Developing a Culture of Strategic Employer Engagement and Grant Know-How to Support Innovative Technical Programs

The *Building Pathways To Innovation (PTI) Through Strategic Employer Engagement* (DUE 2039395) project is funded by the National Science Foundation Advanced Technological Education (NSF-ATE) program that focuses on funding innovative work in two-year Institutions of Higher Education (IHEs) to support technician education in high-technology areas that are essential to the nation's economy. [1] This project's premise is that technical programs in both two-year and four-year IHEs are most effective for both students and industry when they are co-led by leading industry employers and the IHEs so that graduates' skills are well-aligned with industry's future hiring needs. Highly-engaged employer co-leadership guides colleges to be innovative in their technical programs to support industry demands, but many colleges have difficulty building a highly-engage set of employers for this purpose. The project's leaders also recognized that many IHEs, especially those that are small, rural, and those that support large populations of underserved students, often lack funding to support the innovations requested by industry employers, causing the programs to fall behind.

Therefore, PTI supports two cohort-based academies, the BILT Academy [2] and the Grant-Seeker Academy [3] to teach IHE faculty and staff how to build actively-engage relationships with employers they serve to drive technical innovation as well as how to write competitive grant proposals to fund such innovation when the changes needed align with the NSF ATE program solicitation. This paper and the poster session will explain these two interrelated academies and how colleges can pair their learnings to strategically advance their own technical programs over many years.

The American Workforce Policy Advisory Board published a report in 2020 to challenge key stakeholders in the nation's economy to "engage in a shared, coordinated, and sustained effort to build a resilient and agile workforce of the future powered by skilled American workers." *Investing in American Workers to Expedite Economic Recovery* [4] had three goals:
1. Expedite American workers' return to employment and upward mobility by investing in career pathways and implementing skills-based hiring practices.
2. Remove obstacles to the modernization of American education and training to accelerate reskilling and facilitate innovation in workforce development.
3. Build the technological infrastructure necessary for the future of work.

The goals of the National Science Board, National Science Foundation (NSF), and the NSF's Advanced Technological Education (ATE) program align with the goals of the American Workforce Policy Advisory Board to grow the national skilled technical workforce (STW) aligned with local needs. [5] To meet this need requires innovation in workforce development, strong partnerships with industry and college that prepare the STW. The BILT Academy mentors and equips colleges to rise to this challenge.

The foundation for the PTI project builds on 17 years of work from NSF's National Convergence Technology Center of Excellence (DUE 1700530) in creating, honing and spreading the Business and Industry Leadership Team (BILT) model to augment and replace the typically more passive Business Advisory Council model that is required for most career and technical

programs. This model is a structured, repeatable, and efficient process for securing long term strong direction from employers for co-leading technical programs. The BILT Academy, housed at the Center for Occupational Research and Development (CORD) is led by Dr. Ann Beheler, creator of the BILT model, and a set of professionals with BILT experience via a 10-month offering of workshops strengthened by active one-to-one mentoring. The goal of the BILT Academy is for each cohort college to not only learn about the BILT model but also to actually implement it for one technical program during the 10 months.

Rather than meeting once or twice a year as is a common practice for most Business Advisory Councils, the BILT convenes two to three times annually to discuss future industry trends and once annually for two-three hours to identify and prioritize the essential knowledge, skills, and abilities (KSA) by focusing on skills needed 12-36 months into the future to allow college faculty time to appropriately enhance or create curriculum to meet future needs. The KSA analysis is a popular and efficient modified DACUM process [6] that values employer representatives' time and uses electronic asynchronous means to gather quantitative results for use in a synchronous (face-to-face and hybrid) discussion that is recorded and analyzed qualitatively. Faculty then compare the prioritized KSAs with current courses and modify or create new courses to respond to the priorities. The annual process is completed through a BILT feedback session in which the BILT is shown how the faculty mapped the prioritized KSAs to proposed curriculum. Note that the process does not merely present specific courses and a summary of them; rather, the courses are shown with the specific prioritized KSAs each course covers, and then the courses are gathered into certificate and degree patterns.

Colleges that have successfully implemented the BILT for one program typically then begin implementing the model for other technical programs across the college because of their perceived enhanced benefits for doing so. According to an inventory kept by the CTC the model is a proven success, and to date at least 65 colleges and major NSF projects such as the ATE Centers have implemented it. Case studies for broader implementation from colleges such as Miami Dade College's EnTEC Division, Florida State College at Jacksonville, and Crowder College in Missouri have been shared at conferences such as the ATE PI Conference in 2021. [7] Details of the model as well as these case studies are being widely disseminated and promoted nationally.

To potentially fund the changes identified, the Grant-Seeker Academy also uses a free cohort-based model to assist colleges in writing competitive NSF ATE grant proposals aligned with the innovative needs of their engaged employers. High employer engagement through a BILT fulfills the solicitation's long-standing standard requirement for industry commitment. This Academy includes a three-day intensive workshop that teaches how to strategically compose a competitive proposal using the current NSF Solicitation [8], bolstered by frequent one-to-one mentoring by experienced NSF ATE grant principal investigators over a span of five to six months preceding each year's submission date. Further, the Academy provides monthly deeper webinars on subject such as budget formation. budget justification and evaluation together with active monthly reporting to foster proposal success. So far, cohort one saw eight colleges (out of the nine original members) that submitted NSF ATE proposals and another twelve colleges plan to submit this year as part of cohort two. While no project of this nature can guarantee funding, preliminary results from the first cohort indicate a high success rate.

A culture of strategic innovation that builds on strong industry leadership through a BILT model and is funded, as appropriate, by successful NSF ATE proposals provides colleges nationally with a forceful vehicle for both creating continuing innovation that benefits graduates and thereby the national workforce while also having expertise in at least one funding method. See the Pathways to Innovation website for details regarding cohort application deadlines and other details.

[1] https://beta.nsf.gov/funding/opportunities/advanced-technological-education-ate

[2] https://www.pathwaystoinnovation.org/bilt-academy/

[3] https://www.pathwaystoinnovation.org/grant-seeker-academy/

[4] https://www.commerce.gov/sites/default/files/2020-05/AWPABCalltoActionFINAL051520.pdf

[5] https://www.nsf.gov/nsb/publications/2019/nsb201923.pdf

[6] https://occrl.illinois.edu/docs/librariesprovider4/tci/strategies-for-transformative-change/bilt

[7] https://www.atepiconference.com/wp-content/uploads/2021/10/2021_ATEConferenceProgram1021.pdf

[8] https://www.nsf.gov/pubs/2021/nsf21598/nsf21598.htm