

A Rationale for Supporting a Gifted Mandate While Engaging All Students in 21st Century Skills

The Topic	The Message	The Research
Current Status	The Legislation	<p>The intent of the legislation is to mandate services for gifted students while tripling the dollars to underwrite identification, programming and professional development to better prepare teachers to engage <i>all</i> students with 21st century thinking skills. Because our population is changing and our school age population is changing, we soon be facing, in just a few years, a different student profile. We will be close to the fact that nearly half our students will be students of color. Demographers suggest that the majority of those students will be coming from households that occupy the lowest quartile of family income and occupy low level, entry levels of employment. Those conditions will create a negative impact on state tax revenue.</p> <p>We know less than a third of the 350 school districts spend the \$13 PPU dedicated for gifted programming. Currently, without a mandate, the other 230 districts in the state do not offer gifted programs. While we recognize the financial challenges many districts face each year, we believe the increased funding, from \$13 to \$39, will free up district dollars to cover other operating expenses and address the needs of all students, K-12. This legislation calls for all students to be taught critical thinking, creative thinking, problem solving, inquiry learning and working collaboratively.</p> <p>We know school districts across the state are petitioning their voters for additional tax revenue to carry needed repairs, building replacements, transportation and programming. But those efforts often fail. We need to think differently.</p> <p>Minnesota does poorly, when compared with other states, when examining achievement gaps. Another intent of this legislation is to narrow that gap. With this funded mandate all students would benefit. Studies of those skills listed above, if taught with fidelity, results in closing the achievement gap.</p> <p>Results revealed that among American elementary and middle school students, 20% to 49% in English Language Arts and 14% to 37% in mathematics scored 1 year or more above grade level. We address what these findings imply for K-12 schools, grouping decisions, and educational policies that strive to foster advanced abilities. <i>Peters, S, Rambo-Hernandez, K. Makel, M.C. and Plucker, J. A. (2017) Should millions of students take a gap year? Large numbers of students start the school year above grade level. GCQ, Vol 61, No. 3, pages 229-238.</i> "With the federal focus on bringing all students to minimum proficiency, high achievers might not get the</p>

		<p>challenges they need". Are gifted students now an underserved population? <i>Pierce, D. (1017). eSchool News: Daily Tech News and Innovation.</i></p> <p>The statewide advocacy group, the Minnesota Educators of the Gifted the Talented (MEGT), is leading a collaborative effort to bring change to our schools. We are working with the legislature to better prepare all students for an uncertain future in which automation is quickly changing the workplace while the demographic profiles of our schools is rapidly changing. This legislation brings the focus of teaching and learning toward powerful and engaging learning.</p> <p>With a funded mandate a district with 1000 students will have approximately \$39,000 dollars to underwrite a competitive gifted program. Districts with strong programs could dedicate gifted dollars to enhance their programs.</p>
<p>Current Status</p>	<p>Gifted students are an underserved population in classrooms across the state</p>	<p>Approximately only a third of districts in the state provide gifted services. But not all programs existing today are equal. <i>Minnesota is less likely to offer gifted programs, MN Post, 2/18/18.</i></p> <p>Some districts have created comprehensive programs, employing universal identification, consistent and ongoing programming, and special schools. Other districts, whose coordinator is the principal, offer opportunities for their gifted students to engage in problem solving opportunities with little guidance or encouragement. It is an unequal opportunity.</p> <p>Even in classrooms of districts with gifted programs identified on their website, little is done to support teachers with additional professional development. As a partial result most of the cognitive tasks addressed in those classrooms focuses on the lowest level of cognition. While this study is somewhat dated, observations in over 50 classrooms continue to support this study: <i>The Classroom Practices Observational Study</i> conducted by The National Research Center on the Gifted and Talented (NRC/GT) examined the instructional and curricular practices used with gifted and talented students in regular elementary classrooms throughout the United States. This article describes the procedures used in this study and the results obtained from systematic observations in 46 third or fourth grade classrooms. The observations were designed to determine if and how classroom teachers meet the needs of gifted and talented students in the regular classroom. Two students, one gifted and talented and one average ability student, were selected as target students for each observation day. The Classroom Practices Record (CPR) was developed to document the types and frequencies of differentiated instruction that gifted students receive through modifications in curricular activities, materials, and teacher-student verbal interactions. Descriptive statistics and chi-square procedures were used to analyze the CPR data. The results indicated little differentiation in the instructional and curricular practices, grouping arrangements, and verbal interactions for gifted and talented students in the regular classroom. Across five subject areas and 92 observation days, the observed gifted and talented students experienced no instructional or curricular differentiation in 84% of their instructional activities. A similar follow-up student provided even worse results. <i>The Classroom Practices Observation Study</i></p>

