CompetencyWorks ISSUE BRIEF

An International Study in Competency Education:

Postcards from Abroad

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Acknowledgments

United States

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About CompetencyWorks

CompetencyWorks is a collaborative initiative drawing on the knowledge of its partners and advisory board. The International Association for K–12 Online Learning (iNACOL) is the lead organization with project management facilitated by MetisNet. We are deeply grateful for the leadership and support from the partner organizations American Youth Policy Forum, Jobs for the Future, and the National Governors Association. Their vision and creative partnership have been instrumental in the development of CompetencyWorks.

For more information on competency education, you can visit CompetencyWorks, read previous issue briefs on the topic, or visit the Competency-Based Pathways wiki for an in-depth look at the working definition.

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AN INTERNATIONAL STUDY IN COMPETENCY EDUCATION: POSTCARDS FROM ABROAD

Introduction

As educators embrace personalized learning pathways to ensure a high-quality education for every American child, the opportunity to revamp traditional education models to competency-based is both daunting and liberating. It has become standard practice for states to look to each other for guidance in their journeys towards fully realizing competency-based education. As we seek to learn more about what is possible, and what works for students and what does not, we now turn to our colleagues overseas.

An International Study in Competency Education: Postcards from Abroad seeks to highlight components of competency education in international practice, to inform US policymakers and decision makers seeking to implement high-quality competency pathways at the state or local level. Other countries are studying our innovations, and we are studying theirs.

The independence afforded to each US state to establish its own policies and budgets (or to relegate these decisions to the local level) allows us to learn a great deal from other countries, many of whose populations are comparable to those of our states. Finland, for example, has a population of 5.4 million, which is roughly equal to that of Minnesota; at 38 million, the population of California exceeds that of Canada. Pockets of innovation emerge, as well, in regions where elements of competency education are emerging to inform our work. As the economy becomes increasingly globalized, nations are increasingly interconnected, one factor leading to comparative studies on an unprecedented scale; "international benchmarking" exams (PISA, TIMMS) have appeared on the radar of educators and school leaders worldwide. In this study, we analyze ways in which a selection of high-performing countries are investing in a shift towards personalization and competency education.

It is the principles of competency-based education as *embedded in national and regional policy* that captures our imaginations. While no school system examined shows a complete shift to competency-based learning, we have engaged with the broader global community to determine where we stand and what we can both teach and learn. Policymakers and educators abroad are exploring diverse ways of structuring teaching and learning in both time and space. Many of these reflect the very trends we now see in the United States: towards *learner-centered, personalized education; through performance of tasks to demonstrate student competency and mastery-*

You can learn more about competency education at CompetencyWorks.org, as well as find links and materials for all the resources mentioned in this paper on the CompetencyWorks wiki.

based models; featuring an *augmented role for teacher assessment of student learning;* with a focus on *clearly articulated learning standards* integrating acquisition of knowledge with *21st century skills* (those that cut across subject matter, career skills, and cultures).

Acknowledging that national borders need not constrain our thinking, we have examined a selection of alternative academic cultures and, in some cases, specific schools, in search of solutions to common challenges we face when we consider reorganizing American schools. A wide range of interviews and e-mail exchanges with international researchers, government officials and school principals has informed this research, which was supplemented with a literature review scanning international reports and journal articles. Providing a comprehensive global inventory of competency-based education is not within the scope of this study, but we are confident that this is a representative sampling.

The report that follows first reviews the definition of competency-based learning. A brief lesson in the international vocabulary of competency education is followed by a review of global trends that complement our own efforts to improve performance and increase equitable outcomes. Next, we share an overview of competency education against a backdrop of global education trends (as seen in the international PISA exams), before embarking on an abbreviated world tour. We pause in Finland, British Columbia (Canada), New Zealand and Scotland, with interludes in Sweden, England, Singapore and Shanghai, all of which have embraced practices that can inform the further development of competency education in the United States.

I. What is Competency Education?[1]

Competency education has never been as important a concept as it is today. While states meet the challenge of implementing the Common Core State Standards, which emphasize greater rigor and deeper application, they are confronted with the reality that the traditional American time-based system simply may not be up to the task. Competency education presents a personalized alternative, one that facilitates a move away from traditional assumptions about how schools must look, how teachers must teach, and how students must learn. Such assumptions often restrict learning to physical buildings, bell schedules, credit hours, and outmoded learning materials, which no longer adequately prepare students for success in college, careers, and life in an increasingly dynamic global economy.

Competency education weaves a new framework from core concepts and lessons learned from various reforms of the past 50 years, e.g. Bloom's instructional approaches (called Bloom's taxonomy), Essential Schools, standards-based education, and youth development, among others.[2] It places the student at the center of a highly personalized learning experience. Its roots can be traced back through decades of innovation by school leaders and school districts, though in today's usage in the United States the term *competency education* (or *competency-based learning*) typically stems from work initiated by New Hampshire's groundbreaking policy to replace time-based credits with competency-based credits, and the efforts of CompetencyWorks, established by International Association for K–12 Online Learning (iNACOL) and partners.

In March 2011, iNACOL and the Council of Chief State School Officers brought together 100 education leaders and policy innovators who advocated for the promise of a competency-based approach to teaching and learning.

Summit participants strengthened the working definition of the term *competency education*, proposing the following five design elements:

- Students advance upon demonstrated mastery.
- Competencies include explicit, measurable, transferable learning objectives that empower students.
- Assessment is meaningful and a positive learning experience for students.
- Students receive timely, differentiated support based on their individual learning needs.
- Learning outcomes emphasize competencies that include application and creation of knowledge, along with the development of important skills and dispositions.

Depending on the state or district, competency education may be known as *proficiency-based*, *performance-based*, *standards-based*, or *mastery-based*, but all of these approaches are characterized by the same learner-centered principles.

Several states, such as Maine and New Hampshire, are embracing the principles of competency-based learning as an overarching policy.[3] Other states, including Iowa, Oregon and Colorado, have established task forces, pilots or policies that enable competency-based credits. Over 39 states now allow schools to opt out of seat-time requirements for graduation,[4] enabling them to create new proficiency-based pathways, establish credit flexibility and redesign their education systems around student learning in other ways. Students in these environments receive a deeply personalized education that offers robust, timely supports and interventions to keep them engaged and on track to college and career readiness.

Competency-based education is also being integrated into dynamic education models. For example, Jobs for the Future's Students at the Center project believes *student-centered learning* has the potential to close achievement gaps and provide equitable access to a high-quality education, and sees competency education as foundational to this objective. Its four tenets of student-centered approaches to learning state that:

- Learning Is Personalized;
- Learning Is Competency-Based;
- Learning Takes Place Anytime, Anywhere; and
- Students Exert Ownership Over Their Learning.[5]

Espousing these principles, competency-based education takes a holistic approach to the "whole child," embracing the idea that to bring a student to true proficiency, it is important to have more than a simple record of previously demonstrated academic abilities. The social and emotional aspects of a student's learning must be considered for an understanding of his or her motivation for, engagement with and ownership of learning.

Preparation for learning according to clearly articulated State or Common Core State Standards—and the accompanying high expectations they set—is now critical in most US states. But how do we best prepare? Competency education offers a solution.

II. Talking the Talk: The Language of Competency

Even within the United States, the concept of competency education requires careful definition, as a range of terms are used across state borders (and sometimes within them). Imagine, then, the diverse vocabulary in use across the globe! Numerous language- and culture-based barriers complicate a comparison. In this section, we explore some of the phrases and ideas that both complement and complicate the framing of competency education in a global setting. The report places these terms in context as different schools and school systems are reviewed.

