

TESTIMONY OF
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Elementary, and Secondary Education

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Chairman Hunter, Ranking Member Kildee and committee members, I am Maura Banta from the IBM Corporation. Thank you for inviting me to testify about IBM's Transition to Teaching Program. I helped to design the program and have managed it since its inception in 2006. My plan is to share with you our experiences and, more importantly, why we think Transition to Teaching is a model that many companies could use to help students develop science, math, engineering and technology skills.

I want to thank the Committee for taking the time to engage in thoughtful discussion about how we might attract more experienced professionals to move into the classroom to share their applied knowledge and experiences with students.

Over the last 20 years, IBM has been one of the leading corporate contributors of cash, technology and information technology services to non-profit organizations and educational institutions across the U.S. and around the world. We have learned that our most effective grants and partnerships are those that focus on IBM's unique offerings – not only our software, hardware and technical services, but the talent of IBMers. We are most successful when we design initiatives to bring the skills and experience of our employees into the classroom so they can interact directly with students, teachers and administrators to provide what we call “smarter education.”

I don't need to review the growing body of research that shows the disconnect between twenty-first century labor market needs and employment

opportunities and the shortage of high school graduates prepared for STEM careers. We all know that the U.S. is falling well behind other countries in the number and proportion of high school graduates who intend to pursue STEM careers. The relatively small number of students who eventually complete their post-secondary education in STEM fields further increases our competitive disadvantage in a global economy.

Clearly, our continued economic growth will require a base of scientists, engineers, and the next generation of innovators. To have the pipeline of science and engineering talent that we will need, we must focus on STEM education beginning at the elementary school level. Then, we must ensure that students in middle and high school are exposed to educational experiences that will stoke their enthusiasm for math, science, and problem solving. We also must maintain high academic standards, and provide students with the rigorous training they will need for the successful pursuit of scientific and technical degrees in college.

Beyond basic math and science, students also will need a range of workplace competencies – including the social skills to work in diverse, multi-disciplinary and global teams; the communication skills to work with customers, clients and co-workers; the ability to be inquisitive and analytical, and to recognize patterns when confronted with large amounts of information; and the adaptability to cope with ambiguity as leaders and innovators.

This is a very tall order. And while there are many components to effective school improvement, one critical factor is staffing our schools with excellent math and science teachers – teachers who have the content expertise, real-world experience, and working understanding of problem-based learning and the pedagogic practice to launch the next generation of innovators.

In 2006 IBM launched **Transition to Teaching**, our own initiative to address the K-12 STEM pipeline issues by facilitating retiring IBMers' moving into science and math education as a way of helping to encourage young people to enter STEM careers. This is just part of our portfolio of education initiatives including those aimed at bolstering early childhood education, strengthening middle school math skills, and designing an innovative grades 9-14 school model that confers both the high school diploma and a no-cost Associate's degree in Technology.

For the IBM Transition to Teaching program, we decided to leverage our greatest asset – IBM employees. Of course, many IBMers have backgrounds in math and science, whether they are currently working in software development, research, consulting or management. IBMers also are great volunteers.

Our research shows that most IBMers volunteer in schools – whether teaching hands-on science classes during National Engineers Week, serving as one of our 6,000 eMentors who provide online academic assistance to students, leading after-school programs for middle school students, or discussing STEM opportunities on Career Days. IBMers also run EX.I.T.E. camps – which stands for Exploring Interests in Technology and Engineering – for middle school girls to encourage them to pursue math and science careers. These IBMers tell us repeatedly that they have a passion for education, for helping young people, and for giving back to their communities.

At the same time that we are seeing a national decline in math, science and engineering education and competency, we also are witnessing another trend – the graying of the American labor force. With a large number of employees approaching the traditional age for retirement, but eager to continue contributing in their communities, IBM is reaching out to mature, experienced members of our workforce who are interested in a second career in teaching.

Many long-term IBM employees are already thinking about teaching as a second career. Others have the exact background and skills needed to strengthen STEM education in our schools, and we want to introduce them to the idea of teaching. We want to encourage all IBMers who are ready for their next challenge to help address the national teacher shortage in math and science.

More than 120 of our most experienced employees have participated in the Transition to Teaching program. Each person chosen for the program is a math or science professional with at least one degree in a STEM field. The applicants are mature accomplished professionals with a variety of IBM experiences. Most program participants have engineering backgrounds, but participants come from all parts of IBM's business. These IBMers also have extensive experience working with children, volunteering in one of IBM's many after-school programs, and with weekend and summer programs in

their communities. As part of Transition to Teaching, they participate in a range of teacher certification programs – depending on their expertise, prior course work, and the specific licensing requirements and available graduate programs in their states.

