WHAT LEADS STUDENTS TO STUDY MANUFACTURING AT A COMMUNITY COLLEGE?

FINDINGS FROM A PHENOMENOLOGICAL STUDY OF ILLINOIS COMMUNITY COLLEGE STUDENTS PURSUING A CAREER IN MANUFACTURING

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2017 Forum for Excellence
Tiny URL: https://tinyurl.com/forummanufacturing
WHY STUDY COMMUNITY COLLEGE MANUFACTURING STUDENTS?
Why Study Manufacturing Students?

- 66% of all American jobs by 2018 will require no more than some college or an associate degree, yet the four-year degree is still heavily promoted as the only way to a middle-class lifestyle (Harvard Graduate School of Education, 2011).
- Employees in the skilled trades are needed more than ever and businesses are unable to find qualified people to fill those jobs (Grainger, 2013).
- There are still more than 600,000 manufacturing jobs going unfilled because of the skills gap (Deloitte & The Manufacturing Institute, 2011).
Need for Middle-Skill Level Workers

- By 2018, there will be a 47% increase for the need of *middle skill level* jobs in the state of Illinois, and all jobs in the United States will require some postsecondary education or training (Achieve, Inc., 2012).

- *Middle-skill level* includes skilled-trade jobs in the manufacturing sector, and one of the major pathways to these jobs is through associate degree and certificate programs.

- Despite the fact that there will be more middle skill-level jobs available than middle-skill workers, many students are still choosing to pursue a four-year degree.

- Negative perceptions regarding manufacturing—that it’s all hard and dirty work—are steering people away from these types of jobs (Grainger, 2013).
The purpose of this qualitative, phenomenological study was to explore the perceptions and experiences that led to manufacturing as a career choice for students enrolled in manufacturing degree or certificate programs at Illinois community colleges.

- A phenomenological study enables the researcher to explore a group of individuals’ commonalities, with the goal that a composite description of these common experiences can be described (Creswell, 2013).
- Phenomenology is concerned with how people process experience and is a methodology “for capturing the lived experiences of individuals” (Hesse-Biber & Leavy, 2011, p. 19).
Research Questions

- What are the perceptions and experiences that led a small group of students to choose a career in manufacturing and to enroll in a manufacturing degree or certificate program at community colleges in Illinois?

- To inform my research, the following sub-questions were explored:
  - What information related to the field of manufacturing are students exposed to and how and when are they exposed to it? What influence does this information have on their career choice?
  - What motivated these students to pursue a career in manufacturing? What internal and external factors influenced them to pursue a career in manufacturing? What challenges have they faced along the way?
  - What motivated these students to enroll in a manufacturing degree or certificate program at a community college?
Selection of Participants

- Purposeful sampling and snowball sampling
- 11 students who were enrolled in a manufacturing-related program of study at one of four Illinois Community colleges
- Manufacturing-related programs: manufacturing technology, manufacturing engineering technology, welding, computer numeric control (CNC)
- Must have completed at least 8 credits in their technical program
- Contact with the department chair of the appropriate area through email was made to assist in selecting students
- An e-mail was sent to identified students to ask if they would be willing to participate in this study
Significance of the Study

- Community colleges, other postsecondary institutions and high schools may benefit from this research in terms of recruitment and retention.
- Parents can be better informed on how to help their children become more self-aware and thus make better career decisions.
- Students can understand manufacturing careers and factors that may motivate them to pursue the field.
- Manufacturing employers interested in hiring qualified employees may also find this research useful to better understand how to recruit more workers into the field in order to close the skills gap.
- Information gained from this research could also help shape policy and funding surrounding career-technical education as well as inform the work currently being done on career pathways in the state of Illinois and throughout the country.
GETTING TO KNOW
THE PARTICIPANTS
Participants’ Academic Program Information

- 9 Manufacturing-Related AAS degrees:
  - 5 Welding Technology
  - 3 Manufacturing Technology (1 is also pursuing a Welding Technology Certificate)
  - 1 Manufacturing Engineering Technology

- 2 Manufacturing-Related Certificate programs:
  - 1 CAD (Computer Aided Drawing)
  - 1 Welding Technology
Pseudonyms were used to protect participants’ identities.

