



QUALITY EDUCATION MODEL

FINAL REPORT
AUGUST 2014

VOLUME I
FINDINGS AND RECOMMENDATIONS

QUALITY
EDUCATION
COMMISSION

Draft

DEDICATION

This edition of the Quality Education Commission report is dedicated to Lynn Lundquist, who was a long-time champion for Oregon's children, particularly in improving the quality of education in the state. Lynn was a tireless advocate for Oregon's schools, establishing the Legislative Council on *The Oregon Quality Education Model* in 1997 when he was the Speaker of the Oregon House of Representatives. He served as a member of the Quality Education Commission for many years after it was established in statute in 2001. He will be remembered by many as the "Godfather of the Quality Education Model".

Lynn passed away on April 9, 2013 at his home in Powell Butte.

He was a great Oregonian and an inspiration to those of us who work on behalf of Oregon's school children. He will be missed.

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PREFACE

This 2014 report is the ninth biennial report since the first Quality Education Model report was released in 1999. It provides a description of the latest version of the model, including a new methodology to connect resources to student outcomes and an evaluation of school district efforts to better prepare their students for college. This first volume describes the Quality Education Model, the changes made to the model since its inception, preliminary findings from the research into college readiness, and a description of the changes made to the portion of the model that links resources to student achievement. The second volume contains technical appendices regarding methodology.¹

Oregon has set ambitious educational goals, seeking to have 40 percent of students earn a bachelor's degree or higher, 40 percent earn an associate's degree or technical certification, and 20 percent earn a high school diploma that prepares them to succeed in the workplace. Given Oregon students' current rates of high school graduation and postsecondary enrollment, it is highly unlikely that Oregon will realize its 40-40-20 goals without a relentlessly persistent and systematic statewide "scaling up" of best practices along the entire continuum of birth through college and career readiness preparation. The QEC's Best Practices Panel has found that there are some schools at all levels in Oregon continuously improving the percent of students in their care who are on track to meet Oregon's education goal, despite the challenges inherent in ensuring equitable graduation and postsecondary enrollment rates for an increasingly diverse student population. There is also, however, a wide gap in the implementation of effective practices between schools performing better than predicted and those performing lower than predicted even though they share similar student characteristics and levels of funding.

In this report, the Best Practices Panel issues early results on the status of a multi-year, three-phase research project that will ultimately identify and rigorously analyze effective college and career readiness preparation practices at critical transition points along a continuum of public education that spans birth to college and career (often referred to as a "P-20" system). The specific focus for the first phase of the project is the high school to postsecondary education transition. This report documents evidence of effective practices in ensuring students bridge this transition identified through the recent Best Practices Panel's research literature review, and it provides an update on the QEC's College and Career Readiness study conducted in collaboration with ECONorthwest and the Educational Policy Improvement Center (EPIC).²

In this report the Commission also presents a new approach to connecting resources to student achievement by utilizing student-level data the Department of Education has collected over the past decade. With these data, we are able to follow students as they advance through the grades, allowing us to better understand the factors that affect student achievement and to predict how key investments at various points in a student's learning impact later success.

¹ Quality Education Model Final Report, August 2014, Volume II, Technical Appendices.

² The Best Practices Panel Research Literature Review, ECONorthwest Matched Pairs Selection Report, and the preliminary EPIC Report can be found in the technical appendices in Volume II of this report.

The Quality Education Commission and the Quality Education Model are resources to policymakers as Oregon continues its efforts to improve educational outcomes for its students and achieve its aspirational goal of 40-40-20. The new version of the model, by providing insights into the various factors that influence student learning and high school graduation, can be used to evaluate the tradeoffs inherent in the state's efforts to improve student outcomes despite scarce resources. By understanding those tradeoffs, state policymakers and local decision makers will be in a better position to deploy scarce resources in the most productive way. The value of the model extends well beyond what is reported in this document—it comes from using the model to evaluate education policy issues as they arise. For that reason, the Commission will continue to make the model available to policymakers on an ongoing basis.

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EXECUTIVE SUMMARY

More than fifteen years ago, the Quality Education Commission (QEC) was created in order to provide a clear and data-driven model for funding and best practices in Oregon. The hope was, and continues to be, that the Commission's report each biennium would help lead to a more informed dialogue by policy-makers and the public. In recent years, Oregon has moved to an integrated approach to education considering the whole continuum from birth to college & career as we collectively strive to provide a system that supports our children in an atmosphere of often shrinking resources. Every dollar matters and every dollar must be spent wisely. This system's view is critical as we strive to create an Oregon full of promise for all of our children.

With this shift – so must the QEC evolve. It is no longer adequate nor reasonable to consider our K-12 schools as a silo. In order to effectively create policies, funding, and support for our public schools, we must consider early childhood and the circumstances that our children face before they find themselves on the steps of their local school, as well as their skills and preparation as they enter our system of higher education and workforce development. In this evolved world, the QEC can no longer operate as an island and must provide relevance in a new context.

- The Quality Education Model cannot be just a mechanism to report Oregon's education funding shortfall. The model must be the jumping off point for informed and robust dialogue by educators, community, and policy makers.
- We have started the process of considering the "inputs" (early education) and "outputs" (higher education) of our traditional K-12 education system. While much work remains to be done, this integrated approach provides support and analysis of the critical "ramps" of transition for our children.
- Our system of "tight-loose" shared local and state education leadership model that strives for rigorous outcomes while maintaining local decision-making must be balanced to be effective. Decisions driven by communities are critical, and must be informed by data supporting best practices and positive outcomes for our children.

As Oregonians we come together with a shared focus on the outcomes we desire for our future, our children. The Quality Education Commission is in a unique position to provide value across the continuum.

- The Quality Education Model provides cost analysis to policy makers and localities as they struggle to dedicate the necessary resources to meet our quality goals;
- Resource pathway allocation analysis provides guidance on where in the continuum to focus both new investments as well as existing funds;
- Best practices data and research help drive local decisions and provides insight in to the ramps between early childhood, K-12, and work/post-secondary as well as providing a map between practice and policy. In a vision-rich environment, being able to tie vision to practice is critical.

Findings

The Oregon Education Investment Board's Strategic Plan is aligned with current educational best practices. Statewide initiatives designed to improve graduation and postsecondary enrollment rates have strong potential to result in a more equitable level of college and career readiness for Oregon students as they navigate the transition between high school and postsecondary education. Oregon's strongest college and career readiness indicator is Academic Attribution, which is a mindset that reveals students know that hard work determines how well they do. Further analysis will reveal whether or not this empowering attribute has the potential to be used as a lever for improving Oregon's postsecondary enrollment rate.

The Quality Education Model's new Achievement Model shows that factors beyond academic achievement have large impacts on the likelihood of a student graduating from high school. Males, economically disadvantaged students, and Native American students in particular have lower graduation rates even when they perform as well academically as other students. And attendance is critical—students who have poor attendance rates graduate from high school at dramatically lower rates than those with higher attendance rates but the same academic performance. These relationships remain relatively unchanged as students advance through the grades.

Based on the 2014 QEM Costing Model, Exhibit 1 shows the total cost of running K-12 schools at a level recommended by the QEC is estimated at \$9.158 billion in the 2015-17 biennium, \$2.382 billion more than the funding required to simply maintain current service levels.³ This funding gap is smaller than the gap previously estimated for the 2015-17 biennium and is also smaller than the gap in the prior biennium, 2013-15. Four factors contributed to the gap's decline: 1) the legislature appropriated more for the 2013-15 biennium than was required to simply keep up with inflation. This raised the Current Service Level for 2013-15; 2) teacher salaries did not grow as much as previously forecast, leading to a reduction in the current forecast; 3) growth in health care costs has slowed; and 4) the employer rate for the Public Employees Retirement System (PERS) for 2015-17 was set lower than previously forecast.

Despite the reduction in the funding gap, the gap remains large—35% of the state's share of the K-12 Current Service Level.

EXHIBIT 1: QUALITY EDUCATION MODEL FUNDING REQUIREMENTS

(Millions of Dollars)	2013-15*	2015-17	2017-19
State Funding Requirement for Current Service Level	\$6,315.8	\$6,776.6	\$7,442.1
Percent Change from Prior Biennium		7.30%	9.82%
State Funding Requirement for Fully Implemented Model	\$8,755.0	\$9,158.4	\$9,960.2
Percent Change from Prior Biennium		4.61%	8.75%
Funding Gap: Fully Implemented Model above Current Service Level	\$2,439.2	\$2,381.8	\$2,518.1
Percent Change from Prior Biennium		-2.35%	5.72%
Gap as Percent of the State's Share of Current Service Level		35.15%	33.84%

* From 2012 Quality Education Model Report

³ These estimates do not include the costs of going from half-day to full-day kindergarten. Those costs are discussed later in the report.

Recommendations

If Oregon is going to meet its 40-40-20 goal by the year 2025, it is critical that all of the following things happen:

1. Resources must be allocated to the uses that have that greatest positive impact on student learning and on high school graduation. Analysis by the Commission in developing its student achievement model indicates that many students face barriers other than low academic achievement that reduce their likelihood of graduating from high school. Helping students overcome those barriers is as important as increasing their academic achievement.
2. School districts must start early to assure that all students read at grade level by the third grade by utilizing best practices and intentional collaboration with the early learning community. Current public and private investments such as the Oregon Community Foundation's P-3 initiative and the State's *Kindergarten Readiness Partnership & Innovation Fund* must be expanded and utilized effectively.
3. With the State's timely investment in full day kindergarten, it is critical that attention is paid to Oregon's widespread chronic absence problems that start in the early grades and erode our students' ability to graduate. As well, with this change many communities have significant capital needs for both pre-K and kindergarten. Our rural communities in particular often do not have the bonding capacity to work within existing capital investment frameworks.
4. The state must direct resources to promising new initiatives that help districts improve the achievement of specific student groups: students in the early grades, where learning to read well is critical to later learning; English Language Learners, whose high school graduation rates soar if they are proficient in English prior to entering high school; economically disadvantaged students, who face challenges both inside and outside the classroom; male students, who graduate at lower rates than females with similar academic achievement; and Native American students, who face a unique set of challenges.
5. The state must increase funding to education in the places where it makes the most difference. Despite the fact that education is the single largest area of spending in the state budget, education funding in Oregon is lower than the national average and has declined steadily and dramatically over the past two decades when adjusted for inflation. In the aftermath of two property tax limitations passed by Oregon voters, **Oregon is now a low-tax state**, and that makes funding of high-quality public services a challenge.
6. When public resources are limited, evaluating the trade-offs among various options for achieving public goals is essential. The Quality Education Model can help evaluate those tradeoffs, making it a strategic tool in the budgeting and policymaking process. The Model, and the Quality Education Commission, should be fully integrated in to the discourse at all points along the P-20 continuum and utilized for its unique strengths.

INTRODUCTION

MISSION AND PURPOSE OF THE QUALITY EDUCATION COMMISSION

The Oregon Legislative Assembly established the Quality Education Commission in statute in 2001. Under Oregon law (ORS 327.500 and ORS 327.506), the Commission's responsibilities are to:

- 1) Determine the amount of monies sufficient to ensure that the state system of kindergarten through grade 12 public education meets the quality goals established in statute.
- 2) Identify best practices based on education research, data, professional judgment, and public values, and the cost of implementing those best practices in K-12 schools.
- 3) Issue a report to the Governor and Legislative Assembly in even-numbered years that identifies:
 - Current practices in the state's system of K-12 public education
 - Costs of continuing those practices
 - Expected student performance under those practices
 - Best practices for meeting the quality goals
 - Costs of implementing the best practices
 - Expected student performance under the best practices
 - Two alternatives for meeting the quality goals

OREGON'S EDUCATION GOALS

Oregon has maintained its philosophy of setting high goals for its schools and students. In the 1991 Oregon Education Act for the 21st Century, legislators outlined challenging goals for the state's K-12 system of education. They called for a world-class school system in which all students are challenged by rigorous academic content standards and have the opportunity to gain knowledge and skills to reach their full potential. The State Board of Education has adopted standards—guidelines for what students should know and be able to do—to implement these legislative goals.

In 2011, Oregon's State Board of Education adopted the Common Core State Standards, a set of rigorous academic standards developed by a collection of states under the coordination of the Council of Chief State School Officers (CCSSO). These common standards are intended to represent a national set of academic standards for all K-12 public schools.

In 2013, the Oregon legislature adopted a set of education reforms proposed by Governor John Kitzhaber that will integrate all levels of public education in Oregon. Those reforms contain an aspirational goal known as 40-40-20: by the year 2025, 40 percent of students will earn a bachelor's degree or higher, 40

percent will earn an associate's degree or technical certification, and 20 percent will have a high school diploma or its equivalent as their highest attainment.

To achieve the 40-40-20 goals, 100 percent of Oregon students must receive a high school diploma or its equivalent. **To make the Quality Education Model consistent with that goal, the Quality Education Commission has changed its primary measure of student achievement from standardized test scores to the high school graduation rate.** While standardized test scores are still a valuable measure of progress for students as they advance through the grades, a focus on high school graduation as the primary outcome goal for K-12 schools makes the Quality Education Model's focus consistent with that of the state's 40-40-20 goals.

PREVIOUS COMMISSION ANALYSIS AND RECOMMENDATIONS

Since 2000, the Quality Education Commission's reports have provided objective analyses of instructional best practices, school funding, and Oregon's education goals. The reports' recommendations reflect findings about student performance, per-student spending, demographic trends, class size, curriculum, and Pre-K through higher education alignment.

Prior reports have focused on the K-12 system's progress toward the goal of 90 percent of Oregon students meeting the state's academic performance benchmarks. The Commission's primary activities and recommendations are listed below:

- Examined the relationship between school funding and student achievement by developing a statistical model that explored the relationship between standardized test scores and spending per student at the school level (2006).
- Explored the practices, resources, accountability, and systems improvement associated with implementing the new graduation standards that came with the creation of the Oregon Diploma (2008).
- Examined the challenges for math education presented by the new Oregon Diploma requirements (2010).
- Expanded upon the recommendation of the 2010 Commission that the State "Invest in strategies and allocate additional resources where they will have the greatest impact on student performance. Time and leadership are priority investment targets." (2012)
- Focused on professional collaboration and formative assessment, two areas of teacher practice where current research finds compelling evidence of improved student achievement. The Best Practices Panel surveyed all active Oregon teachers to evaluate teacher activities associated with professional collaboration and formative assessment. The Panel also did a follow-up analysis of the effectiveness of these same teacher activities using a second round of on-line surveying and on-site interviews of staff at higher performing and lower performing schools with similar demographics (2012)
- Evaluated how resource allocation among schools (elementary, middle, and high) can affect achievement as students advance through the grades. By relating the pattern of student achievement

to instructional expenditures as cohorts of students progressed through the grades, the Cost Panel sought to identify where, along the K-12 spectrum, schools were getting the most bang-for-their-buck in achieving student learning. The results have the potential to help school districts determine if they are allocating their resources across schools in the most productive way possible.

In light of ongoing education funding constraints as Oregon’s economy continues to grow slowly, the above findings and recommendations remain important strategies to get more out of limited resources. They are, in fact, consistent with many of the strategic investments made by the 2013 legislature:

EXHIBIT 2: STRATEGIC INITIATIVES

Strategic Initiatives for Student Success

- Early Literacy to get all students reading at grade level by third grade
- Connecting students to the world of work
- Creating a college-going culture

The Network for Quality Teaching and Learning

- Teacher mentoring
- Teacher professional development and training

The 2015-2017 biennium is a critical opportunity for Oregon to build upon examples of best practice that bridge effective policies. We must continue to connect the early years to the early grades. We know that many of our children are not arriving at kindergarten ready to learn. Investing in this critical “ramp” and supporting schools and districts as they collaborate with early learning communities will better prepare our children to be successful students. With the investment in statewide full-day kindergarten, we must consider three key areas:

- Capital investments necessary to both support the additional kindergarten students, and the desire to connect districts with quality pre-K opportunities. These capital investments must take into account the capacity of the local community;
- Focus on chronic absence which often starts in kindergarten and has been shown to directly affect later school success;
- Tie these efforts to the current emphasis and investments in 3rd grade reading success.

