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RE: HB 5463 Support

Ever since Bill Gate's now infamous words that "everyone should learn to code" the United States has seen an explosion of coding resources, companies and learning models to support coding as a necessary skill. It is a necessary skill because computer science encourages students to be problem solvers that exemplify creativity and critical thinking!

Companies such as code.org, CodeAcademy, Microsoft and Google have ventured into a very public mantra around learning to code. Google's CS First is an initiative the State of Michigan supports through the efforts of the Michigan Film & Digital Media office.

These companies have driven the development of coding applications for education experiences in programs like FIRST Robotics. They have also led to innovative coding environments such as Minecraft, Lightbot, Scratch, and Tynker, while generating increased participation in certification programs built on job specific languages for CNC, PLC, CAD and other programs.

Code.org's Hour of Code program now has hosted nearly 200,000 events with over 100 million participants in 196 countries around the globe. The U.S is home to 71,116 Hour of Code events and Michigan is home to 1647 of those official events, which ranks in the top 10 nationally.

There is also burgeoning effort to support subgroups in coding as Girls Who Code, Black Girls Code, Ladies Learning to Code and HackerYou have all come along in recent years. Michigan is home to this movement through Grand Circus, a coding boot camp in Detroit, that is striving to fill the over 10,000 vacant IT related jobs in the region.

Continuing to equip today's students with the skills necessary to compete for tomorrow's jobs is the most important layer off the coding discussion. The clear evidence shows that coding capable individuals have more job opportunities that pay more and are a key to our nation's success.

There are nearly 150,000 computing related jobs open in the US, according to National Bureau of Labor Statistics. In California alone there are 87,000 computing related jobs available at an annual salary value of nearly \$10 Billion dollars. This number is astronomical at first until you consider that the average job in Computer Science field pays nearly \$31,000 more than the current average salary in Michigan (\$76,000 vs. \$45,000).

I encourage the committee to visit the compelling Vital Signs and STEMtistics for Michigan as compiled by ChangetheEquation.org. These estimates indicate that computing related jobs will grow by 12% between now and 2024, while regular job growth will be at 6%.

Michigan is not immune to a shortage of qualified candidates for these jobs, as nearly 14,000 computing related positions remain unfilled in Michigan. This number is more daunting knowing that only 1600 students graduated with Computer Science Degrees in 2014 from Michigan College & Universities. Only 15% of those graduates were women.

This is not limited to the post-secondary institutions. In 2015, 103 Michigan high schools offered AP Computer Science and less than 1,000 Michigan High School students took the AP Computer Science exam. The issue is more complex when considering that less than 140 students were female and only 36 students were identified as Hispanic or African-American.

While many of these opportunities seem to be part of a national rhetoric around the necessary skills to have access to the computer jobs of the future, they are also at the heart of Michigan's students becoming globally competitive members of tomorrow's workforce.