National versus "Devolved" Systems

It often comes as a surprise to colleagues abroad that the US federal government does not play a more direct role in regulating education and ensuring a national set of standards.[6] Usually these individuals are from considerably smaller countries, both geographically and with respect to population. Our educational system—and those of Canada, Australia and China, for example—is considered by others to be *devolved*, in that each state bears full responsibility for education of its students. (To devolve means simply to transfer or delegate power to a lower level, especially from central government to local or regional administration.) In fact, in their uniqueness, discrete US state educational systems are well suited for comparison to those in smaller countries, as well as those in other federalized nations.

Seat Time

While advancing with same-age cohorts is the norm worldwide, the specific concepts of *seat time* and the *Carnegie uni*t are almost entirely North American. The matter of truancy (skipping school) is handled in different ways in different countries, but unlike in the United States, does not usually impact student progression through education *except through its impact on performance in the classroom or on assessment*. In England, for example, local education authorities (LEAs) may issue periodic fines to parents, but have established no specific required number of attendance hours or days. To progress academically in most major world economies, formative assessments (as opposed to summative examinations) are administered periodically to ensure a certain standard is met. These tend to be open-ended performance assessments, not multiple choice, which depend upon reliable, quality-controlled, uniform grading; the schools may also have their own proficiency requirements to be met.

In nearly all OECD countries, high school examinations are used to certify completion or graduation. They also are used to determine student access to university-level education.

Competency in the United States and Competence in Europe

With a handful of exceptions, few countries outside the United States recognize the term c*ompetency-based* as referring to a subject or skills mastery approach to learning. Across all 28 European Union member countries, key competences for lifelong learning are part of a framework to define "the new basic skills to be provided through lifelong learning as a key measure in Europe's response to globalization and the shift to knowledge-based economies" (2006).[7] The lifelong learning competences represent a combination of knowledge, skills and attitudes considered necessary for personal fulfillment and development, active citizenship, social inclusion and employment. These are:

- communication in the mother tongue
- communication in foreign languages

- mathematical competence and basic competences in science and technology
- digital competence
- learning to learn
- social and civic competences
- sense of initiative and entrepreneurship
- cultural awareness and expression[8]

It can be confusing that these *competences* are at times referred to as competencies. A number of them overlap with the American concept of *21st century skills*, or those that cut across multiple subject areas, and although different levels of granularity are applied, there is synergy with the US efforts here. See, for example, the Partnership for 21st Century Learning's "Framework for 21st Century Learning" and the EPIC Key Learning Skills and Techniques (KLST).[9] Australia's General Capabilities, New Zealand's Key Competencies and British Columbia's Core Competencies can also be compared.

With the term *competence* referring to a specific skillset, *competency education* as a holistic system requires a different lexicon. *Competency education* is most commonly referred to in the context of *learning outcomes* and how they might be assessed, as outlined by the European Qualifications Framework for lifelong learning of 2008.[10] Nations must develop their own autonomous systems and corresponding terminologies according to the framework, which encourages definition of specific articulated/demonstrated learning outcomes and development of a range of new assessment tools to support the learning process. Emphasis is on increased transparency of qualifications, so countries may ultimately relate their qualifications systems to a common European reference point. In many countries, the need to bring curricula more closely in line with the "key competences approach" has triggered recent reforms, which has furthered the journey towards a more personalized, proficiency-based system (a journey seen also in the United States and elsewhere).

Standards and Curriculum

The terms *standards* and *curriculum* may be used abroad in ways unfamiliar to American educators. A *national curriculum* may, in its phrasing, establish certain *standards* (England); conversely, schools or teachers may design their own independent *curricula* based on *national standards* (Finland). The terms may also be colloquially synonymous.

Touchstone Terms: Learner-centered, Personalization and Formative Assessment

Understanding terms used most widely in reference to competency education principles is of great help in engaging with relevant work underway worldwide (particularly in cases in which terms like competency, mastery and proficiency do not actually appear). As noted above, learning outcomes are an important concept in the European Union, often used in reference to standards and a student's ability to verbalize explicit learning objectives. (For example, from the Early Level of the Numeracy and Mathematics curriculum in Scotland: "I am developing a sense of size and amount by observing, exploring, using and communicating with others about things in the world around me."[11]) We examine other competency-related keywords and terms here.

Learner-centered and *student-centered* are understood almost universally to describe models where components of competency education are in place. This may be considered something of a Rosetta Stone in discussions with

educators abroad who share our educational ideals, as it represents a fundamental shift described as similar to the Copernican Revolution by one contact in Sweden:

> *"The sun is now at the center of the solar system, not the earth; the student is now at the center, and that changes everything. When education is organized to meet different students' different needs, it affects anything you can think of—ranging from the teacher's role, how curriculum is organized, how time is organized, how the spaces are designed, etc. – it is a revolution."*[12]

Formative assessment is differentiated from *summative assessment* in many discussions about competency education, though the former often stands alone in reference to an in *situ* learner-teacher feedback loop, in which the teacher acquires evidence in order to make changes in teaching, as well as to provide feedback to students about how they can improve their learning.[13] The term *formative assessment*, used alone (with no contrast to s*ummative assessment*), indicates an educational environment that is welcoming of performance-based, "show what you know" approaches. *Examination* is used in the same summative sense as in the United States, and is usually clearly differentiated from *assessment* as having direct consequences for students. In nearly all major global economies, high school (upper secondary) e*xaminations* are used to certify graduation as well as determine access to tertiary education, while *assessment* is integral to classroom exchanges (OECD 2013).

Finally, and significantly, *personalization* (or *personalisation*) is widely understood to carry the same definition as in US K–12. In countries or school systems where educators use the term fluently, competency pathways are probably being developed or, at the very least, there is an understanding that each child must be met at a level appropriate to his or her needs.

III. US Competency Education Reflects a Global Trend

A variety of international benchmarking efforts have emerged in the past 15 years, as countries increasingly look beyond their own borders for evidence of the most successful and efficient policies and practices.[14] The use of *benchmarking* in this sense is drawn from industry: It is simply the process of comparing processes and performance metrics to identify best performers or best practices. Almost without exception, education leaders across major world economies share the same goals: *to improve student performance and increase equitable outcomes*.

This focus is especially relevant—and challenging—given the conditions of recession and austerity affecting much of the world in the past decade. Many commonalities are found, however, among those countries succeeding at creating high academic performance and equity. While there is no single approach that will work for everyone, everywhere, benchmarking allows us to observe and learn as much as possible from as many sources and systems as possible. Moreover, US participation in these international assessments provides valuable information about student performance for policymakers and educators so they can better identify policy solutions to US education system shortcomings.[15]

In examining evidence of transferable ideas that work, we look in particular to the most prominent international benchmarking exercise to emerge in the global sphere, the Programme for International Student Assessment (PISA).

The PISA exam provides a triennial comparison of educational outcomes of students in 65 participating countries or economies,[16] with accompanying socioeconomic analysis. PISA asks, *What is important for citizens to know and be able to do?* It emphasizes students' ability to extrapolate from what they've learned and apply that knowledge in unfamiliar settings, an important concept in competency-based settings. Furthermore, the literacy of a PISA cohort has been a reasonably good predictor of later performance in post-compulsory education and the labor market[17] (OECD 2013).

Some obvious trends among PISA's high-performing countries include a willingness to engage all stakeholders, and students in particular (e.g., in seeking student feedback as part of a systemic process); educational climates characterized by expectations of high performance, good student-teacher relations and high teacher morale; minimal tardiness and truancy; a generally positive disciplinary climate; and—on average—mainstreaming as opposed to streaming, which is seen to negatively impact equitable outcomes.[18]

WHAT IS PISA?