THE EVOLUTION OF THE QUALITY EDUCATION MODEL

ORIGINAL MODEL

Oregon’s Quality Education Model (QEM) is a “costing” model that incorporates data and assumptions about school size, demographics, staffing, professional development, technology, supplies, and other

factors in order to estimate the costs of meeting Oregon’s education goals established in statute. As originally conceived, the model portrayed the structure and costs of a system of highly effective schools based on current research. Although Oregon had detailed financial data at that time (1999) to build the cost component of the model, there was insufficient data on student achievement to statistically relate funding levels to student outcomes. As a result, the connection between funding and achievement was based primarily on the professional judgment of educators. The original model had a number of other limitations:

- The model did not define a baseline, so policy proposals could not be easily compared to current conditions.
- The model was not designed to evaluate individual policy proposals, but only the fully implemented, fully funded mode. This made the model of only limited usefulness for the state budgeting process and for helping inform policymakers.
- The full-funding number was viewed as unattainable under Oregon’s existing revenue system, so some observers regarded the model as wishful thinking rather than as a tool for guiding funding decisions.

PRIOR ENHANCEMENTS

- Created a baseline scenario in the model that reflects current funding and current practices. This baseline reflects the Current Service Level of funding, making the model a useful tool for evaluating the costs of policy proposals for the state’s budgeting process.
- Created a user interface or “front end” that allowed policy proposals to easily be input into the model so the cost impacts could be evaluated relative to the baseline.
- Incorporated the findings of prior Commission research into the model to improve its accuracy and usefulness.
- Developed a basic capital component to the model that can evaluate the long-term costs of building and maintaining school facilities.

CURRENT ENHANCEMENTS: THE WORK OF THE 2014 QUALITY EDUCATION COMMISSION

Every two years the Quality Education Commission conducts a broad-based review of the Quality Education Model, both to update the model with the most recent data available and to improve the model’s ability to relate best practices and resource use to student achievement. In this round, the commission focused its efforts in four areas:

- Expanding the Quality Education Model to recognize the impacts of Pre-K programs and the needs of post-secondary institutions in evaluating the effectiveness and costs of the K-12 component of the birth to college & career system.
- Adding an Equity Stance to the Quality Education Model, recognizing that different students require different inputs and supports if they are to be successful, and that Oregon must dramatically reduce its academic achievement gaps if the state is to meet its 40-40-20 goals.
- Getting a better understanding of how practices in Oregon's high schools affect students' college and career readiness.
- Using high school graduation as a key measure of success, relying less on standardized test scores.
- Developing a new student achievement component of the model that allows us to predict the impact that policy interventions in early grades have on high school graduation.
- Integrating the costing component of the model with the student achievement component, enabling the model to be used as a strategic tool to evaluate the tradeoffs, in terms of both cost and student outcomes, of various policy proposals.
- Incorporating considerations of both Pre-K and post-secondary issues into the basic analytical framework of the model so that the Commission is considering the readiness of children when they come out of the Pre-K environment into kindergarten and the readiness of high school graduates when they enter post-secondary education or the workforce.

THE QEM IN A P-20 SYSTEM

The charge of the Quality Education Commission directs the Commission to make estimates of costs and student performance for the kindergarten through grade 12 portion of Oregon's education system, but understanding the readiness of students coming out of Pre-K programs, and anticipating the needs of post-secondary institutions, are important to evaluating the needs of Oregon's K-12 students. By knowing each child's capabilities and needs as they enter kindergarten, Oregon's elementary schools can better serve those students. And by having clear expectations of the knowledge and skills students will need to succeed in post-secondary institutions or the job market, Oregon's middle and high schools can better prepare those students for life after high school graduation.

THE QEC'S EQUITY STANCE

Meeting Oregon's 40-40-20 goal requires that all students graduate from high school. The greatest challenge in achieving 100 percent high school graduation will be to dramatically increase the graduation rates of students who currently underserved by the system, and those students are disproportionately students of color, economically disadvantaged students, Limited English Proficient students, and special

education students. The Quality Education has adopted the following Equity Stance as a statement of the Commissions commitment to equity for all students in Oregon's education system.

QEC Charge:

- Determine the amount of moneys sufficient to ensure the state's system of K-12 public education meets the quality goals established in statute.
- Identify best practices that lead to high student performance and the costs of implementing those best practices in K-12 public schools.
- Issue a report to the Governor and Legislative Assembly by August 1 of each even-numbered year that identifies:
 - Current practices in the state's K-12 public schools
 - Costs of continuing those practices
 - Expected student performance under those practices
 - The best practices for meeting the quality goals
 - Cost for implementing those best practices
 - The expected student performance under those practices
 - Two alternatives for meeting the quality goals (i.e.: different approach, phased implementation)

The Case for an Equity Stance:

Through the efforts of the Oregon Education Investment Board (OEIB), the state has developed a vision of educational equity and excellence for each and every child and learner in Oregon. The Quality Education Commission (QEC) must ensure that sufficient resource is quantified to guarantee student success. The QEC understands that the success of every child and learner in Oregon is directly tied to the prosperity of all Oregonians. The attainment of a quality education strengthens all Oregon communities and promotes prosperity, to the benefit of all. It is through educational equity that Oregon will make progress towards becoming a place of economic, technologic, and cultural innovation.

Oregon faces two growing disparities that threaten our economic competitiveness and our capacity to innovate. The first is the persistent achievement gap between our growing populations of communities of color, immigrants, migrants, and low income students with our more affluent white students. While students of color make up over 30% of our state- and are growing at a significant rate- our achievement gap has continued to persist. As our diversity grows, it is critical that we embrace the strength of our new communities, promote outreach and dialogue, and adjust systems to appropriately serve all students. Our growth in this area increases opportunity for everyone in Oregon.

The second growing disparity is an increasing performance gap between Oregon and the rest of the United States. Our achievement in state benchmarks has remained stagnant and in some communities of color has declined while other states have begun to, or have already significantly surpassed our statewide rankings. If this trend continues, it will translate into economic decline and a loss of competitive and creative capacity for our state. We believe that one of our most critical responsibilities going forward is to quantify resources and note best practices and policies that may be implemented in order to reverse this trend and deliver the best educational continuum and educational outcomes to Oregon's Children.

By adopting this Equity Stance, the QEC is aligning with the equity efforts of the OEIB and committing to explicitly identifying disparities in Oregon's education systems for the purpose of targeting areas for action, intervention and investment.

The QEC Believes:

- Everyone has the ability to learn and that we have an ethical responsibility and a moral responsibility to ensure an education system that provides optimal learning environments that lead students to be prepared for their desired individual futures and a prosperous future for the collective Oregon community.
- Speaking a language other than English is an asset and that our education system must celebrate and enhance this ability alongside appropriate and culturally responsive support for English as a second language.
- Students receiving special education services are an integral part of our educational community and we must welcome the opportunity to be inclusive, make appropriate accommodations, and celebrate their assets. We must directly address the over-representation of children of color in special education and the under-representation in talented and gifted and college-prep programs.
- Students who have previously been described as “at risk,” “underperforming,” “under-represented,” “under-served,” or “minority” actually represent Oregon's best opportunity to improve overall educational outcomes. We have many counties in rural and urban communities that already have populations of color that make up the majority. Our ability to create an equitable education system is critical for us to successfully reach our state's 40/40/20 goals.
- Intentional and proven practices must be implemented to return out of school youth to the appropriate educational setting. We recognize that this will require us to challenge and change our current educational setting to be more culturally responsive, safe, welcoming, receptive, and responsive to the significant number of elementary, middle, and high school students who are currently out of school.
- We must make our schools safe for every learner. When students are alienated from their school communities they are inherently less safe emotionally and, potentially, physically.
- Ending disparities and gaps in achievement begin in the delivery of quality Early Learner programs and appropriate parent engagement and support. This is not simply an expansion of services -- it is a recognition that we need to provide services in a way that engages and has value to our most diverse segment of the population, 0-5 year olds and their families.
- Resource allocation demonstrates our priorities and our values and that we demonstrate our priorities and our commitment to rural communities, communities of color, English language learners, students with special needs, and out of school youth in the ways we allocate resources and make educational investments.
- Communities, parents, teachers, and community-based organizations have unique and important solutions to improving outcomes for our students and educational systems. Our work will only be successful if we are able to truly partner with the community, engage with respect, authentically listen -- and have the courage to share decision making, control, and resources.
- Every learner should have access to information about a broad array of career/job opportunities and apprenticeships that will show them multiple paths to employment yielding family-wage incomes, without diminishing the responsibility to ensure that each learner is prepared with the requisite skills to make choices for their future.

- Our community colleges and university systems have a critical role in serving our diverse populations, rural communities, English language learners and students with disabilities. Our institutions of higher education, and the P-20 system, will truly offer the best educational experience when their campus faculty, staff and students reflect this state, its growing diversity and the ability for all of these populations to be educationally successful and ultimately employed.
- The rich history and culture of learners is a source of pride and an asset to embrace, celebrate, and be included in the culture of Oregon's educational settings; even as our diverse histories and cultures sometimes challenge the assumptions of the state's dominant culture.
- Supporting great teaching is essential. Teachers are among the most powerful influences in student learning. An equitable education system requires providing teachers with the tools and support to be highly effective instructors for each and every student.
- Equity requires the intentional examination of systemic policies and practices that, even if they have the appearance of fairness, may in effect serve to marginalize some and perpetuate disparities.
- Data are clear that Oregon demographics are changing to provide rich diversity in race, ethnicity, and language.
- Working toward equity requires an understanding of historical contexts and the active investment in changing social structures and changing practice over time to ensure that all communities can reach the goal and the vision of 40/40/20.

Implications of Taking an Equity Stance on the QEC's Work:

This Equity Stance will confirm the importance of recognizing institutional and systemic barriers and discriminatory practices that have limited access for many students in the Oregon education system. The Equity Stance emphasizes underserved students, such as out of school youth, English Language Learners, and students in some communities of color, low income students, and some rural geographical locations, with a particular focus on racial equity. The result of creating a culture of equity will focus on the outcomes of academic proficiency and educational attainment, civic awareness, workplace literacy, and personal integrity. The commission will focus on resource allocation, overall investments, practices, and policies.

By utilizing this Equity Stance, the QEC aims to align to a common Oregon vocabulary and protocol regarding issues of educational equity; and consider each of the following matters in the evolving development of the Quality Education Model, related reports, and other items that come before the commission:

1. Review and publish data on current and potential future impact of resource allocation and practices or policies on Oregon's sub-group populations at all levels 0-5, K-12, and higher education.
2. Explicitly describe the impact recommended resource allocation levels and suggested practices or policies have on eliminating the opportunity gap.
3. Enumerate, explain, and develop possible strategies to overcome ideological, institutional, and other challenges to more equitable outcomes.
4. Create and implement a plan to intentionally involve members of affected communities in the consideration of data as well as suggested evidence-based practices or policies.
5. Consider resource allocation levels and practices or policies that focus on transition knowledge and skills (postsecondary and career awareness, self-advocacy, college and workforce norms,

- admission requirements, and financial aid options and procedures). Incorporate an appreciation for diversity and a culturally appropriate development of educational and career transition knowledge.
6. Compare Oregon's performance, practices, and policies with those of other states to better define recommended resource allocation levels and suggested practices or policies to advance the 40/40/20 goal for *all* learners.

Further, the QEC will be developing a Quality Education Model (QEM) report that is more inclusive of Oregon's diverse population. The QEM will also provide a more complete and accurate path to Oregon's 40-40-20 goal than in the past by acknowledging the barriers that exist for many learners and offering recommended resource allocation levels and suggested practices or policies that provide an equitable path to college and career for every Oregon learner.

COLLEGE READINESS

In 2013 The Quality Education Commission (QEC) launched a multi-year research project to investigate practices that result in equitable student progression at critical transition points along Oregon's P-20 (birth through college and career) continuum of education. This section reports on the early status of Phase One of this project: a study of the practices in high schools with higher than predicted graduation and postsecondary enrollment (PSE) rates as compared to high schools that have similar student characteristics but lower than predicted graduation and post-secondary enrollment rates.

Eliminating current discrepancies between the rates at which lower performing students and higher performing students successfully accomplish this transition is essential to Oregon achieving its 40-40-20 high school and college completion goals (SB 253).¹ The QEC utilizes the Educational Policy Improvement Center's (EPIC) college and career readiness inventory, CampusReady⁴, to identify practices that are more prevalent in high-performing schools than in lower-performing schools in all four Oregon school locales (city, suburban, town, and rural).⁵

Background:

Over the past three QEM Report cycles, the Quality Education Commission has worked to increasingly expand the Best Practices Panel's capacity to explain how the local implementation of educational practices impact student achievement. This is because a recurrent QEC finding has been significant variation among districts and schools in how school improvement practices are implemented, and these variations have been found to result in significantly different student achievement.

Further, past Best Practices Panel research has shown that that while lower K-12 student achievement levels exist most often in schools with higher percentages of at-risk students, there are schools throughout

⁴ <https://www.epiconline.org/Issues/college-career-readiness>

⁵ *The Status of Rural Education*. (May 2013). U.S. Department of Education, National Center for Education Statistics (NCES). Retrieved from: http://nces.ed.gov/programs/coe/indicator_tla.asp

the state that are performing higher than predicted, despite sharing similar at-risk student characteristics and funding levels as their counterparts who are performing lower than predicted.

This finding was reinforced by the 2011-12 QEC research cycle that shed light on how *two schools with similar characteristics foster very different student outcomes regardless of very similar student characteristics*. The QEC's research design for the 2012 study utilized: 1) regression analysis to identify matched pairs of schools performing higher than predicted and lower than predicted with similar at-risk student populations; 2) online teacher and administrator surveys regarding the use of formative assessment and teacher collaboration in their schools; and 3) on-site interviews of teachers and administrators to shed further light on exactly how each school was implementing formative assessments and teacher collaboration.⁶

2013-16 Multi-year Research Plan:

The QEC is conducting a multi-year study that investigates practices resulting in student progress at critical transition points along Oregon's birth to college and career continuum of education. Ultimately, this project will provide Oregon's Governor, State legislators and the Oregon Education Investment Board (OEIB) with an understanding of the practices and associated investment levels needed to ensure students are prepared for a successful progress throughout their secondary and post-secondary education. The study's areas of focus over a three-year period are:

- | | |
|--------------------|--|
| Phase 1 (2013-15): | Practices that improve high school graduation and postsecondary enrollment |
| Phase 2 (2014-16): | Practices that improve postsecondary completion and transition to careers |
| Phase 3 (2014-16): | Practices that improve kindergarten readiness |

2013-14 Phase 1 Research Design:

Implementation of Phase 1 began in October of 2013. It is anticipated it will take a minimum of 18 months to complete all four of the Phase 1 research components:

- | | |
|--------------|---|
| Component 1: | Development of a high school college readiness ranking methodology and identification of matched pairs of schools (completed) |
| Component 2: | Review of current research literature in the areas of improving graduation and postsecondary enrollment rates (completed) |
| Component 3: | Administration of EPIC's CampusReady diagnostic tool to matched pairs of schools (in process) |

⁶ *Moving the Needle on Student Achievement in Oregon through Formative Assessment and Teacher Collaboration*, QEC Research Brief. (October 2012). summarizes the findings of this research

Component 4: Implementation of case studies of matched pair high schools to better understand the CampusReady results (anticipated to begin by January 2015)

The successful implementation of all four components will enable the QEC to answer the question:

What are the practices and associated costs in high schools that have better than predicted student graduation and postsecondary enrollment rates than high schools that have lower than predicted graduation and postsecondary enrollment rates?

Phase 1-Component 1: Selection of Matched Pairs

The goal of this component was to identify matched pairs of high schools for further analysis of practices used to improve graduation and postsecondary enrollment rates by the selected schools. In constructing the model ECONorthwest, a Portland-based economics consulting firm, used student-level cohort graduation data showing student characteristics (i.e., gender, race/ethnicity, program status including economically disadvantaged, Limited English Proficient (LEP), Talented and Gifted (TAG), and special education (SPED)), high school completion status, and the name of the high school with responsibility for each student's completion outcomes. Student-level enrollment history (mobility) was also used to calculate additional background characteristics. ECONorthwest relied on data from the National Student Clearinghouse (NSC) to assess post-secondary enrollment of Oregon's high school graduates.

