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**Senate Committee on Commerce, Science and Transportation: America Wins When America  
COMPETES: Building a High-Tech Workforce  
May 6, 2010**

**Context:** The Senate Committee on Commerce, Science and Transportation held a hearing on May 6 regarding reauthorization of the America COMPETES Act, specifically related to integrating STEM education across the educational pipeline.

**Testimony Summary:** Witnesses for the hearing included: David Zaslav, President and CEO, Discovery Communications; Susan Naylor, Mathematics Instructional Coach, Wood County Schools; S. James Gates, Jr., John S. Toll Professor of Physics, University of Maryland; Ioannis Miaoulis, President and Director, Museum of Science, Boston and Founding Director, National Center for Technological Literacy; and Tom Luce, CEO, National Math and Science Initiative.

Chairman Rockefeller (D-WV) set the stage for the hearing by remarking on the importance of STEM education programs as a long term investment that pays incredible dividends in our workforce. With authorization of the America COMPETES Act expiring this year, Chairman Rockefeller commented on the need to evaluate progress and to support STEM across the educational pipeline, from kindergarten through postsecondary, as well as in homes and in the media. Ranking Member Hutchinson (R-TX) remarked on the global disparities and U.S. ranking in students attaining undergraduate degrees in STEM fields, and talked about the need to develop K-12 teachers in STEM areas, so that all students have access to teachers that are certified in their subject areas in middle and high school. Ranking Member Hutchinson plans on introducing legislation that would allow and fund colleges to adopt the UTeach program and certify teachers in STEM fields.

- In his testimony, Dr. Zaslav discussed Discovery Communications' efforts to provide digital content to teachers and students, and the need to ignite passion and motivation in STEM subject areas. He emphasized the importance of using technology and digital tools to reengage students and the need to make these tools more accessible.
- Susan Naylor focused her comments on the need to provide professional development for teachers who are of a different generation in order for them to feel confident in teaching math and science curriculum. She emphasized the need for embedded, on-site professional development and the creation of support networks to sustain learning, as well as recommending that the Committee consider providing incentives for veteran teachers to be retrained in their subject areas.
- Dr. Gates, in addition to discussing his personal story for engaging himself in a STEM oriented career, remarked on the power of partnering with government agencies, such as the National Science Foundation, to provide opportunities for students to get engaged. He also discussed the challenge of increasing diversity in STEM fields, and remarked on the gap in teacher effectiveness in K-12 in predominately minority schools as a critical factor.
- Dr. Miaoulis focused his remarks on promoting engineering and technology as part of the core curriculum in K-12 education. He offered three recommendations to the Committee: 1) enact

S.3043 (E2 Innovation Act) as part of the reauthorization of the America COMPETES Act; 2) support NASA's ability to be a leader in engineering education; and 3) support the National Science Foundation's commitment to Education and Human Resource development by providing for a balanced portfolio of research and development funds.

- Tom Luce discussed the work of the National Math and Science Initiative, funded and supported by the private sector to implement activities recommended by the America COMPETES Act. Mr. Luce commented on the success of the AP Incentive Program in helping students take and pass AP exams and providing professional development to teachers in these courses. Additionally, he discussed the UTeach program in greater detail, and urged the Committee to invest and replicate these two programs across the country. Mr. Luce also recommended that non-profit organizations be allowed to compete for grants in reauthorization, to ensure faithful replication and accountability.

**Discussion Focus:** Following testimony, members of the Committee participated in a question and answer session with the witnesses.

- Chairman Rockefeller (D-WV) questioned witnesses on the role of the local boards of education and local superintendents in allocating time and subjects that can be taught. Witnesses remarked by noting that the implementation of the Common Core Standards will provide some consistency across states in subject areas, and that curricular resources will start addressing these standards. Witnesses also noted that teachers will have to be prepared to teach these courses and that too many schools currently do not offer higher standards courses to students.
- Ranking Member Hutchinson (R-TX) asked Tom Luce about data on student performance as a result of teachers participating in the UTeach program. Mr. Luce responded that this data is not yet available, but that grantees will be required to supply that data within a few years. Additionally, Sen. Hutchinson asked Mr. Luce for general recommendations for reauthorization. Mr. Luce responded that STEM teachers need to be trained in different ways, and that preparation of these teachers needs to be funded separately from funding that is geared toward reforming entire colleges of education.
- Sen. Begich (D-AK) remarked on the difficulty in training teachers and providing access to digital content in extremely rural areas. Mr. Luce provided information on the AP Incentive Program that operates virtually in rural schools in South Dakota, with other witnesses providing information on similar programs such as developing virtual science labs, as ways to provide access for rural schools. Sen. Begich also asked witnesses about ways to deliver STEM content and training in areas that have very diverse populations, particularly in areas experiencing language barriers. Witnesses commented on the need to have curriculum reflect the student population they serve, and that many curricular resources around the country have an ELL component.
- Sen. Klobuchar (D-MN) asked witnesses to discuss effective ways to get students motivated to engage in STEM subject areas. Witnesses discussed the need to develop and use inquiry-based materials to help enrich and challenge students, as well as to assist with remediation. At the college-level, Dr. Gates noted the need to open the pipeline by creating a seamless transition between high school and postsecondary. Mr. Luce emphasized that while challenging students and getting them engaged at the elementary and middle school levels is important, there is still hope for high school students as well. The AP Incentive Program increases the AP exam passing rate in high schools, and increases access to these courses for all students.

**Analysis:** Members of the Committee demonstrated a strong interest in improving STEM education as a top priority for reauthorization of the America COMPETES Act and members expressed support and enthusiasm for learning more about the initiatives discussed by witnesses.