

The “T” in STEM: Community College Technician Education Pathways

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PathTech



“T” for Technology: Community College Technician Education

Examples of Advanced Technology Fields



ENGINEERING
TECHNOLOGY



ENERGY AND
ENVIRONMENTAL
TECHNOLOGY



ADVANCED
MANUFACTURING



MICRO AND NANO
TECHNOLOGY

Advanced technology fields emphasize applied learning primarily within community college programs that offer AS/AAS degrees, certificates, licenses and other credentials geared toward preparation for the STEM workforce and to transfer to a four-year university.

PathTech Philosophy

PathTech aims to conduct targeted research on educational and employment pathways into advanced technology degree programs and careers in conjunction with high schools and community colleges.

As the need for a skilled technology workforce continues to grow, understanding pathways to and from technician education programs and the technology workforce is vital to sustain workforce development, improve student/worker life chances, and stabilize local economies.

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PathTechUSF.com

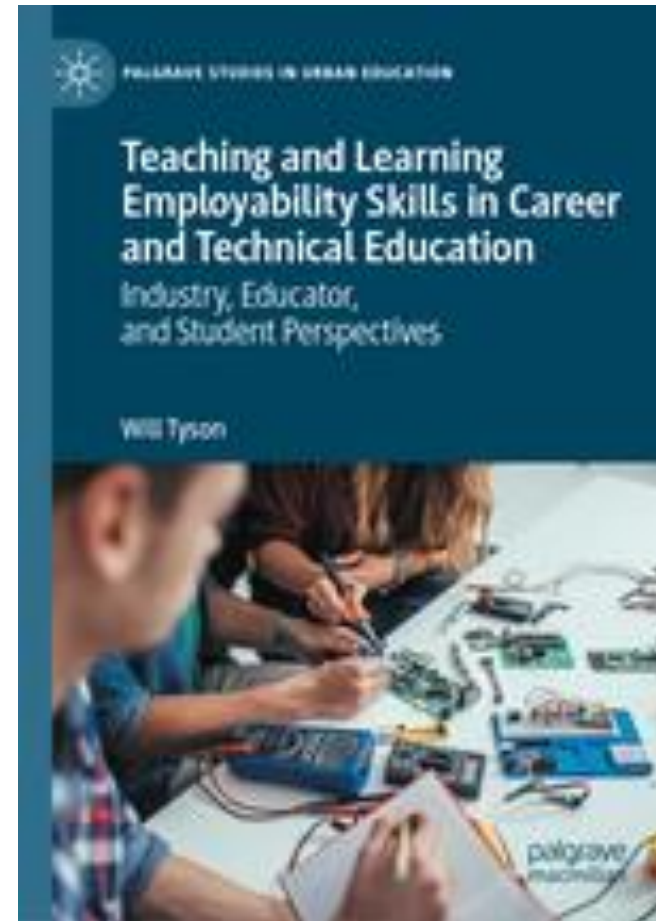
PathTech Targeted Research

PathTech Tampa Bay (2011-15)

Successful Academic and Employment
Pathways in Advanced Technologies (NSF
#1104214)

Examination of educational and employment pathways through Tampa Bay area high school engineering and engineering technology (ET) career and technical education (CTE) programs and community college ET AS/AAS programs

Interviews with local industry leaders along with high school and community college students, teachers, faculty, and administrators.