The completed model enabled the ranking of each high school's graduates' *actual* college enrollment and persistence rates as compared with their *predicted* performance rates for both indicators. The resulting College Readiness Ranking Report was utilized by ECONorthwest to identify matched pair candidates. The focus of selection of matched pair candidates was on the extent to which schools over- or under-performed relative to predicted performance, given the characteristics of students served by each school. Primary factors considered included:

- Estimated school effects—the impact on students' post-secondary success that can be attributed to their secondary schooling
- Geography/locale code assigned to each school by the National Center for Education Statistics (NCES): City, Suburban, Town, and Rural
- Distance of each school from OUS (Oregon University System) and CCWD (Community College and Workforce Development) institutions to gauge physical proximity and potential access
- School size (enrollment)
- Student demographics (matched pair schools shared similar percentages of students identified as economically disadvantaged, non-white, and Hispanic).

Excluded from the analysis were schools with fewer than fifty students, schools with poverty rates that are well below average, Charter schools, alternative schools, and other atypical programs, but ECONorthwest

also advised the QEC that there are high and low performers among this group that may deserve attention in future work.

Phase 1-Component 2: Administration of a College Readiness Diagnostic to Matched Pairs

The goal of the second research component is to determine the extent to which college readiness skills are taught in the matched pair high schools to promote greater enrollment and persistence in post-secondary education. To this end, the Educational Policy Improvement Center (EPIC), a Eugene-based educational policy research organization, administered CampusReady to the matched pairs of schools, analyzing the results at a systems level for the QEC, and providing participating schools with personalized reports they can use for further analysis and planning.

Through more than ten years of college readiness research, Dr. David Conley and EPIC developed the Four keys to College and Career Readiness, a model describing the knowledge and skills that students need to be successful in the postsecondary environment. This model is the basis for CampusReady, a diagnostic measuring college and career readiness that has been administered to more than 43,000 students, 3,700 teachers, 300 administrators, 270 counselors, and 148 schools in 20 states.⁷

CampusReady is designed to measure how well schools are doing to prepare all students for college and careers. CampusReady is a web-based diagnostic that is administered to students, teachers, counselors, and administrators and provides detailed reports on measures linked to the Four Keys to College and Career Readiness. Embedded within the Four Keys are meta-cognitive learning skills that include behaviors through which students manage their own learning process and understand how they learn best (e.g., reflection, learning strategy selection). This is an area of high interest to the QEC given current best practice evidence that “knowing how to learn” has an equal if not greater influence on college success than content area knowledge.

EPIC’s definition of College and Career Readiness is: *The content knowledge, skills, and habits that students must possess to be successful in postsecondary education or training that leads to a sustaining career. A student who is ready for college and career can qualify for and succeed in entry-level, credit-bearing college courses without the need for remedial or developmental coursework.*

EPIC further explains that college readiness and career readiness are similar, because: *Analyses of college courses reveal that the learning skills and foundational knowledge associated with college success overlap considerably with those necessary for success in training programs that lead to careers. Given this overlap, it serves no useful purpose to separate students into two groups, one bound for college and the other for work. All students aspire to enter the workforce, and to do so, all will need a comparable set of foundational skills and learning abilities if they are to succeed.*⁸

⁷ Epiconline.op.cit

⁸ Epiconline, op.cit.

The QEC, ODE, OEIB and EPIC staff worked together to secure five of the matched pair candidates for the college readiness diagnostic, one each from city, suburban, and town locales and two from rural locales. The matched pair representing “City” high schools and the matched pair representing “town” high schools were able to complete the diagnostic by June 2014. A summary of preliminary findings related to the results of their CampusReady administration is reported in this section of the Executive Summary. See Volume II of this report for the complete June 2014 EPIC report to the QEC.

The “rural” and “suburban” matched pairs will be taking the CampusReady diagnostic in the fall of 2014. The summary of findings related to their results will be combined with the “town” and “city” matched pair results and reported in a research brief planned for release by the QEC by December 2014.

EPIC’s Preliminary Campus Ready Findings and Insights:

The Four Keys to College and Career readiness are listed below along with EPIC’s preliminary findings for each Key from the matched pair study. Both students and teachers provide scores on components of these Keys.

Key Cognitive Strategies: The Key Cognitive Strategies are mental techniques for processing and organizing information.

Preliminary Findings:

- Scores were average in the implementation of Key Cognitive Strategies for both matched pairs of Oregon schools as compared with other schools in the U.S.
- The larger “city” schools reported more focus on Key Cognitive Strategies overall than did the smaller “town” schools for both teachers and students
- Research is a Key Cognitive Strategy of note for all schools; student scores are much higher than teacher scores at all schools, indicating that students feel they have a grasp of research although teachers do not emphasize research in the classroom
- Student scores for Interpretation are lower than teacher scores for all schools

Key Content Knowledge: Key Content Knowledge measures the ways in which students interact with content knowledge, its perceived value to them and the effort they are willing to expend to learn necessary content.

Preliminary Findings:

- All schools in the study had higher than average scores in this dimension as compared with other schools that have taken CampusReady in the U.S.
- This was the highest rated key dimension for all schools in the study

- All schools had high scores on Academic Attribution (students know that hard work determines how well they do, not whether they were predetermined to be “good or bad” at something), and smaller “town” schools rated themselves even higher than the larger “town” schools
- There is a large student/teacher discrepancy on Academic Value (Teachers reported they teach the value of coursework and how learning information taught in courses will be useful later in life often to very often, but students say they only somewhat see the value)
- Students feel confident in using technology, but teachers are not emphasizing technology in the classroom

Key Learning Skills and Techniques: Ownership of Learning describes traits that help students monitor and increase their learning, and Learning Techniques involve the exercise of specific methods and techniques that can be learned.

Findings for Ownership of Learning:

- Across all schools, teachers rate persistence as an area of emphasis in their classrooms. Students rate themselves lower in persistence than teachers
- For goal setting and self-awareness, students have higher ratings than teachers.
- For self-awareness, students at all schools have higher scores than teachers and teachers at lower performing schools report focusing on self-awareness more, although for one pair this was lower when looking at core content teachers only

Findings for Learning Techniques:

- Students perceive their strategic reading and information retention strategies as weaker than most other skills
- Teachers at higher performing schools focus more on developing time management skills than their peers at lower performing schools
- Students scored lower than teachers in the majority of dimensions for this key including time management and collaborative strategies

Key Transition Knowledge and Skills consist of information and behaviors necessary to understand the norms, culture, expectations, and systemic processes for gaining entrance into and navigating the postsecondary environment that aligns to one’s career or academic aspirations.

Findings for Key Transition Knowledge and Skills:

- Students scored themselves low on knowledge of tuition and financial aid at all schools, but the lower performing schools’ students had the highest scores of the pairs.
- Administrators had higher scores at larger schools than other groups at those schools

EPIC research indicates transition skills are especially important for students who are first generation college aspirants:

Successful transition out of high school requires understanding the process involved in obtaining the postsecondary training and education required to reach goals. The repeated and systematic provision of information about the postsecondary matriculation process (i.e., program selection, eligibility requirements, and admissions procedures), as well as postsecondary costs (i.e., tuition awareness, financial aid, and private loan awareness) to all students is one of seven principle elements observed in schools that have demonstrated greater success in preparing students for postsecondary education than comparable schools. Traditionally, privileged knowledge of this process is often handed down from parents to their children, making it less available to students whose parents did not attend college and students from lower incomes: low-SES students are 55% less likely to apply to four-year colleges than are their higher-SES peers.

EPIC's Insights include:

1. Inclusion of the additional matched pairs in the study will provide more robust data regarding the differences between higher and lower performing schools.
2. The high scores of students and teachers on components of Key Content Knowledge are consistent with Carol Dweck's Academic Growth Mindsets research (Academic Attribution). Dweck's research has focused on demonstrating the importance of having a "growth" mindset, where effort leads to success, rather than a fixed mindset, where a student either has innate ability or does not.⁹
3. The differences between smaller and larger schools indicate there will be value in doing case studies that:
 - a. Explore why Key Cognitive Strategies and Key Learning Skills & Techniques are opposite from predicted in the smaller schools;
 - b. Examine Keys in school context including other important dimensions related to school performance (e.g., leadership, family involvement, instructional resources);
 - c. Take note of postsecondary aspiration differences between rural and urban schools; and
 - d. Explore Key components using mixed methods within the case study
4. Students and teachers often disagree on the degree to which particular elements of each of the Four Keys to College Readiness are emphasized in the classroom (e.g., persistence, academic value, challenge level, experience with technology, self-awareness strategies, and goal setting strategies)

Additionally, the QEC finds that an analysis of the differences and similarities among survey respondents is important to investigate as a part of the upcoming case study component of this study. For example:

Participant responses to CampusReady items were measured on Likert scales of 1-5. These responses were averaged across groups to create an overall score for each participant group at each school. The higher

⁹ Dweck, C. (2007). *The Perils and Promises of Praise*. Association of Supervision and Curriculum Development (ASCD), Alexandria, VA.

performing school of the “city” locale had the greatest level of agreement (closest average scores) between teachers and students in their responses to the following components of the Four Keys to College and Career Readiness:

Strategy	Student Somewhat like me= 2-3 A lot like me= 3-4 Very much like me= 4-5	Teachers - Overall I rarely/ never do this= 2-3 I do this often=3-4 I do this very often= 4-5	Teachers – Core Content I rarely/ never do this=2-3 I do this often= 3-4 I do this very often= 4-5
Problem Formulation	3.76	3.79	3.80
Interpretation	3.37	3.69	3.65
Communication	3.36	3.33	3.26
Precision and Accuracy	3.76	3.69	3.68
Student Effort	3.74	3.94	3.94
Structure of Knowledge	3.91	4.03	4.05
Note Taking Strategies	3.46	3.45	3.47
Academic Awareness	3.62	3.74	3.76

For this same higher performing school, teachers and students had the most disagreement in their responses to the following components of the Four Keys:

Strategy	Student Somewhat like me= 2-3 A lot like me= 3-4 Very much like me= 4-5	Teachers - Overall I rarely/ never do this= 2-3 I do this often=3-4 I do this very often= 4-5	Teachers – Core Content I rarely/ never do this=2-3 I do this often= 3-4 I do this very often= 4-5
Research	3.76	3.09	3.08
Academic Attribution	3.85	4.20	4.34
Academic Value	3.26	4.44	4.44
Challenge Level	3.56	4.03	4.05
Experience with Technology	4.0	3.31	3.15
Goal Setting Strategies	3.78	2.93	2.83

Persistence Strategies	3.45	4.0	4.05
Self-Awareness Strategies	3.92	3.03	2.96
Test Taking Strategies	3.46	3.91	4.0
Collaborative Learning Strategies	3.24	3.68	3.67
Time Management Strategies	3.20	3.79	3.79
General Study Strategies	3.14	3.75	3.76

Phase 1-Component 3: Case Studies

The third component of Phase I will involve on-site, in-depth case studies of each of the matched pair schools. The QEC will utilize the data gathered from components 1 and 2 as the basis for developing questions related to effective practices, attributes and actions of the subject schools. Surveys, focus groups, direct observation, interviews, and a cost effectiveness analysis are a few of the strategies that have been used with success by the QEC in the past and are being discussed as likely candidates for this matched pair study as well.

Phase 1-Component 4: Best Practices Research Literature Review

The focus of the Best Practices Panel's 2014 research review was to learn from studies that provide reliable evidence of effective high school practices shown to improve high school graduation and postsecondary education enrollment rates and college and career readiness. Of high priority was the identification of strategies and practices that are effective in helping historically underserved/underachieving student groups (e.g., economically disadvantaged, Hispanic, Black, American Indian/Alaska native, English Language Learner (ELL), and special education (SPED)). Additionally, the QEC sought to learn more about the impact of gender, school locale, and the systematic teaching of specific college readiness skills on high school graduation and postsecondary enrollment rates.

The intent of the research review was to answer the following questions:

1. How do Oregon's 4-year graduation rates compare with those of other states and countries?
2. What educational practices have been effective in improving high school graduation rates in other states and countries?
3. How does Oregon's postsecondary enrollment rate and Oregon's high school graduates' level of college and career readiness compare with high school graduates of other states and countries?
4. What strategies and approaches have been effective in improving post-secondary enrollment rates and levels of college and career readiness in other states and countries?
5. What costing and budgeting practices among educational decision-makers in other states and countries are the most likely to result in evidence-based practices being implemented?

Highlights of the findings of the QEC Best Practices Panel Review of Research Literature were:

Access to high quality data about the relative effectiveness of educational practice has improved dramatically since the QEC was established in 1999 and the 2000 release of the National Center for Education Statistics (NCES) Statistical Analysis Report, *Monitoring School Quality: An Indicators Report*.¹⁰ At the turn of this century, “high quality” data, defined as data that has been systematically collected over a number of years, were only available on a few straightforward teacher indicators: teacher assignment, teacher experience, and class size, and there were conflicting research results about the impact of each of them on student achievement.

Monitoring School Quality: An Indicators Report identified thirteen indicators of educational practice overall, and explained that only poor-quality data were available at that time on indicators such as pedagogy, school leadership, school goals, and professional community:

These indicators are complex and therefore more difficult to measure and, historically, have not been prominent in national data-collection efforts. It is difficult to isolate and measure critical elements of pedagogy because the teaching process consists of a complex set of interactions between students, the teacher, and the curriculum. Measuring human actions, incentives, and opinions to estimate the effects of school-level attributes such as leadership goals, and professional community is an equally complex task.

This report was essentially an urgent national “call to action” for quality data to enable schools and teachers to make the best possible evidence-based decisions about which practices are the best fit for their students’ needs and, if implemented, will likely result in improved student achievement. The task of identifying and generating high quality data and conducting rigorous research into practices associated with complex indicators of quality education was not, however, within the realm of possibility for schools and districts by themselves.

A wide variety of non-profit organizations, educational institutions, foundations, businesses and other entities throughout the U.S. stepped up to the plate, and significant strides have been made in the quality of data that can now collectively measure the thirteen indicators of a quality educational experience identified by NCES. One outcome of this unprecedented and ongoing nationwide effort to improve the analytical capacity of schools and teachers is that there is increased access to published information about how states are improving their graduation and postsecondary enrollment rates.

Closely associated with this improvement is the forging of research practice partnerships as a strategy for leveraging research for educational improvement in school districts. A William T. Grant Foundation sponsored white paper, *Research-Practice Partnerships: A Strategy for Leveraging Research for Educational Improvement in School Districts*¹¹ describes three types of research-practice partners:

¹⁰ Mayer, D., Mullens, J., and Moor, M. (2000). U.S. Department of Education (USDED). National Center for Education Statistics (NCES). *Monitoring School Quality: An Indicators Report*. Washington, DC.

¹¹ Coburn, C.E., Penuel, W.R., & Geil, K.E. (January 2013). *Research-Practice Partnerships: A Strategy for Leveraging Research for Educational Improvement in Schools Districts*. William t. Grant Foundation, New York, NY.

- 1) Research alliances that are partnerships between a district and an independent research organization, focused on investigating questions of policy and practice of importance to the district (e.g., Research Alliance for New York City Schools, Consortium on Chicago School Research, alliances funded through the Regional Education Laboratory contracts)
- 2) Design-research partnerships that aim to build and study solutions in real-world, place-based contexts that focus equally on informing practice and research, emphasize co-design, and collaborate throughout the process (e.g., The University of Washington and Bellevue School District Partnership)
- 3) Networked improvement communities (NICs) that are networks of school districts that seek to leverage diverse experiences in multiple settings to advance understanding about what works, where, when and under what conditions. They involve networks of schools, district, or universities; use systematic methods for continuous improvement; put researchers and district staff in non-traditional roles; and focus on developing local capacity (Carnegie Foundation for the Advancement of Teaching's Networked Improvement Communities.)

How do Oregon's 4-year graduation rates compare with those of other states and countries?