		<p>(1993). <i>Karen L. Westberg, Francis X. Archambault, Jr., Sally M. Dobyms, Thomas J. Salvin.</i></p> <p>Guiding children to the very highest levels of academic achievement falls low on the priority list of most schools today, far below equity, diversity, and extra-curriculars. Were Plato with us today, he might scold us with a warning that “By not cultivating excellence, you are dishonoring it.” Not only is this tragic for many students, it flies in the face of national realities. The truth is, many of the most admired <i>becomers</i> from our past were talented people who were given special help along the way. Douglass received surreptitious reading lessons during his childhood. Edison was home-schooled by an attentive mother. Robert Goddard was given a telescope, microscope, and subscription to <i>Scientific American</i> during formative years. Steve Jobs was encouraged and aided in following his unconventional fascination with technology. <i>Closing America’s High Achievement Gap: A wise giver’s guide to helping our most talented student Reach their full potential. Andy Smarek.(2013). The Philanthropy Roundtable</i></p> <p>Gifted Forums conducted in different parts of the state provided examples facing this underserved population. In one northern district with a student population of 2000, the current legislation would generate \$26000.00. But gifted student programming was routed through Community Services where parents had to pay to participate.</p>
Current Status	An Argument in Support of Acceleration, Language in the Legislation	<p>Grade level is a social construct for convenience and ignores developmental difference and readiness.</p> <p><i>Stop wasting money teaching millions of students content they already know. Plucker, Makel, Rambo-Hernandez, Matthews and Peters; (9, 19, 16), Fordham Foundation</i></p> <p>Maybe part of the issue is boredom: “A 2013 Gallup poll of 500,000 students in grades five through 12 found that nearly eight in 10 elementary students were “engaged” with school, that is, attentive, inquisitive, and generally optimistic. By high school, the number dropped to four in 10. A 2015 follow-up study found that less than a third of 11th-graders felt engaged. When Gallup asked teens in 2004 to select the top three words that describe how they feel in school from a list of 14 adjectives, “bored” was chosen most often, by half the students. “Tired” was second, at 42 percent. Only 2 percent said they were never bored. The evidence suggests that, on a daily basis, the vast majority of teenagers seriously contemplate banging their heads against their desks.” <i>Jason, Z. (2017). Bored out of their minds. Winter, 2017 (ed/Winter- 2017 Harvard Graduate School of Education.</i></p>
	The Absence of Rigor in Classroom across the State	<p>Even in classrooms in schools with gifted programs, high-level cognitive tasks are by passed for test prep on low-level skills all kids need to learn for the test. <i>Personal observation in classrooms and all levels in the metro area.</i></p> <p>Twenty-seven days of differentiated instruction on differentiation resulted in little or no application to everyday practice by almost all teachers trained in those practices in one district. High stakes courses like AP, challenged by a broader spectrum of learner readiness result. Twenty-seven days of differentiation did not pay off. With no mandate teachers were left to continue the practice of “guess what I am thinking).</p>
	The Achievement Gap and the Excellence	<p>Minnesota has one of the worst Achievement Gaps in the Nation. Fifteen years later, MN schools are more segregated, and</p>

	<p>Gap</p>	<p>achievement gap has barely budged. Minnesota now has more than 200 schools where students of color make up 90 percent or more of the enrollment, state data shows <i>Pioneer Press, 8/21/17.</i></p> <p>In a recent report, Minnesota gets a “C” rating. The article appeared in the September 5, 2018, Education Week, <i>Quality Counts 2108: K-12 Achievement and Chance for Success, Grading the States</i>. Little change in the elusive Achievement Gap.</p> <p>Low-poverty schools are somewhat more likely to have gifted programs than high-poverty schools. Schools in Minnesota are much less likely to have gifted programs than the national average, and high-poverty schools in the state are also much less likely to have gifted programs than the national average. <i>Fordham Foundation</i> Some of those numbers are challenged. At a recent gathering of advocates only about a 1/3 of the districts reported having a gifted program. <i>Is There a Gifted Gap. Gifted Education in High Poverty Schools</i></p> <p>Although Minnesota does not mandate participation in NAAEP, “Results reflected in the report demonstrate a common finding. First, as the data plainly show, more students reached NAEP’s Advanced level in 2017 than in 2007 in both grades, both subjects, and every subgroup. And in every instance, the difference across that decade is statistically significant—sometimes massively so. In eighth grade math, for example, almost one third of Asian students reached the test’s top level in 2017, a 13-percentage-point increase over ten years. This is all rather remarkable. And every parent, teacher, and advocate who helped make this universal progress possible deserves a round of applause. But once the plaudits subside, much work remains to address the data’s other takeaway: huge and widening gaps among subgroups of high achievers, discrepancies that Johns Hopkins professor Jonathan Plucker rightly calls “excellence gaps.” Yes, black, Hispanic, and low-income students have seen gains, but from a depressingly low base, especially compared to white, Asian, and affluent peers. The 2017 percentage-point difference between white and black students who reach NAEP Advanced, for instance, ranges from 5 points in eighth grade reading to 11 points in eighth grade math. For Asian and black pupils in 2017, it’s between 10 and 28 percentage points. All of these are wider gaps than in 2007. And the refrain is the same for low- and high-income students, between which the Advanced-level gap has also widened in both subjects and grades in the last decade. <i>NAEP’s good news for high achievers: A decade of universal but uneven growth. The High Flyer, Fordham Foundation, NAEP 2017.</i></p>
		<p>Promising practices in closing the achievement gap have emerged in states over time where gifted funding and a mandate existed. NC, OK, CO, KY, all appear to be doing a better job and closing the achievement gap than others. <i>Excellence Gaps in Education: Expanding Opportunities for Talented Students. Plucker and Peters (2016), Cambridge, MA; Harvard Education Press.</i> <i>All students Deserved to be Challenged. Tyner, February, 2018</i></p>
	<p>But it is difficult to track down</p>	<p>“We find that schools vary dramatically in the relative success of advantaged and disadvantaged students, and that different schools</p>

