Testimony of

Mike Forster
Chairman
Innovate Mississippi

On

"There's an App for that: Trends in Mobile Technologies"

Before the

U.S. Senate Committee on Commerce, Science, and Transportation
Subcommittee on Communications, Technology, Innovation, and the Internet

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Chairman Wicker, Ranking Member Schatz, and members of the Subcommittee, on behalf of Innovate Mississippi and the Mississippi Coding Academies (MCA), thank you for the opportunity to testify today on how we are bridging the enormous gap which exists between high tech employer needs for entry level programmers and coders and the available resources from our community colleges and universities.

Allow me to tell you just a bit about Innovate Mississippi. Our mission is to accelerate technology and innovation start-ups in Mississippi by connecting them to mentors, service providers and capital. We've helped transform over 1200 ideas into companies that have raised over $170M and created in the neighborhood of 6000 jobs, significantly impacting the economy of our state. We do all of this with a small staff of 6 dedicated professionals and a budget of about $1M per year, half of which comes from private industry sponsorships. Our board is made up of private company executives, entrepreneurs, the presidents of our research universities, the Mississippi Community College Board and the Mississippi Institutions of Higher Learning. I am currently serving a 2-year term as chairman.

In addition to working directly with entrepreneurs, we also focus on building an ecosystem in which innovation and technology-based startups can thrive. It was that part of our charter which lead to the creation of the Mississippi Coding Academies.
In our state alone, there are approximately 1200 open jobs for coding professionals; our colleges and universities produce approximately 250 computer science graduates a year and half of them leave the state for other opportunities. At the national level it is even

more compelling. Code.org estimates there are 500,000 open computing jobs today and only 43,000 computer science graduates to fill them. They expect that number to grow to 1M by 2020. The demands of the digital economy and the burgeoning App industry will only worsen this gap over time.

At the other end of the spectrum are many highly motivated young people who for various reasons, mostly socio-economic, are not able to attend a 2 or 4-year college program. Yet many of them have the basic analytical and creative skills to become coders, ensuring them positions at wages competitive with many college graduates. I've had over 5 decades in the technology business, and my own experience is that these core skills are not predictable based on education or background. Some of the finest coders I've ever known had backgrounds in music or the arts, and, of course, many of them were good at math and science.

So what are we doing about this problem? In the spring of 2017, four board members from Innovate Mississippi became aware of an outstanding program begun by two former C-level executives of a technology services company. Base Camp Coding Academy had been established, cooperatively with private industry sponsors, in the little town of Water Valley, MS, to prove that high school graduates could complete an intensive 11-month program and emerge as full stack developers. The graduates of the entire first class were hired by companies like FedEx and C Spire (which is a large regional telecom company based in Ridgeland, Mississippi) and have begun new and exciting careers in information technology.

With the permission of the Base Camp founders, we took their ideas and approached the Mississippi Development Authority with the idea of expanding the approach geographically within our state. With the whole-hearted support of Governor Phil Bryant, Glenn McCullough, executive director of MDA and Dr. Andrea Mayfield, president of the Community College Board, necessary seed funding was allocated and

two academies were launched in the fall of 2017. Today there are 25 students enrolled and we have firm plans in place to add 3 more classes in the summer of this year. Three other locations are being considered for a June, 2019 launch..

I should point out that the academies are tuition-free. The only cost to the student is the sweat equity associated with showing up for work each day, 5 days a week, for the 11-months that our program requires. We do not provide stipends, and our demographics are worth noting. 50% of our students are women, 80% are minorities; all have high school diplomas and came with excellent recommendations from public school teachers and administration. Only a few had any kind of coding experience before beginning. One of our coders is already employed in a part time job doing customer support in an IT firm and has a full time job waiting upon graduation.

Of course, there are similar programs in other states, notably ZipCode in Wilmington, DE, and CodeCrew in Memphis, TN, and we've certainly gleaned valuable information from their experiences. What we have learned over the past 7-months is that there are certain key imperatives for success:

1. A tight partnership with private industry, the potential employers of our graduate coders, and, ultimately, the financial backers of future classes.
2. The academies should be run more like a workplace than a classroom. We want our coders to be acclimated to the workplace, to be team players, and self-motivated. We believe in learning by doing, and 90% of instructional time is spent coding.
3. We believe that "soft skills" are as important as the coding skills. A significant portion of the curriculum is about developing the personal skills and work habits necessary for success.
4. Last but certainly not least, our programs have been successful because of the determined effort of volunteer "champions" who found the required facilities, hired top notch instructors, and managed the entire start up process.