National Center for Education Statistics (NCES) data confirms that the overall U.S. public high school on-time 4-year Average Cohort Graduation Rate in the United States for 2010-11 and 2011-12 were at all-time highs of 79 percent and 80 percent, respectively. (Note: The 2011-12 rate reflects the cohort grad rate from 47 states and the Average Freshman Graduation Rate for Idaho, Kentucky and Oklahoma). ***Oregon's average cohort graduation rate for 2010-11 and 2011-12 was 68 percent, placing it 5th from the bottom of all states and the District of Columbia in 2010-11 and 2nd from the bottom of all states and the District of Columbia in 2011-12.***

A comparison of 2010-11 and 2011-12 Average Cohort Graduation Rate results disaggregated by race/ethnicity and selected demographics, shows that students identified as American Indian/Alaska Native, Hispanic, Black, Economically disadvantaged, Limited English proficient, and/or as Students with disabilities, graduated at lower rates overall in the U.S. than Asian/Pacific Islanders. The same populations of students graduated at an even lower rate in Oregon.¹²

The prospects for young adults without high school diplomas are poor. The report, *2009 Average Income by Educational Attainment Averages* released by the U.S. Department of Education were: (1) High School Dropout: \$19,540; (2) High School Graduate: \$27,380; (3) Associate's Degree: \$36,190; and (4) Bachelor's Degree: \$46,930. Additionally, the individual state report produced by the Alliance for Excellent Education reports the benefits to Oregon of graduating 90 percent (7,400 more) students from the

¹² Stetser, M., and Stillwell, R. (2014). Public High School Four-Year On-Time Graduation Rates and Event Dropout Rates: School Years 2011-12. (NCES 2014-391), U.S. Department of Education, National Center for Education Statistics.

Class of 2012 would have been \$74 million in increased annual earnings, \$95 million in increased annual gross state product and \$12 million in increased annual state/local tax revenues.¹³

Gaps in educational attainment by income, race and ethnicity, gender, and locale have grown in recent decades:

1. Graduation rates are significantly lower in districts with higher percentages of students who are eligible for free or reduced-price lunches
2. About 42 percent of Hispanic students, 43 percent of African American, and 46 percent of American Indian students do not graduate on time with a regular diploma, compared to 17 percent of Asian students and 22 percent of white students
3. Among all races and ethnicities, males graduate at a lower rate than do their female peers—68 percent versus 75 percent
4. High school students of low-income families drop out of high school at six times the rate of their peers from high income families
5. The lowest-achieving 25 percent of students are twenty times more likely to drop out of high school compared to students in the highest achievement quartile¹⁴

U.S. census data for 2011 shows that nationally, 22 percent of America's children live at or below the federal poverty line and 49.5 percent live in low-income families that struggle to meet basic needs. The U.S. poverty rate is higher—and has been for many years—than any other industrialized country that participates in international student achievement tests, and people who are poor in America stay that way longer than anywhere else in the industrialized world. In the 2013 Research Report Update: *A New Majority: Low Income Students in the South and Nation*, the Southern Education Foundation report, **Oregon, with 51 percent of children in low-income families, is identified as one of 17 states having the highest rates of low income students in the U.S., and is second only to California (54 percent) in the Western United States.**¹⁵

There are strong relationships among poverty, locale of schooling, and equity of educational outcomes. The National Center for Education Statistics (NCES) revised its definitions of school locale types in 2006. The result was an urban-centric classification system with four major locale categories - city, suburban, town, and rural - each of which is divided into three subcategories--cities and suburbs are subdivided into small, midsize, or large; towns and rural areas are subdivided by their proximity to an urbanized area into the categories fringe, distant, or remote. This system differentiates towns and rural areas on the basis of

¹³ U.S. Department of Education, National Center for Education Statistics, (2011). The Digest of Education Statistics. (2010). (NCES 2011-015). Washington, D.C.: U.S. Government Printing Office.

¹⁴ Baum, S., Ma, J., & Payea, K. (2013). The Benefits of Higher Education for Individuals and Society. New York, NT: The College Board. Retrieved from: <https://trends.collegeboard.org/sites/default/files/education-pays-2013-full-report.pdf>

¹⁵ Suits, S. & Sabree, N., (October 2013). Southern Education Foundation (SEF). Research Report Update. *A New Majority: Low Income Students in the South and Nation*

their proximity to larger urban centers, allowing the differentiation of rural schools and districts in relatively remote areas from those located just outside an urban center.

In the 2013 NCES Report, *The Status of Rural Education*, researchers found that more than half (57 percent) of all regular school districts in the U.S. are located in rural areas, while 20 percent of districts are located in suburban areas, 18 percent in towns, and 5 percent in cities

Students in rural districts experienced higher graduation rates than their peers in districts in cities and towns. In the District of Columbia and the 47 states that reported data (California, Nevada, and Vermont did not), the averaged freshman graduation rate (AFGR) for 2008-09 was 77 percent. Rural areas experienced graduation rates of 80 percent, which is higher than the average. Graduation rates were higher in rural areas than in cities (68 percent) and towns (79 percent) but lower than in suburban areas (81 percent). Graduation rates in large urban district are the lowest 64 percent of all four locales and their subgroups (64.1 percent).¹⁶

A comparison of the percentages of students distributed among the four locales in Oregon versus the United States shows Oregon has higher percentages of students in locales that graduate students at lower rates (cities and towns) and has lower percentages of students in locales that graduate students at higher rates (suburban and rural). The impact and implications of this difference will be further explored through case studies:

Locale	U.S. Student Distribution	Oregon Student Distribution	U.S. AFGR 2008-09
City	29%	32%	68%
Suburban	34%	24%	81%
Town	12%	26%	79%
Rural	24%	17%	80%

The Best Practices Panel also searched for information on the relationships among poverty, race, gender, and exclusionary discipline (suspensions or expulsions) of high school students as factors that have the potential to influence graduation rates. The Institute for Education Sciences' (IES) 2007 research on *Suspensions and Expulsions of High School Students* found distinct differences in national rates of suspension and expulsion by gender and race/ethnicity. IES reported that the rate of male high school students who had ever been suspended was 32 percent while this rate for females was 17 percent. In addition, nearly 49 percent of Black (male and female) high school students had been suspended at least once, a greater percentage than Hispanic (26 percent), White (18 percent), and Asian/Pacific Islander (13 percent) and students of two or more races (29 percent).¹⁷

¹⁶ *The Status of Rural Education*. Op. cit.

¹⁷ USED, National Center for Education Statistics. *Youth Indicators 2011. America's Youth: Transitions to Adulthood, Chapter 2. School-Related Characteristics, Indicator 14. Suspensions and Expulsions of High School Students*. (2012)

A 2014 study conducted by the National Center for Education Evaluation (NCEE), Northwest Regional Educational Laboratory at Education Northwest, *Suspension and Expulsion Patterns in Six Oregon School Districts*, provides further analysis of the impact of student suspension and expulsions in Oregon. The six districts studied collectively enroll 25 percent of Oregon's K-12 students and are among the most diverse with enrollments of 28 percent of the state's Hispanic students, 51 percent of its Asian students, and 55 percent of its Black students. The study reported that for the year 2011-12:

1. The percentage of students receiving exclusionary discipline (suspensions and expulsions) was 2.5 times higher for male students than for female students. The percentage was higher for American Indian, Black, Hispanic, and multiracial students and lower for Asian students than for White students. And the percentage for students in special education was higher than that for students not in special education.
2. The percentage of students receiving multiple suspensions was three times higher for male students than for female students. The percentage was higher for American Indian, Black, Hispanic, and multiracial students and lower for Asian students than for white students. And the percentage was four times higher for students in special education than for students not in special education.
3. There is no evidence that imposing exclusionary discipline on more students has increased school safety, improved learning climates in schools, or improved the behavior of students receiving such discipline
4. Schools with a higher level of exclusionary discipline have been found to have lower levels of academic achievement and environments less conducive to learning. Students who are suspended are more likely to repeat a grade, drop out, and become involved in the juvenile justice system.¹⁸

The National Institutes of Health also report that families have a powerful role in shaping educational and adult outcomes. A growing proportion of American children are being raised in single parent families and for an increasing fraction of their childhoods. Children reared in single-parent homes are more likely to live in poverty and drop out of high school. The analysis shows that boys in single parent homes complete less schooling than girls, which may help to explain divergent trends in dropout rates by gender¹⁹

Finally, an analysis that shed light on the profound role of poverty in dropout rates was conducted by Balfanz & Legters (2004) at the Center for Research on the Education of Students Placed At Risk (CRESPAR) at Johns Hopkins University found that schools with the lowest levels of promotion (from freshmen to senior status) were not necessarily schools with the highest levels of minority students. Rather, schools with the weakest promotion power (the rate at which a high school is able to advance students through grade levels and to graduation) were schools with high levels of poverty and a lack of resources. In fact, "majority minority schools with more resources successfully promote students to senior status at the

¹⁸ Burke, A. & Nishioka, V. (2014). Institute of Education Sciences (IES), National Center for Education Evaluation and Regional Assistance, Regional Educational Laboratory at Education Northwest. *Suspension and Expulsion patterns in six Oregon School Districts*.

¹⁹ Heckman, J. and LaFontaine, P. (2011). *The American High School Graduate: Trends and Levels*. NIH Public Access

same rate as majority white schools.”²⁰ The researchers further propose that this suggests that a dedicated application of resources to schools with a high level of poverty could help lower dropout rates.

Education at a Glance 2013, The Organization for Economic Co-operation and Development’s (OECD) most recent publication detailing the graduation and post-secondary enrollment rates of its member countries is the primary source of “upper secondary” or high school graduation rates among countries. It reports that since 1995, upper secondary graduation rates have increased by an average of 8 percentage points among OECD countries with comparable data. The greatest increase occurred in Mexico, which shows an annual growth rate of 4 percent between 2000 and 2011. The U.S. annual growth rate for the same period of time is .7 percent. Finland has the highest upper secondary graduation rate overall with 84 percent of males and 86 percent of females graduating in 2013.

Also, for the 23 of 29 OECD countries with available data, the first-time upper secondary graduation rate for 2013 is 83 percent. The EU21 countries’ average rate for the same indicator is 84 percent, and the G20 countries’ average rate for the same indicator is 79 percent. With a graduation rate of 77 percent, the U.S. was below the OECD overall average graduation rate of OECD, EU21 and G20 countries. Oregon’s 2011 graduation rate of 68percent was below the lowest average rate of graduation among OETC, EU21, and G20 countries as well.²¹

What Strategies Are Effective In Improving High School Graduation Rates in the U.S.?

The USED Institute of Education Sciences (IES) What Works Dropout Prevention Practice Guide (2008) synthesizes all of the What Works Clearinghouse (WWC) findings about interventions and makes the following recommendations about how to decrease dropouts and improve graduation rates:²²

1. *Utilize data systems that support a realistic diagnosis of the number of students who drop out and that help identify individual students at high risk of dropping out*
2. *Assign adult advocates to students at risk of dropping out*
3. *Provide academic support and enrichment to improve academic performance*
4. *Implement programs to improve students’ classroom behavior and social skills*
5. *Personalize the learning environment and instructional process*
6. *Provide rigorous and relevant instruction to better engage students in learning and provide the skills needed to graduate and to serve them after they leave school*

²⁰ Balfanz & Legters. (2004). *Locating the Dropout Crisis*, Center for Research on the Education of Students Placed At Risk (CRESPAR), Johns Hopkins University.

²¹ Office of Economic and Cooperative Development (OECD). (2013), *Education at a Glance 2013: OECD Indicators*, OECD Publishing. Retrieved from: <http://dx.doi.org/10.1787/eag-2013-en>

²² Retrieved from: <http://ies.ed.gov/ncee> and <http://ies.ed.gov/ncee/wwc/publications/practiceguides/>

In addition, a search of all regular high school What Works Clearinghouse intervention studies related to “staying in school”, “progressing in school”, and “completing school”, released after the 2008 publication of the IES Dropout Prevention Practice Guide, resulted in a finding of seven interventions having an effectiveness rating of “potentially positive” or “strong” impact on student outcomes.²³ This finding was based on each intervention’s Improvement Index score on a scale of -50 to +50. The score is the expected change in percentile rank for an average comparison group of students if the student had received the intervention. It was measured as the percentile difference between the intervention group mean and the comparison group mean using the comparison group distribution. The seven interventions are:²⁴

1. *Accelerated Middle Schools* (+35 Dropout Prevention/Progressing in School Improvement Index and +17 Progressing in School Improvement Index)
2. *ALAS (“Wings”)* (+42 in Dropout Prevention/Staying in school and +19 in Dropout Prevention/Progressing in school)
3. *Career Academies* (+13 in Dropout Prevention/Progressing in school and +13 in Dropout Prevention/Staying in school)
4. *Check and Connect* (+30 Dropout Prevention/Progressing in school; +25 Staying in School; and +1 Completing School Improvement indices)
5. *Financial Incentives for Teen Parents to Stay in School* (+6 Staying in School Improvement Index)
6. *High School Redirection* (+4 Dropout Prevention/Progressing in School Improvement Index)
7. *Talent Search* (+17 Dropout Prevention/Completing School Improvement Index)

Other sources of research-based information detailing effective practices in the implementation of strategies that are scaling up best practices in improving graduation rates in entire systems (e.g., states, districts, cities) include:

The University of Chicago’s Consortium on Chicago Schools Research(CCSR) involving the progress being made by Chicago Public Schools (CPS) April 2014 CCSR Research Summary entitled, *Preventable Failure—Improvements in Long-Term Outcomes when High Schools Focused on the Ninth Grade Year*,²⁵ tells the story of Chicago Public School’s seven-year metamorphosis from a large urban school district with one of the highest poverty levels in the US and a 59 percent graduation rate in 2001-02 to one in which 82 percent of its ninth graders in the class of 2013 were on track to graduate. Key features of Chicago’s “On Track” indicator are shown below:

²³ Retrieved from: <http://ies.ed.gov/ncee/FindWhatWorks.aspx?o=3&n=Dropout%20Prevention&r=1&g=22>

²⁴ The interventions are described in more detail in Volume II of this report.

²⁵ Roderick, M., Kelly-Kemple, Johnson, D. & Beechum, N. (April 2014). Research Summary, *Preventable Failure: Improvements in Long-Term Outcomes when High School Focused on the Ninth Grade Year*. The University of Chicago Consortium on Chicago School Research. University of Chicago, Chicago, Illinois

1. **Student Data:** District provides data on students most at risk of going off track, to the right people within school, in a timely way
2. **Leadership:** Principal prioritizes on-track and ensures buy-in among teachers, counselors and larger school community
3. **Collaboration:** Ninth grade teachers collaborate in professional learning communities and share strategies within a school, and across schools
4. **Personalization:** Interventions are tailored to each child's specific needs based on specific knowledge of his or her individual course performance

Research findings related to the effectiveness of On Track over time include:

1. **Improvements in ninth grade on-track early-mover schools were sustained** in tenth and eleventh grade and followed by a large increase in graduation rates.
2. **Between 2005 and 2013, improvements in ninth grade on-track rates across the district were dramatic**, sustained, and observed across a wide range of high schools and among critical subgroups—by race, by gender and across achievement levels.
3. **Improvements in on-track were accompanied by across-the-board improvements in grades.**
4. **Large, consistent improvements that create lasting change** across subgroups and considerably reduce variation in outcomes across schools—are rare in education. This is one of those rare cases. It has spread to elementary and middle schools, and almost all have continued to improve through 2013.
5. **The on-track initiative reframed the problem of school dropout** from an outcome that is outside the control of educators to one that can be managed through effective school-based strategies. Striking improvements in performance can result from a targeted approach that also allows schools latitude in their strategy. In contrast to the common assumption that school dropout is an intractable problem in urban schools, the improvements in on-track and graduation rates in CPS suggest that students' performance is actually "highly malleable".
6. **Ninth grade is a pivotal year** that provides a unique intervention point to prevent school dropouts. When schools concentrate their efforts on helping students make a successful transition to ninth grade, it results in dramatic increases in graduation.
7. **7,000 more students each year** are staying on track to graduate.
8. **Chicago's on-track outcomes provide an important case study of the use of data** to build the capacity of high school educators to manage complex problems and create system of continuous improvement.

Ohio provides another example of an effective large scale school turnaround effort that first asked the question, *Why do some schools in high poverty communities produce remarkable stories of success while others fail?* Citing the findings of larger-scale quantitative research from across the country (Bryk et al.

(2010); Clifford (2012) Florian (2000); Knnapel and Clements (2005); Sebastian (2012); and Reeves (2003) as their inspiration, a consortium involving the Ohio business Roundtable, the Ohio Department of Education and Ohio State University sought to identify best practices at work in Ohio's high performing, high poverty schools.