<table>
<thead>
<tr>
<th>Name</th>
<th>Academic Program</th>
<th>Student Status</th>
<th>First-Generation College Student (Yes/No)</th>
<th>Number of Credits Completed Toward Degree/Certificate</th>
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<td>Part-time</td>
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<td>46 or more</td>
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<td>Alex</td>
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<td>Ben</td>
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<td>James</td>
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<td>31-45</td>
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<td>Lisa</td>
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<td>Michael</td>
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<td>Sam</td>
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<td>Trevor</td>
<td>AAS Welding Technology</td>
<td>Full-time</td>
<td>No</td>
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## Participants’ Demographic Information

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<td><strong>Gender:</strong></td>
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<td>Black/African American</td>
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<td>40-49 years old</td>
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<td><strong>Student Status:</strong></td>
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<td>Full-time</td>
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</tr>
<tr>
<td>Part-time</td>
<td>4</td>
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</tbody>
</table>
Adam, 26 ● Welding Technology AAS

- Married, with one 3-year-old son
- Part-time student
- Currently employed by the community college as a welding technician (7 years)
- Teaches in the welding program as an adjunct
- Runs a CNC and powder coating business out of his garage
- Took welding, automotive, and wood shop in high school
- Did not intend on going to college
- Hopes to one day be a full-time welding instructor and to grow his business
Alex, 23 ● Manufacturing Technology AAS

- Single
- Part-time student
- Currently working full-time as a operator/helper at a cardboard processing plant
- Took automotive classes in high school
- Completed 1 ½ years at a university for automotive
- Has also taken classes at the community college for HVAC
- Pursued manufacturing because he “wanted something different”
- Is interested in the machine maintenance aspect of manufacturing
Ben, 36 • CAD Certificate

- Married, has a child on the way
- Not currently employed but is trying to start a furniture making business
- Has an associates degree and a bachelor’s degree in business
- Took auto body in high school
- Wanted to learn CAD to be able to produce drawings for his furniture business
- Would like to find a position that uses CAD to gain more experience
Brooke, 32 • Welding Technology AAS

- Single with two children
- Full-time student
- Currently working as a bartender, but was also going to be a student worker in the welding program
- Was planning on being a nurse
- Had not taken any CTE courses in high school and had not welded or been in an industrial setting prior to entering the program
- Would eventually like to join the Boilermaker Union
Edward, 21 ● Manufacturing Technology AAS & Welding Technology Certificate

- Single
- Full-time student
- Works part-time in the stock room for a retailer
- Completed two years at a university; was majoring in geology
- Took wood shop in high school
- Has always wanted to learn welding
- Eventually would like to aerospace welding, but would be happy with an entry-level welder or machinist position
James, 29 ● Manufacturing Technology AAS

- Single
- Full-time student
- Not currently employed
- Had attended community college out-of-state
- Taken wood shop in high school
- Intended on getting an engineering degree until he learned about manufacturing
- Interested in several manufacturing-related positions, including welder, CNC operator, and maintenance
Lisa, 19 • Welding Technology AAS

- Single
- Full-time student
- Works part-time in retail
- Took welding and machining in high school
- Originally wanted to go to art school
- Wants to go on and get a bachelors degree in metallurgy
- Wants a production welder position
Michael, 21 ● Welding Technology AAS

- Single
- Full-time student
- Currently working part-time at a lumber yard
- Involved in Student Government Association and American Welding Society on campus
- Took a wood shop class in high school
- Had most requirements met for admission to OTA program (occupational therapy assistant) at the community college
- Plans to go into pipefitter apprenticeship program and eventually would like to become a certified welding inspector
Sam, 40 • Mechanical Technologies AAS

- Divorced, one son
- Part-time student
- Works full-time creating part drawings for a subcontractor to a major manufacturer
- Took small engine repair in high school
- Attended college immediately after high school but dropped out after one semester
- Would like to get into project management and maybe start his own business some day
Tony, 24 • Welding Technology Certificate