Publisher
Website link



Lessons Learned

Motivations of Engineering Technology Students

Learning



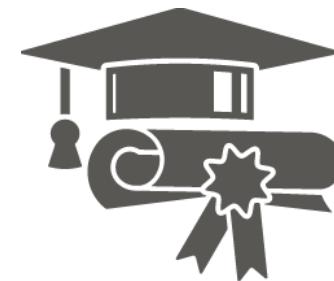
Credentialing



Re-skilling



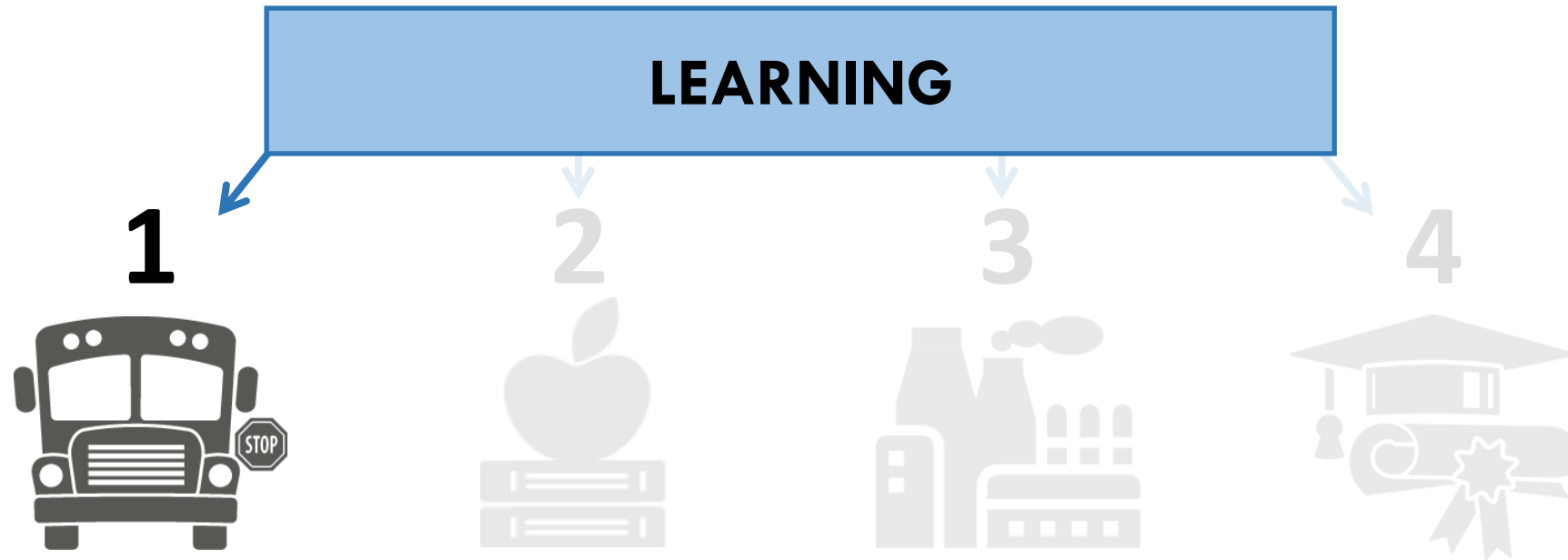
Empowering



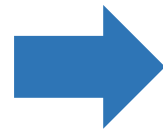
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Motivations of ET Students



- High school diploma or equivalent
- Enjoy working with their hands
- Have been indifferent towards schooling in the past
- Winding work history



Through ET classes, they have now found something that really interests them, and they are interested in going further in schooling—*perhaps the first time.*

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Motivations of ET Students

CREDENTIALING

1



2



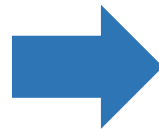
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- At least a high school diploma and often some college.
- Describe themselves as good students in the past, but never exposed to ET in their earlier educational or work experiences.
- Stable work history