As a result of this research, the Ohio Failure is Not an Option Consortium identified the key attributes and practices of nine successful high-poverty schools in its 2012 report: *Failure is Not an Option: How Principals, Teachers, Students and Parents from Ohio's High-Achieving, High-Poverty Schools Achieve Their Success*²⁶:

- Principals lead with a strong and clear vision for their school, engage staff in problem solving and decisions making and never lose sight of their school's goals and outcomes.
- Teacher and administrators are dedicated to their school's success and committed to making a difference in their students' lives.
- School leaders provide genuine opportunities and incentives for teachers to collaborate, and teachers say that collaboration and sharing best practices are keys to their effectiveness.
- Teachers regard student data as clarifying and helpful, and they use it to plan instruction.
- Principals and teachers have high expectations for all students and reject any excuses for academic failure.
- Schools offer students nontraditional incentives for academic success and good behavior.
- Students feel valued, loved and challenged. They are confident that their teachers will help them succeed and be at their side if they hit a rough patch.
- While parent and community support can be an asset, principals and teachers do not see their absence as an insurmountable barrier to student learning and achievement.
- School leaders and teachers seek to continuously improve practices and student achievement. They take today's success as tomorrow's starting point.
- Each school tells its own story of change and improvement, yet some commonalities exist.

The list of attributes higher performing schools identified through this study are similar to recent findings of other studies of its kind. What makes this one especially relevant to the QEC's research is that it provided greater insight into what the catalyst for change was and how higher performing schools generate an impetus for the change.

The researchers found that every higher performing school had some sort of "fresh start"—whether by means of new leadership, a fundamental restructuring of the school day, the adoption of a new instructional regime, the deliberate creation of a defining culture or the construction of a new building. Most of the staff and administrators believed that their fresh start was effective because it responded directly to actual problems. It presented a possible solution to something specific that people knew was not going well.

Second, they saw instruction improve and scores go up as they became willing to dedicate themselves to new practices wholeheartedly. This open attitude toward better practices seemed to stem from the schools'

²⁶ *Failure is Not an Option: How Principals, Teachers, Students and Parents from Ohio's High-Achieving, High-Poverty Schools Explain Their Success.* (2012). Public Agenda,

constant efforts toward improvement. This persistent dedication to improvement kept their minds open to new ideas and provided a powerful, constant push toward excellence.

Third, reform did not necessarily lead to staffing overhauls; many veteran staff members remained and were valued for their expertise. Veteran teachers reminded their fellow teachers of the fact that change rarely comes easy and effective reforms often involved tough changes to teachers' timework routines. These schools sought to stick by their reforms and to critically assess their effectiveness through constant data collection and analysis. The ultimate success of their reforms, evidenced in their student data, finally won them over.

Also, researchers at The Center for Evaluation and Education Policy (CEEP) at Indiana University in a 2008 analysis of the effectiveness of six programs designed to reduce the dropout rate nationally and in Indiana found that regardless of the program or strategy, targeting at-risk students for additional help as early as possible is essential to improving the overall graduation rate of a school. They also found a clear need for a shift in school-wide programs and philosophies. Students must feel they are part of a community and have a strong relationship with one or more adults in the school, must feel as if what they are learning is connected to something larger than the present time and place, and must be challenged intellectually. Every study reviewed for this research indicated that a lack of at least one of these factors played a large role in a student's decision to leave school.

No school can be successful in improving graduation rates without a strong focus on relationships, relevance, and rigor. Allowing high school students to experience college-level work and receive college credit while still in high school, using a school-based adult mentor to assist with the ongoing monitoring of each student's career plan, and changing instructional strategies away from the dominate (passive student) teacher lecture to interactive learning with peers were all cited as effective in improving high school graduation rates.

The CEEP researchers drew the overarching conclusion that it is impossible to improve student satisfaction in education without listening to students first. Student input should be highly regarded and responses should be formed accordingly. Most students in surveys indicated a desire for more challenging academic work. They cited the Southern Regional Education Board's finding that of the successful high schools profiled for the study, most raised expectations and were still succeeding in improving graduation rates; students rose to meet the higher expectations.²⁷

A consortium involving Civic Enterprises, the Everyone Graduates Center at the School of Education at Johns Hopkins University, America's Promise Alliance, and the Alliance for Excellent Education provides further evidence of the nationwide practices that are enabling the U.S. as a whole to increase its graduation rate to an unprecedented level. In Building a Grad Nation—Progress and Challenges in Ending the High School Dropout Epidemic Annual Update 2014, the consortium offers an analysis explaining the status of improvement efforts in the U.S. and concludes: The preponderance of evidence

²⁷ Stanley, K. and Plucker, J. (2008). *Education Policy Brief: Improving High School Graduation Rates*. Center for Evaluation & Education Policy (CEEP). Indiana University, Indianapolis

indicates that graduation rates went up in the states, communities, school districts, and schools that recognized and then effectively responded to the graduation challenge, employing a core set of strategies.

Building a Grad Nation 2014 also offers a perspective on what is driving improvement in graduation rates across the country based on research that compared key national developments that recognized and responded to the dropout crisis over the past decade with the timing and location (states and districts) of improvements in high school graduation rates. The four key drivers for significant high school graduation rate improvements in states are ***Awareness (data analysis), Accountability, Targeted High School Reforms, and Targeted student interventions.***

In the interest of continuing to drive national improvement toward a 90 percent graduation rate, *Building a Grad Nation 2014* recommends that federal interventions should continue to be focused on improving data reporting and accountability and on supporting school improvement and innovation. State interventions should be focused on strengthening in-school factors of achievement by ensuring students are college- and career-ready and by strengthening accountability and improvement systems by putting greater emphasis on traditionally underserved student subgroups.²⁸

What Strategies Are Effective in Improving High School Graduation Rates in other Countries?

Finland is now the OECD member country that has the highest high school (upper secondary) graduation rate, but it wasn't always number one in international comparisons. The systematic forty-year transformation of its educational system has been well-documented and has much in common with current U.S. educational system reforms cited in here.²⁹ This is due, in part, to the fact that Finnish teachers integrated materials produced in the U.S. into their reform efforts which began with a focus on improving teacher quality through professional learning.

As the level of teacher professionalism gradually increased in schools, the prevalence of effective teaching methods and pedagogical classroom and school designs increased. A new flexibility within the Finnish education system enabled schools to learn from one another and make best practices universal by adopting innovative approaches to organize schooling. It also encouraged teachers and schools to continue to expand their repertoires of teaching methods and to individualize teaching in order to meet the needs of all students. The teaching profession of Finland has evolved to the point where it now attracts its highest performing secondary school graduates to the profession.

Also of particular note, is that Finland eliminated “streaming” (“tracking” as it is called in the U.S.) and expanded special education services to half of all students when it discovered a widening achievement gap among schools that corresponded with the socioeconomic divide that existed in Finland in the 70s and 80s.

²⁸ Balfanz, R. et. al. *Building a Grad nation: Progress and Challenge in Ending the High School Dropout Epidemic.* (April 2014)., Civic Enterprises, Everyone Graduates Center at Johns Hopkins University, America's Promise Alliance, & Alliance for Excellent Education, AT&T, and Target

²⁹ For more information see literature review in appendix II

Now, Finland has the highest PISA scores and the smallest reading variance among its schools of all the OECD countries.

Oregon's Postsecondary Enrollment Rate and College and Career Readiness as Compared With Other States

Utilizing American Community Survey data, The National Center for Higher Education Management Systems (NCHEMS) Information Center reports *Oregon's 2010 "College-Going Rate of High School Graduates Directly from High School" as 47.8 percent, 4th from the bottom of all states in the U.S.* Also, Mississippi and Connecticut have the highest postsecondary enrollment rates for 2010 high school graduates at 78.8 percent and 78.7 percent, respectively. Both states have implemented policy that helps students overcome barriers to community college access. Despite Oregon's lower percent of college-going of high school graduates directly from high school, however, *Oregon ranked 15th from the top in the U.S. in 2010 in "First Time College Freshmen Returning Their Second Year."*³⁰

Also drawing upon American Community Survey data, NCHEMS reports that Oregon residents have an educational attainment degree-level of 88.7 percent, which is above the U.S. overall degree attainment rate of 87.9 percent in 2010. NCHEMS advises further analysis to explain greater degree attainment levels than postsecondary enrollment rate stating that among other patterns, "...states can perform rather poorly in educating and graduating students, while importing large numbers of educated citizens from other states."

NCHEMS also indicates the student pipeline or transition and completion rates from 9th Grade to college for Oregon in 2010 was 16.4 percent. This is the percent of ninth graders who graduate from high school on time, directly enter college and graduate within 150 percent of required degree time (6 years for a bachelor's and 3 years for associate). It indicates strengths and weaknesses of states at each stage of transition in the education pipeline and can be analyzed to determine which transition stage warrants the most policy attention whether it be high school graduation, college-going, first-year retention, or college graduation. The primary source for this indicator was NCES.

Strategies that improve postsecondary enrollment rates and college readiness in the U.S.

A search of all What Works Clearinghouse studies related to "Post-secondary Enrollment" and "College and Career Preparation" resulted in a finding of six studies of interventions (primarily directed at first generation college aspirants) that met WWC evidence standards without reservations and provided a positive, statistically significant effect on student outcomes:³¹

1. *"Closing the Social-Class Achievement Gap: A Difference-Education Intervention Improves First-Generation Students' Academic Performance and All Students' College Transition.*

³⁰ Mortensen, T., (2014). *Postsecondary Opportunity*, The National Center for Higher Education Management Systems (NCHEMS). Retrieved from: <http://.higheredinfo.org/dbrowser/index.php?measure=32>

³¹ Retrieved from: <http://ies.ed.gov/ncee/FindWhatWorks>

2. *Early College, Early Success: High School Impact Study (March 2014).*
3. *Looking Beyond Enrollment: The causal effect of need-based grants on college access, persistence, and graduation*
4. *Late Interventions Matter Too: The Case of College Coaching New Hampshire*
5. *Information and College Access: Evidence from a Randomized Field Experiment (This randomized controlled trial examined the impact of offering an online informational video and financial aid materials to high school students)*

Helping Students Navigate the Path to College: What High Schools Can Do (2009) is an IES Practice Guide based on What Works Clearinghouse research that focuses on effective practices that prepare student academically for college, assists them in completing the steps to college entry, and improves their likelihood of enrolling in college. It incorporates all studies and other expert evidence into five recommendations:³²

1. Offer courses and curricula that prepare students for college-level work, and ensure that students understand what constitutes a college-ready curriculum by 9th grade.
2. Utilize assessment measures throughout high school so that students are aware of how prepared they are for college, and assist them in overcoming deficiencies as they are identified
3. Surround students with adults and peers who build and support their college-going aspirations
4. Engage and assist students in completing critical steps for college entry
5. Engage and assist students in completing critical steps for college life
6. Increase families' financial awareness, and help students apply for financial aid

The review of best practices literature also confirmed that the next generation of U.S. high schools with professional technical roots and near seamless connections to community colleges (and other certificate granting institutions) is also well underway in the U.S. Time magazine documented this movement in a February 24, 2014 education article: *The School that Will Get You a Job*.³³ It discusses Sarah E. Goode STEM Academy Early College High School, the Professional Technical (P-Tech) model originally developed by IBM, the New York City department of education and the City University of New York. It is described as a six-year hardcore science, technology, English and math (STEM) high school. It integrates the Career Academy and Early College High School Model, and while it is still experimental, thirty-six more schools like it are in the works. “Many U.S. leaders—including President Obama, Education Secretary Arne Duncan and scores of blue-chip CEOs and executives and a sizable number of top educators”—believe we’re once again at a turning point in educational reform that responds to the need to ensure the kind of skilled workforce needed to compete in a new higher-tech industrial era. Also, many of these leaders are pushing six year (P-Tech) high schools, with the last two years spent in conjunction with a

³² Retrieved from: <http://ies.ed.gov/ncee/wwcpublications/practiceguides/>

³³ Fooroohar, R. (February 24, 2014). *The School that Will Get You a Job. Time Magazine, pgs.22-29.*

community college certification program. Concurrent with this movement, several states, including Tennessee and Oregon have unveiled and passed legislative proposals that would provide two free years of community college tuition for qualifying high school graduates.

Community colleges are also critical partners with states in the adoption and implementation of college and career readiness indicators as a part of Common Core State Standards. In *Making Career Readiness Count*,³⁴ a joint report of Achieve and the National Association of State Directors of Career Technical Education Consortium (NASDCTEc), two primary recommendations for states are promoted. First, states are encouraged to use multiple indicators of college and career readiness in their accountability and public reporting systems. The report explains that college and career readiness requires the experience of working toward mastery of college and career-ready standards and persisting along pathways to graduation, advanced training and postsecondary education. As such, states should include indicators that reflect student achievement on assessments; completion of rigorous coursework; and attainment of credits, recognized credentials and degrees.

Second, it emphasizes that states need to ensure they incentivize student progress toward and beyond college and career readiness, so the system recognizes and rewards schools and districts where students are going above and beyond in accelerating and deepening their application of knowledge and skills towards college and careers. “States should use college- and career-ready indicators that reflect a continuum of progress toward meeting and exceeding college- and career-ready expectations. The continuum of indicators positions states to meet the goals of ensuring that students off-track get the attention and resources they need and providing incentives for students who meet the college and career readiness standard earlier in high school to continue to strive for more.” The report further states that while progress has been made nationwide in building measures of college and career readiness into their reporting and accountability systems, no state has a system that fully addresses and promotes the many facets of college and career readiness, in particular, the academic, technical and employability skill that are critical to post-high school success.

Another contributor to the resurgence of excitement around a seamless transition for students from high school to postsecondary education, is the U.S. Department of Education’s Office of Educational Technology. In its 2013 report, *Promoting Grit, Tenacity, and Perseverance: Critical Factors for success in the 21st Century*, it explains that “grit” is a complex, multi-faceted college readiness skill and defines it as: *Perseverance to accomplish long-term or higher-order goals in the face of challenges and setbacks, engaging the student’s psychological resources, such as their academic mindsets, effortful control, and strategies and tactics.*

The report further explains that “grit” can be a significant determinant of what students’ value and want to accomplish, the types of challenges they face, and the resources they can access. It is well documented that students from high-poverty backgrounds are particularly likely to face great stress and limited social

³⁴ Achieve and National Association of State Directors of Career Technical Education Consortium (NASDCTEc). (2014). *Making Career Readiness Count*. Retrieved from: www.achieve.org/files/MakingCareerReadinessCount.pdf.

support for academic achievement, factors which can undermine perseverance toward a wide range of goals.

The researchers recommended that to promote perseverance students should be given opportunities to take on “optimally challenging” goals that, to the student, are worthy of pursuit. Second, students need a rigorous and supportive environment to accomplish these goals and/or develop critical psychological resources. Students will be more likely to persevere when the learning environment has a fair and respectful climate, conveys high expectations, emphasizes effort over ability and provides necessary tangible resources—materials, human, and time.

Also, academic mindsets constitute how students frame themselves as learners and have a powerful impact on academic performance in general, and in particular on how students behave and perform in the face of challenge. A core mindset that supports perseverance is the “growth mindset”—knowing “My ability and competence grow with my effort.”

