

Nevada Manufacturers Association
963 Topsy Lane Ste 306-182
Carson City, NV 89705-8417
775-882-6662 / cell 775-771-8550

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TO: Mo Denis, Chair, Legislative Interim Education and Cmte Members

FROM: Ray Bacon

SUBJECT: Your meeting on CTE programs

This is perhaps among the most important issues this panel will deal with during the interim. CTE schools and programs work and they work for a broad spectrum of students across a wide range of economic conditions. In many cases they open the door to college and careers in a comprehensive and economical way. Certainly not all, but clearly the majority are focus on the jobs either in Nevada or expected to be in Nevada. Because of the close link between CTE programs and jobs and careers, the programs took a hit in the peak of the recession. The demand now is the greatest ever in this state. We suggest the challenge to you is to ramp these programs however you can with some level of focus on those prone to drop out or fail to graduate. Engaged CTE students graduate and routinely become productive citizens.

We have some level of competition between the High School and College CTE programs. We need much more cooperation than competition given our near full employment current situation. The college and CTE high school programs seem to find issues with the math skills of those arriving at their doors. Marc Tucker's comments from your last meeting were clear the problem is widespread. The NCSL study and report provided by Senator Woodhouse is a challenge to Nevada. The employers in this state need the volume of CTE skilled output and we need to agree our numbers headed straight to four-year college programs are limited.

In the last few years the cooperation between 9-12 and 13-14 systems has improved with shared students, equipment and facilities. Six years ago, a student receiving his HS diploma and a AAS degree at essentially the same time was a rare occurrence limited mostly to Nevada State Charter High School and the High schools on the Community College campuses. Now the number grows each year. Those students are college and career ready and have saved thousands of dollars towards the next step in their lives. As a state, that is something to be proud of and yet it is rarely mentioned.

At your last meeting I suggested the idea of some level and type of categorical funding for CTE programs. Many of these programs take equipment and consume more power, than the average school building has available. The equipment needed for the jobs of the future is not cheap although it is truly peanuts compared to what it cost a decade ago. The tax law just passed allows from complete expensing of new capital equipment in the year of purchase or placed in use from now until 2022, then it starts dropping. School need to take the time to get to know business leaders as there maybe some technically acceptable equipment available.

It appears we are headed toward a workforce where most of jobs with require some training or education beyond HS and less than a 4 years degree for at least the near future. Automation, robotics and the related digital second industrial revolution are going to change our world in way we do not yet understand. The nature of work is changing as we enter what many are calling: the second machine age. This is the age in which computers have and will change all facets of our lives much are steam and electrical power once did.

This second machine age means we will need to change the culture to talk with kids about the changing nature of work and what they want to do early and often. They will face a different world we are only beginning to see. Teachers and parents all need to envision what is possible and open their eyes for the endless possibility they will have and possible consequences for missed opportunities. Math, science and computer understanding matter more than ever before.

Finally, I learned about a program called Project Lead The Way (PLTW) over a decade ago. It is not an inexpensive program to start and sustain, but it uses a team approach to create a high school preparation for future engineers. Slowly PLTW engineering programs have been installed in about 13 High Schools around the state. They are truly CTE program targeted at the careers in engineering and the sciences. PLTW later created a Biomedical program aimed at creating future medical professionals and we now have 5 of those in this state. In the last few years PLTW created a computer science program and we have none of those. They are starting a Cyber security program this fall. The college graduation rate for PLTW student is very high and a few don't get the college degree, but routine wind up in related careers. If you really want to move this state forward as envisioned by Marc Tucker in his remarks at your last meeting, then figure a way to get PLTW programs into some of more challenged High Schools. This state needs engineers for this second machine age, we are short of doctors and nurses. We are not producing nearly the number we need with community connections. If Carson City and Douglas county can create and rapidly grow PLTW programs, where are the big counties and why don't you have the answers to this question. The heat is on; Utah has close to 35 PLTW programs in their schools.