The best-known international benchmarking survey is the **Programme for International Student Assessment (PISA)** exam, administered triennially since 2000 by the **Organization for Economic Cooperation and Development (OECD)**. The 34 member democracies of OECD (which includes the United States) work together to promote economic growth, prosperity and sustainable development. The aim of PISA is to identify the characteristics of high-performing education systems to allow governments and educators to identify effective policies that they can then adapt to their local contexts. The tests are designed to assess to what extent students at the end of compulsory education can apply their knowledge to real-life situations, in preparation for their full participation in society. Representing 28 million 15-year-olds globally, 510,000 students in 65 countries or economies took part in PISA 2012. In addition to the exam, students and school principals are given questionnaires, used later to correlate personal and local data with exam results. Design and cultural translation, and sampling and data collection are subject to strict quality controls (though considered controversial by some). PISA is used by many countries as a "yardstick for evaluating the quality, equity and efficiency of school systems."

– Drawn from Strong Performers and Successful Reformers in Education: Lessons from PISA 2012 for the United States

More broadly, we note the following relevant trends worldwide—and in the countries we "visit" below.

- **Personalization.** The term itself does not appear in most PISA-related publications, yet the bulk of interviews confirm either a distinct process of transition towards learner-centered, personalized learning pathways, sometimes at the national policy level. Personalization in high-performing countries is provided in flexible learning progressions through the education system, rather than by establishing individualized goals or institutional tracking, which have been shown to lower performance expectations for students (OECD 2011).
- **Curriculum redesign.** Driven by EU policy frameworks and/or internal motivators, significant curricular reform has been seen in recent decades (and particularly the last five years), spurred in part by the benchmarking processes described above. A common feature is a shift towards national core curricula, including clearly identified learning standards (or vice versa, depending on a country's terminology), with an emphasis on embedded, crosscutting 21st century skills. Reforms focus on learning outcomes and a holistic "whole child" approach, including emotional and physical wellness programs. Schools have more autonomy over curriculum and assessment, and the physical spaces in which they operate; systems have improved accountability arrangements and greater teacher–principal collaboration.
- **Integration of performance-based learning assessments.** Teacher-led, classroom-based assessment has gained popularity over national or regional summative examination. For example, nearly 4,000 schools in over 140 countries currently employ the internationally benchmarked Cambridge exams, offered by a not-for-profit organization at the University of Cambridge, UK. Cambridge Assessment designs and administers both summative assessments as well as those with a formative function.[19] These can include written reports or structured activities (marked by the same teachers delivering the learning programs), performance assessments and accumulation of a graded portfolio. Ofqual, the regulator of examinations in England, accredits the examining body. Clients supply their own criteria or standards, which are often part of national and international legislation.[20] Over 40 US schools are currently participating in a pilot program featuring Cambridge exams as part of the Excellence for All initiative of the National Center for Education Excellence (NCEE).[21]

> High-performing nations integrate curriculum, instruction, and assessment to improve both teaching and learning. As a large and increasing part of their examination systems, they use open-ended performance tasks and school-based assessments to give students opportunities to develop 21st century skills: The abilities to find and organize information to solve problems, frame and conduct investigations, analyze and synthesize data, and apply learning to new situations. [22]
>
> — *Benchmarking Learning Systems: Student Performance Assessment in International Context*

- **Student well-being.** National governments have come to incorporate family and physical data into the academic goal-setting process where possible, working from the assumption that a child's academic performance is inseparable from his or her state of mind and physical well-being. Supports are available and interventions made from a young age for learners showing at-risk behaviors, and these may extend beyond the school and into the broader community. Additionally, schools increasingly take on responsibility for physical and emotional well-being.
- **Redesigned learning environments (physical spaces).** In several schools examined, learner-centered pedagogy was being considered not just as new learning spaces were designed, but also as old spaces were redesigned. Students may face each other and the "front of the room" no longer exists—or may exist in some spaces used during the day, but not others. This is increasingly true of schools deploying 1:1 laptop or tablet programs, as students forge their own learning paths, assuming agency as they take on more responsibility for their own education.
- **A global outlook.** As they seek the most successful and efficient policies and practices, policymakers, as well as active teachers, show an increased thirst for international research. Of particular interest are pockets of innovation, in which best practice is established before flourishing regionally. Exams such as PISA, Trends in International Mathematics and Science Study (TIMSS) and Progress in International Reading Literacy Study (PIRLS)[23] contribute to greater understanding, as do international school visits, an enhanced role for research in teacher education and ongoing teacher development. We are not the only ones seeking and showcasing commonalities in the quest for better schools.

While performance data in the United States are often used for purely accountability purposes, other countries tend to give greater weight to using them to guide intervention, reveal best practices and identify shared problems. Where school performance is systematically assessed, the primary purpose is often not to support an evaluation of public services or to support market mechanisms in the allocation of resources; rather it is to reveal best practices and identify common problems in order to encourage teachers and schools to develop more supportive and productive learning environments. To achieve this, many education systems try to develop assessment and accountability systems that include progressive learning targets that explicitly describe the steps that learners follow as they become more proficient, and define what a student should know and be able to do at each level of advancement. The trend among OECD countries is towards multi-layered, coherent assessment systems from classrooms to schools to regional to national to international levels. These assessment systems support improvement of learning at all levels of the system and are increasingly performance based. They add value for teaching and learning by providing information that can be acted on by students, teachers, and administrators and are part of a comprehensive and well-aligned learning system that includes syllabi, associated instructional materials, matching exams, professional scoring and teacher training.

– Strong Performers and Successful Reformers in Education: Lessons from PISA 2012 for the United States

IV. Snapshots from the Journey

Although no school system surveyed has fully embraced competency-based learning, a rich tapestry of approaches to student-centered teaching and learning has emerged. With this in mind, we are pleased to share highlights of our travels.

- Finland has initiated comprehensive education reform over the past 40 years. High scores across most PISA exam cycles include unparalleled equity in performance, and its systemic approach to greater individualization in the tenth through twelfth grades can inform our thinking about high school redesign.
- British Columbia showcases the policy language of competency and personalization, innovates with pedagogical architecture and enables student choice in the classroom through a flexible core curriculum.
- New Zealand has well-articulated competency frameworks, features the most autonomous schools in the OECD and strongly supports self-evaluation for principals, teachers and even students.
- Scotland has been phasing in most components of competency education at the policy level for more than 11 years. National standards encourage teacher autonomy, formative assessment is the norm, and classroom supports focus on the "whole child" rather than solely academic performance.

Glimpses of competency education in specific schools abroad appear in this section, as well. We have sought to engage with a range of colleagues for a broader range of examples and highlight innovators who were willing to participate in our review and initial scan. We hope this report begins an important conversation on the topic.

The data suggest that in most of the countries that performed well in PISA, it is the primary responsibility of schools and teachers to engage constructively with the diversity of student interests, capacities and socio-economic contexts, without having the option of making students repeat the school year, or transferring them to educational tracks or school types with lower performance requirements….

Many of the benchmark countries have developed elaborate support systems to foster the motivation of all students to become independent and lifelong learners. They tend to train teachers to be better at diagnosing learning difficulties so that they can be addressed through personalised instruction methods. They also help individual teachers to become aware of specific weaknesses in their own practices, which often means not just creating awareness of what they do, but also changing the underlying mindset. In addition, they seek to provide their teachers with an understanding of specific best practices and encourage teachers to make the necessary changes with a variety of incentives that goes well beyond material rewards….

