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To: Rep. Brittany Pettersen – House Education Committee Chair

From: Elaine Menardi

Re: HB-1289 and HB-1291

Cc: Rep. Pete Lee; Rep. Janet Buckner; Rep. Justin Everett; Rep. Rhonda Fields; Rep. Alec Garnett; Rep. Paul Lundeen; Rep. Dominick Moreno; Rep. Kevin Priola; Rep. Jim Wilson; Rep. JoAnn Windholz

Dear Rep. Pettersen:

I apologize for not being here in person to present this testimony. As a Colorado Educator Voice Fellow, I am keenly attuned to the work you and the committee do for the education of young people and I wanted to offer these stories for consideration as the debates begin on HB-1289 and HB-1291 regarding incentives for career development course work and technology education in public schools. I am writing in support of both of these bills and encourage you and the committee to pass each for the benefit of Colorado students.

I am a *teacher-in-the-trenches* in the small rural school district of Yuma. Our northeastern community of 3500 people has one elementary school, one middle school, one high school and is home to about 750 K-12 students district-wide. The primary industries in this part of the state are farming and ranching and a strong majority of students intend to focus their careers in sustaining long-standing family businesses.

I teach math to 7<sup>th</sup> and 8<sup>th</sup> grade students. Before that, I was the K-8 School Counselor and the Gifted and Talented Coordinator for the district. As you know, school counselors serve the social-emotional needs of students as well as academic and career counseling. I have extensive experience and knowledge of the skills pathways available for students to create successful futures, all of which are at the heart of each of these important bills you are discussing.

Earlier this month, our middle school held student-led conferences—a modern version of the traditional parent-teacher conferences. Here, students take the lead in presenting a portfolio of

school work to their parents. It is a shining opportunity for young people to take ownership of their learning and showcase their hard work in the classroom. I had very difficult conversations with three families, not because they have challenging students, but because they have *outstanding* students.

I had to tell these parents that this school district is not going to be able to keep up with the educational needs of their high-achieving children—that they need to begin now to find additional resources to further their children’s love for learning to set them on a course for entrance into high-level institutions and career fields.

The issues at hand are two-fold: lack of technology resources and lack of technology-qualified educators. We have neither. Entrusted with the task of preparing students with relevant 21<sup>st</sup> century skills—creativity, critical thinking, collaboration and communication—this district will fail to give students high level learning opportunities. We are in a crisis.

The prevailing mindset is that there is no need for technology education or career development courses because this is “just a farming and ranching town.” But in fact, technology has transformed the agricultural industry such that computer science and mid-level vocational skills are a necessity anymore, not a luxury. Tractors and combines are supercomputers on wheels maneuvering fields using GPS signals while dairy farms and feed lots operate 24/7 with a precision dictated by mega-machine computers. Even in the quiet, bucolic prairie of eastern Colorado, students need access to high-tech STEM skills and quality vocational certification to have a chance at a prosperous future on their own farms and ranches.

For students who aspire to careers in the larger world, computer science skills are minimal prerequisites for any post-secondary educational institution. Gone are the days of classic paper note-taking, turning in hard-copy assignments or communicating with professors during scheduled office hours. Technology increases our capacity for communication across any venue, particularly in the education world. Teachers and students have unprecedented access to content *and* to each other. Yet we have no comprehensive guidelines to educate young people how to effectively use these tech tools.

Colorado is home to many advanced industries with roots in science, technology, engineering and mathematics and therefore, employs tens of thousands of workers who require these skills. There is a huge talent gap that continues to grow annually because schools like mine do not spark student interest towards these careers in the early years of education.

Consider for a moment this idea: *Every student is a STEM student.*

That is not to say that every student should choose a science career or that the arts have no place in schools. No.

*Every Student STEM* means that every young person in our school system today is a digital native—they have never known a world without internet. Everything about their lives has involved some form of technology and many educators believe this has profoundly changed the way children think, learn and process information. All their lives, these children have been developing a scientific, engineering mindset of logical reasoning and sequential thought processes to navigate even the simplest applications.

Witness a 2-year-old on a smartphone or iPad and you will see a young brain growing neural pathways through a trial-and-error process playing a game. This is a STEM student. This child will grow up in a world surrounded by rapidly-evolving technology and digital devices that will require a deeper knowledge base of STEM skills. Educators tend to hold fast to a stereotype of a traditional STEM student, but any young person who wants to keep up with his or her peers will continually develop STEM skills to learn a new smartphone app or video game. This is the inherent nature of a tech-based world.