		<p>within the same school district differ substantially in terms of their advantaged-disadvantaged success gaps. In some schools, both advantaged and disadvantaged students fare especially well; while in other schools, both fare especially poorly; while in still others, one group does relatively well and the other group does relatively poorly. We investigate whether these differences across schools can be explained by differences in relative kindergarten readiness of advantaged and disadvantaged students, and we find that pre-school preparation is unlikely to explain the cross-school differences that we find. Moreover, we find that overall school advantage levels are unrelated to differences between the success levels of advantaged and disadvantaged students.” Evidence Speaks Reports, Vol 2, #19 July 20, 2017 , Brookings Institute</p>
	<p>Promising Practices Have Emerged</p>	<p>Plucker and Peters wrote about promising practices in states with both a mandate and funding. District in CO, Ky, NC and KY appeared to narrow the achievement gap and to narrow the excellence gaps. This is another closer look at the Achievement gap and Excellence Gaps. Minnesota, in this analysis warrants a “B”. Their programs had identification practices that tended to be inclusive, identifying more students of color, more students from lower socio-economic levels and disabled students. An important element of these district programs was intentional and required professional development that was grounded in the standards those states had developed.</p> <p>“A growing body of research offers evidence that high-ability students from lower-income families are far less likely than wealthier students to be identified for advanced level course work and opportunities.* They are also less likely to achieve at high levels, despite their aptitude. Lacking access to the enriched academic opportunities, differentiated learning, and counseling afforded to wealthier students, high-ability, low-income children are becoming what one team of researchers has termed a <i>persistent talent underclass</i> — underserved and therefore prevented from fully developing their talents. <i>Equal talents, unequal opportunities: A report card on state support for academically talented low-income students.</i> Plucker, Glynn, Healey, and Dettmer. (March, 2018). Fordham Foundation</p> <p>We know districts are all trying to respond to demands that more students of color participate in high stakes course work like AP or IB classes. Many need the skills this legislation supports to be successful in these high stakes classes. Spending 12 years being exposed to critical thinking and creative thinking skills better prepares the learner for these more challenging classes.</p>
	<p>What is Universal Screening?</p>	<p>Universal screening is an emerging practice in districts across the country in an effort to be more inclusive in their identification practices (Card and Giuliano’s (2015) “Can universal screening increase the representation of low income and minority students in gifted education?”</p> <p>“In the original study, Card and Giuliano took advantage of a “natural experiment,” where they were able to compare program diversity in a school district that moved from an identification process initiated by a teacher or parent referral to a new process that began with every second-grade student completing a screening assessment. This is called universal screening. The researchers were interested in the proportion of historically underrepresented minorities (such as English learners, Hispanic students, and African-American students) identified with the new program. The key finding of their study was that the universal screening system was more effective than the previous teacher and parent referral system in addressing the under-</p>

		<p>identification of African-American, Hispanic, female, low socioeconomic status, and English learner students. Another important finding was that using universal screening greatly increased the number of students referred overall in the first screening stage, and therefore, required the second stage placement test to be identified for services.”</p> <p>https://www.hmhco.com/blog/universal-screening-gifted-talented-identification-implementing-overcoming-challenges</p> <p>Universal screening involves systematic assessment of all children within a system on important indicators like academic or behavioral competence. Universal screening tools must be aligned with schools’ curriculum and instruction and must allow school personnel to understand the general academic and behavioral health of students in that system. <i>Best Practices in Universal Screening</i>. Ikeda, M. Neesen, E. and Witt, J. (January 2003) <i>Best Practices in School psychology</i>.</p>
	Identification and management tools	<p>Assessment Tools: CogAT, NNAT, RAVINS, Torrance Test of Creativity, Management Tools: Schoology</p>
	Standards Can Guide Our Work	<p>Because Minnesota has no standards for gifted programming, our legislative initiative looked to the National Association for Gifted Children (NAGC). Rather expecting all teachers to be trained in differentiation, we looked at the research supported instructional strategies that NAGC had identified that had a deep research base.</p> <p>We were also mindful of what colleges and the business community were expecting from our high school graduates. Those instructional strategies include, critical thinking, creative thinking, inquiry learning and problem solving, along with learning strategies for collaborative work. Imagine that across the state, students from K-12 were being taught these skills and kids were mastering those skills throughout their 12 years of learning. We would be better than the World’s Best Workforce’s list of expectations. We would be preparing all students for success in college and in life.</p>
	Critical Elements of the Legislation	<p>The language of the bill includes an expectation that all students are taught how to think creatively, critically, engage in problem solving and inquiry, along with learning how to work collaboratively. All have a deep research base.</p>
	Creative Thinking	<p>“The study confirmed what teachers have reported. The remedies most often used to address inequities, regimented curricula and standardized testing may actually be making them worse. The more that “teaching to the test” dominates the school day the more creative learning gets sidelined” ...our inventiveness grows from our ability to absorb from the outside world and generate “what if” scenarios, extrapolating the known into the new. Everything that separates us from world from that of 10,000 years ago comes from the human brain’s everyday, lifelong neural manipulations. We take in the world and we energetically refashion it.” We create. <i>Creativity has become the domain of the elite. Schools can help change that.</i> Anthony Brandt & David Eagleman (<i>Education Week</i>, April 5, 2108)</p> <p>In an examination of 142 students designed to teach students how to think creatively, E Paul Torrance concluded, “It does indeed seem possible to teach children to think creatively.” <i>E. Paul Torrance, Teaching for Creativity (1984)</i>.</p> <p>This article reports on a meta-analysis of 120 studies (total N _</p>