The personalisation in these countries is provided in flexible learning pathways through the education system, rather than by establishing individualised goals or institutional tracking, which have often been shown to lower performance expectations for students and tend to provide easy ways for teachers and schools to defer, rather than solve, problems.

– Strong Performers and Successful Reformers in Education: Lessons from PISA for the United States

FINLAND

Exemplary Schooling Follows Decades of Reform

In 2014, Finland had an estimated 5.5 million residents (making it a bit larger in terms of population than Minnesota). In terms of area, it is the eighth largest country in Europe, and a little larger than New Mexico. It had 540,500 pupils at K–12 level in 2013.[24]

The Finnish education system is a shining light in Europe for proponents of competency-based education. Finland's system is widely acknowledged as one of the best in the world, and the country is traditionally a top scorer on PISA exams (the United States is not). A central objective is to provide all citizens with equal opportunities; the concept guiding most educational reform is equity, and in 2012, there was only a 6% disparity among its highest and lowest performing schools.[25] Finland's Minister of Education notes, "The Finnish paradox is that by focusing on the bigger picture for all, Finland has succeeded at fostering the individual potential of most every child."[26]

A reform movement dating to the 1970s is credited for these successes. Finland's national core curriculum has shifted from a highly centralized system emphasizing external testing to a localized one. Armed with a research background in psychology and curricular theory, teachers now design their own curricula around lean national standards. Local teachers and administrators define overall educational goals for their schools, assuming responsibility for their own student assessment, school improvement and self-assessment.[27]

There is a strong sense of societal trust in the schools and teachers charged with carrying out these responsibilities—trust that is critical, yet difficult to gain. A primary ingredient in Finland's success is its investment in teacher preparedness or "professionalization," including a research-based master's degree at state expense. Teachers are selected from the top ten percent of high school graduates.

In Teacher and Principal Quality, the Center on International Education Benchmarking (CIEB) explains:

> Primary school teachers are required to major in education, with a minor in two primary school curriculum subject areas. Secondary school teachers are required to major in the subject they will teach, and to complete a fifth year of education designed to assure that they have mastered their craft, either alongside their major fieldwork or after they have completed four years of subject coursework. At the end of the five-year program, they earn a master's degree. Teacher education is heavily research-based, with a strong emphasis on pedagogical content knowledge. Students must also spend a full year teaching in a school associated with their universities before graduation. These university-affiliated schools are model schools, where prospective teachers and researchers develop and model new practices and complete research on teaching and learning. Teacher education programs in Finland are monitored by the Higher Education Evaluation Council.[28]

Teachers assess their students extensively through ongoing performance-based formative assessments; performance tasks require students to demonstrate what they know and can do. For evaluation, teachers use rubrics based on national core curriculum guidelines for assessment in all common subjects. Each course is assessed on completion, based on diverse evidence of progress in different areas, including work skills and behavior. Teachers may provide feedback in numerous ways, not just through "tests."[29] Sample-based student assessments are the primary means to inform policymakers and the public about school performance; these have "no stakes" for students, teachers, or schools.[30]

As in the US competency model, Finland is seeing a powerful push for student self-assessment so that students may understand their progress and help design their own activities.[31] This is most prominent in the tenth through twelfth grades (upper secondary school), when students engage in self-directed, self-paced learning. During these years, students build their own personalized learning schedules (comprised of 70-minute classes and six-week units); students may complete the courses at a pace appropriate to their abilities and unique circumstances. Most complete the prescribed courses in three years, though some students progress more rapidly or more slowly.[32]

> *One task of basic education is to develop the pupils' capabilities for self-assessment. The purpose of this is to support the growth of self-knowledge and study skills and to help the pupils to learn to be aware of their progress and learning process.*
>
> – Finnish Education in a Nutshell: Education in Finland

The National Core Curriculum for Upper Secondary Schools (2003) outlines the upper secondary school modular process clearly:

> Based on the curriculum, each upper secondary school will draw up an annual plan for the practical organisation of education for every school year. Each student will draw up his or her own individual study plan on the basis of the upper secondary school curriculum and the annual plan.
>
> The curriculum must be drawn up in such a way as to take account of the upper secondary school's operating environment, local value choices and competence strengths as well as special resources. The local or regional environment, linguistic conditions, history and the economic and cultural life surrounding the upper secondary school will add local colour to the curriculum. Practical co-operation with experts in different fields will increase the depth and authenticity of studies. The curriculum will also be drawn up in such a way as to update the provisions of the National Core Curriculum…
>
> Students must be guaranteed an opportunity to complete the studies included in the general upper secondary school syllabus within three years through flexible arrangements for progression of studies and provision of special support as required. The curriculum must be drawn up so as to provide students with an opportunity to make individual choices, also taking advantage of instruction offered by other education providers.[33]

The Finnish focus on "whole child" from the start manifests in many ways, with direct links to accommodation and support in competency-based education. Through ninth grade, enrichment classes include home economics, art, technology and more. Schools provide hot lunch for every student, on-site health services and psychological counseling. A special needs teacher works closely with all teachers to identify students in need of extra help early and provide supports to keep students on pace. (Special needs are defined differently; almost one-third of all Finnish students are in part- or full-time special education). Every comprehensive school has a pupils' multi-professional care group, which checks weekly on each student's progress and pacing (as in Scotland – see below). The availability of all these services and others confirm a deep societal commitment to the well-being of all students, contributing ultimately to educational equity for all.[34]

FOCUS ON:

KUNSKAPSSKOLAN, SWEDEN

The 33 Swedish Kunskapsskolan *(knowledge schools)* are based on a fully competency-based model. Founded in 1999, Kunskapsskolan consistently achieve academic results surpassing comparable schools and national averages; students attend colleges and universities at a higher rate than those from their peer schools.[35]

The Kunskapsskolan model is based on personalized learning pathways. With the guidance of a learning coach/tutor, students identify, set and work towards their own personal goals; independence in goal setting is encouraged as early as eighth grade. This degree of flexibility and student agency is familiar to competency education practitioners in the United States.

Students learn according to clearly articulated national standards, and can *break down* and *express* the standards for each week, e.g., *During this week my goal will be to understand and be able to* ____. There are also broader *Working Goals* and *Actions*. Kunskapsskolan use a proprietary learning platform with a highly incremental student progress tracking module for students to track their own progress and personal development step by step.

Frequent assessments are structured as *presentations* at times chosen by students, who determine when they are ready to "show what they know" for teacher feedback. The Kunskapsskolan is visualized as a learner-centric space, in which the learner is at the center of every exchange. The learning process has two levels: subject learning, and then crosscutting higher level skills (mapping to the EU's key competences). Weekly learning discussions review whether the past week's goals were achieved, and set goals for the following one; the learning coach will only step in if proficiency is not being established. All students take placement exams on entry, and a personal coach sets goals based on the results. There are three levels of concept mastery, of which the lowest is 3, the mid-range is 4, and top level is 5. Three is a passing mark and the baseline pathway; students may aim for assessment along pathways 4 or 5 if agreed upon with their coach, but all learners advance upon meeting national standards. Assessment matrices are provided by the learning platform, but teachers focus on formative assessment, especially process.

Kunskapsskolan classrooms are designed for their intended use and feature a distinctive physical layout optimized for specific learning tasks. Their architect aims for the untraditional; base group rooms (homerooms) are sized for 20 and used for both personal coaching and labs. Halls are built solely for lectures. A *Big Arena* seats up to 80 students, while there are small rooms where one to two people can work. Tables are ubiquitous. Workshops are held in a familiar space that looks like a traditional American classroom, though in general, teachers are encouraged to move away from traditional layouts.