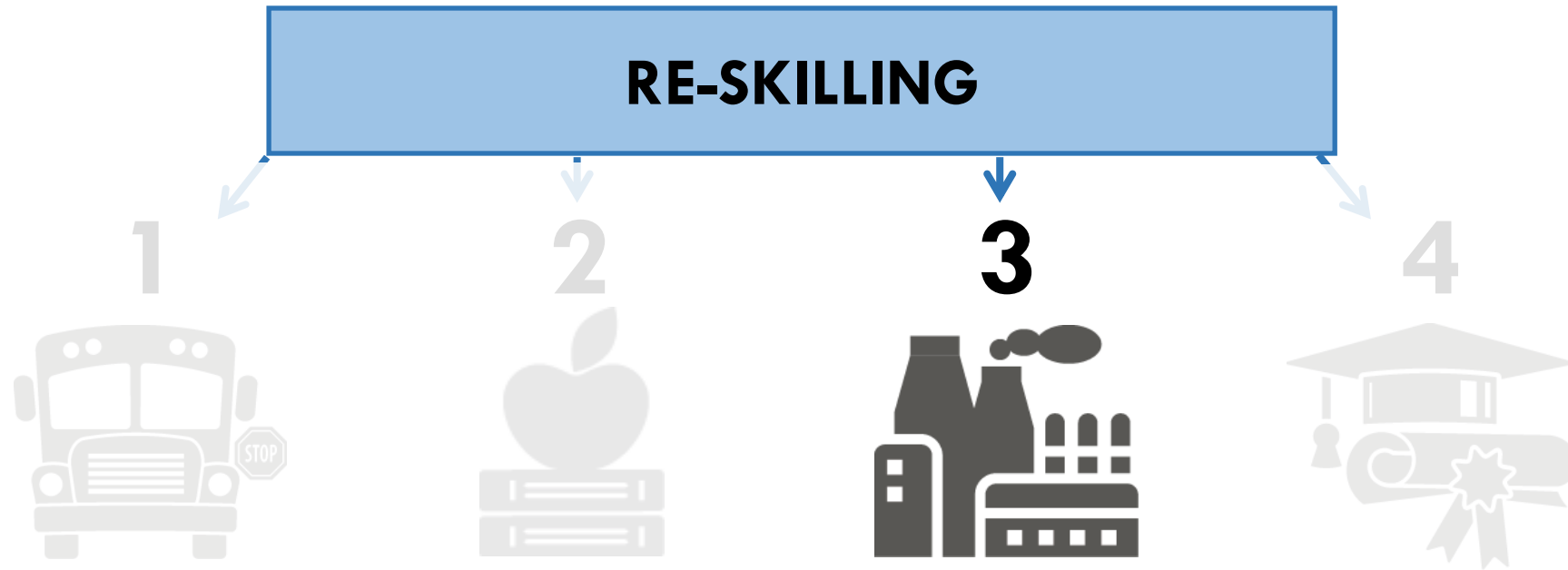


Aim to enter industry with the credentials/certifications from their ET programs

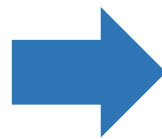
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Motivations of ET Students



- Focused on re-skilling
- Eager to improve their job
- Prior careers in manufacturing or related fields; laid off after many years of employment



Taking ET courses and seeking certification in order to gain a new and more stable job that will be able to support their families.

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Motivations of ET Students

EMPOWERED

1



2



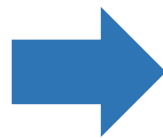
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4



- Degree-seeking
- Hope to empower themselves and gain the respect of others



Higher education degree has often been a life-long dream, and ET provides a pathway