		<p>52,578; 782 effects) examining the relationship between creativity and academic achievement in research conducted since the 1960s. Average correlation between creativity and academic achievement was $r = .22$, 95% CI [.19, .24]. An analysis of moderators revealed that this relationship was constant across time but stronger when creativity was measured using creativity tests compared to self-report measures and when academic achievement was measured using standardized tests rather than grade point average. Moreover, verbal tests of creativity yielded significantly stronger relationships with academic achievement than figural tests. <i>Creativity and Academic Achievement: A Meta-Analysis</i>. Aleksandra Gajda, Maciej Karwowski and Ronald A. Beghetto (2016) APA.</p>
	<p>Critical Thinking</p>	<p>Critical thinking (CT) is purposeful, self-regulatory judgment that results in interpretation, analysis, evaluation, and inference, as well as explanations of the considerations on which that judgment is based. This article summarizes the available empirical evidence on the impact of instruction on the development and enhancement of critical thinking skills and dispositions and student achievement. The review includes 341 effects sizes drawn from quasi- or true-experimental studies that used standardized measures of CT as outcome variables. The weighted random effects mean effect size (g+) was 0.30 ($p < .001$). The collection was heterogeneous ($p < .001$). Strategies for Teaching Students to Think Critically: A Meta-Analysis. (2015). Philip C. Abrami, Robert M. Bernard, Eugene Borokhovski, David I. Waddington, C. Anne Wade, and Tonje Persson. <i>Review of Educational Research</i>, Vol. 85, No.2, pp. 274-314.</p>
	<p>Inquiry Learning and Problem Solving</p>	<p>Inquiry-based teaching is a pedagogical approach that invites students to explore academic content by posing, investigating, and answering questions. Also known as problem-based teaching or simply as 'inquiry,' this approach puts students' questions at the center of the curriculum, and places just as much value on the component skills of research as it does on knowledge and understanding of content. An inquiry-based curriculum develops and validates 'habits of mind' that characterize a life-long learner: It teaches students to pose difficult questions and fosters the desire and skills to acquire knowledge about the world. An inquiry-based curriculum can increase student achievement and narrow the gap between high- and low-achieving students.</p> <p><i>Kahle, J. B., J. Meece, and K. Scantlebury. 2000. Urban African-American middle school science students: Does standards-based teaching make a difference? Journal of Research in Science Teaching 37 (9):1019-1041.</i></p> <p>A study involving over 1400 students found that inquiry-based approaches in middle and high school language arts classrooms allow both low- and high-achieving students to make academic gains. <i>Applebee, Arthur N., Judith A. Langer, Martin Nystrand and Adam Gamoran. 2003. Discussion-Based Approaches to Developing Understanding: Classroom Instruction and Student Performance in Middle and High School English. American Educational Research Journal 40 (3): 685-730.</i></p> <p>When used in place of a textbook approach, an inquiry-based approach yielded significantly higher achievement for high school students with special needs. <i>Scruggs, T. E. and M.A. Mastropieri. 1993. Reading versus doing: The relative effects of textbook based and inquiry-oriented approaches to science learning in special education classrooms. Journal of Special Education 27 (1):1-15.</i></p> <p>A guided inquiry, which should be the start of teaching students the</p>

		<p>inquiry process, relies on the teacher as a facilitator guiding students through the process as they gain confidence as an inquirer. That critical guidance assures teacher/facilitator that students will find success. More importantly, completed inquiries should be shared with other inquirers and teacher facilitators to nurture the inquirer through effective rubric feedback and for others in the classroom to learn from the inquirer. In that case, everyone is learning all the time. Practiced teacher/facilitators can tease out standards met in the process and keep track of learning through the lens of content standards. With credit for Prior Learning in place in classrooms across the state, students would be moving through the learning more rapidly and demonstrating mastery of the standards. Even young students can be engaged in inquiries with support of the teacher/facilitator. A practiced facilitator reported that while scaffolding is needed for 6-7 year olds in their initial experiences, they produce reports rather than expert level inquiries. But over time they grow in their capacity to reach that expert level through ongoing efforts, feedback and seeing what others have been capable of doing.</p> <p>High school and middle school staff could set a “Genius Hour” each week to support students in their pursuits of inquiries or problem based learning. A high school or a middle school could reorganize into multi-disciplinary teams to provide support to students in the inquiry pursuits. Their expertise would be the lens to assess a student's performance and provide feedback from that discipline's perspective.</p>
	<p>Collaborative Learning</p>	<p>Collaborative learning is an educational approach to teaching and learning that involves groups of learners working together to solve a problem, complete a task, or create a product. Collaboration is a promising mode of human engagement that has become a twenty-first-century trend. The need to think together and work together on critical issues has increased (Austin, J. E., 2000; Welch, M., 1998), causing to stress on from individual attempts to team work and from autonomy to community (Leonard, P. E. & Leonard, L. J., 2001).</p> <p>Strengthening students' collaboration skills can also enhance their prospects at employment and job advancement once they leave school. In particular, people who know more about collaborating go on to enjoy higher performance in team settings, and earn high performance ratings on the job, better salaries, and bigger bonuses. http://www.p21.org/storage/documents/Skills_For_Today_Series-Pearson/Employer_-_Executive_Summary_FINAL.pdf</p>
	<p>The Impact Across All Dimensions of the Elements of the Legislation</p>	<p>There exist ample evidence supporting the argument that teaching kids how to engage in Inquiry and Problem Solving taps both critical thinking and creative thinking in the development of the investigations but also in the production of the presentations to showcase the topic studied. This type of learning reflects real life practices in the work place.</p>
	<p>Social Emotional Needs</p>	<p>Among policy elites and pundits in education, the urgency to improve academic achievement has stoked a raging debate. On one side are those who prioritize rigorous cognitive and academic development; on the other, those who care most about students' noncognitive skills and the physical, social, and emotional needs of the whole child. To many teachers, the debate seems ridiculous—because they have long known the answer is “both.” Now, science is on their side</p> <p>Beyond addressing the cognitive skills of all students, ongoing research argues for a greater emphasis on the social emotional</p>

