WISCONSIN DEPARTMENT OF PUBLIC INSTRUCTION

Tony Evers, PhD, State Superintendent

Wisconsin STEM Summit Welcome and Remarks

August 16, 2010 — Kalahari Resort and Convention Center, Wisconsin Dells

By State Superintendent Tony Evers

Good morning, and thank you Joan Wade for that introduction. Thank you also to the International Center for Leadership in Education and to CESA 6 for inviting me to kick off this summit designed to enhance comprehensive science, technology, engineering, and mathematics education and career development.

We are here to share a vision for STEM education for our students, and what we must do to achieve that vision. Van Walling, executive director of Engineers and Scientists of Milwaukee, is often heard saying the STEM challenge is "increasing the quantity, competency, and diversity of students choosing a STEM-related educational pathway on their way to a STEM career."

First and foremost, I want to emphasize that STEM education includes not only studies in each of the independent STEM subjects (science, technology, engineering, and mathematics), but also opportunities to integrate and apply STEM learning across many disciplines. If STEM education is to make an impact on our economy, we need to link it to the personal aspirations of all students — whether artists or scientists or entrepreneurs — and we need to make it powerful enough to transform communities and improve our quality of life.

STEM education must focus on specific content AND on nurturing students to become creative, innovative, and critical thinkers. Our students must be able to identify and solve problems, to effectively collaborate and communicate, and to become productive members of our increasingly global society.

"Imagination is more important than knowledge," Einstein reminded us, because "knowledge is limited whereas imagination embraces the entire world."

STEM education requires a collective school, district, and community effort in order to be truly successful. It is not the responsibility of one teacher in one classroom at one grade level. It is not one unit of instruction, nor does it belong to only certain specified courses or teachers.

STEM education must go beyond coursework in science, technology, engineering, and mathematics. Schools must recognize the STEM foundation and 21st century skills required in every career and build those experiences and knowledge throughout students' learning.

One huge benefit of STEM education is that it drives learning beyond basic levels of knowledge and comprehension, encouraging students to apply knowledge and skills as they benefit the community around them.

I encourage schools and communities to incorporate STEM into multiple aspects of learning — in and out of the classroom — and to look for collaboration and partnerships with their local business, community, and economic development stakeholders.

And throughout Wisconsin, school districts are moving toward this vision. Here are several examples of Wisconsin's STEM efforts:

- Wisconsin recently adopted the Common Core State Standards in English language arts and mathematics. We have aligned the standards with 21st century skill acquisition. These standards include making sense of problems and persevering in solving them; reasoning abstractly and quantitatively; demonstrating independence; and using technology and digital media strategically and capably. This is STEM in practice: learning broad skills and using them in real applications — making students STEM-ready.

- Academic service-learning is an important element of our STEM practices in Wisconsin. This instructional approach gives students opportunities to increase their knowledge and skills while making positive contributions to the world.

  Through direct application of STEM knowledge and skills in addressing community issues, students are learning to develop important critical thinking and problem solving skills. The scientific process comes alive when students meet real community needs and turn their learning into action. Service-learning gives them more motivation to learn, a greater understanding of how to put their learning to good use, and a sense of democracy in action.
- Wisconsin has in place a process to identify rigor in specific agriculture, food science, and technology education, including Project Lead the Way courses, in order to provide mathematics or science equivalency credit for students who successfully pass them. Through this process, the local school district and our university system recognize the academic standards achieved through career and technical education.
- Like the "common core," a new project is underway nationally to develop a Framework for Science Education. The framework specifically embeds core applied knowledge and skills of engineering and technology plus scientific and engineering practices. This effort has the potential to support and extend STEM understanding, STEM achievement, and STEM career awareness and exploration.

Wisconsin formed a task force on the arts and creativity in education which resulted in a set of recommendations for government, schools, businesses, and communities. Wisconsin also formed the Wisconsin Entrepreneurship Education Task Force that issued a framework to help infuse entrepreneurial skills and competency throughout the PK-12 curriculum. Both of these efforts brought into focus the importance of developing creativity, innovation, and critical thinking, all of which are core elements of STEM education.

- Wisconsin has a STEM Portal developed through the collaborative and mostly volunteer efforts of business and industry partners, educators (prekindergarten through technical colleges and universities), Wisconsin Public Television, and a variety of professional and community organizations. You may explore this growing resource by going to www.wistem.org. We like to consider that site as **"Wisconsin's Source for all things STEM."**
- Technology education instructors are implementing pre-engineering programs, like "Project Lead the Way" and "Engineering by Design" in secondary schools. Wisconsin is the 20th largest state by population in the USA, but is the fifth and soon to be the fourth largest in Project Lead The Way participation.

Of course there are other challenges around STEM awareness, education, and the future. Here are a few questions to ponder:

- How do we help educators see that changing their practices to include more inquiry-based, authentic problem-solving, with cross or multi-disciplinary content, is essential to preparing the workers and citizens needed not just for today but in the future?
- How do we organize schools to support the highest quality project-based learning in many settings and across many disciplines?
- How do we overcome myths, stereotypes, and misinformation about STEM content and STEM careers that lead many students to avoid or ignore the development of critical foundation skills?
- How can we help all educators realize that engineering is just one career field related to STEM — and what we do in information technology, health care, and many other career pathways is just as critical to our future?
- How do we build capacity in our schools by linking universities and private industry with the millions of scientists who could support STEM work?

And those were only a few of the challenges we face with respect to ensuring quality STEM education throughout Wisconsin. It is clear to me that we need to invest in high-quality, systemic STEM initiatives over the next decade if we wish to be globally competitive and create and sustain the "knowledge economy" jobs that are the way of the future.

To make progress, we will have to give up the ingrained organization of our work "silos." Instead, it is essential that we approach "all things STEM" in a more consistent, efficient, and synergistic manner.

In order for Wisconsin, or any state, to be globally competitive in an innovation economy, we must have a reliable talent pipeline producing well-qualified, STEM-competent workers.

I am convinced we have the capacity to design and implement learning opportunities to meet and exceed this goal.

And that is why I am so pleased you are here at this conference. Your participation means we have begun the journey to realize the STEM education vision for our state and nation.

I wish you a most successful and insightful conference and I challenge each of you to return home inspired to act on what you learn here — not alone, but in collaboration with others.

Thank you.

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Tony Evers is Wisconsin's state superintendent of public instruction. A high-resolution photo of the state superintendent is available on the Department of Public Instruction "Media Contacts and Resources" webpage at http://dpi.wi.gov/eis/vm-media.html.