- Single
- Part-time student
- Not currently working
- Did not take CTE courses in high school
- Attended community college prior with the hope of going into real estate
- Would like to obtain a position as a production welder after graduation and maybe work for himself one day
Trevor, 20 ● Welding Technology AAS

- Single
- Full-time student
- Works part-time at a gas station
- Took technical drawing and CAD classes in high school
- Was also dual enrolled in classes in the welding program
- After graduating he would like a mid-level welding position working on bridges or barges or as a pipefitter
- Would eventually like to become an underwater welder
MANUFACTURING STUDENTS:
THE JOURNEY TO A CAREER

MAJOR THEMES
13 Major Themes and 2 Sub-themes

1. Handy and Pragmatic: We Like to Work with Things
2. The Early Influence of Handy People
3. Interest and Ability in the Mechanical Arts: Artistic, Creative, and Mechanical
   1. Welders as Artists
4. It’s Who You Know: People Who Influenced or Motivated Us to Pursue Manufacturing
5. The Economic Motivation of Pursuing a Manufacturing Career: Opportunity, Money, and the Value of the Community College
6. Sense of Pride and Accomplishment in their Work and Desire for Job Satisfaction
13 Major Themes and 2 Sub-themes, continued

7. We Respect and Admire Our Community College Instructors
8. Support and Encouragement From Family and Friends
9. Challenges: Career Choice, College, and Coursework
10. Laying the Groundwork: The Importance of High School CTE
   1. High School CTE Classes and Community College Manufacturing Programs
11. We Didn’t Originally Intend to Go Down This Road
12. Entrepreneurial and Willing to Take Risks
13. Perceptions of Manufacturing and Encouraging Others to Go into the Field
Handy and Pragmatic: We Like to Work with Things

- All 11 participants recognized they were handy and liked to work with their hands, use tools, and were interested in how things work.
- Participants were also pragmatic in dealing with problems or issues: “Why should I pay someone else to do something I can do?”
Handy and Pragmatic: We Like to Work with Things

_In the participants’ own words:_

“[A trade is] the great equalizer, you know? I mean, I’m smart. I’ve always done well in school, but I just don’t really like your run-of-the-mill things, like doctor or lawyer. I’d rather work with materials or equipment than people, I guess.”

– Tony

“Well, I put a trailer hitch on my Subaru yesterday, which my wife was pissed, because it’s brand new. And she came home and the whole rear end was taken apart. I got it back together. I took my fridge apart; the ice maker was all busted. [I’m] getting ready to frame my basement [and] finish my basement off.”

– Ben
All 11 participants were influenced by someone in their lives who directly or indirectly taught them about manufacturing and working with their hands.

- Personal, professional, or familial relationships
- Many people in their lives worked in manufacturing.
The Early Influence of Handy People

*In the participants’ own words:*

“Well, growing up, I basically was raised by men. We purchased the house that was only $92,000, and my dad wanted to get the best of it. Because this house was well worth it, but there was a few issues. My dad’s a handyman himself, and so he’d always have me and my brother come and help him on little projects and stuff around the house. So I can do woodworking. . . . If it wasn’t for doing little small projects with my dad, I don’t think I probably would have even gone into the [manufacturing] field.”

–Lisa

“With all that equipment he had, it’s expensive to have it get fixed, so he would fix it. I remember as young as I can, I was out there working with him, and he would teach us everything we needed to know while we’re out there. I’d definitely say he was handy. I remember being on job sites [where] people were questioning us, because we would drive the equipment when we were 7, 8 years old.”

–Adam
Interest and Ability in the Mechanical Arts: Artistic, Creative, and Mechanical

- All 11 participants shared examples of their artistic, creative, or mechanical interests, abilities, or skills
- 1 sub-theme: Welders as Artists
Interest and Ability in the Mechanical Arts:
Artistic, Creative, and Mechanical

*In the participants’ own words:*

“I like to take things apart, ever since I was a little kid—radios, electronics, everything I could get my hands on. I think I really did enjoy that small engine class [in high school] because you get to take [it] apart, see all the parts, and then put it back together and make it work.”