		<p>needs of all students, including gifted student. Social-emotional learning (SEL) captures the mindsets, skills, attitudes, and feelings that help students succeed in school and life. Other names for these skills include “non-cognitive skills,” “soft skills,” “21st century skills,” and “whole child.” Research shows that students who participate in SEL programs demonstrate 11% gains in academics, improved classroom behavior, better stress management, and higher attendance. Imagine a gifted program enhanced with a Pro-Active Counseling program that would address the mental health issues of some gifted students challenged by intensities, their asynchronous behaviors, or troubled home life. According to Durlak et al. (2011), social and emotional learning combines youth development with the promotion of particular competencies, with the aim of enabling students to respond appropriately to environmental demands and fully take advantage of opportunities. Ultimately, social and emotional competencies encourage a shift to an internal locus of control, allowing individuals’ choices and actions to better accord with their own values. These competencies relate to “soft skills” and personality traits that, according to Heckman and Kautz (2012), predict success in school, the labor market, and in life. Notably, social and emotional competencies do not just raise academic achievement and educational attainment. They also foster personal satisfaction and growth, help individuals become better citizens, and reduce risky behaviors like violence and drug use. <i>Durlak, Weissberg and Pachan, 2010; Collaborative for Academic, Social, and Emotional Learning, 2013).</i></p> <p>At the top of July 2018, New York State (NYS) required public schools to implement a mental health segment within the curriculum. With the school year now underway, the program will take effect and aim to nurture children’s perception and experience with mental health.</p> <p>Research shows that students who participate in SEL programs demonstrate 11% gains in academics, improved classroom behavior, better stress management, and higher attendance. Imagine a gifted program enhanced with a Pro-Active Counseling program that would address the mental health issues of some gifted students challenged by intensities, their asynchronous behaviors, or troubled home life. According to Durlak et al. (2011),</p>
	<p>Why These Skills?</p>	<p>All five skills included in this legislation are grounded in research that demonstrates a positive impact on student achievement. Some of the effect size evidence is strong. All of the studies cited in this document are linked to the narrowing of the achievement gap.</p>
	<p>How Equity, Equality and Economics Enhances the Argument for this Legislation</p>	<p>Minnesota’s population is changing. Minnesota’s schools are changing. Minnesota’s workplace expectations are changing. <i>Getting Schools Ready For the World, Will Richardson Educational Leadership, December 2016-Janauary 2017.</i></p> <p>“As more and more districts scramble to respond to the new needs presented by these recent changes in student demographics — with</p>

		<p>efforts like building up English language learner services, creating a more inclusive school environment, and diversifying their teacher workforce — the appetite among educators and school administrators for resources and best practices has continued to grow. Mounting pressure to tackle the state’s persistent achievement gap is no longer confined to the Twin Cities.” <i>Five Education stories in 2018 that signal a growing appetite for change.</i> MN Post, 12/28/18.</p>
	Minnesota’s Changing Population	<p>In Minnesota, people of color (those who identify as a race other than White alone, and/or those who are Hispanic) make up 19% of the total population. Non-Hispanic White Minnesotans represent the remaining 81% of the statewide population. All race groups have grown recently in Minnesota, but between 2010 and 2015, the state has added four times as many people of color as non-Hispanic White residents. Populations of color are distributed unevenly across the state, and are more likely to live in metro areas than rural areas. But that minority is growing. First and second generation arrivals in Minnesota are changing schools.</p>
	Minnesota’s Changing Student Population	<p>This school year in Minnesota schools, students of color represented nearly one third of the student population in grades K-12. Tim Strom, Legislative Analysis for the Minnesota legislature.</p> <p>While our population is changing so also is the student population in our schools. First and second -generation arrivals here are entering schools across the state. J. Plucker, in speaking to over 50 educators in the early evening conversation at Craguns’, suggested that failing to address this population of students effectively might result in both an Equity and Economic dilemma. But there are solutions.</p> <p>In recently published article by the Fordham Foundation, written by Christopher Yaluma and Adam Tyner. The equity argument is represented here: The 2017 numbers from MDE found that in grades three through eight and tenth, the amount of white students who met the standard for reading and math was about double that of black students. <i>Is There a Gifted Gap? Gifted Education in High-Poverty Schools. Yaluma and Tyner(2018). The Fordham Foundation (January, 2018).</i></p>
	Minnesota’s School Districts Gifted Programs	<p>According to research over the years, gifted identification is closely tied to income and race. Students from low-income families and students who are black or Latino are much less likely to be identified as gifted than more-affluent students and white or Asian students. While districts are implementing practices that impact the demographic distribution of students of color in gifted programming, it is a noble but not widespread practice. Many gifted students of color are waiting for the challenge. <i>NAEP’S Good News for High Achievers: A decade of universal but uneven growth. Advancing Educational Excellence, Thomas Fordham Foundation, April, 2018.</i></p>
	The Economic Argument and Minnesota’s Changing Workforce	<p>The Economic argument follows: School improvement efforts can benefit individuals’ earnings and balance state budgets, says Hanushek. <i>“As the skills of today’s students improve, the skills of tomorrow’s workers advance. Realizing these gains does require a sustained commitment on the part of a state’s political leaders. But if we are to achieve prolonged economic growth in our nation, we have no choice but to strengthen the skills of all our people.”</i></p> <p><i>“Jobs that require only a high school degree are most in danger.</i></p>

Take cashiers and tollbooth operators, for example. These jobs don't require much human analysis so are easier for machines to handle. Some tollbooth operators have already been replaced by automated systems such as E-Zaps, which is used in 16 states. Meanwhile, as many as 7.5 million retail jobs are at risk of automation in the next decade, according to a [study](#) from financial services firm Cornerstone Capital Group.

