

**NATIONAL SCIENCE BOARD
SKILLED TECHNICAL WORKFORCE LISTENING SESSION
FLORENCE DARLINGTON TECHNICAL COLLEGE
OVERVIEW OF THEMES DISCUSSED
WEDNESDAY, SEPTEMBER 26, 2018**

On September 26, 2018, the National Science Board (NSB) hosted a listening session at the Southeastern Institute of Manufacturing and Technology (SiMT) at Florence Darlington Technical College (FDTC) to discuss the opportunities and issues faced by the Skilled Technical Workforce (STW) community. Sixty individuals from the community participated in the listening session. Participants included:

1. Faculty and students from educational institutions: FDTC, SiMT, South Carolina (SC) ATE Center, Darlington County Institute of Technology, Frances Marion University, Clemson University, and Trident Technical College in Charleston
2. Industry stakeholders: Sumter Utilities, Hill South, Honda Manufacturing of SC, Cartee-Berry & Associates, Bosch, SCBIO, Apprenticeship Carolina, Talley Metals, Georgia-Pacific (Dixie Cup) Manufacturing Darlington, Nephron Pharmaceuticals, Sonoco, Johnston Supply, and Wyman-Gordon
3. Government: South Carolina Department of Commerce
4. Government Representatives: Director of Economic Development for Rep. Tom Rice (7th district)
5. Non-profits: South Carolina Research Authority and SC Council on Competitiveness
6. Business: Mike Reichenbach Dealership - Ford Lincoln Volkswagen

Below are the key themes discussed at the listening session.

KEY THEMES

- **Stigmas/Barriers in the STW**
 - There is an overarching view that two-year degrees are not as valuable as four-year degrees. In addition, the myth that a four-year degree is the 'only path' to the middle class and a promising career
 - Participants expressed that guidance counselors and teachers may have an unconscious bias towards four-year degree programs because they attended four-year universities.
 - There is a persistent stigma that two-year degree programs/technical colleges/vocational schools are for individuals who cannot succeed at four-year universities (sometimes this negative perception extends to a judgement on the individual).
 - Guidance counselors and parents need to become educated about the opportunities that exist within the STW and understand that different pathways to success exist outside of a four-year education.
 - There is a major misconception about salaries and career potential for two-year technical degrees, which deters students from entering the field and discourages parents from supporting two-year programs.

- **Outreach/Raising Awareness**
 - There is a strong need and desire to raise student awareness about STW career paths and to provide students with more hands-on training opportunities in the K-12 setting.
 - There was a consensus that outreach to students should start before high school. Early awareness and exposure allows students to develop interests and skills in STEM related fields.
 - Students and families need more information on career choices that are available beyond those offered as standard majors at four-year colleges.
 - A participant expressed the need for national campaigns to promote the STW. Some people will not understand the necessity of skilled technical workers and the careers available if they aren't exposed to it from a national perspective.

- **Diversity Disparities**
 - Companies need to be intentional about pursuing non-traditional applicants and aiming for a workforce that mirrors the population around them.
 - When addressing diversity within the STW, participants reported that there is a good amount of ethnic diversity in the STW, but the field lacks diversity in gender.
 - A participant stated that more women are beginning to move into non-traditional areas at his vocational high school, but it has taken a lot of work to encourage women to explore those non-traditional fields.
 - It was expressed that some parents discourage their daughters from entering male dominated fields like the STW.
 - Some women feel uncomfortable in the male-dominated STW, which discourages them from developing or maintaining a career in the field.

- **Policy Issues**
 - The metrics to assess student success is predominantly based on four-year college placement. This plays a role in the continued stigmas surrounding two-year degree programs.
 - There is a need for different metrics for teacher and guidance counselor success and new forms of faculty engagement.
 - Vocational high schools have decreased over the past few decades. New education policies need to be developed to expose students to a wide variety of vocational skillsets.
 - K-12 STEM curriculum needs to be consistently developed and taught in the education system.

- **Retention/Recruitment in industry**
 - Technical colleges are an affordable way for employers to get their employees educated and trained. It is also a good place to recruit new employees.
 - Managers in industry expressed difficulty in recruiting skilled workers. Some of the issues with retention include: the inability for workers to pass required tests, lack of soft skills in the workplace, and an inability for some workers to develop a strong skillset.

- Typically, if companies cannot find skilled technical workers in their locality, they move away.
 - Some companies seek four-year college degree candidates for employment, but discover those candidates have little to no practical experience.
 - A participant reported that some managers often lack STEM experiences and insights, which gives them a very limited understanding of how to properly manage employees.
- **Partnerships**
 - While many leaders in academia, industry and students value apprenticeships, there are still businesses that do not understand the importance and benefits of apprenticeships.
 - In 2007, South Carolina had 800 apprentices across the state and now, in 2018, there are 30,000 apprentices. The Youth Apprenticeship program is also growing across the state with 211 programs in place.
 - Companies should provide more networking opportunities to students and prospective employees to foster continuous relationships within the community.
 - Many four-year institutions in South Carolina partner with and support two-year technical colleges.
 - Apprenticeship Carolina focuses primarily on meeting the needs of industry and students by assisting businesses with creating apprenticeship opportunities.
 - The Advanced Robotics for Manufacturing (ARM) Institute, readySC, and Apprenticeship Carolina are part of the SC network supporting two-year technical education programs to increase student preparedness to enter the skilled technical workforce.
 - Participants agreed that there is a need for more collaboration between industry, schools, and parents to develop and sustain interactive relationships.
 - These accomplishments need to be more communicated to the general public
- **Educational Training & Skills Gap**
 - Students should be exposed to STEM fields at the elementary and middle school level. This can allow them to develop skills and interests related to the field prior to entering high school.
 - There is a lack of innovative and practical activities for students to gain real-world experiences and exposure to STEM related work.
 - K-12 education and technical colleges should recruit experienced skilled technical workers to teach in schools and colleges. To recruit from the STW, these educational systems must be willing to compete with the salaries and wages offered in industry.
 - Participants emphasized the role of guidance counselors and how they play an integral part in connecting students, teachers, and families to technical education programs. Guidance counselors need to become more educated and aware of the STEM workforce to properly educate students and families about different career paths.
 - Students expressed their concern with the workload necessary to work full-time, attend school, and find apprenticeship opportunities that will fit in their busy schedule.
 - Some faculty members have found that students have interests in skilled technical fields, but they often do not possess a strong mechanical aptitude or do not have enough math education when they enter a technical college. As a result, some students

- become discouraged and drop out. ¹
- Clemson University has an ATE Center that works with South Carolina technical colleges to create curriculum specifically for the needs of two-year institutions. This curriculum is currently used in 42 states in the U.S.
 - The South Carolina education system accepts 86 specific classes when transferring into a four-year university. Many two-year classes are not on the accepted list of courses, which could be due to naming conventions as opposed to content.
 - Clemson University has a NSF INCLUDES grant and has created a Runway program that is currently being piloted to help remedy the bridge between transferring from a two-year to four-year college.
 - Industry needs to interact more with the education system—from high school administrators and guidance counselors to college programs—to meet employment needs.
 - Participants expressed that businesses and industry need to engage educators to help inform curriculum and skills taught in technical education programs. Open communication between schools and industry will provide students with curriculum that will better prepare them for the workforce.

¹ Clemson University developed a mechanical aptitude test to baseline students' mechanical aptitude at the start of the program.