We absolutely need modern technology education in public schools, crafted around a rigorous set of computer science standards. Keep in mind that this must be more than simply teaching and assessing mastery of content as we do in core academic subject areas. The whole of technological advancement evolves faster than any individual can keep up with and will be even harder for an institution to pace.

Digital natives are especially adept at revealing the unintended consequences of discovery using technology. Any set of computer science standards needs to be a living, breathing curricula that must remain flexible, adaptable and agile if it is to hold value for the future. The resource bank described in the bill must be created in and of technology itself, i.e., Wikipedia-style, allowing contributions from educators and students as well, otherwise it will quickly become outdated and irrelevant.

Computer science programs and courses need highly qualified teachers who have expert skills. Most of today's educators are digital immigrants, meaning they were not exposed to technology at an early age and are likely less intuitive when it comes to learning new technologies. This would be the equivalent of speaking a different dialect in terms of learning and adopting technology. For example, a digital immigrant may prefer to print out a document and edit with pen in hand rather than editing onscreen.

The division between digital natives and digital immigrants is not hard and fast—there is much crossover in both directions—but the classification is palpable and distinct in education. Educators face a daunting learning curve in the age of digital technology and need to run fast just to stay one step ahead of their digital native students. Because technology evolves so quickly, educators are in a constant state of professional development to keep pace. Grant-

funding for teachers to learn these skills would be a tremendous benefit and creates a viable pathway to channel qualified teachers into school computer science and technology programs.

All of this paves the way for our education system to focus more directly on creating *Idea-Economy students*.

We have been walking the road of public education for more than 300 years, and even though the face of education has changed many times, the fundamentals remain the same. We have been producing information-economy graduates. We assess and graduate students based on what they know. We hold up knowledge as the primary raw material and source of value: *Knowledge is King*. But knowledge has changed in this digital era. How we get knowledge has changed and how we use knowledge has changed. Businesses today need employees who can discern what knowledge is relevant to a situation and then assemble facts to create solutions to problems. These are idea-economy workers.

Information economy means: *"You hire me for what I know."*

Idea economy means: *"You hire me for what I can do."*

This is the heart of the education reform revolution at hand. I would invite you to read further and join the conversation on June 4 at Wings Over The Rockies Air and Space Museum for *edOS: A New Operating System for Education*:

- The Future Demands Idea Economy Students: <http://gettingsmart.com/2016/01/the-future-demands-idea-economy-students/>
- Confessions from DarknetED: <http://gettingsmart.com/2016/03/confessions-from-darkneted/>
- edOS: A New Operating System for Education: <https://neversummerdschool.com/>

This is why we have a talent gap, not only in Colorado, but in many other states as well. We are all competing for the top graduates from vocational schools and universities who can demonstrate mastery of mid-level industry job skills and problem-solving abilities. These are the workers that our digital future demands.

If we could facilitate a certification process for high school students to gain marketable skills while in school, drop-out rates would likely fall, graduation rates would rise and businesses would have the benefit of hiring local employees who would be more inclined to establish long-term careers in Colorado. Career development course work in high schools would benefit all the

stakeholders, most especially the students who want to pursue jobs and apprenticeships directly after high school.

The career development pilot program in HB-1289 would open a door for school administrators to give students more opportunity for future success. Obtaining an industry-recognized skills certification while earning high school credits is akin to the education models in other countries which have proven to be effective and sustainable for individuals and communities leading to economic growth and stability. We have a chance towards closing the talent gap when we focus on giving students the skills they need and want.

Business leaders use two keywords to characterize this way of working: *disruptive* and *agile*. *Disruptive innovation* means looking at “how we’ve always done things” through a new lens and creating a new market. *Agile* means we are willing to let “how we’ve always done things” shift and grow quickly and easily into something new that will be more effective.

These two bills give me hope for my students that education leaders are ardently seeking ways to help them succeed in the future. The original intent of the founders of public education was to train and prepare workers for factories during the Industrial Revolution. The entire world has evolved rapidly since those early days and this post-modern digital era pushes all of us at even faster speeds.

When I met with those parents during conferences, I felt like a double agent. I exposed a hidden truth that everyone knows but is unwilling to admit out loud. As a teacher, I felt a moral obligation to let these good families know what is coming and what they will need to do to help their children excel throughout their school years. If I were in their shoes, I would want someone to tell me the hard truth.

These two bills and others like them show students and parents that we are putting their best interests at the front of our work in education reform, that we are as much invested in their futures as they are. I urge you to pass both bills to create new pathways for the young people of Colorado.

Please feel free to contact me if you would like to continue the conversation.

Thank you for your time, energy and thoughtful consideration.

Sincerely,



Elaine Menardi