A shift is already underway. CVS has installed self-checkouts in 448 locations. McDonald's (MCD) and Wendy's have also added kiosks in some restaurants, allowing customers to place orders on a touchscreen. In December, Amazon (AMZN) teased a video of its new Seattle-based concept store Amazon Go, which has no checkout line or cash register. The payment process is automated through a customer's smartphone, so a customer can skip the line and walk out.

"Retail is going through this existential crisis," Gartner retail analyst Robert Hetu told CNN Tech. "There's a need to eliminate many of the manual processes that retailers just lived with for decades."

McFarland, M. (Sept., 2107) CNNTech.

<http://money.cnn.com/2017/09/15/technology/jobs-robots/index.html>

In Great Britain, Ocado's new warehouse has thousands of robots zooming around a grid system to pack groceries. The thousands of robots can process 65,000 orders every week. They communicate on a 4G network to avoid bumping into each other. Is this the future of retail? , [Tech Insider](#)

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In Walmarts across the country, Bossa Nova robots, in California, are scanning bar codes and prices during the open hours. They are monitoring what is on the shelf and what needs to be reordered to fill the shelves. They can catch if price tags are missing, as well.

This is the beginning of a change in what types of jobs are disappearing and what is possible with automation. [Rich DeMuro](#)

Published on Mar 22, 2018. YouTube.

Meanwhile, as many as 7.5 million retail jobs are at risk of automation in the next decade, according to a [study](#) from financial services firm Cornerstone Capital Group.

By the year 2025, machines will be performing 52% of all the office tasks currently being performed by humans, [World Economic Forum study](#)

By 2021 Amazon will be opening 3000 cashierless stores around the country.

The impact of a better-educated population is not immediate, as it takes time for students to finish their education, to enter the workforce, and to realize their full potential. Therefore, the authors have discounted future gains to their present value, so that any near-term gains are given more weight than gains in the more distant future. The authors' projections also account for interstate migration and foreign immigration, as well as the gradual improvement of workforce skills over time. [Getting Schools Ready For the World, Will](#)

		<p><i>Richardson Educational Leadership, December 2016-January 2017</i></p> <p>“While people still outperform robots on a range of tasks — lifting objects of various shapes and sizes, for example — economists predict that JD and other ecommerce businesses are leading a shift that will displace millions of workers worldwide in retail and manufacturing”. <i>He is one of the only humans at work-and he loves it.</i> D. Paquette. The Washington Post. September 10, 2018.</p> <p><i>The impact of a better-educated population is not immediate, as it takes time for students to finish their education, to enter the workforce, and to realize their full potential. Therefore, the authors have discounted future gains to their present value, so that any near-term gains are given more weight than gains in the more distant future. The authors’ projections also account for interstate migration and foreign immigration, as well as the gradual improvement of workforce skills over time.</i></p> <p><i>Getting Schools Ready For the World, Will Richardson Educational Leadership, December 2016-January 2017</i></p> <p><i>Reports suggest that 47% of people employed in the US are at risk of being replaced by machines and 35% of jobs in the UK may similarly be threatened – with even higher threats in developing countries, with two thirds of jobs at risk of being automated. (Gray, Richard, May, 2017. The Future is Now. http://www.bbc.com/future/story/20170522-how-automation-will-affect-you-the-experts-view</i></p> <p><i>“For all the talk of technologies such as artificial intelligence and robotics doing away with the human element in corporate life, well trained human beings are still an essential ingredient. In fact, if the current skills gap remains unplugged, by 2030 the world will see “tens of millions of unfilled jobs and trillions of dollars in unrealized revenue,” according to a new study by global consultancy Korn Ferry. The shortages could also change which countries are dominant in specific industries and force organizations to move their headquarters and operational centers to locations where they can find the talent they need. One solution: for companies to take a bigger responsibility in training people out of school. The research examined the gap between future talent supply and demand for the years 2020, 2025 and 2030 in three broad industries: financial and business services; technology, media and telecommunications; and manufacturing. In the United States, according to the report, the skills deficit will be come to the forefront by 2020 and become “significant” by the year 2030. The financial and business services sector, which makes up a disproportionate amount of the American economy, will suffer the worst by then, experiencing a talent shortage expected to exceed 1.2 million workers and generating a shortfall of an estimated \$436 billion.” Skills Deficit Will Imperil U.S. Economy by 2030. D. Schaffhauser, 05/23/18. The Journal.</i></p>
	<p>The Economic Argument</p>	<p>If students leave schools without the skills that allow them to be successful in a competitive economy, we are doing them a disservice. We could be developing talent.</p> <p>Amazon's well-publicized search for a second HQ site is all about talent: Amazon turns over about 50% of its personnel in a year, according to an analysis Plucker read a couple weeks ago. Fifty percent! They are going to build the new facility somewhere with</p>