In a typical day, eighth-grade students might begin with a 30-minute base group session, looking over their personal logbook, deciding what to do in different daytime sessions. The day consists of a combination of different class types. In workshop sessions, which are similar to traditional classes, students bring their own work from the learning portal; teachers must adapt the lesson based on who turns up for it, and arrivals may come from all middle-school grades. A lab session may take place in which students undertake collaborative work, developing skills with others (these are teacher-led and planned according to the course rubric). Communication sessions focus on communication skills and are adapted for a student's pacing in their coursework. Twenty- to thirty-minute lectures in all subjects are required, and all students participate in moderated seminars (discussions). The day closes with a base group session to revisit that day's goals, and plan for what to do at home.

Kunskapsskolan also provides a *KED Program* to schools in the United Kingdom, India and the United States, where a curriculum appropriate to national or state standards is administered.[36]

BRITISH COLUMBIA (CANADA)

A Policy of Personalization Enables Student Voice and Choice

Canada has 35 million residents, roughly one-ninth the population of the United States. K–12 education in Canada is the responsibility of each province, much as it is the responsibility of each US state. Each provincial Ministry of Education develops its own curriculum and determines major education policies and initiatives. Canada benchmarks internally among its provinces.[37] It has outperformed the United States considerably on recent PISA exams in math, science and reading. This section examines the province of British Columbia (BC), which in 2013 had an estimated population of 4.6 million, roughly the same number of residents as South Carolina.

The British Columbia Ministry of Education sets its own K–12 standards and curriculum, describing for teachers what students are expected to know, understand and be able to do. (A new draft curriculum is under review as of 2014). The required learning standards include curricular competencies, concepts and content for each area of learning.[38]

BC's education policy language has directly embraced a shift towards personalized and competency-based education in a series of policy documents dating to 2010, when its government committed to transform education in BC to better meet the needs of all learners. British Columbia is on a path towards student-centered learning, adopting many of the same elements seen in competency education in leading US states.

"Students Must Be at the Centre of Their Learning," declares the website unveiling the province's new Education Plan. Prior to the plan's implementation, the Ministry engaged stakeholders in an extensive consultation period, including research, formation of a provincial advisory group and solicitation of feedback from 12 regional meetings. Its goal was to create a new core curriculum that was more flexible, dynamic and adaptable, to better prepare all learners.

One component of ongoing work to modernize BC's education system is a legislative framework enacted in 2012 for school calendars, which allows Boards of Education "to set their own school calendars to better meet the needs of their community."[39] Since SY 2013-14, schools have operated under no standard calendar, as each board may establish calendars for schools in its district. The legislation also permits students in grades K–9 to mix online and traditional school courses if they so choose.

New policies embrace and build on a provincial shift towards personalized learning first espoused in 2010. Pockets of innovation are found throughout the province, with some schools participating in the Canadian Coalition of Self-Directed Learning. In 2014, the Ministry began phasing in the new curriculum, based on guiding principles for future curriculum development (as laid out in the report Exploring Curriculum Design, part of a series on transforming curriculum and assessment).

Guiding principles emphasize increased autonomy at the school level, curricular flexibility, and greater attention to higher order skills. These include:

- Making curriculum more flexible to better enable teachers to innovate and personalize learning.
- Reducing the prescriptive nature of current curricula while ensuring a solid focus on essential learning.
- Focusing new curricula on higher order learning, giving emphasis to the key concepts and enduring understandings (big ideas) that students need to succeed in their education and their lives.

- Making explicit the cross-curricular competencies that support life-long learning.
- Respecting the inherent logic and unique nature of the disciplines while supporting efforts to develop cross-curricular units.[40]

Pending feedback on the new draft curriculum, BC's previous curriculum remains in place. Its standards, known as Prescribed Learning Outcomes (PLOs), outline the expectations for what students should know and be able to do at each grade and within each subject area (and include a specific set of indicators to be used to assess achievement). The new curriculum is far less granular and is seen by legislators as therefore less "prescriptive." For example, the renewed science curriculum "… highlights fewer concepts to allow for substantial inquiry time. The level of facts and details in the new curriculum is left open to individual customization by the educator, allowing more time for in-depth exploration by students."[41]

As seen in Finland, a leaner curriculum is meant to offer greater autonomy to teachers, who may then permit learners to choose how they "show what they know." As outlined in *Enabling Innovation* (from the same Ministry series), educators have the freedom to:

- Design, improve on and share learning experiences
- Form an extension of standard-based instruction
- Emphasize communication, critical thinking, creative thinking and innovation
- Maximize the possibilities for innovation, personalization, creative thinking, and collaboration based on the needs of diverse learners in diverse contexts

Students are thereby encouraged to be actively involved in setting goals, reflecting on their work and taking control of their learning. The approach embraces place-based (experiential, non-classroom-based) learning and inquiry-based learning.[42]

A website is devoted to helping educators through the transition. It is aptly entitled Rethinking Curriculum, evocative of the EU's Rethinking Education (2012).[43] British Columbia's curriculum redesign acknowledges the importance of a learning environment that is conducive to personalizing learning.

FOCUS ON:

THOMAS HANEY SECONDARY SCHOOL, BRITISH COLUMBIA

Thomas Haney Secondary (High) School has been hailed as a "trailblazer in the personalized learning field." It is common to see students of different ages collocated and engaged in shared class time, as in the Swedish Kunskapsskolan. Beginning in the ninth grade, students may design their entire day of classes, as long as it revolves around that day's learning goal, which is mapped to learning standards (and which they can articulate). They meet with a *teacher-adviser* at the start and end of each day to reflect: *What are today's goals?* and later, *Did I meet them? How does this impact tomorrow's? Learning Conversations* precede all assessments; students inform teachers if they feel ready for graded tasks. Blended learning is common, but unlike at Kunskapsskolan, student progress tracking takes place in paper log books.

Founded in 1992, the school was specifically designed to meet the needs of the 21st century, and to serve as a *school of the future*. As permitted by the province, it built its own standards-based curriculum on the principle that all students learn at different rates and in different ways; students will learn better if they take some responsibility for their own learning; current learning should support students' lifelong learning; all students can learn and want to learn; schools must be safe and orderly; and the building itself should support, not hinder, innovation.[45]

One teacher-adviser takes responsibility for about 25 students, becoming the prime advocate/contact in a triangle involving the home, the student and his or her teachers. Students may at times learn at their own pace and to their own abilities, taking on work from other grade levels. The school is *self-directed*, not *self-paced*, and is a member of the Canadian Coalition of Self-Directed Learning.

Students generally work in public-feeling spaces, e.g., a department's open concept *great hall*, a wide open space with natural light and trees, almost resembling a cafeteria. Here students of different ages mingle with teachers from different themes; other students of different ages may study the same concept together with a teacher. Both learners and teachers are thus granted time to collaborate. In eleventh and twelfth grades, students may work from home.

Inquiry-based learning is a priority, as is commonly seen in US competency models. While students acquire and can demonstrate the same skills, the subject they use to explore the skills is up to them. A single ongoing project, for example, can meet the needs of an entire course.

