | 47.945 |

We recommend that in the future, the ECA adopted for the statutory model be based on the four indices recommended by Dr. Taylor. This recommendation would make the determination of the ECA more predictable for school district budgeting.

## Glossary of Funding Model Elements

| Model Element | Page Number | Definition |
|---|---|---|
| Core Teachers | 11 (elementary)<br>15 (secondary) | Core teachers are the grade-level classroom teachers in elementary schools and the core subject teachers in middle and high schools (e.g., mathematics, science, language arts, social studies and world language, including such subjects taught as Advanced Placement in high schools). |
| Elective Teachers | 17 | Elective teachers as all teachers for subject areas not included in the core, including such classes as art, music, physical education, health, and career and technical education, etc. However, some career technical classes can substitute for core math and science classes. |
| Instructional Coaches | 29 | Instructional coaches, sometimes called mentors, site coaches, curriculum specialists, or lead teachers, coordinate the school-based instructional program, provide the critical ongoing instructional coaching and mentoring that the professional development literature shows is necessary for teachers to improve their instructional practice, do model lessons, and work with teachers in collaborative teams using data to improve instruction. |
| Tutors | 34 (core)<br>93 (struggling students) | Tutors, or Tier II Interventionists, are licensed teachers who, during the regular school day, provide 1-1 or small group (no larger than 5) tutoring to students struggling to meet proficiency in core subjects. |
| Extended day Programs | 99 | Extended day programs provide academic extra help to students outside the regular school day before and after school. |
| Summer School | 102 | Summer school includes all programs provided during the summer months, i.e., outside the regular school year, largely focusing on academic deficiencies of students but includes a wider array of classes for high school students |
| At-risk Students | | The unduplicated count of students eligible for free and reduced price lunch, ELL and mobile students. |

| Model Element | Page Number | Definition |
|---|---|---|
| | | The proposed resources triggered by At-Risk students would include all resources for tutors (Tier 2 Interventionists), extended day programming, summer school, and additional pupil support. |
| English Language Learner services | 106 | ELL students are those who come from homes where English is not the native language and who perform at Levels 1, 2 and 3 in English; in addition to the At-Risk resources, the model provides resources to provide English as a Second Language services for these students. |
| Special Education | 114 | Programs for all students with disabilities. |
| Alternative Schools | 110 | Alternative Schools provide services, usually outside of the regular school environment, to students who have some combination of significant behavioral, social and emotional issues, often including alcohol or drug addictions. These students are different from at-risk students and require a different set of services. |
| Gifted and Talented | 55 | Gifted and talented students are those who perform in the very top levels of performance, and can handle much more than a year of academic work in a regular school year. |
| Substitute Teachers | 37 | These are regular substitute teachers. |
| Student Support, Counselors, Nurses | 38 (core)<br>92-99 (struggling students) | These include guidance counselors, social workers, psychologists, family outreach workers, nurses, etc. Guidance counselors and nurses are provided for all students and additional student support staff are provided in the struggling students section. |
| Duty/Supervisory Aides | 44 | These are non-licensed individuals who monitor the hallways, doors and playgrounds, and supervise the lunchroom. |
| Librarians | 46 | These are regular school librarians. |
| Principal, Assistant Principal | 51 | These are regular school principals and assistant principals. |
| Professional Development | 60 | Professional development includes all training programs for licensed staff in schools including professional development for implementing new curriculum programs, sheltered English instructional strategies for |

| Model Element | Page Number | Definition |
|---|---|---|
| | | ELL students, gifted and talented, etc. It also includes assistance to teachers working in collaborative groups and ongoing coaching of teachers in their individual classrooms. Resources include instructional coaches, 10 pupil-free days for training, and $156 per pupil for trainers and other expenses. |
| School-Based Technology and Equipment | 76 | These include within school technology such as computers, servers, network equipment, copiers, printers, instructional software, security software, some curriculum management courseware, etc. |
| Instructional and Library Materials | 65 | This includes textbooks, consumable workbooks, laboratory equipment, library books and other relevant instructional materials. |
| Interim-, Short-Cycle Assessments | 73 | These include benchmark, progress monitoring, formative, diagnostic and other assessments teachers need in addition to state accountability assessment data. |
| Student Activities | 76 | This includes on-credit producing after-school programs, including clubs, bands, sports, and other such activities. |
| Central Office Administration | 91 | This based on a prototypical school district of 3900 students and includes all typical central office staff such as superintendent, assistant superintendents, curriculum director, special education, the business and HR functions, assessment & technology, and a director of operations/maintenance. |
| Operations and Maintenance | 80 | Covers functions such as custodial services, grounds maintenance and facilities maintenance and minor repairs. |

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(Those with an asterisk* refer to randomized controlled trials.)


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