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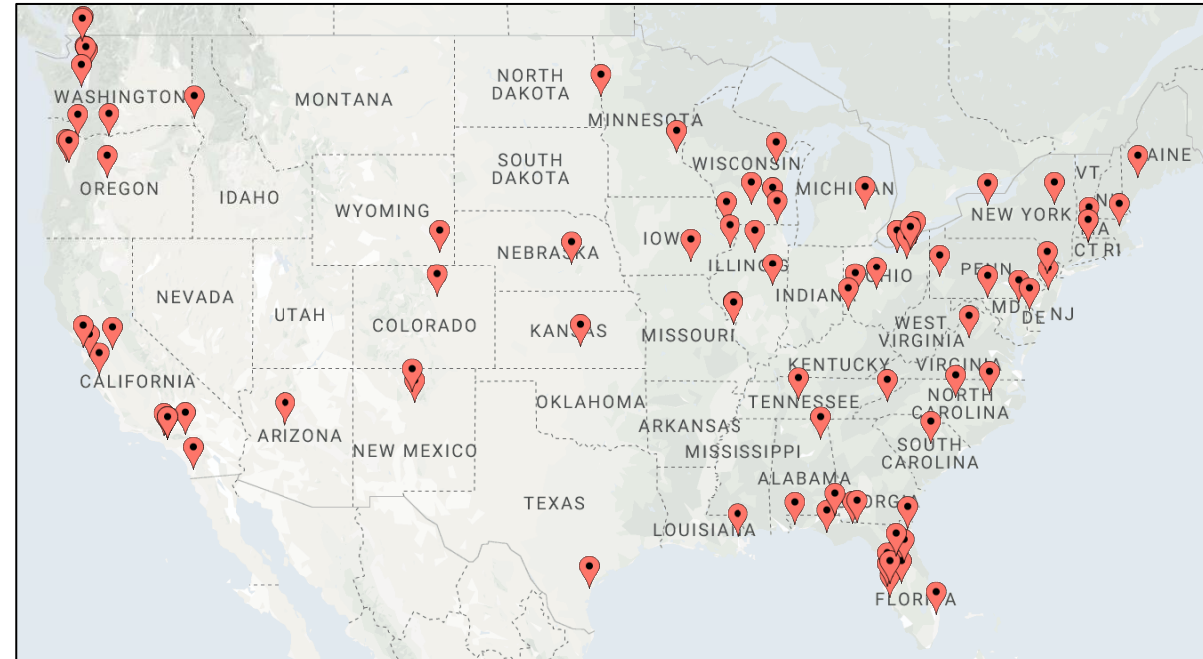


PathTech Targeted Research

PathTech LIFE (Learning, Interests, Family, Employment) (2015-19)

3,216 students from 96 colleges in 38 states and 3 territories

PathTech LIFE: Constructing a National Survey of Engineering Technology Students through Regional and Statewide Testing (NSF #1501999)