Research into meta-cognitive college and career readiness skills has been of high interest to the Quality Education Commission, and with good reason. An early finding of “CampusReady,” the college and career readiness diagnostic currently being administered to selected high schools is that the strongest college and career readiness attribute in Oregon high schools is “Academic Attribution,” which the Education Improvement Policy Center (EPIC) explains is having a growth mindset. Further, there is early evidence that Oregon student are aware of and aspire to enroll in community colleges at a higher rate than students in other states who have taken the diagnostic. This will be explored further by the QEC and could well be a key lever to ensuring Oregon’s 40-40-20 goal is met, if not exceeded.³⁵

Strategies That Have Been Effective in Improving Postsecondary Enrollment Rates and College Readiness in Other Countries

OECD does not report postsecondary enrollment rates, but it does report the rate of tertiary or postsecondary completion for all of the countries in its consortium. As of 2011, the countries with the highest rate of postsecondary education (PSE) completion in order of postsecondary education completion rate are:³⁶

1. Canada: (51%)
2. Israel: (46 %)
3. Japan: (45%)
4. United States: (42%)
5. New Zealand: (41%)

An investigation into Canada’s high postsecondary completion rate led to a clear emphasis on a seamless transition from high school to postsecondary education supported by an extensive system of postsecondary institutions, both degree and non-degree granting, not unlike that of the U.S. Canada’s Conference Board

³⁵ Shechtman, N., DeBarger, A. Dornsife, C., Rosier, S., & Yarnall, L. (2013), *U.S. Department of Education. Office of Educational Technology*

³⁶ 2013 *At A Glance*. Op.cit

explains the persistently high rate of college completion in comparison with other OECD member countries in its 2013 report, *College Completion*.³⁷

One reason for Canada's high ranking on college completion is the unique role of colleges known as Collèges d'enseignement général et professionnel (CEGEPs) in Canada's second-largest province, Quebec. CEGEP is a pre-university program offered after Grade 11 that replaces the extra year of high school provided in other Canadian provinces. As a two-year program, however, it also covers one year of community college. It is a prerequisite for university acceptance. CEGEP enrollment is around 150,000 per year. Between 1990 and 2006, college participation rates for those aged 17 was 19 percent in Quebec, compared with only 10 percent in the rest of Canada.

The CEGEP system was started in 1967 by Quebec's provincial government. The goal was to make post-secondary education more accessible by preparing students to enter university or a technical profession. The government has also used CEGEP to encourage public-private partnerships in technology transfer. Many CEGEPs have set up "technology transfer centres" where applied research is carried out in a specific field in cooperation with industrial partners in key sectors of the Quebec economy.

In an interview with 24/7 Wall St., OECD's Chief Media officer explained that the majority of countries that spend the most on education have the most educated populations. The U.S. and Canada spend the first and third most respectively. He also indicated that educational funding appears to have a strong relationship to how many residents pursue postsecondary education. Private spending on educational institutions relative to public expenditure is much larger in the countries with the highest rates of college-equivalent education.³⁸

Best Practices Panel Conclusions and Recommendations

1. The Educational Best Practices Research Literature Review confirms that poverty trumps all other student characteristics and systemic conditions considered by the QEC as potential contributors to lower graduate and postsecondary enrollment rates. Schools with the lowest levels of promotion are not necessarily those with the highest levels of minority students. Rather, schools with the weakest promotion power are schools with high poverty and a lack of resources. In fact, majority minority schools with more resources successfully promote students to senior status at the same rate as majority white schools. Oregon, with 51 percent of children living in low-income families, is identified as one of 17 states having the highest rates of low-income students in the U.S. Students living in low-income families are more likely to have lower school attendance rates, fail coursework and receive exclusionary discipline (suspension or expulsion). Also, a disproportionately higher rate of Hispanic, African American, and American Indian male students are suspended and/or expelled as compared with their female peers. Exclusion from school contributes to lower high school graduation rates for males of all races and ethnicities than for their female peers. High school students of low-income families also drop out of high school at six times the rate of their peers from high-income families. ***The Best Practices Panel recommends that the relationship among poverty, race/ethnicity, gender, school attendance, course failure and school discipline be further explored as part of the 2015 matched pair case study***

³⁷ College Completion, (2013). The Conference Board of Canada

³⁸ Sauter, M.B & Hess, A. E. (September 24, 2012). NBC News. *The Most Educated Countries in the World*

research to identify practices in Oregon that have the potential to eliminate related inequities in student outcomes and improve graduation and postsecondary education rates.

2. Oregon schools that participated in the spring 2014 administration of CampusReady, The Educational Policy Improvement Center's (EPIC) Four Keys to college and career readiness web-based diagnostic, fell within the average range of implementation of Key Cognitive Strategies (KCS). This key specifically measures mental techniques for processing and organizing information. Participating schools also had, however, higher than average scores as compared with other schools in the U.S. in Key Content Knowledge (KCK), which specifically measures the ways in which students interact with content knowledge, its perceived value to them, and the effort they are willing to expend to learn necessary content. This was also the highest rated key dimension for all schools in the study. In particular, all schools had high scores on Academic Attribution which is a mindset that reveals students know that hard work determines how well they do, not whether they were predetermined to be "good or bad" at something. This result is unique to Oregon, and further analysis will reveal whether or not this empowering attribute has the potential to be used as a lever for improving Oregon's postsecondary enrollment rate. ***The Best Practices Panel recommends that this finding be further analyzed for its postsecondary promotion power potential as part of the 2015 case study project.***
3. The 2014 Best Practices research literature review affirms that Oregon's 40-40-20 Goal and many of the elements of its implementation plan as outlined in the OEIB Strategic Plan and the ODE Strategic Implementation Plan are aligned with Best Practices literature. The literature is also rich in findings about the practices that ensure successful implementation of strategic initiatives. There is, however, a dearth of research-based information about what these initiatives cost in relation to their effectiveness. This makes it more difficult to make policy recommendations related to educational budgeting and spending decision-makers at all levels. ***The Best Practices Panel recommends a cost effectiveness analysis be conducted in association with the 2015 case study project.***

THE QEM'S NEW STUDENT ACHIEVEMENT MODEL

For this report, the Quality Education Commission developed a new approach to linking resources to student achievement, one of the original goals of the Quality Education Model. In this new approach, the Commission utilizes the vast amount of student level data collected by the Department of Education over the last 12 years to isolate the factors that influence individual student's likelihood of graduating from high school. This type of model, when combined with the costing component of the QEM, represents a powerful tool for evaluating the tradeoffs inherent when resources are limited. Before describing the new achievement model, we provide a description of the evolution of the Quality Education Commission's efforts to link resources to student achievement.

When the Quality Education Model was first developed in 1999, it was a clearly stated expectation that the model would be able to link resources with student achievement. This would enable legislators, it was thought, to know what level of student performance they were "buying" at different levels of state funding for schools. In the initial formulation of the model, the connection between resources and student

achievement was more implied than explicit. The first Quality Education Model report published in 1999 stated:

“The Oregon Quality Education Model may be implemented in full with the expectation that the performance of all Oregon students would move toward required performance levels. While the amount of time it will take each school to reach any specified level may vary, the model *assumes* all schools will be able to reach the performance goal of 90 percent at benchmark standards, first at third grade, then at succeeding benchmarks as that cohort of students moved through the system. It also *assumes* that the remaining 10 percent of students are making significant progress to be as near to reaching the standards as possible within that same time frame. Any school that was not making progress or reaching the goal would be *assumed* to be a variance with the assumptions of the model—either tangible or intangible assumptions—or would be *assumed* to be utilizing resources in ways that do not lead to student learning.” (Emphasis added)³⁹

This passage makes clear that the connection between resources and student achievement in the original version of the model was tenuous, based on inference drawn from a broad range of research rather than on a methodical evaluation of data for Oregon schools. This was partly because of the paucity of consistent data for Oregon schools and partly because the state of the art in estimating the relationship was not well-developed.

Over the next decade, as Oregon collected more consistent financial data and student-level academic performance data from standardized assessments, the Quality Education Commission, working with staff from the Department of Education, estimated the relationship between resources and student achievement using statistical models. These models had the advantage of using Oregon-specific data and of being able to estimate an explicit and quantifiable link between school spending and student achievement. These models, typically estimated at the school level, estimated student performance as a function of per-student spending and other variables that capture cost differences of educating students with different needs.

These models had two drawbacks that limited their usefulness. First, the per-student spending data did not capture how schools were actually using their resources. This meant we were not able to distinguish between schools that were not using their resources effectively and those that faced higher costs due to factors that the model did not adequately capture. And second, aggregate school-level student performance measures (average test scores or percent of students meeting the state benchmarks) capture only across-school variation in student performance, which is often dwarfed by the level of *within-school* variation. With too little variation across schools, these types of models have difficulty separating the effects of resources from those of other factors such as student characteristics. Despite their shortcomings, these types of statistical models provided insights into the factors that influence the costs of educating students with different characteristics and different needs.

Recognizing the shortcomings of these prior models, the Commission has developed a student achievement model that utilizes student level data to identify and isolate the quantitative impacts of various factors on

³⁹ The Oregon Quality Education Model, Legislative Council in the Oregon Quality Education Model, Oregon Legislative Assembly, April 1999, p. 10

high school graduation. Using data starting as early as third grade, the model can isolate the impact on high school graduation of factors such as prior student achievement, gender, ethnicity, attendance, Limited English Proficiency status, special education status, economic disadvantage status, and others. Using a statistical technique called linear probability modeling, we can identify which factors have the largest impacts, which in turn can suggest policy options that have the best chance of improving graduation rates.⁴⁰ Exhibit 3 shows, in equation form, the basic structure of the student achievement model, where a and c_1 through c_{14} are the coefficients to be estimated by the model.

EXHIBIT 3: STUDENT ACHIEVEMENT MODEL STRUCTURE

$$\begin{aligned} \text{Probability of HS Graduation} = & a + c_1 * \text{OAKS Score} + c_2 * \text{Male} + c_3 * \text{Asian} + \\ & c_4 * \text{Hispanic} + c_5 * \text{Black} + c_6 * \text{Pacific Islander} + \\ & c_7 * \text{Am. Indian/AK Native} + c_8 * \text{Special Education} + \\ & c_9 * \text{Ec. Disadvantage} + c_{10} * \text{TAG} + c_{11} * \text{Preg. \& Parenting} + \\ & c_{12} * \text{10}^{\text{th}} \text{Grade Attendance Rate} + \\ & c_{13} * \text{Limited English Proficient (LEP)} + \\ & c_{14} * \text{Exited LEP Before High School} \end{aligned}$$

Exhibit 4 shows the results of the linear probability model estimated on the cohort of students that was in 3rd grade in 2003-04 and graduated from high school in 2012-13. The coefficients in the table are those shown in the equation above (a and c_1 through c_{14}) and are interpreted as the impact of each individual factor on the probability of a student graduating from high school. When the estimated changes in individual student probabilities are added up, they represent the estimated statewide impact on the high school graduation rate.

The **t-stat** is a measure of the statistical significance of each coefficient. If the **coefficient** is statistically significant, it means we have confidence that it is different from zero—that is, the particular factor (e.g., the student's OAKS score) has a high probability of affecting the likelihood that the student will graduate from high school. A t-stat greater than 1.96 (in absolute value) indicates the coefficient is statistically significant.

In interpreting the model's estimates, it is important to note that the coefficients are the **independent** impact of each of the factors in the model on graduation rates, **holding all other factors constant**. That is the power of statistical models—they isolate the impact of each individual factor.

The data used to estimate the model is student-level, so the interpretation of the results is the independent impact of each of the above factors that a student will graduate from high school. For example, the

⁴⁰ More details about the models can be found in the technical appendices in Volume II

coefficient on the 3rd grade OAKS score for reading is 0.0031. This means that, all else equal, a 10 point increase in a student’s OAKS score (about one standard deviation), is estimated to increase the student’s probability of graduating from high school by .031, or 3.1 percentage points.

EXHIBIT 4: ACHIEVEMENT MODEL RESULTS—3RD GRADE READING

	Coefficient	t-stat	Statistically Significant?*
Intercept	-1.3514	-33.87	Y
OAKS Score	0.0031	18.06	Y
Male	-0.0683	-17.74	Y
Asian	0.0433	4.09	Y
Hispanic	0.0265	4.19	Y
Black	0.0147	1.12	N
Pacific Islander	0.0343	1.16	N
Am. Indian/AK Native	-0.0514	-3.54	Y
Special Education	-0.0701	-11.43	Y
Ec. Disadvantage	-0.0850	-19.76	Y
TAG	-0.0275	-3.41	Y
Pregnant & Parenting	-0.1209	-8.09	Y
10 th Grade Attendance Rate	1.7205	91.70	Y
Limited English Proficient (LEP)	0.0176	1.75	N
Exited LEP Before High School	0.0347	2.77	Y

Dependent variable is high school graduation flag = 1 if student received a regular diploma, 0 otherwise
 * At the 5% level of significance

In evaluating the other coefficients, it must be remembered that each coefficient is the *independent* impact of the factor, holding all other factors constant. This means, for example, that the Male coefficient is the impact on the probability of graduating from high school relative to females for a group of students *that have the same OAKS scores* and are the same for all the other factors. In other words, it isolates the impact of being male within a group of male and female students who have the same academic performance (as measured by OAKS scores).

The coefficient of -0.0683 means that male students have a probability of graduating from high school that is 6.8 percentage points below that of female students, *even if the male students perform as well academically as the female students*. The coefficients for the other factors are interpreted in the same way: the independent impact on the probability of graduating from high school, holding all other factors constant (including academic performance). The results in Exhibit 4 can be summarized as follows:

- For a given level of academic performance, Asian and Hispanic students have a higher probability of graduating from high school than White students (White students represent the baseline ethnic

category in the model), while American Indian/Alaska Native students have a lower probability of graduating than White students.

- The coefficients for Black and Pacific Islander students are positive but not statistically significant, so being part of these ethnic groups cannot be said to either increase or decrease the probability of graduating from high school, compared to White students, at a given level of academic performance.
- Males, economically disadvantaged students, Talented and Gifted students, and Pregnant and Parenting students have a lower probability of graduating than other students who are not part of those groups but who are at the same level of academic performance.
- For a given level of academic performance, students with higher attendance rates have a higher probability of graduating from high school. The coefficient of 1.7205 means that if a student's attendance rate increases by 5 percentage points (say from 85% to 90%), the student's probability of graduating from high school goes up an estimated 8.6 percentage points (5 percentage points times 1.7205)
- For a given level of academic performance, being Limited English Proficient (LEP) does not have a statistically significant effect on graduating from high school. However, for LEP students who exit LEP status prior to entering high school, the probability of high school graduation increases by 3.47 percentage points.

Some of these results may seem counter-intuitive if you don't remember that the model statistically controls for academic performance by including students' OAKS scores in the model—that is, we are isolating the impacts on high school graduation of factors *other than academic performance*. One way to better understand this is to think about a room full of students, all of whom are at the same level of academic performance as measured by OAKS scores. Those students who are male, American Indian/Alaska Native, special education, economically disadvantaged, TAG, or Pregnant and Parenting will graduate at lower rates than students who are not part of those groups. Students who are Asian, Hispanic, were LEP but exited LEP status prior to high school, or have above average attendance rates will graduate at higher rates.

The value of this analysis is that it is able to isolate factors, independent of academic performance, that impact high school graduation. These types of factors are likely to require interventions that are very different than ones aimed primarily at raising academic performance. The coefficient for economically disadvantaged students, for example, is -0.085, indicating that *for a given level of academic performance*, those students' likelihood of graduating from high school is 8.5 percentage points lower than for students who are not economically disadvantaged. This means that programs aimed at raising the high school graduation rate for economically disadvantaged students must focus on helping those students overcome the *non-academic* barriers they face, not just the academic ones.

This approach has four distinct advantages. First, it fully utilizes the variation in school experiences we observe for Oregon students because it uses student-level data for multiple grades over multiple years. This allows us to follow cohorts of students over time as well as compare different cohorts of students to one

another. Second, by using large sample sizes (roughly 30,000 students in each intact cohort), the statistical power of our results is typically very high—that is, we have more confidence in our results. Third, by isolating the factors that influence high school graduation as early as third grade, the model suggests areas for policy attention that can be addressed early when success may be more likely and potentially less expensive. Finally, this type of model, when combined with the QEM’s costing model, can identify tradeoffs among policy proposals—a critical exercise when resources are limited.

The results described above are based on students who were 3rd graders in the 2003-04 school year using data from their 3rd grade year along with data on their high school outcomes nine years later in 2012-13. The Commission also estimated coefficients for these same students as they progressed through the grades, using data from their 4th through 11th grade years. The coefficients from these later grades allow us to estimate the impact on high school graduation of policy investments and interventions at the various grades, allowing us to evaluate the trade-offs between investments that are made at various grade levels. Examples of various policy investments, and the methods used to evaluate the trade-offs between them, are presented later in this volume of the report. The coefficients estimated for grades 4 through 11 are presented in the technical appendices in Volume II of the report.