Let me briefly expand on each of these 4 imperatives.

Partnership with Private Industry is Imperative: Each Academy site must have fully engaged industry partners. These partners are the "secret sauce" of our approach, as they assure that the skills being taught are those that are required in the workplace. Given the short life cycles of new techniques and methods in coding, continuous involvement of industry partners is a requirement. Specific roles for our partners include assistance in student coder selection, curriculum guidance, guest instructors from within their IT staff, and systematic interaction with the students to reinforce the "real world" aspect of our training.

It is important to note that these interactions are supportive of our emphasis on soft skills. As the student coders mature, we anticipate short-term internships and job shadowing to be increasingly a part of the program. Both parties gain from this interaction: the employers can better assess the skill levels vis a vis their specific needs. The student coders gain a better awareness of the employer's needs.

Group visits to company sites allow student coders to gain the big picture of the employer's business objectives and better understand how information technology supports those objectives. A recent visit by both academies to the US Army's Engineering and Research Development Center (ERDC) in Vicksburg, MS, was an outstanding success for both parties. Students spent the better part of a day moving from one location to another in small groups, directly observing the work being done. It is significant to note that ERDC for the first time has the ability to hire non-college graduates into their entry-level jobs.

The overall message is that our industry partners are a critical success factor to the coding academies. It is a distinguishing characteristic to our approach at preparing these young men and women for careers in information technology.

Learning Should Occur in a Workplace Environment: We believe that the approach developed by Rich Sun, the champion of our Jackson, Mississippi Academy, is another distinguishing characteristic. Rich decided early on that the learning should take place in a workplace, not a classroom, type environment. We have equipped the students with laptops and furniture typical of what they will find when employed. Their hours and holidays are patterned on business hours and holidays. They are expected to show up for work on time, stay on task during the day and clean up after themselves before they leave. They work in small groups and are encouraged to help each other with their assigned projects.

Soft Skills as Important as Coding Skills: Heavy emphasis is placed on working cooperatively in small teams, sharing of ideas, and peer level reviews. Soft skills (work habits, punctuality, interviewing skills, dress codes, etc.) are emphasized as much as technical coding skills. At course completion, the coders will have worked in a business-like setting for 11-months. Periodic corporate style performance reviews of each coder prepare them for the realities and pressures of being measured on consistent performance over time.

The Need for a "Champion": In the early stages of a program like this, it is essential that each location has an executive who will act as the champion. It requires bringing together representatives from the school district, the local community college, as well as local employers. Our programs would not have been able to launch without this kind of active management; let me tell you a bit about the guy who got us started in Jackson. Richard Sun is a chartered financial analyst who runs his own investment firm. Sun and Company manages and advises early stage companies. Rich is a board member and former chairman of Innovate Mississippi, and he saw the potential of coding academies early on. He took the lead to develop the Jackson Academy and remains highly active in the program. He managed it like a start up and instilled that mentality into his instructors. He did all this as an unpaid volunteer, but we now have the blue print for what must be done to spin up other locations around the state.

The bottom line is that we have the opportunity to take young people with little hope for anything other than dead end jobs, and provide the means to have a well-paying career. We are addressing the shortfall in programming and coding with highly tailored programs that are employer driven, and we have a model that works.

Let me close by saying that I am not here looking for money today. The success of our Mississippi Coding Academies will be determined by our success in meeting the needs of our industry partners. If we do that well, the future will take care of itself. However, I do believe there is a broader need for programs of this sort to ensure our digital economy doesn't stall due to lack of talent. Strong consideration should be given to incentives, such as tax credits, which would encourage the private sector to invest in alternative types of workforce development, and there should be specific funding for public schools to support the development of programs which will allow young people to begin developing coding skills as early as middle school years. We've got a great example of that today in our Vicksburg-Warren County School District.

Thank you for the opportunity to testify today, and I look forward to your questions.