NEW ZEALAND

Autonomy in Teamwork: Rigorous Self-Evaluation and Self-Assessment for All

At 4.5 million, New Zealand's estimated population is comparable to that of British Columbia; in land mass, it is similar in size to Oregon. Like other countries in this report, it has had a firmly established national curriculum for some time. Its vision: *Young people will be confident, connected, actively involved, lifelong learners.*[46]

A high PISA performer since 2000, New Zealand has one of the mostly highly devolved school systems in the world—that is, it grants individual schools the greatest autonomy over the teaching and learning processes. Nationally, clear goals and performance expectations are set via a revised National Curriculum, National Standards, the New Zealand Qualifications Framework, Teacher Standards and other indicators for school reviews.[47] (Select reforms are underway, focused mainly on improving equity and building community among schools, following a dip in PISA 2012 mathematics performance.)

As in Finland, evaluation and assessment are characterized by a high level of trust in schools and school professionals. There are no full-cohort national tests; teachers are given full autonomy to both develop a standards-based curriculum and assess student learning. In such cultures, different measures of accountability must be established (a key issue for educators in competency education), and in New Zealand, these are firmly rooted. The introduction of standards is seen as an alternative way to make information about student learning more consistent and comparable, and National Standards were introduced in primary education in 2010 to provide clear expectations for student learning in mathematics, reading and writing—and to help teachers make and report overall teacher judgments (OTJs) based on a range of assessment evidence. Teaching standards provide a clear and concise statement or profile of what teachers are expected to "know and be able to do." Having skilled school leaders is of key supervisory importance, and a suite of tools and training opportunities support school leadership staff. This includes a model of effective educational leadership, a range of professional learning opportunities, and survey tool for principals. Teacher peer review of lesson plans and assessment instruments is the norm, as is senior staff observations of classes. Finally, schools are required to report data on the number and proportions of students "at, above, below and well below" National Standards, bringing a final level of oversight to the process (OECD NZ 2011). This data is examined carefully by the Ministry of Education for accuracy.[48]

As a result of these and other measures, teachers are seen as the main experts in instructing and assessing their students. As it should be in schools implementing competency strategies, teachers feel full ownership of student assessment.

New Zealand boasts a well-established tradition of teamwork among teachers, perhaps due to the high degree of teacher autonomy and the need for teachers to contribute to the school's strategies to meet student learning goals. Activities such as curriculum co-development, establishing student assessment methods, and ensuring fairness in grading encourage peer cooperation. Teachers also develop a research role alongside their teaching role; ongoing professional development in the Ministry-published monographs and other sources (e.g., reports from the New Zealand Council for Educational Research, New Zealand's national, independent educational research organization[49]) is focused on examining the evidence base for good practice.

Schools in New Zealand include students in the assessment and self-regulation of their own learning; dialogue around achievement data is ongoing and rooted in classroom practice. Students are therefore party to the language of assessment and evaluation, and can articulate their views and concerns. A visiting OECD group found that "schools have equipped their students with the skills and vocabulary to talk to external visitors on achievement and quality issues." (OECD NZ 2011)

FOCUS ON:

TEACHER PREPAREDNESS, SINGAPORE AND SHANGHAI

Andreas Schleicher of OECD writes: "Nowhere does the quality of a school system exceed the quality of its teachers."[50] Following high 2012 PISA scores in select Asian countries and economies (e.g. Singapore and Shanghai), organizations including the Asia Society[51] have conducted studies focused on this region. Findings credit teacher training as a distinguishing factor, as a continuum of professional development opportunities are facilitated throughout teachers' careers. Research targets the questions: *What processes and structures for all teachers? In what ways are capacities and competencies built, and then adapted?* Competency education research focuses on these same topics, as a shared sense of proficiency must be established among teachers. Highlights from recent study visits are reported in an April 2014 webinar.[52]

- **Teacher preparedness.** Educators in Singapore and Shanghai succeed in part because they are trained to effectively address economic and cultural diversity. Teachers are better prepared than their American counterparts for diversity in the classroom, and therefore to meet the cultural needs of students (e.g., rural students entering an urban classroom in Shanghai). Understanding cultural differences and detecting learning difficulties, for example, enables the formative assessment inherent in competency-based learning. Early interventions are impossible in situations where teachers lack the training to know when it is time to intervene.
- **Teachers as lifelong learners.** Teachers spend less time lecturing and more time learning, observing and mentoring each other; peer observation and feedback are common. Shanghai approaches all teachers as lifelong learners, and provides systemic and systematic, incentive-based ways to rise through career ladders. In-house professional development is common as part of an ongoing, integrated learning culture (as opposed to bringing in external experts or leaving the premises for training).
- **Teachers as researchers.** Teacher research groups focus on best practices in single subject areas that cut across different educational levels (as seen in US mastery-based education). For example, a fourth grade math lesson was unrecognizable to one American Assistant Superintendent as such, in that it required such a multifaceted skills-based approach: Over the course of a lesson, students were required to tell the time, differentiate time zones, and demonstrate awareness of and ability to describe what was happening in different places simultaneously.

For more information on Shanghai's high scores on the PISA 2012 exams, see *Chinese Lessons: Shanghai's Rise to the Top of the PISA League Tables* from the Center on International Education Benchmarking (CIEB).[53]

SCOTLAND (UNITED KINGDOM)

Curriculum Redesign: Formative Assessment, Equity and Health and Well-being

Scotland is part of the United Kingdom, but its educational system is distinct and always has been; a devolved local government is responsible for most public services. The country's population in 2013 was estimated at 5.3 million, similar to that of Colorado. In area, Scotland is a bit larger than West Virginia.

Scotland's relatively new Curriculum for Excellence,[54] which launched in SY 2010-11 and is still being implemented, embraces many competency education concepts. Curriculum guidelines (2009) embrace national standards that, while very specific about desirable learning outcomes, permit local education authorities and schools far greater autonomy in creating the curriculum delivered to students. As in British Columbia, the new curriculum is less granular than its predecessor, anticipating that teachers will work together to share their understanding of standards and expectations of performance through professional discussion and moderation activities.[55]

The new curriculum—described by one headmaster as a "national attempt to get away from summative assessment"—focuses on relentless formative assessment in the classroom, a "show what you know" crosscutting pedagogical strategy, learning goals that are clearly articulated by students, and the needs of the holistic well-being of the child. As outlined in one professional development document, students are expected to understand and clearly articulate their learning goals.

> The learning intention is what learners should know, understand or be able to do by the end of a learning experience. The focus should be on what is to be learned as opposed to the task, activity or context. By teasing out the learning from your chosen experience(s) and outcome(s), you will be able to develop learning intentions that focus specifically on what has to be learned. When clear about the learning intention, learners will be more focused and actively engaged in their own learning. Sharing the learning intention makes it easier to give quality feedback specifically on what has been learned.[56]

The Curriculum for Excellence website offers examples of experiences, outcomes, assessment and success criteria, modeling for teachers the multilayered, multifaceted nature of high-quality competency education.[57]

The Scottish curriculum includes not only principles of academic achievement, but also a clearly spelled-out vision for educators for contextualizing educational experiences in the broader scheme of a person's life trajectory. It focuses on detailed experiences and outcomes across eight specific curriculum areas, but also on four areas that are the teaching responsibility of all staff: literacy, numeracy and aspects of health and well-being.

> The title 'experiences and outcomes' recognises the importance of the quality and nature of the learning experience in developing attributes and capabilities and in achieving active engagement, motivation and depth of learning. An outcome represents what is to be achieved. Taken as a whole, the experiences and outcomes embody the attributes and capabilities of the four capacities. They apply to the totality of experiences which are planned for children and young people, including the ethos and life of the school and interdisciplinary studies as well as learning within curriculum areas and subjects. This means that they apply beyond timetabled classes and into, for example, enterprise and health activities and special events.[58]

FOCUS ON:

CORNWALLIS ACADEMY, ENGLAND

The population of England is 53 million people, making it twice the population of Texas. Unlike many countries and regions in the EU, England has moved away from personalization and formative assessment in recent years, but innovative schools remain.

