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P-TECH SCHOOL IN TRANSPORTATION AND SUPPLY CHAIN MANAGEMENT PROGRAM: A CASE OF BALTIMORE CITY COMMUNITY COLLEGE

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ABSTRACT

Four years high school students took the opportunity of early college access and dual enrolment program by taking college courses while they are at a high school. In recent years several states including Maryland supported the development of a new model of early college access program for high school students called Pathways in Technology Early College High Schools (P-TECH) 9-14 schools. With the P-TECH 9-14 school model in six years or less students graduate with a high school diploma and a no cost two-year associate degree in STEM fields. This paper discusses the recently developed new P-TECH transportation program at Baltimore City Community College. The program focuses on supply chain management career pathway to meet the present and future needs of the region. P-TECH schools works with industry partners and a local community college to ensure an up-to-date curriculum that is academically rigorous and economically relevant. P-TECH programs also include mentoring, workplace visits and instruction on the skills needed for the industry and paid internships and job consideration with the partnering companies.

Keywords: P-TECH**,** Early college access, Transportation, Supply chain management

1. INTRODUCTION

Pathways in Technology Early College High Schools (P-TECH) 9-14 school model is a global education reform initiative started by IBM. P-TECH programs prepare high school students with technical and professional skills where in six years or less students graduate with a high school diploma and a no cost two-year associate degree in STEM fields. Currently in the United States alone P-TECH 9-14 school model has 94 school partners, 63 college partners, 229 industry partners in 12 career pathways (1).

The 2017-2021 Maryland Higher Education Commission Maryland State Plan for Postsecondary Education, states that "Most recently, Governor Hogan has supported the development and implementation of several Pathways in Technology Early College High Schools, or P-TECH schools, throughout Maryland (2)." There are currently eight P-TECH programs in Maryland operating at seven high schools that partner with five community colleges. P-TECH schools works with industry partners and a local community college to ensure an up-to-date curriculum that is academically rigorous and economically relevant. P-TECH programs also include mentoring, workplace visits and instruction on the skills needed for the industry and paid internships and job consideration with the partnering companies.

P-TECH graduates can earn both a high school diploma and an associate degree in six years. Students participate in college classes when ready and develop workplace skills through mentoring, internships and more. Students enter a P-TECH 9-14 schools in grade

nine and begin college courses as early as the tenth grade, and as through the process, they attain an industry-recognized associate degree (3). The first P-TECH school was launched in Brooklyn, New York in September 2011. There are more than 100 P-TECH programs throughout the country with a capacity to serve more than 200,000 students (4).

Recently Baltimore City Community College (BCCC) is selected to develop a new supply chain management career pathway P-TECH program in partnership with the New Era Academy high school in Baltimore city. Industry level partners for this new P-TECH program include the Port of Baltimore and United States Coast Guard. Baltimore City Public Schools, BCCC and Baltimore Port Alliance signed a Memorandum of Understanding (MOU) for the development and support of a P-TECH grades 9-14 school program in Transportation and Supply Chain Management (TSCM) at BCCC (5).

The BCCC program is designed to meet the framework of the MOU with the City Schools and the Port Alliance. The program will be also open to other potential students within BCCC service area. The program provides students and city resident's access to a growing industry and delivers an innovative solution to the workforce needs in the modern occupation category of Transportation, Distribution and Logistics. The TSCM Associate of Applied Science (AAS) degree program at BCCC provides a pathway for students to fill a workforce gap in STEM fields. Students will have the options to obtain academic, experience and industry credentials for their careers in the pivotal Maritime, Transportation, distribution, and Supply Chain industries.

Including the new P-TECH in transportation program at New Era Academy with the port of Baltimore and United States coast guard as industry partners BCCC has three P-TECH programs. In the other two P-TECH 9-14 programs Carver high school partner with IBM preparing students for cybersecurity and information technology careers. Dunbar high school partners with Johns Hopkins University, Johns Hopkins Hospital, Kaiser Permanente, and the University of Maryland, Baltimore for careers in nursing and allied health careers. The TSCM program is an essential first step to accelerating entry into the job market which impacts the local and national economy and our global competitiveness.

2. PROGRAM DESCRIPTION

The TSCM program at BCCC prepares students for jobs in the transportation and supply chain management industries. Emphasis is placed on supply chain logistics, commercial, freight, and maritime transportation systems. The program offers a 60-credit course work that provides students' opportunity to master conceptual and technical skills in transportation, distribution, maritime, and supply chain management. Students will fill positions in port operations and port-based logistics, vessel operations, and emerging maritime technologies. Whether they come in at the entry level or changing careers, student can use the skills and knowledge gained to obtain certifications and to advance or qualify for higher paying jobs for a more rewarding position.

As the P-TECH Community College in Baltimore City BCCC is committed to making the attainment of employment-oriented credentials a priority. This program supports the signed MOU between the College, Baltimore City Public Schools, and Baltimore Port Alliance to provide students with an education that "culminates in attainment of an Associate of Applied Science in Transportation, Distribution, and Maritime Logistics degree or related degrees, thus preparing students to succeed in college and career (6)." The TSCM program is an essential first step to accelerating entry into the job market which impacts the local and national economy and our global competitiveness. The program is developed in partnership with Baltimore City Public Schools and The Baltimore Port Alliance as part of the expansion of P-TECH program offerings.

The first cohort of 21 New Era Academy high school students started their P-TECH 9-14 transportation program. The second cohort just started their 9th grade education in

September 2019. Based on the MOU New Era Academy will accept up to 50 students a year until it reaches it maximum.