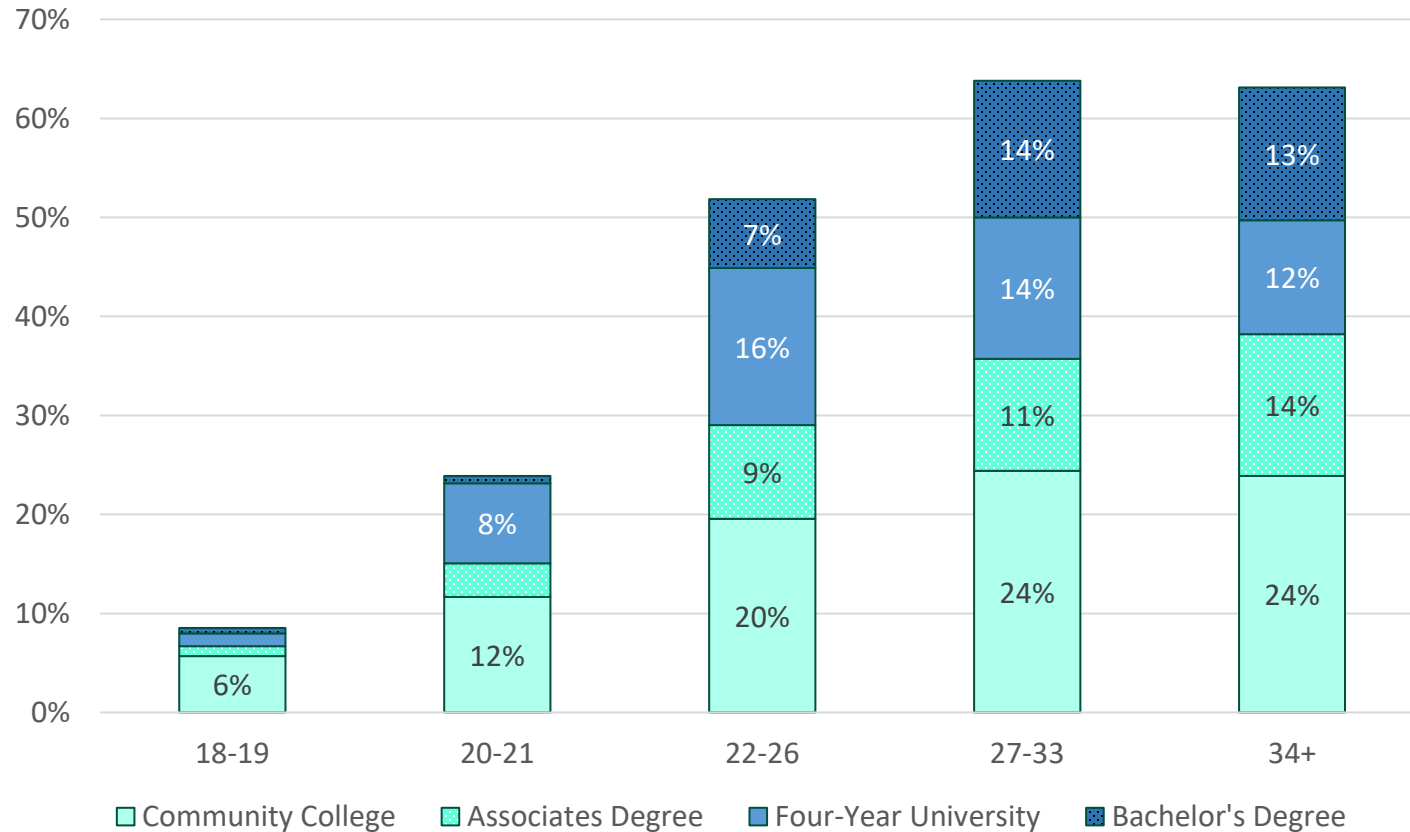


National survey of community college students in advanced technology fields in collaboration with a national network of colleges



Student Characters by Age Quintile

Prior Enrollment and Degree Attainment



Technician education programs serve students from a wide variety of backgrounds. About half of survey participants were age 25 or older. For respondents age 18-21, their current community college program was their first time in higher education.