One technology-rich English school synthesizes many of the features of the school systems and schools described above. Part of the Future Schools Trust, Cornwallis Academy was purpose-built around a personalized 1:1 learning pedagogy. Traditional classrooms have been replaced by low-cost, bright, open and flexible *learning plazas*. As at Thomas Haney in BC, students listen to lectures in wide open spaces, seated at tables and facing each other, surrounded by laptops, books, and various multimedia tools (e.g., monitors on multiple *video walls*, adjustable natural lighting and sound). Teachers and students interact in a continuous feedback loop of formative assessment. Student move into and out of independent learning areas for group activities. Workshop tutorials are available within the same spaces. Students must also assess their own learning activity in a way transparent to their teachers.[59]

Cornwallis seeks to *ensure that all students achieve the national standard at GCSE (General Certificate of Secondary Education) and are prepared for both work and life.* A well-being agenda focuses on emotional intelligence and risk reduction, and recognizes that social development helps drive academic success. Schooling includes "wraparound services" within a consistent narrative of support and development; data analytics intelligence systems are used within the student information system to collate individual "risk profiles" for students, which are related to likely success both at school and beyond.[60]

Strong supports and intervention systems are in place to protect at-risk youth. Interventions are built into the Scottish system in very clear phases; tiered approaches address the neediest as well as those who are poised to excel. Student home data is available from government sources, including Scottish Neighbourhood Statistics and the Scottish Index of Multiple Deprivation. In some regions, this data is then cross-referenced with performance data by principals and teachers to assess general student well-being in parallel to academic advancement. This data is readily available to principals and teachers for assessing students' capabilities and learning pathways (as in the case of Kyle Academy in South Ayrshire, detailed below). The health and well-being of every student is "greatly enhanced through the individual support and pastoral care which they receive through having an identified member of staff who knows and understands them and can support them in facing changes and challenges and in making choices."[61]

Learners have the opportunity to demonstrate achievement of standards and expectations in different ways, and as in other examples in the United States and this report, may take different routes through experiences and outcomes, allowing those who may accomplish more to do so. Schools are given explicit flexibility to provide a range of progression pathways appropriate to learners' needs and local circumstances. In particular, they are granted freedom to allow learners choice in how they demonstrate mastery, from pre-K through the third year of secondary school (Broad General Education).

The Curriculum for Excellence defines five levels of learning. The first five levels (Early, First, Second, Third and Fourth) are described in My Experiences and Outcomes, with progression to qualifications described under a sixth level, the Senior Phase. Students need not necessarily progress with students their own age; some will start learning at certain levels earlier and others later. For example, students may, in theory, be considered First level students to the end of Scottish grade P4, "but earlier or later for some." The framework is designed to be flexible in order to permit careful planning for those in need of additional support, including those who, for example, have a learning difficulty or are "particularly able or talented."[62] To date, most students still progress in age-based cohorts much as in the United States, although in SY 2013-14 some schools began teaching Senior Phase students (upper-level high schoolers) as a single cohort.

Assessment methodology is outlined in hopes of achieving "coherence across experiences and outcomes, learning and teaching and assessment practice." Staff should discuss with learners what they are expected to learn, clarifying learning intentions and success criteria and appropriate "experiences for achieving these" (i.e. ways of showing mastery). The website notes:

> As with all aspects of Curriculum for Excellence, assessment practices should be seen from the perspective of the learner. Learners should be engaged in all aspects of assessment processes and be afforded an element of choice and personalisation in showing that they have achieved the intended outcomes.
>
> As learners move through the curriculum, they will experience a range of approaches to assessment. From the learner's perspective, assessment will begin in pre-school by focusing on personal development and feedback with experiences built around the developing child while in addition at the senior phase young people will experience assessment practices which lead to qualifications.[63]

Scotland's Curriculum for Excellence embraces a close equivalent to competency education as we know it in the United States, and we look forward to sharing notes with our Scottish colleagues as these new nationwide policies spur innovation in schools.

FOCUS ON:

KYLE ACADEMY, SOUTH AYRSHIRE

Kyle Academy's conundrum may be a familiar one to educators in the United States who have faced nearby school closures. A school of 770 students in an urban area, for some time Kyle Academy had students of a uniform local demographic. When a school from the most economically disadvantaged area in the region closed overnight, Kyle suddenly faced the challenge of integrating the two student populations under one roof. The achievement gap between the two groups was palpable. Kyle had traditionally performed at very high achievement levels, while the other school had not. Kyle's scores now plummeted, and both old and new Kyle students began acting out behaviorally. With no guidance available, the school implemented its own innovative approach to personalization to keep students on pace and improve equity in performance (two typical goals of competency education).

Staff found what they needed in a rigorous data tracking system—one they built themselves, with the aid of a retired head teacher, to meet their needs. Teachers first met and pored over every resource available, getting to know each student based on personal data, past transcripts, and current achievement levels. Staff also used a nationally available database on poverty and single-family homes to develop a full portrait of each child. They then implemented a two-tiered process, with one strategy for at-risk youth, and one for mid-range achievers. At-risk supports building on those already offered regionally were now tailored to Kyle's specific needs. At-risk youth are now identified at ages 9 and 10, earlier than is nationally indicated. The school communicates with a campus police officer and community partners to monitor what is happening in a student's days and nights. A personalized curriculum focuses on developing social and emotional skills, providing additional support through the age of 16 or beyond.

Mid-range monitoring includes extensive data collection regarding achievement from every teacher, in every subject, for every pupil; with trends available it became possible to spot outliers immediately (e.g., in a single class, or during a single month), and to use academic achievement to identify indicators of additional support needs. It became easier to spot underperformers—both teachers and students—and boost their achievement.

At the start of each new session, all teachers and departments analyze attainment data to plan for improvement. Targets are set for each student. Senior leadership conferences are held with the school headmistress, counselor, and teachers for any student who is struggling. All learners profile their own achievements and next steps in each subject, taking increasing responsibility for their own learning.

A culture of extensive self-evaluation has taken hold. "Subject teams" evaluate the quality of learner experiences in each subject, and discuss outcomes with a senior leadership team to inform improvement planning for the next school session. As in US competency education models, students know exactly what is expected of them in the class, not just in day-to-day goals but with respect to national qualification exams (i.e., what score they are expected to get and how that expectation will shape their own learning process). Student attitudes and performance began to improve in parallel, a trend which has continued each year. Kyle Academy is now known for having the most rigorous student supports system in the region, if not country, and has been praised for successfully tackling "one of the most intractable problems in Scottish education: closing the achievement gap between the lowest attaining 20% and the highest attaining 80%."[64] The school now performs in line with the top 10% of schools in Scotland.[65]

v. Discussion

Competency education presents a platform on which to build personalized learning approaches both at home and abroad, and we can glean much from the journeys of other education systems and schools in their development of personalized, proficiency-based systems. Our report has taken us on a whirlwind tour of nations, regions and schools; we have identified numerous resonances with and opportunities to learn from competency-based learning principles in practice. As we seek to improve our own thinking, and liberate ourselves from certain limitations the American education system (as well as our expectations of what it should look like), we turn to our international colleagues for insight and guidance as to *what has worked for them.*

Taking the five design elements of the CompetencyWorks definition of competency education as a starting point, we offer the following insights for discussion.