THE QEM COSTING MODEL

In the costing component of the Quality Education Model, the school serves as the unit of analysis for evaluating costs. In order to estimate the cost impact of policy proposals to improve student achievement, it is necessary to understand the effects those proposals will have on an individual school’s operations—that is, what programs will be the most effective at implementing the proposal, and what will be the impact on staffing levels and other school resources required to implement the programs. To focus on the school-level, the Quality Education Model is structured around prototype elementary, middle, and high schools, each designed to help students meet Oregon’s high academic standards and performance goals. Each prototype school reflects the resources needed to implement best practices and research associated with effective and high-performing schools and serves as a mechanism to evaluate the resource and cost implications of proposed education programs, policies, and strategies. While the prototype schools are not intended to be prescriptive, they can assist educators, policymakers, and citizens in understanding and making informed decisions about school resources and funding.

Quality Indicators are factors that indicate organizational functioning and efficiency, which the prototype schools are assumed to possess. These thirteen indicators are based on research about effective schools and serve as measures of whether a school employs effective practices and uses resources efficiently. The Quality Indicators fall into four broad categories: school-level, teacher-related, classroom-focused, and student-centered factors.

Best Practices are strategies and programs that have been demonstrated by research and experience to be effective in promoting high levels of student achievement. The prototypes demonstrate how schools of certain sizes and characteristics may be designed to implement the best practices. The Quality Education Commission identified the following essential characteristics that support best practices:

QUALITY INDICATORS

Schools

- Leadership that facilitates student learning
- Parental/community involvement
- Organizational adaptability
- Safe and orderly learning environment
- District policies to support learning

Teachers

- Teacher and teaching quality
- Teacher collaboration
- Professional development program
- Teacher efficacy

Classrooms

- Effective instructional programs and methods
- School database collection and analysis to improve instructional programs

Students

- Readiness to learn
- Connectedness to school and engagement in academics and extra-curricular programs

- Each student has a personalized education program.
- Instructional programs and opportunities are focused on individual student achievement of high-quality standards.
- Curriculum and instructional activities are relevant to students' lives.
- Each student has access to a rich and varied elective co-curricular and extra-curricular program.
- The school creates small learning environments that foster student connection.
- The school provides and encourages connections with significant adults, including parents, mentors, and other advisors to ensure that each student develops a connection to the greater community, along with a strong sense of self.

- The school makes data-informed decisions about the capability of programs to foster individual student achievement.
- The school at upper grade levels uses community-based and worksite learning as integral components of its instructional program.
- The school has a comprehensive staff induction program that guides recruitment and employment and provides ongoing professional development programs.
- Cost-effective management of resources allows school districts to better meet the needs of the greatest number of students.

The **Individual Prototype Schools** incorporate what research and best practices have shown to be most important in improving student achievement and provide a level of resources that adequately promotes and sustains that goal. Each prototype school includes:

- Adequate staffing
- Added instructional time and activities for students having trouble meeting standards
- Curriculum development and technology support
- On-site instructional improvement
- Professional development for teachers and administrators
- Collaboration time for teachers
- Adequate classroom supplies
- Adequate funds for building maintenance

Prototype Resource Assumptions are incorporated into each prototype school in the Quality Education Model. The basic assumptions include:

- The size of each school is within a range that research literature recognizes as efficient.
- The assumed level of teacher experience is about average for schools in Oregon.
- Each school has fast Internet access with adequate bandwidth.
- Students have access to technology.
- Teachers are using technology effectively in the design and delivery of instruction.
- The schools accurately reflect the socioeconomic status of Oregon students.
- The schools have approximately 13 percent of their students identified for special education.
- The schools have approximately 11 percent of the students who speak English as a second language.
- The principal is knowledgeable about reform requirements and is supportive of the reform goals.

PROTOTYPE SCHOOLS

Elementary School—340 Students

- All-day kindergarten
- Class size average of 20 in kindergarten and 23 in grades 1-3
- Class size of 24 in grades 4-5
- 4.5 FTE for specialists in areas such as art, music, PE, reading, math, TAG, library, ESL, child development/counselor

Middle School—500 Students

- Class size average of 22
- 1.5 additional teachers for math, English, and science
- Alternative programs for special needs and at-risk students
- Volunteer coordinator and community outreach worker
- One counselor for every 250 students
- Adequate campus security

High School—1,000 Students

- Class size average of 21
- 3.0 additional teachers for math, English, and science
- Alternative programs for special needs and at-risk students
- Volunteer coordinator and community outreach worker
- One counselor for every 250 students
- Adequate campus security
- School-to-work coordinator

- The principal is skilled as a leader and a manager.
- Teachers are open to reform goals and the training necessary to support the reform requirements.
- Teachers possess content knowledge necessary to teach to applicable state standards.

COSTING MODEL UPDATE FOR 2014

The following exhibits depict the Commission's 2014 prototype elementary, middle, and high schools. They illustrate characteristics of the QEM's prototype schools under the Current Service Level of funding and the changes that would occur under full funding of the Quality Education Model. The changes that have been incorporated are those recommended by the Commission's Best Practices and Cost Panels.

The Current Service Level Prototypes represented in Exhibits 5-7 show the characteristics of schools under current funding levels based on actual spending patterns in Oregon schools. The Fully-Funded Prototypes show the Commission's recommended level of funding required to implement a comprehensive Quality Education Model, including all relevant resources and education programs.

EXHIBIT 5: PROTOTYPE ELEMENTARY SCHOOL—340 STUDENTS

	Current Service Level Prototype	Fully-Funded Prototype	Difference
Kindergarten	Half-day	Full-day	Increases learning time
Average elementary class size	22 for Kindergarten 23 for grades 1-3 24 for grades 4-5	20 for grades K-1 23 for grades 2-3 24 for grades 4-5	Cuts class size by 2 for Kindergarten
K-5 classroom teachers	13.7 FTE	15.2 FTE	Adds 1.5 FTE
Specialists for areas such as art, music, PE, reading, math, TAG, library/media, second language, or child development	3.5 FTE	5.0 FTE	Adds 1.5 FTE
Special education licensed staff	2.5 FTE	3.0 FTE	Adds 0.5 FTE
English as a second language licensed staff	0.5 FTE	1.0 FTE	Adds 0.5 FTE
On-site instructional improvement staff	None	0.5 FTE	Adds 0.5 FTE
Instructional support staff	5.0 FTE	6.0 FTE	Adds 1.0 FTE
Additional instruction time for students not meeting standards: 20% of students	Limited	Summer school, after-school programs, Saturday school, tutoring, etc.	Additional programs for 20% of students
Professional development time for teachers	3 days	Equivalent of 7 days	Equivalent of 4 additional days
Dedicated Teacher Collaboration Time	Limited	2 hours per week	Additional 2 hours per week
Leadership development training for administrators	Limited	Equivalent of 4 days	4 additional days
Textbooks	\$65 per student	\$85 per student	\$20 per student
Classroom materials & equipment	\$80 per student	\$90 per student	\$10 per student
Other supplies	\$61 per student	\$90 per student	\$25 per student
Operations and maintenance	\$750 per student	\$838 per student	\$88 per student
Student transportation	\$455 per student	\$455 per student	
State-level special education fund	\$32 per student	\$92 per student	\$60 per student
Centralized special education services	\$95 per student	\$95 per student	
Technology services	\$190 per student	\$210 per student	\$20 per student
Other centralized support	\$306 per student	\$315 per student	\$9 per student
District administrative support	\$303 per student	\$303 per student	
Education Service District Services	\$556 per student	\$743 per student	\$187 per student
Total Expenditure per Student in 2012-13	\$9,776	\$11,855	\$2,079

* The Baseline Prototype shows the Quality Education Model's prototype school costs estimated using the level of inputs that currently exist in Oregon schools.

EXHIBIT 6: PROTOTYPE MIDDLE SCHOOL—500 STUDENTS

	Current Service Level Prototype	Fully-Funded Prototype	Difference
Class size in core subjects of math, English, science, social studies, second language	24	22, with maximum class size of 29 in core academic subjects	Cuts average class size by 1 in core subjects
Staffing in core subjects	19.5 FTE	21.0 FTE	Adds 1.5 FTE
Extra teachers in math, English, and science	0.5 FTE	1.5 FTE	Adds 1.0 FTE
English as a second language licensed staff	0.5 FTE	0.75 FTE	Adds 0.25 FTE
Special education and alternative education licensed staff	4.0 FTE	4.5 FTE	Adds 0.5 FTE
Media/Librarian	1.0 FTE	1.0 FTE	
Counselors	One for every 333 students	One for every 250 students	Adds 0.5 FTE
On-site instructional improvement staff	None	1.0 FTE	Adds 1.0 FTE
Instructional support staff	11.0 FTE	11.0 FTE	
Additional instruction time for students not meeting standards: 20% of students	Limited	Summer school, after-school programs, Saturday school, tutoring, etc.	Additional programs for 20% of students
Professional development time for teachers	3 days	Equivalent of 7 days	Equivalent of 4 additional days
Dedicated Teacher Collaboration Time	Limited	2 hours per week	Additional 2 hours per week
Leadership training for administrators	Limited	Equivalent of 4 days of training	4 additional days
Textbooks	\$55 per student	\$75 per student	\$20 per student
Classroom materials & equipment	\$80 per student	\$90 per student	\$10 per student
Other supplies	\$55 per student	\$80 per student	\$29 per student
Operations and maintenance	\$825 per student	\$894 per student	\$69 per student
Student transportation	\$456 per student	\$456 per student	
Centralized special education services	\$95 per student	\$95 per student	
State-level special education fund	\$32 per student	\$92 per student	\$60 per student
Technology Services	\$188 per student	\$210 per student	\$22 per student
Other centralized support	\$297 per student	\$323 per student	\$26 per student
District administrative support	\$319 per student	\$319 per student	
Education Service District services	\$556 per student	\$743 per student	\$187 per student
Total Expenditure per Student in 2010-11	\$10,107	\$11,676	\$1,569

* The Baseline Prototype shows the Quality Education Model's prototype school costs estimated using the level of inputs that currently exist in Oregon schools.

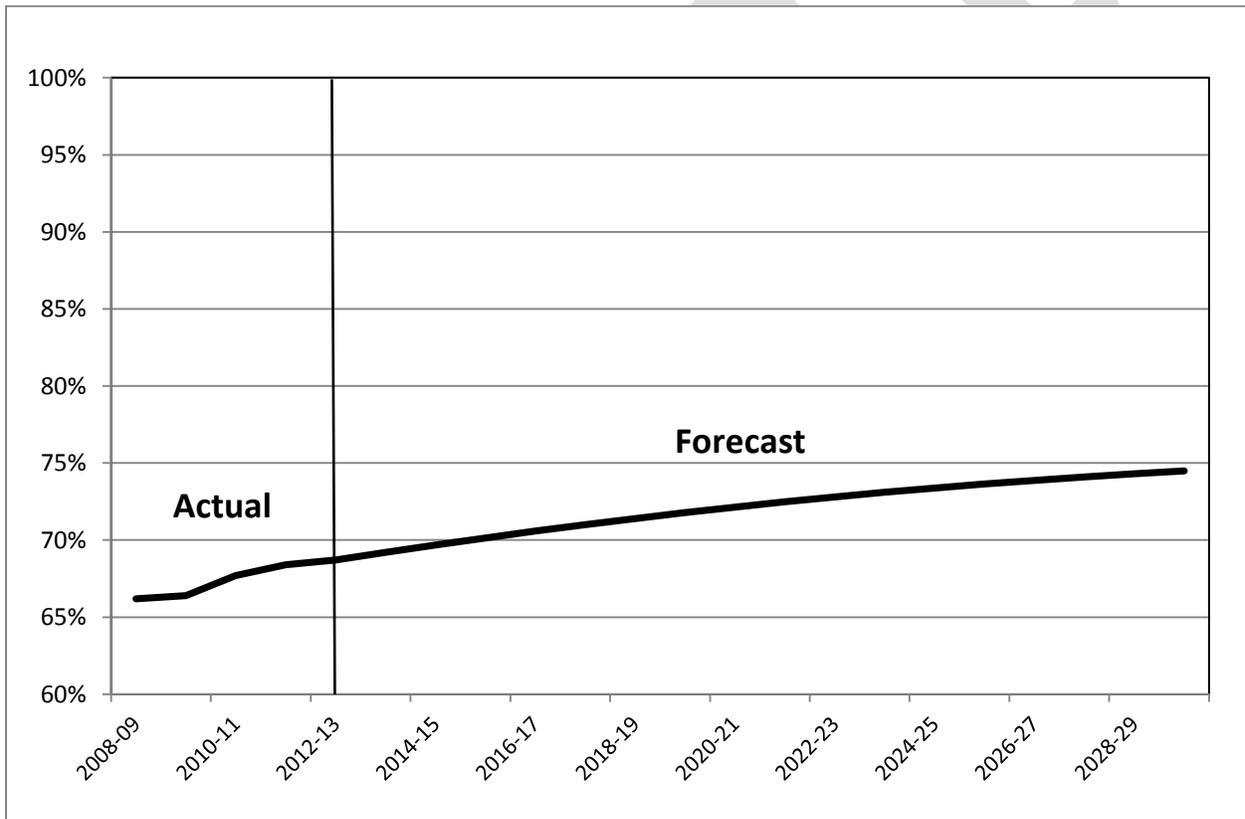
EXHIBIT 7: PROTOTYPE HIGH SCHOOL—1,000 STUDENTS

	Current Service Level Prototype	Fully-Funded Prototype	Difference
Class size in core subjects of math, English, science, social studies, second language	23	21, with maximum class size of 29 in core academic subjects	Cuts average class size by 2 in core subjects
Staffing in core subjects	42.0 FTE	44.0 FTE	Adds 2.0 FTE
Extra teachers in math, English, and science	1.5 FTE	3.0 FTE	Adds 1.5 FTE
English as a second language licensed staff	0.5 FTE	0.5 FTE	
Special Education and alternative education licensed staff	5.0 FTE	5.25 FTE	Adds 0.25 FTE
Alternative education and special programs	2.5 FTE	2.5 FTE	
Media/Librarian	1.0 FTE	1.0 FTE	
Counselors	One for every 333 students	One for every 250 students	Adds 1.0 FTE
On-site instructional improvement staff	None	1.0 FTE	Adds 1.0 FTE
Instructional support staff	20.0 FTE	20.5 FTE	Adds 0.5 FTE
Additional instruction time for students not meeting standards: 20% of students	Limited	Summer school, after-school programs, Saturday school, tutoring, etc.	Additional programs for 20% of students
Professional development time for teachers	3 days	Equivalent of 7 days	Equivalent of 4 additional days
Dedicated Teacher Collaboration Time	Limited	2 hours per week	Additional 2 hours per week
Leadership training for administrators	Limited	Equivalent of 4 days	4 additional days
Textbooks	\$60 per student	\$80 per student	\$20 per student
Classroom supplies and materials	\$120 per student	\$130 per student	\$10 per student
Other supplies	\$69 per student	\$102 per student	\$33 per student
Operations and maintenance	\$875 per student	\$958 per student	\$83 per student
Student transportation	\$475 per student	\$475 per student	
Centralized special education services	\$95 per student	\$95 per student	
State-level special education fund	\$32 per student	\$92 per student	\$60 per student
Technology Services	\$193 per student	\$210 per student	\$17 per student
Other centralized support	\$311 per student	\$355 per student	\$44 per student
District administrative support	\$319 per student	\$319 per student	
Education Service District services	\$556 per student	\$743 per student	\$187 per student
Total Expenditure per Student in 2010-11	\$10,259	\$11,778	\$1,519

CURRENT SCHOOL FUNDING AND ACHIEVEMENT

The Current Service Level (CSL) of funding for K-12 schools is estimated at \$6.78 billion in state resources. When combined with local and federal resources, the total CSL for the 2015-17 biennium is \$13.08 billion. At that funding level we expect to continue to see modest rates of increase in graduation rates as Oregon’s schools continue to find ways to use resources more effectively. Exhibit 8 shows high school graduation rates in Oregon for the past 5 years along with a forecast of rates out to the year 2030 assuming current funding levels (adjusted for education sector inflation) continue. This forecast assumes modest increases in graduation rates based on Oregon experience over the past decade, during which inflation-adjusted funding levels actually declined. The continued growth in graduation rates, although modest, indicates that Oregon’s schools have continued to improve despite declining resources.

