



Annual External Evaluation Report

# PathTech LIFE: Constructing a National Survey of Engineering Technology Students through Regional Statewide Testing

NSF Award #1501999

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## Table of Contents

<b>1.</b>	<b>Overview of the PathTech LIFE Project and the External Evaluation .....</b>	<b>1</b>
1.1	About the PathTech LIFE Project.....	1
1.1.1	The PathTech LIFE Project Research Design and Methodology .....	1
1.2	About the External Evaluation .....	2
<b>2.</b>	<b>Year 2 External Evaluation Findings .....</b>	<b>2</b>
<b>3.</b>	<b>Next Steps in the External Evaluation.....</b>	<b>3</b>

# 1. Overview of the PathTech LIFE Project and the External Evaluation

## 1.1 About the PathTech LIFE Project

The Successful Academic and Employment Pathways in Advanced Technologies (PathTech) project is funded through a grant from the National Science Foundation (NSF) Directorate for Education and Human Resources (DEHR) under the Advanced Technological Education (ATE) program (NSF Award #1501999). The NSF ATE program promotes the improvement of education, particularly at two-year colleges, for science and engineering technicians entering into high-technology fields. The ATE program supports different types of activities, including the development of curriculum, educator professional development, career pathways, articulation between two-year and four-year programs for potential educators, and research to add to the understanding of various aspects of technician education.

The NSF ATE grant for the PathTech LIFE project was awarded to the University of South Florida (USF). This project is being conducted over three years between September 15, 2015 and August 31, 2018. Grant funds for this period total \$778,031. The primary goal of the project is to develop a national survey of students completing coursework, certification, and AS/AAS degrees in advanced technology programs at community colleges.

Dr. William Tyson (USF) is the principal investigator, and Dr. Edward Fletcher (USF) and Dr. Danielly Orozco (USF) are serving as co-principal investigators. In addition to ICF serving as the external evaluator, this project is being aided by the following collaboration of ATE partners:

- Consortium for Alabama Regional Center for Automotive Manufacturing (CARCAM);
- California Regional Consortium for Engineering Advances in Technological Education (CREATE);
- National Resource Center for Materials Technology Education (MatEdU);
- Northeast Advanced Technological Education Center (NEATEC);
- Regional Center for Nuclear Education and Training (RCNET); and
- Regional Center for Next Generation Manufacturing (RCNGM).

### 1.1.1 The PathTech LIFE Project Research Design and Methodology

The PathTech LIFE project contributes to a growing body of knowledge on advanced technician education and to the overall mission of the NSF ATE program by:

- increasing understanding of recruitment and pathways into engineering technology programs,
- providing information to improve the education of engineering technicians,
- discovering promising practices that increase the visibility of ET programs at community colleges, and
- providing information about practices that produce qualified science and engineering technicians to meet workforce demands.

## RESEARCH QUESTIONS

The purpose of the PathTech LIFE project is to answer two broad research questions:

1. What factors contribute most to students' decision to enroll in engineering technology and other advanced technologies programs?
2. How do student pathways, career goals, and school-work-life balance influence recruitment and retention in engineering technology and other advanced technologies programs?

## METHODOLOGY

The research team constructed an online pilot survey based on the PRiSM Decision Model for Adult Enrollment, Schlossberg's Transition Theory, and explanatory models from the recently completed PathTech Tampa Bay study (DUE #1104214). An expert panel made up of two persons each from the Florida Advanced Technological Education Center (FLATE), six ATE Center partners, and the external evaluator reviewed the online pilot survey using the Delphi Method. The objective of the review was to establish a consensus (80% agreement) for which items should be included in the final pilot survey to be sent out to community college students.

In Round 1, the Delphi panel concentrated on the wording of individual items. For each item panelist were asked to indicate whether each item seemed suitable for inclusion in the survey "as is" or whether and how it might be improved. In Round 2, the panelists further reviewed the revised list of items to check for clarity, conciseness, and completeness. Items that received at least 80% consensus by the panel were selected for inclusion in the pilot survey. In Round 3, researchers asked the panelists to again review the items which had not received 80% agreement. Round 3 items upon which panelists achieved 80% consensus were then added to the pilot survey. Once assembled, the pilot survey was sent to the ATE Center partners to distribute at their institution or a partner institution.

### 1.2 About the External Evaluation

The external evaluation of PathTech LIFE is being conducted by ICF, led by Thomas Horwood as lead evaluator and supported by Dr. James Demery. The external evaluation is intended to complement and support the efforts of the PathTech LIFE research team. The approach to external evaluation involves: (1) monitoring the progress of the project; (2) providing objective reviews of project instruments, protocols, analysis plans, and reports; and (3) serving as an external resource for technical advice. Data for this report were collected through conversations with the PathTech LIFE project team and through review of project documents (e.g., grant application, research instruments, research protocols, reports).

## 2. Year 2 External Evaluation Findings

This report assesses the PathTech LIFE project team's progress during the second year of the grant. The Year 2 project period was September 15, 2016 to August 31, 2017. In Year 2 of the PathTech LIFE project, the research team set out to:

- Conduct a second pilot survey to test distribution methods of the survey in Fall 2016; and
- Conduct Wave 1 of the PathTech LIFE national survey in Spring 2017.

The research team met these goals by conducting a second pilot survey in November 2016 to test the distribution methods of the survey in response to challenges identified during the first pilot of the survey instrument in May 2016. The first round received 97 responses from students

at 13 colleges. The second pilot received 147 responses from students at 19 college which resulted in the survey being shortened from 25 to 15 minutes for the Wave 1 administration in April 2017. The Wave 1 survey received 528 responses from students at 26 colleges. The median completion time was 15 minutes, 4 seconds.

An early challenge was figuring out how to recruit and distribute surveys to community college students from across the country. The project team met this challenge by communicating directly with colleges and offering incentives. More specifically they hired a consultant to serve as the External Communications Consultant (ECC) to complete the following tasks:

- Strategize with PathTech LIFE and FLATE on how to best achieve the end goal of receiving the desired student response rate from each college.
- Continually evolve the strategy as new information comes to light from communications with administration and faculty at partner colleges.
- Be the “point of contact” for PathTech LIFE and FLATE in order to coordinate communication with partner centers and colleges in order to achieve desired goals.
- Distribute surveys and other information to partner centers and colleges as needed.

The ECC was able to make and sustain contact with over 40 colleges during and before the survey period. The ECC also recommend a comprehensive incentive plan based on his interactions with college program heads. Thus, it was agreed that each participating college would receive a \$250 stipend and a report on findings unique to their own college if they delivered a 70% response rate. Seven of 26 colleges reached this goal. The Wave 2 survey in mid-September will occur with only minor revisions.

### **3. Next Steps in the External Evaluation**

Evaluation activities over the next year of the NSF grant period will include: (1) ongoing monitoring of the progress of the project against project timelines; (2) objective review of data survey results; and (3) review of the replicability of the analyses conducted. In addition, the evaluation team will serve as external resources for technical advice, and will continue to provide commentaries and written reviews of the project’s various activities.

The ICF evaluators will continue to maintain regular contact with Dr. Tyson and his team, bringing in other members of the external evaluation team as needed. We will prepare quarterly monitoring memos, in which the research team’s progress towards project milestones is assessed and suggestions for addressing challenges are provided. We will prepare a final evaluation report in August 2018.