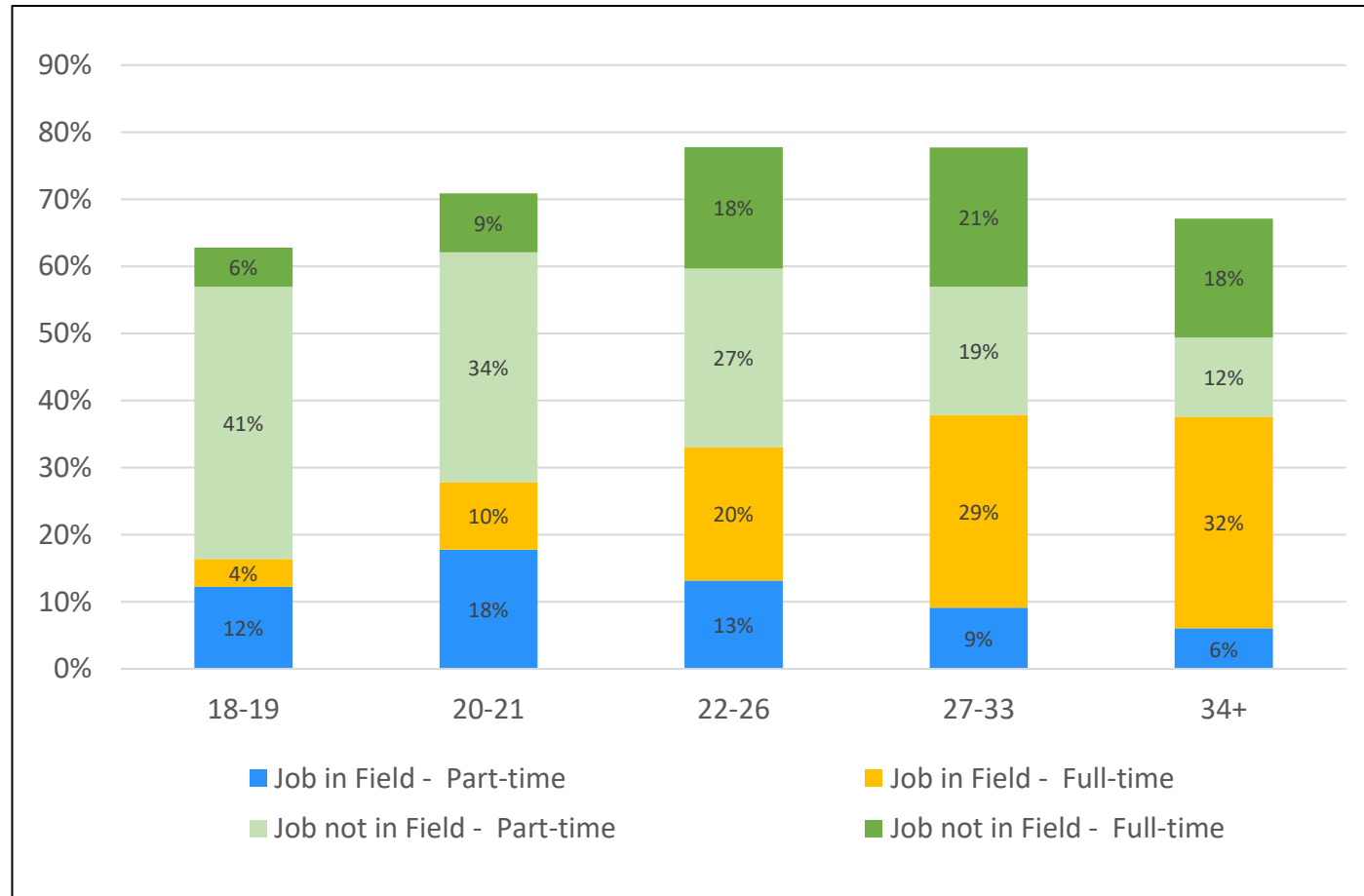
Among students of every age 22 or older, the majority had been enrolled in a community college or four-year university before starting their program.

13% of all respondents age 23 and over had a bachelor's degree before enrolling in community college.

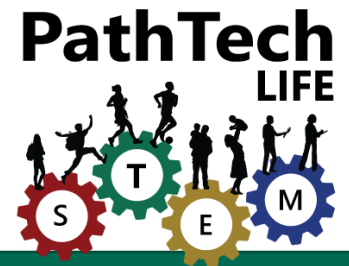


Student Characters by Age Quintile

Employment Status



Most participants worked part-time or full-time while enrolled. 21% of respondents age 18-21 worked in a job related to their field of study compared to 36% of respondents age 22 and older. Older working students largely enrolled while working full-time jobs in their field.



