Scaling Up Utah’s Automated Manufacturing Technician Pipeline (SUUAMTP)
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Our Team

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Overall Problem

“One third of work activities could be displaced by 2030.”

Sample of Northern Utah Employers
Skills Gap Problem #1: Miniscule Pipeline

- 26% job growth
- 630 new job openings/year
- Producing 21 per/year
- Baby boomer retirements
Skills Gap Problem #2: Expertise Bottleneck

3rd largest occupational group with the most openings in Utah (29,795).

8 technical colleges/17 instructors
Skills Gap Problem #3: Curricular Development Demands

- Electronics Engineering and Automated Manufacturing teachers average 14 course preps per teacher.
- Electronics Engineering and Automated Manufacturing teachers are expected to realign their curriculum to industry every year.
Skills Gap Problem #4: All Roads Lead to the University

- K-12 education focus is on university graduation.
- Local university engineering departments only offer engineering degrees.
  - They are not aligned to the 1:2:7 ratio of industry needs.
In a nutshell, how do we:

• Alleviate miniscule pipeline?
• Overcome expertise bottlenecks?
• Rapidly develop curriculum for a changing industry?
• Replace retiring workforce?
• Have K-12 teachers consider technical education/industry?
OBJECTIVES

CURRICULUM
- Redevelop 10 courses with video lectures, project models, and industry centered-rubrics

RECRUITMENT
- Increase recruitment by 50 new students

RETENTION
- Increase high school retention by 20%
- Increase post high school retention 15%

PROFESSIONAL DEVELOPMENT
- Affective support rating of 80%+
Curriculum Development

Competency-based Instruction, Video Lab Demonstration,
Course Topics

• Industrial Robotics
• Programmable Logic Controllers
• Electronics
• Electric Motors with Controls
• Fluid Power (Hydraulics, Pneumatics)
• Safety
• Sensors
• Basic Electrical
• Microcontrollers
## Essential Transitions

<table>
<thead>
<tr>
<th>Old Model</th>
<th>New Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Content-Paced</td>
<td>● Student-Paced (Time Estimates)</td>
</tr>
<tr>
<td>● Teacher-Centered</td>
<td>● Content-/Student-Centered</td>
</tr>
<tr>
<td>● Content-Guided</td>
<td>● Employer-Guided</td>
</tr>
<tr>
<td>● Disconnected from HS and Universities</td>
<td>● Vertical and Horizontal Articulation</td>
</tr>
<tr>
<td>● Static Student Submission</td>
<td>● Video Lab Submissions</td>
</tr>
<tr>
<td>● Static Teacher Feedback</td>
<td>● Personalized Video Feedback</td>
</tr>
<tr>
<td>● Live Lecture</td>
<td>● Pre-recorded Demonstrations</td>
</tr>
<tr>
<td>● None/Simple Rubrics</td>
<td>● Robust Rubrics</td>
</tr>
</tbody>
</table>
Professional Development

Two Week Summer Camps, Curriculum Sharing, Annual Leadership Meeting,
Expansion Across Intermountain West
## Unpublished Pages as HS Teacher Facilitator Guides

### Module 01: Basic Concepts and Arduino Setup - 3 hrs 40 min

- **Overview**
- **What is a Circuit?** - 30 min
  - 3 pts | Score at least 2.0
- **Ohm's Law Quiz - 1 hr 40 min**
  - 16 pts | Score at least 12.0
- **How to Power a Project - 30 min**
  - 5 pts | Submit
- **AC/DC Quiz - 30 min**
  - 4 pts | Score at least 3.0
- **Facilitator Help Page Blynk Lab**
- **Lab 1 Blink - 30 min**
  - 10 pts | Submit
- **LEDs**
- **Module 01: Troubleshooting Discussion**
  - Contribute

**RUNNING TOTAL: 3 hrs 40 min**
Sharing Curriculum through Commons Consortium

Consortiums

Create a new consortium

BTECH Automated Manufacturing & Electronics

USHE and UEN Consortium  Created by: Utah Education Network
Low Cost Trainers

Inexpensive labs effective at a distance
Retention

Industry Tours, Stackable Credential Pathway, Disconnecting the Disconnected
Automation Competition & Job Fair 2019 -- (100+ Students)
Disconnected & Missing Pieces

Rich
Mt Crest
Green Canyon
Bear River
Box Elder
Ridgeline
Sky View
Preston
Logan

AAS ASSOCIATES DEGREE
Connected, Solid Pathways at Every Level
Connected, Solid Pathways at Every Level
Everyone Working Together!
Recruitment

Conference Presentations, Using High School Teachers as Recruiters, High School Visits
Outcomes Summary

CURRICULUM DEVELOPMENT

Ten advanced automated manufacturing courses have been redeveloped and enhanced to more accurately reflect industry demands and enable more effective learning over distance education technology. (Goal was 10).

RECRUITMENT

- Baseline: 232
- Yr 1: 284
- Yr 2: 420
- Goal: 281

PROFESSIONAL DEVELOPMENT

The project has trained 28 professors/high school teachers from three technical colleges, 20 high schools, and one university to adopt and implement this project in their respective areas. Workshop attendees rank support level at 100% (Goal was 80%).

RETENTION

- Baseline: 36%
- Yr 1: 47%
- Yr 2: 55%
- Goal: 40%