—Sam

The first day I worked with the old man at his [automotive shop while in high school], I dropped the oil pan out of a car and pulled pistons out the engine and replaced the piston rings and put everything back together, having never done it. At my [army] unit [on the West Coast], our ice maker broke. They said it was going to take six months to get it fixed. I just went one day, opened it up, fixed it, and put it back together. It was the only working ice maker in the whole unit.

—James
Sub-theme: Welders as Artists

- All 7 of the participants who were pursuing a welding degree or certificate mentioned having some type of artistic background, either through art classes in high school, as a hobby, or through work
- Demonstrates a strong creative connection between welding and art
Participants Pursuing Welding Who Have an Interest and Ability in Art

<table>
<thead>
<tr>
<th>Name of Participant Pursuing a Welding Degree/Certificate</th>
<th>Interest and Ability in Art as Work or Hobby</th>
<th>Enrolled in Art Class(es) in High School</th>
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</thead>
<tbody>
<tr>
<td>Adam</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Brooke</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Edward</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Lisa</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Michael</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Tony</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Trevor</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>2</td>
</tr>
</tbody>
</table>
Welders as Artists

In the participants’ own words:

“I actually brought this because I actually searched around for a good welding helmet, and I couldn’t find one that wasn’t over a certain amount of money. I only had a week left until I had to find one for class, and this was $75. This was the only one left. It had all of the things that I needed inside of it, and this was actually all black, at first . . . . I did this bird on the side, so I thought that I kind of just put my welding and artistic side to this, and made myself a little cute welding helmet.”

–Lisa

“I [want to] buy a welding machine and then just start taking scrap metal and putting things together and selling them at art shows, because I know people are willing to pay high amounts of money for just little bits of items people welded together. They’ll look artful.”

–Edward
It’s Who You Know: People Who Influenced or Motivated Us to Pursue Manufacturing

- All 11 participants described people in their lives who influenced or motivated them to pursue manufacturing or to enroll in a community college manufacturing program.
- 9 of the 11 participants were influenced by a friend or someone close to them.
- 2 of the 11 participants were influenced by community college advisors.
It’s Who You Know: People Who Influenced or Motivated Us to Pursue Manufacturing

In the participants’ own words:

“I hadn’t really done anything with myself [after high school] except [to] work part time. . . . [My friend was] like, ‘If you really want to get a leg up in life and do something, you know I’ve been going to [the community college], and I’m going to be a machinist. I’m going to work all these crazy hours.’ I was like, ‘You know what? Sounds cool. I can go to school to be useful.’ That’s the way I put it.”

—Tony

“I’m like, ‘I’m going to do that.’ I don’t know, I was very intrigued and I got to learn more about it and it’s just more of an art, you know? . . . . I’ve always been in art. I think that’s why I’ve been so intrigued with it. . . . I’m pretty sure I was flipping through there and I [saw his picture and] I’m like, ‘Well that’s [the community college instructor]. That’s awesome.’ I just remembered that whenever I [decided to go into welding]. I messaged him over Facebook [and said], ‘Hey I want to know more about this.’”

—Brooke
The Economic Motivation of Pursuing a Manufacturing Career: Opportunity, Money, and the Value of the Community College

- All 11 participants understood that when they completed their programs they would have a good paying job.
- All 11 participants said their programs and community colleges were of high quality or low cost and that their programs were excellent.
- The participants knew they would have opportunities upon graduation: to work for themselves, to pursue hobbies, to move within the field of manufacturing.
The Economic Motivation of Pursuing a Manufacturing Career: Opportunity, Money, and the Value of the Community College

_In the participant’s own words:_

“It was like, ‘All right, the STEM field that I wanted to do [is] not going to work out; liberal arts degree, no thanks. I know I can’t get a job in that, or it’s a very highly competitive market for not a lot of positions and not a lot of money. I know [in] manufacturing there’s less positions, [and the] money is based off of how skilled you are. If I can go into that and make myself highly skilled, I could probably do fairly well.”