Transition to Teaching is based on a number of proven methods and protocols. Teachers must have strong, in-depth backgrounds in their subject areas. We focus on IBMers who have Bachelor's degrees or higher in a math or science discipline. Because we believe that IBMers need to learn the craft and skill of teaching, classroom management, and instructional practice to be effective educators, we reimburse their tuition costs for education preparation. IBM provides stipends of up to \$15,000 so those who are transitioning to teaching can take leaves of absence – while maintaining their benefits – to do student or practice teaching for up to one year. It is absolutely essential for individuals to have real-life K-12 classroom experience – to observe good teaching, and then practice good teaching, before taking responsibility for a class of children.

In our experience, at least three challenges must be addressed in order to attract math and science professionals to education, and prepare them to become exemplary teachers. We would encourage policy leaders to focus on:

- 1) The development of standards for the pedagogic and instructional skills and knowledge required and focus only on those education courses that are necessary for teacher certification.
- 2) Assurances that teaching candidates are placed in supportive practice environments under qualified instructors.
- 3) Systems that will provide new teachers with mentoring and peer support during their first two years to ensure that they are able to provide the highest quality education to their students.

Many degree programs in education still do not meet these criteria. First, too many programs include coursework that is neither relevant nor helpful to new teachers, while not providing enough practical, hands-on experience. Degree programs do not always give credit for career-acquired competencies, and often treat experienced professionals the same way they treat first-year college students. We clearly need to develop streamlined

programs that provide second-career teachers with efficient and effective means for entering the profession.

IBM's Transition to Teaching is one such effort. Thus far, 31 IBMers have completed the program, left the company as fully certified teachers, and taken math and science teaching positions throughout the nation. The retention rate for these second-career STEM teachers is very high. They tell us that they love being able to help math and science come alive in the classroom through real-life applications. But we know that a single Transition to Teaching program cannot compensate for the national shortage of STEM teachers.

If an additional 25 large companies established programs similar to Transition Teaching, their combined efforts could provide a substantial number of new math and science teachers. In parallel with addressing the STEM teacher shortage, broader corporate participation in teacher transition programs could help raise the reputation of teaching as a desirable career. However, the private sector alone cannot solve this problem. It will take improvements in teacher training and professional development programs in every school district. In addition, school districts will have to change the way they recruit, place and supervise teachers to retain the best professionals.

In the meantime, both new teachers and their principals are commenting on the success of the IBM Transition to Teaching program:

“This is my dream! To become a math teacher.” – Gary, who teaches 8th grade math in New York

And from a principal who supervises a Transition to Teaching graduate: “Jennifer has had an outstanding beginning as a teacher. Her experience as a mother and a former manager has enabled [her] to nurture and advance middle school students at this critical crossroad. She is exuberant and enthusiastic about math, and makes it come alive for her students. Undoubtedly, her professionalism comes from her IBM background, and her enthusiasm is contagious. I am very grateful that IBM's Transition to Teaching Program helped to add Jen to our team.”

Transition to Teaching participants achieve their career aspirations while making significant contributions. IBM's preparation, financing, and benefits support smoothes the transition. The program also benefits IBM by enhancing the company's ability to recruit and retain top talent, and by reinforcing IBM's reputation for outstanding corporate citizenship. And in the long term, IBM's investment in Transition to Teaching strengthens our nation's economic competitiveness by helping to ensure a full pipeline of emerging STEM professionals.

IBM has shared the Transition to Teaching model with several companies that have replicated its principles. We also have worked with the State of California EnCorps STEM teacher transition and training program to share our best practices. Meanwhile, IBM continues to seek opportunities to influence other companies to embrace and deploy the Transition to Teaching model.

To attract new talent to the teaching profession, we must take steps to open it to qualified persons at all stages of their working lives. This will require public-private partnerships that enable the recruitment of new members of the profession throughout their careers. We should give professionals in many industries the opportunity to develop transferrable skills as part of their preparation to become teachers. Only in this way will we facilitate faster movement into the profession for those with the training, dedication and expertise that America desperately needs in its classrooms.

Thank you for the opportunity to provide testimony about the IBM Transition to Teaching model. I look forward to fielding questions on this important topic.