3. PROGRAM OUTLOOK

Baltimore's citizens face significant barriers to employment within the middle-skills jobs market that often pay higher wages. There is a strong level of alignment between the State Plan's occupational composition, BCCC's TSCM program and the expanding choices for disadvantaged students. This program goes beyond the notion of a traditional student. Many of the students will be non-traditional students that represent the reality of most postsecondary students. The TSCM program provides students with a focused pathway that fosters an efficient plan to a successful career. State jobs are changing, favoring higher skilled occupations. Employers are demanding a more highly skilled and educated workforce. Baltimore City has a diversified economy, with workforce demands across many sectors and skill levels.

The widening of the Port of Baltimore will be beneficial to this new program's advancement and the state of Maryland, through more jobs and a larger economic impact. Jobs that require high levels of knowledge represent a growing component the local and state labor market. With 68 % of the current jobs in the Port of Baltimore not requiring a college degree the new program can be a bridge for many non-traditional students/employees who come to college with unique backgrounds. Middle-skill jobs represent a significant opportunity for unemployed and underemployed residents who seek to earn a family supporting wage. The average wages for middle-skills workers was $58, 504 in 2015. Maryland Port Administration Vision2025 identified that the Port continues be an economic engine and is the 12th largest employer in the state of Maryland (7). The Port remains as Maryland's economic jewel far into the future. The Port generates more than 33,000 jobs statewide. 13,650 jobs are related to day-to-day operation.

3.1 P-Tech Schools in Maryland

According to the 2017-2021 Maryland state plan for postsecondary education, Maryland had five P-TECH schools in 2017: Two programs at Baltimore City/ Baltimore City Community College, One program at Allegany County/ Allegany College, two programs at Prince George's County/Prince George's Community College. Since 2017 it added three more P-TECH programs: One program at Baltimore City/ Baltimore City Community College, One program at Baltimore County/Community College of Baltimore County, and one program at Montgomery County/Montgomery College. BCCC currently has three P-TECH 4-16 programs with three high schools and industry partners as shown in Table 1.

Table 1. BCCC P-TECH Schools

Community College	School	Industry Level	Career Pathway
Baltimore City Community College	New ERA Academy	Port of Baltimore and United States Coast Guard	Supply Chain Management
Baltimore City Community College	Carver Vocational Technical High School	IBM	Cybersecurity Assurance and Computer Information Systems

Baltimore City Community College	Paul Laurence Dunbar High School	John Hopkins Hospital, Kaiser Permanente, and University of Maryland, Baltimore	Nursing, Respiratory Care, Physical Therapy Assistant, Health Information Technology

Source: 2017-2021 State Plan for Postsecondary Education, p. 23

3.2 BCCC Transportation Program Curriculum

The Transportation and Supply Chain Management AAS degree program as shown in Table 2 offers a 60-credit course work that provides students' opportunity to master conceptual and technical skills in transportation, distribution, maritime, and supply chain management (8).

Table 2. TSCM Program Course Listing Organized by Content Area

Course ID Credits		Course Name	Category** Requirement Fills:
PRE100	1	Preparation for Academic Achievement	College Requirement
HLF	2	Health and Life Fitness	College Requirement
Total Credit by Category			3
SP 101	3	Fundamentals of Speech Communication	GE Cat I
ECO 201	3	The American Economy I: Macroeconomics	GE Cat II
ES 110	3	Biological and Physical Science Elective	GE Cat III
MAT 125	3	Finite Mathematics	GE Cat IV
ENG 101	3	English Writing	GE Cat V
BUAD 112	3	Computers for Business Management	GE Cat VI
Total Credit by Category			18
BUAD100	3	Introduction to Business	Program Requirement
ACCT221	3	Financial Accounting	Program Requirement
MGMT222	3	Principles of Management	Program Requirement
TSCM 101	3	Introduction to Transportation Systems	Program Requirement
TSCM 120	3	Commercial Transportation Systems	Program Requirement
TSCM 140	3	Supply Chain Management	Program Requirement
TSCM 160	3	Maritime Transportation	Program Requirement
TSCM 200	3	Freight Transportation	Program Requirement
TSCM 210	3	Supply Chain Logistics	Program Requirement
CADD 101	3	Introduction to CADD	Program Requirement

CADD 200	3	Geographic Information Systems Applications	Program Requirement
PHI 105	3	Introduction to Professional Ethics	Program Requirement
Total Credit by Category			36
Electives:			
COP 200	3	Cooperative Education/Internship	Program Elective
MGMT127	3	Customer Relationship Management	Program Elective
Program Total:			60

3.3 Transfer Articulation Agreements

Based on the model in six years or less, P-TECH students graduate with a high school diploma and a no-cost AAS degree in Transportation and Supply Chain Management from BCCC. For TSCM graduates who wish to further their education at four-year institution a transfer articulation agreement is in progress for students to transfer credits from the AAS degree in TSCM towards a bachelor degree in transportation systems, transportation systems engineering, and civil engineering programs at Morgan State University.

4. CONCLUSION

The TSCM program is an essential first step to accelerating entry into the job market which impacts the local and national economy and our global competitiveness. The program is developed in partnership with Baltimore City Public Schools and The Baltimore Port Alliance as part of the P-TECH 9-14 program offerings. Whether they come in at the entry level or changing careers, student can use the skills and knowledge gained to obtain certifications and to advance or qualify for higher paying jobs for a more rewarding position.

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