Promising Practices to Support the Development of K–12 Manufacturing Programs: Spotlight on Eli Whitney Technical High School's Data

Background

The Manufacturing Skills for Connecticut (MSforCT) project, funded by the U.S. Department of Commerce National Institute for Standards and Technology, aimed to establish a menu of effective educational best practices that Manufacturing Extension Partnerships (MEPs) throughout the country, and manufacturers and school systems across CT and beyond, can use to establish and advance effective career pathways. CONNSTEP, CT's MEP representative, was the lead organization partnering with ReadyCT, a statewide nonprofit focused on K–12 education and career-connected learning; CBIA, CT's largest business organization; the Connecticut Manufacturers' Collaborative, a statewide, policy-focused collective composed of the nine major manufacturing associations within CT; and WestEd, a non-partisan research, development, and service agency.

As part of the MSforCT project, WestEd executed a multistep process to identify 13 manufacturing programs with evidence of using promising practices intended to support high-quality programming. This process included developing a statewide survey; identifying all existing manufacturing programs across CT for survey administration; developing and using a rubric to rank manufacturing programs on their use of high-quality, high-impact practices; and considering site demographics and industry recommendations to choose the final 13 program sites. WestEd then conducted 13 program reviews which included interviews/focus groups with key program stakeholders and a review of student administrative data. Ultimately, the MSforCT project created numerous resources including The MFG Skills-CT website, a Promising Practices guide, and 13 program-specific reports, including Eli Whitney Technical High School's manufacturing program.

Eli Whitney Technical High School Manufacturing Program Data

The current summary of Eli Whitney Technical High School's manufacturing program data supplements the site-specific report. This document summarizes data from CT's Statewide Longitudinal Data System (SLDS): the Preschool Through 20 Workforce Information Network (P20 WIN). The data included all students enrolled in the high school during the 2017-2018 and 2020-21 academic years. Manufacturing program students at Eli Whitney are in the Precision Machining Program, which consists of courses in machine safety, measuring tools, precision machining fundamentals, and use of manual milling machines, lathes, and other metal processing tools. Manufacturing students are defined as students who have finished all the precision machining courses. Manufacturing students are included in the overall school population.

Table 1: Student Demographics, Academic Year 2020-2021

Student Characteristics	Overall School Population (n = 604)	
	N	%
American Indian or Alaska Native	*	*
Asian	*	*
Black or African American	218	36%
Hispanic/Latino of any race	321	53%
Native Hawaiian or Other Pacific Islander	*	*
Two or More Races	12	2%
White	49	8%
Female	278	46%
English Language Learners	44	7%
Students with Disabilities	79	13%
Free/Reduced Lunch Eligible	400	66%

Note: Cells with five or fewer students are restricted from reporting and are noted with an asterisk.

It was not possible to report manufacturing cohort student demographics because of the small number of students enrolled in the program in the academic year 2020-21 at Eli Whitney Technical High School. Overall, more than half of the school population (54%) was Hispanic/Latino (any race). An additional 36% of the student population was Black or African American, and 8% was White.

Table 2: Student Demographics, Academic Years 2017-2018 & 2020-2021

Student Characteristics	Manufacturing Program Students (n = 15)		Overall School Population (n = 1,019)	
	n	%	n	%
American Indian or Alaska Native	*	*	*	*
Asian	*	*	6	1%
Black or African American	*	*	379	37%
Hispanic/Latino of any race	10	66%	525	52%
Native Hawaiian or Other Pacific Islander	*	*	*	*
Two or More Races	*	*	20	2%
White	*	*	*	*
Female	6	40%	473	46%
English Language Learners	*	*	82	8%
Students with Disabilities	*	*	131	13%
Free/Reduced Lunch Eligible	8	53%	728	71%

Note: Cells with five or fewer students are restricted from reporting and are noted with an asterisk.

There were 15 manufacturing program students in academic years 2017-18 and 2020-21 combined. Across the two cohorts, 66% were Hispanic/Latino students of any race and more than half (53%) were eligible for free/reduced lunch. In the overall school population, 52% of students were Hispanic/Latino students of any race, 37% were Black or African American, and another 2% were students of two or more races.

Table 3: Academic Characteristics, Academic Years 2017-2018 & 2020-2021

Metric	Manufacturing Program Students (n = 15)					Overall School Population (n = 1,133)				
	Mean	Median	SD	High	Low	Mean	Median	SD	High	Low
Attendance	166.8	167	7.6	176	152	165.4	170	19.1	182	14

Note: Attendance is defined at the total number of days attended in a given school year.

Manufacturing program students across cohorts (2017-18 and 2020-21) attended school, on average, 166.8 days (SD 7.6). This figure is only slightly higher compared to the overall school population's average attendance of 165.4 days (SD 19.1).

Table 4: Standardized Assessment, Academic Years 2017-2018 & 2020-2021

Metric	Manufacturing Program Students (n = 10)					Overall School Population (n = 485)				
	Mean	Median	SD	High	Low	Mean	Median	SD	High	Low
English SAT	458	445	65.4	600	380	421.2	410	62.2	640	220
Math SAT	445	460	54.8	520	340	401	390	60	650	200

Across the 10 manufacturing program students who took the SAT in 2017-18 and 2020-2021, the average scores were 458 (SD 65.4) on the English section and 445 (SD 54.8) on the math section. This small group of manufacturing students scored, on average, higher than the overall school population in both sections of the SAT.

Table 5: Secondary Graduation Rate, Academic Years 2017-2018 & 2020-2021

Metric	Manufacturing Program Students		Overall School Population	
	n=15	%	n=646	%
Graduated	15	100%	569	88%

All manufacturing program students from 2017-2018 and 2020-2021 graduated from high school compared to 88% of the overall school population.

Table 6: Postsecondary Enrollment, Academic Years 2017-2018 & 2020-2021

	Overall School Population	
	n=569	%
Enrolled in CT Postsecondary Program	127	22%
Enrolled in Out of State Postsecondary Program	18	3%
No Record of Postsecondary Enrollment	424	75%

Of the overall student population, 22% of students studied in Connecticut colleges and only 18 out of 149 total students entering the post-secondary education system were enrolled in programs outside Connecticut. The numbers for the manufacturing cohorts were too small to report.

Table 7: Postsecondary Enrollment, By Institution Type, Academic Years 2017-2018 & 2020-2021

Institution Type	Overall School Population	
	n=149	%
4-Year Institution	62	42.7%
2-Year Institution	83	57.3%
<2-Year Institution	0	0%

Across students who enrolled in postsecondary institutions, the majority (57.3%) were enrolled in 2-year institutions. The numbers for the manufacturing cohorts were too small to report.

Table 8: Postsecondary Persistence – Y1 – Y2, Academic Year 2017-2018

	School Population	
	n=149	%
Persistence	57	38.2%

Note: There was not enough data to calculate and report the persistence rate for manufacturing cohort students.

Persistence in postsecondary education was defined as an individual being enrolled in a postsecondary institution the same year as they graduated from high school and being enrolled in two consecutive fall terms in the institution. In the overall school population, the persistence rate was 38.2%.