EXHIBIT 8: HIGH SCHOOL 4-YEAR COHORT GRADUATION RATE



Making significant progress toward Oregon's 40-40-20 goal, however, will require additional resources and a focused effort on implementing more effective practices and allocating resources to the uses that are most productive at improving student achievement. In the following section we provide examples of how the Quality Education Model can help evaluate the costs of implementing strategic investments and practices designed to accelerate student learning, leading to larger gains in high school graduation rates. By evaluating different initiatives and investments for improving outcomes, the model can help policymakers evaluate the tradeoffs between proposals in an environment where scarce resources dictate that not all proposed investments can be made.

IMPACT ANALYSIS AND STUDENT ACHIEVEMENT EXPECTATIONS

Because resources for education are limited, it is imperative that they be deployed in a way that maximizes student learning. In this section of the report we use the Quality Education Model to evaluate some proposed investments and policy interventions that have the potential to significantly improve student outcomes, both in terms of academic achievement and high school graduation.

Example 1: Early Reading

Research continues to confirm that early success in learning to read has a dramatic impact on later success in school, on high school graduation, and on college-going and completion. Oregon's strategy to improve early reading has a number of components, including full-day kindergarten, summer and after-school programs, excellent teaching strategies, and aligned curriculum.

In this example, we use the Quality Education Model to evaluate the following initiatives:

- Full-day kindergarten, which will require approximately 885 FTE of additional teachers and 190 FTE of additional educational assistants statewide.
- Teacher coaching to improve the effectiveness of kindergarten through grade 3 teaching.
- Extra instruction, such as summer school and before and after-school programs, for students who are not on track to meet standards
- Aligned, evidence-based curriculum

Using the costing component of the Quality Education Model, we estimate the total cost of these initiatives, if fully implemented statewide, is approximately \$200 million per year, or \$400 million for a biennium. This investment in early reading is assumed to have the following impact on student performance:

- In the first year, 65% of 3th graders would be reading at grade level, up from 61% today.
- In the second year, 75% of 3rd graders would be reading at grade level.
- In the third year, 90% of 3rd graders would be reading at grade level

- In the fourth year, when the first class to have full-day kindergarten statewide reaches 3rd grade, close to 100% of 3rd graders will be reading at grade level.

These improvements in reading proficiency by third grade, if realized, will show up as improved academic performance in later grades and to higher graduation rates as these students move through high school. Using the QEM's student achievement model to project the impacts of these improvements in reading shows that graduation rates will increase about one percentage point in 2023-24, when next year's third graders are due to graduate. In 2026-27, when next year's kindergartners are due to graduate, the graduation rate are estimated to be two percentage points higher. These estimates assume that close to 100 percent of 3rd graders will be reading at grade level by 2017-18.

Example 2: Increasing the graduation rate of boys

The estimated coefficients of the student achievement model described earlier indicate that even when they have equivalent academic achievement, boys graduate from high school at rates that are nearly seven percentage points below those of girls. This suggests that there are strong factors other than academic achievement that are getting in the way of a large number of boys finishing high school. A number of factors may contribute to the lower graduation rate for boys, and many of them may be circumstances over which schools have very little control. Solving even a part of the problem, however, will pay large dividends. If this gap is eliminated, the graduation rate for boys will increase nearly 7 percentage points, increasing the overall graduation rate by 3.4 percentage points.

Example 3: Increasing the graduation rate of economically disadvantaged students

Just as boys graduate at lower rates than girls with similar academic achievement, economically disadvantaged students graduate at much lower rates than students who have similar academic achievement but who are not economically disadvantaged. The reasons for this gap are not well understood. While it is true that economically disadvantaged students, overall, have academic achievement below their peers who are not economically disadvantaged, **even those students who do achieve at the same academic level as their more affluent peers graduate at much lower rates.** This finding is somewhat surprising. The conclusion of much of the research using aggregate data was that it was the lower academic performance of economically disadvantaged students that led to their lower graduation rates. Our analysis, based on individual student data, finds that even after taking into account academic achievement, economically disadvantaged student still have a large graduation gap. This result suggests that initiatives that can help students overcome **non-academic** barriers can raise graduation rates substantially. If this gap is eliminated, the graduation rate for economically disadvantaged students is estimated to increase by 8.5 percentage points, and the overall graduation rate by 3.6 percentage points.

Example 4: Increasing Attendance Rates

The results of the student achievement model show that students with higher attendance rates have significantly higher rates of high school graduation. Students fail to graduate from high school for a variety of reasons, and disengagement from school—often showing up as poor attendance rates—appears to be a key factor. In this example, we assume that all students who have attendance rates of less than 90% will

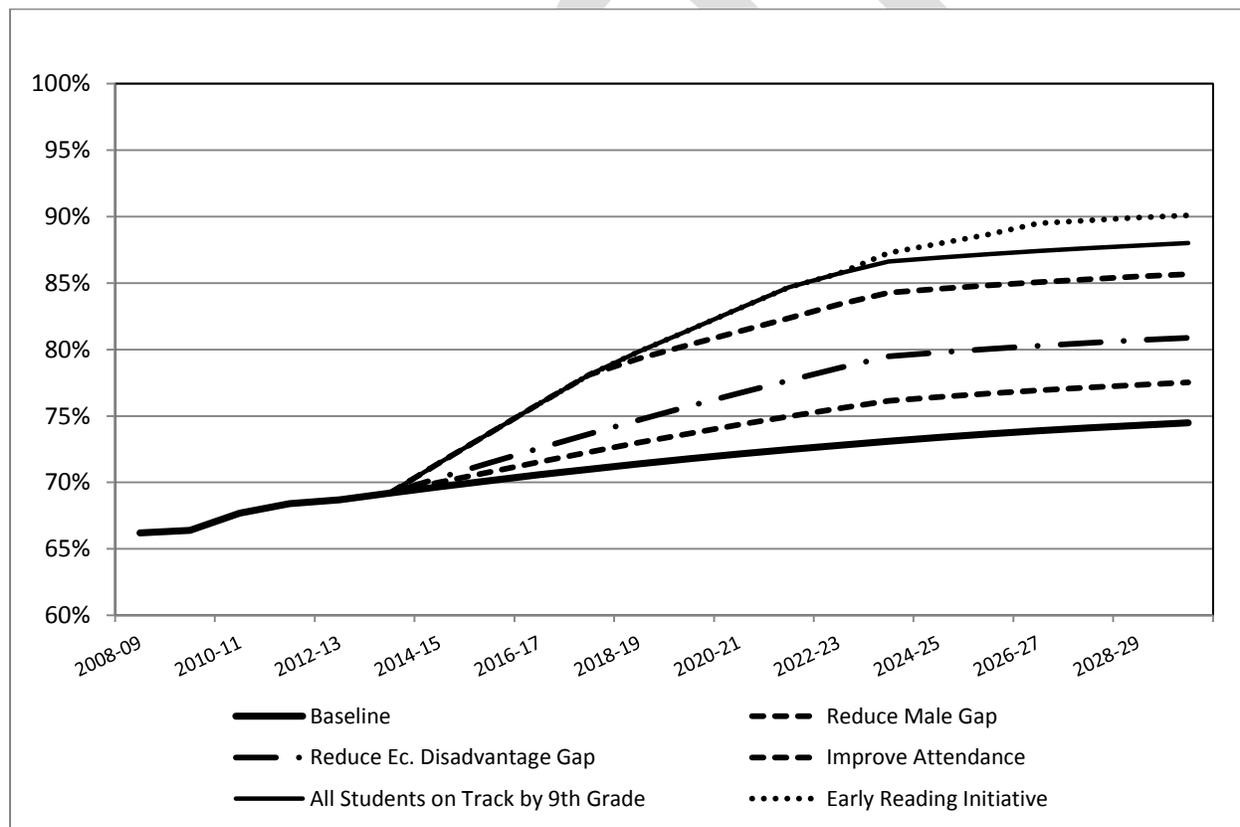
increase their rate to 90% within 4 years. To accomplish this, schools and districts are likely to need to implement a variety of strategies to improve student engagement.

Example 5: All Students on Track by 9th Grade

Chicago Public Schools has had success in recent years in increasing high school graduation rates by assuring that all students are on track by the end of 9th grade. In Oregon, the definition of “9th grade on track” is typically expressed in terms of credits earned. Because we do not have comprehensive data on credits earned for all students in the state, for this example we define 9th grade on track as having passed the 8th grade benchmark. We assume that 100% of students are able to do that by the 2017-18 school year (i.e., within 4 years).

Exhibit 9 shows how predicted high school graduation rates rise over time if all five of the initiatives described above were implemented statewide starting in the 2014-15 school year. Further work needs to be done to understand the costs of implementing the initiatives described above, and the Quality Education Commission will continue that work in the near future.

EXHIBIT 9: CUMULATIVE IMPACT ON GRADUATION RATES OF SELECTED INITIATIVES



ALTERNATIVE STRATEGIES: EVALUATING TRADEOFFS

Trade-offs are inherent in all public sector activities: Governments rarely, if ever, have sufficient resources to carry out all initiatives that have public benefits. Instead, governments need to make trade-offs, choosing the initiatives that provide the largest benefits and at the same time meet the specific goals. The education sector is no different. As was presented above, the Current Service Level of funding for Oregon's K-12 schools is \$2.38 billion below the level that the Quality Education Commission recommends if Oregon is to get close to meeting its 40-40-20 goals. Without a dramatic increase in funding in the near future, policymakers will need to make choices among a set of initiatives for improving student outcomes. The choices made will involve trade-offs among which students are served by new programs and the timing of when the improvements will bear fruit in terms of noticeable student achievement gains, increased high school graduation rates, and progress toward 40-40-20.

In K-12 education, the tradeoffs are of two basic types—1) those related to which students will be the focus of new initiatives and programs, and 2) those related to the timing of investments and when the benefits are realized.

Tradeoffs Related to Student Groups

Students in subgroups with lower student performance levels will require additional attention if Oregon is to reduce its achievement gaps

- English Language Learners
- Economically disadvantaged students
- Students of color
- Students with disabilities

Tradeoffs Related to the Timing of Investments

The focus of programs across grade levels will affect the timing of when the benefits will be realized in terms of boosting high school graduation rates.

- Early reading initiatives that focus on grades K-3 will have most, if not all, of their impact on high school graduation rates 9 to 12 year in the future.
- Programs focused on Pre-K students will have their impacts even further into the future; research shows that such programs have very large benefits, both cognitive and non-cognitive, that stay with students into adulthood.
- Programs that aid middle and high schools students will have impacts on high school graduation rates much sooner, but are likely to be smaller in overall impact, than those for students in the early grades or in Pre-K.

THE COST OF FULL QEM IMPLEMENTATION

Exhibit 10 shows the estimated costs of fully implementing the Quality Education Model for the 2015-17 biennium compared to the Current Service Level. The Current Service level is the estimated cost of continuing the level of education services in Oregon's K-12 schools that was actually provided in the prior biennium (2013-15). As the table shows, the gap between the Current Service Level and the full QEM model is \$2.38 billion. To eliminate the gap, total funding would need to increase by 18%. If all of funds to close the gap were to come from state source, the state would need to increase its funding by 23.2%.

The estimated gap in 2015-17 is \$57 million smaller than the gap for 2013-15 estimated in the 2012 QEM report. Four factors contributed to the decline: 1) the legislature appropriated more for the 2013-15 biennium than was required to simply keep up with inflation. This raised the Current Service Level for 2013-15; 2) teacher salaries did not grow as much as previously forecast, leading to a reduction in the current forecast; 3) growth in health care costs has slowed relative to prior predictions; and 4) the employer PERS rate for 2015-17 was set lower than previously forecast.

EXHIBIT 10: QUALITY EDUCATION MODEL IMPACT ANALYSIS—2015-17

Current Service Level Funding Compared to Full Funding of the QEM				
	Current Service Level*	Fully Funded Model	Funding Gap	Percent Diff.
Estimated District Operating Expenditures for 2015-16	\$6,035,218,721	\$7,044,523,412	\$1,009,304,691	16.7%
Estimated District Operating Expenditures for 2016-17	\$6,213,363,046	\$7,252,310,250	\$1,038,947,204	16.7%
2015-17 Biennium Total	\$12,248,581,767	\$14,296,833,662	\$2,048,251,895	16.7%
Plus: 2015-17 ESD Expenditures	\$793,658,201	\$1,059,181,904	\$265,523,703	33.5%
Plus: High-Cost Disabilities Fund	\$36,000,000	\$104,000,000	\$68,000,000	188.9%
Equals: Total 2015-17 Funding Requirement	\$13,078,239,968	\$15,460,015,566	\$2,381,775,598	18.2%
Less: Local Revenue not in Formula**	\$978,305,639	\$978,305,639	\$0	0.0%
Less: Federal Revenue To School Districts and ESDs	\$1,156,886,976	\$1,156,886,976	\$0	0.0%
Less: Food Service Enterprise Revenue	\$94,653,167	\$94,653,167	\$0	0.0%
Less: PERS side Account Earnings	\$577,079,254	\$577,079,254	\$0	0.0%
Equals: Total Formula Funding Requirement	\$10,271,314,931	\$12,653,090,529	\$2,381,775,598	23.2%
Less: Property Taxes and other Local Resources	\$3,494,681,782	\$3,494,681,782	\$0	0.0%
Equals: 2015-17 State Funding Requirement	\$6,776,633,150	\$9,158,408,747	\$2,381,775,598	35.1%

* Does not include the costs of full-day kindergarten

**Local option taxes, fees, and donations.

FULL-DAY KINDERGARTEN

The estimates in Exhibit 10 above do not include the costs of expanding kindergarten to full-day in the 2015-16 school year in the Current Service Level scenario (but does included those costs in the Fully Funded Model scenario) because there is still a great deal of uncertainty about how many children will actually be served in full-day programs, particularly in the first few years. We can, however, estimate the costs of serving **all** Oregon kindergarteners in full-day programs using the QEM. That gives us an upper bound of the actual costs. The estimate is shown in Exhibit 11 below for the 2015-17. It assumes that a typical elementary school of 340 students will require one additional classroom teacher, 0.25 FTE of a specialist teacher, and 0.25 FTE of an instructional assistant. The estimate does not include the capital costs of adding any new classrooms that may be needed.

EXHIBIT 11: ESTIMATED COST OF FULL-DAY KINDERGARTEN—2015-17

<u>Operating Costs</u>	
Additional Classroom Teachers	\$135,410,393
Additional Specialist Teachers (.25 per school)	\$37,237,858
Additional Instructional Assistants (.25 per school)	\$19,109,126
Biennium Total	\$191,757,377

This estimate is somewhat lower than a previous estimate made using the 2012 Quality Education Model (\$218 million). The current estimate is lower because the forecasts of teacher salaries, health insurance costs, and the PERS rate have all been reduced. In addition, the 2014 QEM assumes that class sizes are slightly higher, so the estimated number of additional staff required is lower.

CAPITAL FUNDING

While there has not recently been a thorough evaluation of the total capital needs of Oregon’s public schools, it is generally agreed that the cost of building new schools to keep up with enrollment growth, replacing schools that are no long adequate or safe, and rehabilitating schools that require substantial investment to extend their useful lives runs into the billions of dollars. But unlike many other states, Oregon provides virtually no state funding to school districts for capital projects to build new schools or renovate and maintain existing schools. In fact, until recently the Oregon Constitution prohibited the state from using state bond funds for local school construction projects. As a result, local school districts generally rely on property tax bond levies to raise funds for capital projects. Many school districts have not been able pass bond levies sufficient to adequately build and maintain high-quality school facilities. In 2011, Oregon voters amended the state Constitution so it now allows the state to assist local school districts

with the funding of capital projects with the proceeds of state bond sales (Article XI-P). In response to this new ability to assist local districts with capital funding, the 2013 legislature created the Task Force on School Capital Improvement Planning. The charge to the task force contained in Senate Bill 540 reads as follows:

The task force shall research and recommend to the Oregon Education Investment Board programs and funding sources that:

- (A) Will allow providers of public education to respond to evolving methods for delivering education and for funding and maintaining capital infrastructures; and*
- (B) Establish a more efficient and integrated capital infrastructure system for preschool through community colleges.*

The task force has been meeting since November 2013 and will present its report to the Interim Legislative Committee on Education by October 1, 2014.