		<p>ready access to talent. Which is why 3 of the 20 "finalists" are in the DC area, and another 3 are in the NYC region. And consider the classic late 90's example of Microsoft's Vancouver research facility - they were very clear that they put it in Canada because they couldn't get enough talented people in the U.S., both due to a general lack of talent and restrictive immigration policies. Talent matters! And business leaders are looking for talent.</p> <p><i>"A November 2017 report from global management consulting firm McKinsey on the effects of automation on <u>jobs, skills and wages</u> for the period ending in 2030 estimates that fully 50% of current work activities are automatable by technologies that have already been tested and found effective. The report predicts that in 60 percent of occupations, at least one-third of activities could be automated. The report expects 400 million to 800 million people could be displaced by automation in the next 12 years, creating a challenge potentially greater than past historic shifts, at least in the modern era". Will Robots take your job? Humans ignore coming AI revolution at their peril. AI aims to replace the human mind, not simply make industry more efficient. Subhask Kak, February 07, 2018. NBC NEWS/</i></p> <p>Our research also indicates new thinking and practices are needed to ensure students develop both the cognitive and social-emotional skills necessary to succeed in their personal and professional lives. While the class of 2030 will need deeper cognitive skills in priority areas such as creativity and problem solving, social-emotional skills such as relationship building, self-awareness, and self-recognition will be increasingly important, since they not only support academic learning but also promote well-being. To meet these needs, technology will play an increasingly critical, complementary role in how students learn and how educators support them. <i>The Class of 2030 and life ready learning: The technology imperative. Holzapfel, B. 2018. Microsoft</i></p> <p>The workplace is changing. Automation will impact low paying service type work. "If there is little change in the lives of minority students and their families, and the possibility to move up economically is blocked by poverty and other new arrivals, their contributions in the form of tax revenue will be limited. With a growing population that tend to be at the bottom of income levels and they and their children want to become wage earners that will lift them out of those low levels of family income, their income will be measured by the education that prepares them for jobs not yet invented. Teaching them from K-12, the skills within this legislation will better prepare a generation of high-end wage earners to be contributing members of our society. Machines will change jobs, but they won't fully take over from humans. The technical feasibility of automation is best analyzed by looking not at occupations as a whole, but at the amount of time spent on individual activities, and the degree to which these could be automated by using technology that currently exists and adapting it to individual work activities. Overall, we find that only about 5% of <i>occupations</i> could be fully automated by adapting current technology. However, today's technologies could automate 45% of the <i>activities</i> people are paid to perform across all occupations. What's more, about 60% of all occupations could see 30% or more of their work activities automated." <i>Fortune Magazine, JAMES MANYIKA, MICHAEL CHUI, and MEHDI MIREMADI July 11, 2016</i></p>
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	<p>The Economic Argument Expanded</p>	<p>Minnesota reports a wide discrepancy in family income between households in Minnesota. Median household in some places white households over twice that of black households in Minnesota. Family income impacts spending by those families. Unless we can impact earning potential, that trend will continue. We know that spending is more limited in households with little disposable income. And spending results in greater tax revenue. These jobs are the least likely to go to robots</p> <p>Between tax revenue attached to earnings and the tax revenue from other spending on necessities, as well as, luxuries, government revenue will negatively impacted. That negative impact will affect government spending on infrastructure, social services, medical services, and education.</p>
	<p>Is College Right For Every High School Graduate?</p>	<p>The changing population who will occupy our schools will be little different in their expectations than their white counterparts. College will be a goal. With the skills learned in those twelve years of training with high levels of cognitive tasks this legislation supports, these students will be better prepared for the rigor on high stakes classes, like, AP or IB course work and for the college experience that follows. Hispanics, which is the majority of students of color, will be entering our schools in greater numbers. They will be looking at college. <i>Hispanics are making big inroads in college enrollment. In 2014, 35% of Hispanics ages 18 to 24 were enrolled in a two- or four-year college, up from 22% in 1993 – a 13-percentage-point increase. That amounted to 2.3 million Hispanic college students in 2014. By comparison, college enrollment during this time among blacks (33% in 2014) increased by 8 percentage points, and among whites (42% in 2014) the share increased 5 points. Among Asians, 64% were enrolled in college in 2014, a nearly 9-point increase over 1999 (no data are available for Asians before 1999).</i></p> <p><i>The pay gap between college graduates and everyone else reached a record high last year (2013), according to the new data, which is based on an analysis of Labor Department statistics by the Economic Policy Institute in Washington. Americans with four-year college degrees made 98 percent more an hour on average in 2013 than people without a degree. That’s up from 89 percent five years earlier, 85 percent a decade earlier and 64 percent in the early 1980s. (Is college worth it? New data says, Yes!. Leonhardt, D. New York Times, May 14, 2014.</i></p> <p>But not all students will be college bound. Despite the opportunity of of the preparation for the college experience, it may not be the target for everyone. Community college, trade schools, specific trade preparations may be the target and the kind of skills training these students would experience K-12 would prepare them, as well.</p>
	<p>Questions of Equity and Equality</p>	<p>Current analysis reports 944,000 students divided between public schools and charter schools. Yet we still have less than 125 of the 350 school districts across the state with gifted programs. But even that number could be challenged. I have been working and advising folks who attended one or both of the fall workshops. In one district that MDE is counting, the would-be coordinator, with little background in gifted education, but given the charge, prepared a proposal for a modest program. In another district the gifted program in a northern district had hired a gifted specialist with no background</p>