1. Students advance upon demonstrated mastery.

Student advancement in most cases described above is rooted in students' meeting clearly articulated learning objectives by demonstrating evidence of acquired knowledge and skills, through performance assessment, or "show what you know." Students participate in conversations about what mastery looks like, and—as at the Swedish Kunskapsskolan or Thomas Haney Secondary in British Columbia—in deciding how and when to demonstrate what they have learned. The degree to which students can continue to advance upon mastery depends, of course, on a high degree of system articulation and coherence of learning progressions across grade levels and schools. In Finland, New Zealand and Scotland, for example, teachers are responsible for understanding what proficiency means within the curriculum, and have the autonomy to determine for themselves whether a student has adequately demonstrated this. Compulsive, formal summative assessment—as used commonly at state-level in the United States—does not figure prominently in the evaluation of students, teachers or schools.

The United States is not alone in structuring schools around the progression of same-age cohorts; no country or school yet identified has moved on entirely from this traditional approach, although many are offering personalized pathways within each cohort. Finland's upper secondary students are treated as one cohort across multiple grade levels, an approach now being piloted in some Scottish schools (as enabled by the introduction of a new curricular approach). Some policy language (Scotland, British Columbia) enables or even encourages students to progress upon mastery, but in practice, this does not commonly take place. Schools abroad are also generally course-based as in the United States (despite the lack of Carnegie unit or seat-time principles), although select schools (Kunskapsskolan, Thomas Haney Secondary, Cornwallis) are designed to enable learners to move through learning progressions with a mix of student peers across courses and cohorts, to maximize every student's learning opportunities.

The shift to delivering instruction through personalized learning pathways (as opposed to age-based cohorts) has posed significant challenges to policy and school operations in all of the countries of our investigation. These changes have not occurred overnight, nor in a vacuum; extensive international study and intranational review typically precede curriculum redesign. Education in the United States is highly devolved, but US federal policy[66] nonetheless inhibits greater personalization of learning through the expectation that state-level summative assessments be based on age and grade, rather than on the evaluation of where a student is in a learning progression, and the amount of growth that has occurred.

2. Competencies include explicit, measurable, transferable learning objectives that empower students.

We see numerous countries in the midst of redesigning their national standards and/or curricula to determine what all students need to know and be able to do at each level of advancement. Well-articulated and explicit learning objectives are an essential element of competency education. New Zealand's and Scotland's systems are based on competency frameworks that include multi-layered learning progressions, providing coherence across academic levels. This unleashes two powerful forces that dramatically change the dynamics of schools:

- *Student Agency:* As seen in the national systems of Finland and New Zealand, and in Thomas Haney and Kunskapsskolan, learning is self-directed. Students are aware of learning objectives and can describe them (and their progress towards them); they are empowered to demonstrate mastery on their own terms, in their own way, when they are ready. There is flexibility in how students learn, based on their own interests and passions.
- *Teacher/School Autonomy:* In Finland, New Zealand and Scotland, schools and teachers are provided examples of student success criteria but develop their own lessons and assessment methodologies. Increased local autonomy has been strongly correlated with improved student outcomes. Teacher autonomy in assessing students is strengthened and moderated by peer reviews of these assessments; frequent collaboration and internal processes fine tune quality expectations for consistently high levels of rigor across the system.

The emphasis on student agency and autonomy have implications for how systems of assessments are designed, as discussed below.

3. Assessment is meaningful and a positive learning experience for students.

Under several school systems examined, assessment is an integral part of the cycle of learning rather than simply a mechanism to determine the degree of learning. Students develop an awareness of what they must know and be able to demonstrate through frequent performance assessments. This self-awareness results in students' understanding that assessment is an organic part of the learning process. As students build skills in reflecting upon their own knowledge and abilities from an early age, they become active partners in their own performance reviews; in Finland and New Zealand, this is seen as critical to educational development. Teachers become skilled at assessment of student performance that is formative, not summative, and takes place on an ongoing basis. Students have the vocabulary for, and knowledge of, the learning process.

- *Formative Assessments:* These are widely accepted as collaborative classroom processes, in which both teachers and students are active participants. Students recognize assessment as the primary means to "show what they know." Assessment is part of the student-centered classroom practices that can provide guidance to both students and teachers, to help students advance in learning progressions.
- *Summative Assessments:* In more traditional settings, these may take the form of examinations with high-stakes consequences for students' opportunities for future education. In a competency-based effort, however, these are typically "quality-control checks" and form part of a broader mastery-based process. Teachers play a powerful role in credentialing learning. For example, Finnish students automatically receive their high school diplomas (upper secondary school certificates) after completing the required number of courses; course completion assumes mastery of learning, with teachers responsible for

ensuring that students have mastered skills before completing a course. Those seeking a university degree must then take a nationally graded matriculation examination, but its outcomes do not impact their school completion status.

4. Students receive timely, differentiated support based on their individual learning needs.

Critical to the personalization of education is a learning framework that allows schools to provide differentiated academic support to learners. Kunskapsskolan and Thomas Haney Secondary schedule both daily and weekly check-ins with learning coaches, a premise around which other scheduling conforms. We see a trend towards higher standards for those who choose to become educators as well, such as—in Finnish high schools – a requirement that teachers earn a bachelor's degree in whatever subject(s) they will teach. (Topical expertise offers obvious advantages, e.g., to teachers helping students address a particularly challenging subject-level concept.)

In Finland and Scotland (and in South Ayrshire in particular), student supports emphasize the "whole child" and incorporate a wide range of social, emotional and health needs. These countries use a broader range of non-academic supports, and connect wellness to academic data by providing real-time assistance to bolster learning. Personal and health challenges are taken into account to address and anticipate academic need. In Scotland and Finland alike, we find significant cultural values and investments blending holistic approaches with strong academic emphasis.

The continuous flow of data on student progress drives instruction and intervention in Kunskapsskolan and across Finland (and under the new Scottish curriculum). Rather than allow students to progress automatically with gaps in their learning, to fail whole courses and then retake credit hours, these systems are designed to provide additional supports and interventions to bring students to consistent levels of mastery throughout the system.

5. Learning outcomes emphasize competencies that include application and creation of knowledge, along with the development of important skills and dispositions.

Most countries examined rely on high-level national curricula that focus on crosscutting 21st century skills, while specific classroom lessons blend these with subject-specific knowledge acquisition. Curricula are being upgraded to enable stronger emphasis on application of these skills in practical, hands-on contexts, while the physical design of schools grows more flexible to augment these efforts. The European Union (and in turn, many constituent nations), New Zealand and Australia have all identified specific competencies that underlie student success, and target these to both improve overall school performance and increase equity across educational systems.

Overall, our research reveals that personalization is taking hold as an overarching goal of many education systems around the globe. Systems locally and nationally are openly discussing common challenges and possible solutions to ensure that all students develop the world-class knowledge, skills and competencies required to succeed in our rapidly changing world. As we ponder how we might adapt transferable ideas, processes and methods, we seek to establish a fair balance between optimism and consideration for local contexts, and offer examples to frame a dialogue.

National and state futures are increasingly interdependent. With the broader feedback loop that benchmarking and international connectedness afford, we hope to share in the patterns that are emerging toward a globally shared mission to ensure access and equity through a world-class education that is personalized for each student's needs.

We hope our readers will join us on this exciting journey in the spirit of lifelong and worldwide learning.

End Notes

[1] This section is drawn primarily from *A K–12 Federal Policy Framework for Competency Education: Building Capacity for Systems Change* (Worthen & Pace 2014) and *Necessary for Success: Building Mastery of World-Class Skills: A State Policymakers Guide to Competency Education* (Patrick & Sturgis 2013). These and other briefing papers are available on the CompetencyWorks website at www.competencyworks.org.

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