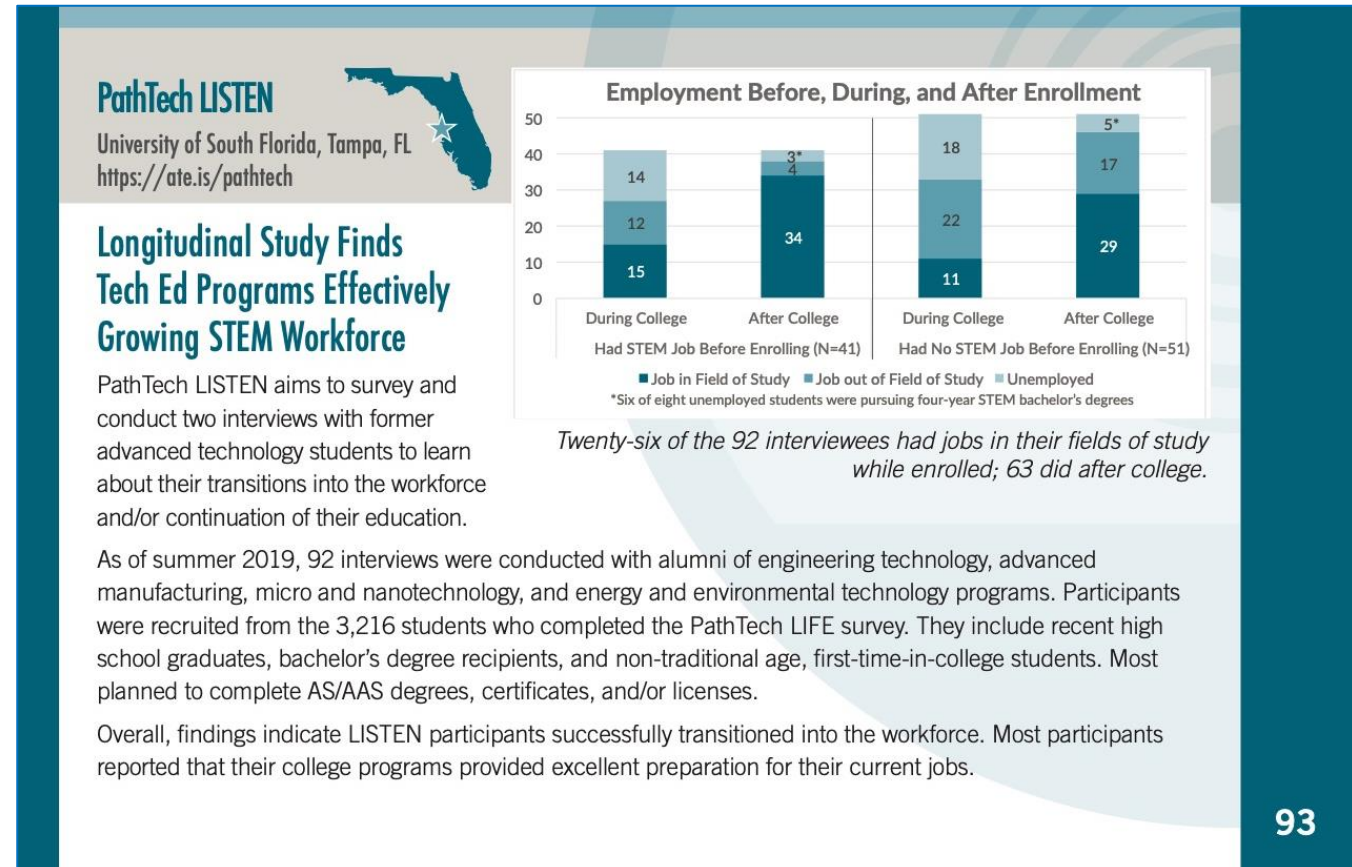
PathTech Targeted Research

PathTech LISTEN:

Mixed Methods Longitudinal Investigations of Students in Technician EducationN (#1801163)

Three longitudinal follow-up interviews and pilot survey with PathTech LIFE respondents from a variety of backgrounds. Wave 2 interviews in 2020 are devoted to the COVID crisis.

From ATE Impacts 2020-21:



Notes from Wave 2 (2020) Interviews

Job stability and progress:

- 76% of participants with a STEM job in 2019 still had a job in a STEM field including 14% who had earned promotions

Overall job/education status:

- 62% working in their field of study
- 47% in a full-time job related to their field
- 23% enrolled in two-year or four-year IHE (15% working while enrolled)

Personal and professional impact of COVID-19:

- 40% of participants had tested positive for COVID-19 (4%) or knew a family member, friend, or co-worker who had tested positive for COVID-19 (36%)
- 9% of participants with a STEM job in 2019 lost their job due to COVID-19
- Among participants with a full-time job related to their field, 66% work on-site, 9% work remotely, and 25% alternate in order to social distance at work