		<p>in gifted. She was charged with starting their gifted program with directions to establish an AP course in the high school. In neither district was a program established. In Forums conducted around the state coordinators report little support for their gifted students. In one district of over a 1000 students, a retired coordinator is now being paid a minimum salary for identification and programming is funneled through Community Services and parents pay for the programming. In another district gifted services are provided for 30 minutes a week. While we know gifted students around the state are waiting to learn.</p>
	<p>What is the Response to the Challenge of Money Spent?</p>	<p>Why \$39 PPU? As we began this effort we recognized that the \$13PPU had not incentivized districts to embrace the "May-Must" mandate. The language of the legislation does not require districts to spend the \$13 PPU as intended. Too few districts have chosen to bring their gifted programs into reality. We recognized that programming for an effective gifted program requires resources not always available in many districts. So tripling the funding becomes that incentive to provide a gifted program. If you wanted to offer your gifted students an opportunity to participate in academic competitions, costs of memberships, materials, registrations, and coaching expenses would quickly exhaust the available funding in the current law. If you were a school of 1000 students, about 100 students would be identified for gifted services. <i>Destination Imagination</i> allows 7 team members per team. You could be funding 12 teams. But if a third of those students wanted to learn more about programming you might consider, the <i>Bit Coding Robot</i> at \$55 a piece or <i>VEX Robotics</i>. Placing 2 young gifted kids with on Robot or a VEX robot, your district costs might be around \$1000 for each pair of students. But if you wanted to give all 30 kids their own Robot, your costs would rise dramatically. To bring <i>CUE</i> robots for coding and programming learning into a program, at a cost of \$200 each, would challenge most coordinators to underwrite the opportunity for their students. The \$13 PPU is not sufficient. The \$39 would allow districts to ramp up their programming to serve their gifted students, while enriching the learning for all other students teaching them 21st century skills.</p> <p>The dollars could become a negotiating point: But the amount also encourages by in by the districts because of their current financial condition and opposition.</p>
	<p>The Legislation</p>	<p>The legislation's intent is to be more inclusive in identification (universal screening) and to better prepare all students, including the minority students, for a future that will be much different than what we faced and our children will face. The language which would mandate all students to be taught throughout their school experience, critical thinking, creative thinking, problem solving and inquiry learning, along with learning how to work collaboratively. These are skills colleges expect of their incoming students and what employers demand in the hiring they do each day. Teaching students these skills throughout K-12 would be mandated in the legislation.</p>
	<p>How Do We accomplish this effort if Legislation is implemented?</p>	<p>Once initiated, a district, through planning and support, could set aside a late summer series of days to approach this task. For 2.5 days a district could introduce the skills of Critical Thinking, Creative Thinking, Inquiry Learning, Problem Solving and Collaborative</p>

		<p>Learning in a professional development experience for their teachers.</p> <p>The second half of the week could be teachers, working in teams, to identify where these skills are already being taught in the curriculum and looks for ways to enhance the curriculum and fill in the gaps with additional and different practice with those skills. Districts with comprehensive programming could jump right in and be rewarded with the full \$39 PPU.</p> <p>But think first on implementation around the state. Another implementation strategy would be stage the implementation over a three-year period. In the first year district leaders could indicate to the state their intent. Year one, train the teachers K-12 in the strategies and receive partial funding increases. Year Two, spend PD days determining where these skills are already taught in the curriculum and add additional learning experiences focused on the skills where there are gaps in the curriculum. Another increase in funding follows. In Year Three districts would be begin implementing the enhanced curriculum and funding would be set at the \$39PPU. There could be other configurations. But the MDE would need to monitor compliance to the rule.</p>
	<p>How might the legislation impact be measured?</p>	<p>CogAT, NNAT, I-Excel (is a new online, above-level test for high-ability 4th-6th graders), Torrance Test of Creativity, Yanpiaw Creative-Critical Thinking Styles Test. If schools employed <i>Schoolology</i>, teachers and districts could track all records efficiently and accurately.</p>
	<p>What would be the Legislation's Impact?</p>	<p>This is a long-term effort that requires sustained effort on the part of district leaders and teachers along with patience from parents. We would be changing practice and learning in schools.</p> <p>More students will be identified for gifted programs but those numbers will not vary too much. While additional students of color or disabled students would qualify for gifted programming through Universal Screening, the number will not change dramatically. Yet, we believe that all students will benefit from a focused attention on the skills detailed in this legislation.</p> <p>A student given ample experience applying the skills of creativity, critical thinking, inquiry and problem solving, along with how to work collaboratively during their K-12 learning, those students would be better prepared to take on higher paying jobs that had been created after low paying jobs had been replaced through automation. The additional dollars would encourage districts to have proactive counseling for students at all levels. Social Emotional Learning (SEL), will enhance all students to be better prepared for working with others in the emerging workforce.</p> <p>In a recent conversation with a city administrator, I told him about this legislation. He emphatically told me the local manufacturing business that had moved into their city were consistently challenged to find a workforce prepared for the type of prepared worker needed for this high technology labor. He volunteered to testify during the next hearing.</p> <p>Because of open enrollment, districts, especially those along the narrow corridor of population from St. Cloud to Rochester and their near by neighbors, there exists a competition for students who bring</p>

		in additional revenue. Strong gifted programs that exist within that corridor may resist the mandate and additional dollars because they may lose students. But because of their long history of programming for gifted students in their districts, they would be better prepared to respond to the mandate, refining and expanding their offerings to hold on to their out of district students.
	How might this initiative be supported and what infrastructure currently exists?	<p>Hamline University offers an online gifted certificate program throughout the school year. Program completion prepares an individual to effectively guide development and coordination of a gifted program. Four hundred graduates both working and retired could serve as experts available to provide guidance in adapting learning for all students. This cadre is well prepared and knowledgeable. St Mary's College has recently established a program. Once the legislation is implemented other institutions will join in the efforts to better prepare teachers for serving gifted students and all students</p> <p>Leadership from the MEGT Board as consultants to schools across the state would be available</p>
	Collaborations	DFL Disabilities Caucus, ED Allies: Daniel Sellers, NAGC: William Knutson. Ted Kolderie, TNTP, Senior Fellow, Center For Policy Design
	What could Be MDE's involvement?	<p>MDE could provide a variety of services to support this mandate. Statewide purchases of on line tests would ease some of the costs for districts. MDE would also have access to those test results for research purposes.</p> <p>MDE and MEGT, collaborating, could target PD around the state that would better prepare districts for the change.</p>