– Edward
Sense of Pride and Accomplishment in Their Work and Desire for Job Satisfaction

- All 11 participants illustrated a sense of pride and accomplishment in their work and a desire for job satisfaction.
- The participants expressed their desire and persistence to produce quality work.
Sense of Pride and Accomplishment in Their Work and Desire for Job Satisfaction

In the participant’s own words:

“Building a product and you know you’re the one that built it, it’s satisfying. Something about putting two things together and welding it together and knowing that you did that. It gives you a better appreciation of what you do. . . . At first, I felt that I wasn’t very good because everybody else that I saw had experience in welding before. They did welding in high school or they did welding on farms and stuff. And they already knew a lot of it and I came in knowing nothing. I felt like I had a disadvantage. But because I felt I had a disadvantage, I worked hard and stayed in the booth the whole class period through the whole program and still continued doing that. I think the disadvantage, I made that into positive energy.”

–Michael
We Respect and Admire Our Community College Instructors

- All 11 participants emphasized the positive impact of their community college manufacturing instructors
- Participants expressed pride when speaking about them and felt they were knowledgeable
- Participants perceived their instructors as wanting them to succeed and that they cared about their students
We Respect and Admire Our Community College Instructors

*In the participants’ own words:*

“The teachers, actually. They actually help you. . . . All growing up, I had teachers that just basically clocked in, clocked out. . . . I [think] all my [community college] teachers, they always [put] their students first before anything else. Because there are teachers here that stay longer than what they normally need to, and they get paid salary. I feel like they actually like where they are.”

—Lisa

“[My welding instructor] is a big influence. [One instructor] ended up calling me his son because of my work ethic. . . . I love the people. I love the teachers. It’s fun to work in a fun [environment], just talking to everybody with their different experiences. And I haven’t been in a program that was like that, not even in high school. It’s really awesome.”

—Michael
Support and Encouragement from Family and Friends

- All 11 participants said they felt supported and encouraged by their families and friends for pursuing a manufacturing-related career or program.
- 2 of the 11 participants did not have support from their family initially but eventually did gain their support.
Support and Encouragement from Family and Friends

*In the participants’ own words:*

“They’re all super excited about it and if I have to hear one more time, ‘We’ve been telling you to do this. . . . This is what you should have been doing your entire life.’”

—Ben

“She was shocked, definitely. She’s one of the traditional people of, ‘You need to get a bachelor’s degree or you’re not going to be able to get a job.’ I was like, ‘No, that’s not true.’ She fought me on it, but she realized that if she doesn’t support me, I’m just going to fight her more. . . . She didn’t like it. She wanted me to go back to [name of public university] and explore some other degree, and I was just like, ‘No, Mom, I’m not getting a liberal arts degree.’”

—Edward
Challenges:
Career Choice, College, and Coursework

- All 11 participants faced one or more challenges related to their community college manufacturing program.

- Challenges included:
  - Career choice and general learning challenges (8 participants)
  - Inadequacy or inexperience regarding the manufacturing field (6 participants)
  - College-enrollment issues (5 participants)
  - Challenges with manufacturing courses (4 participants)
  - Managing time (3 participants)
Challenges: Career Choice, College, and Coursework

*In the participants’ own words:*

“I really had a struggle trying to figure out what I wanted to do. [When I was] 18, I just had no idea where I was going, right or left.”

– Brooke

“If I really, like, put my mind to it, I can write a paper, but I just don’t like to. And, I mean, I’m not very good at math either, which is kind of hard. Because there is a little bit of math in manufacturing, like trigonometry, which I struggle with. But, yeah, I just like working with my hands.”

– Alex
Laying the Groundwork:
The Importance of High School CTE

- 9 of the 11 participants were enrolled in one or more CTE classes in high school
  - 3 Wood shop
  - 1 Drafting/CAD (this student was also dual enrolled in college courses in the welding program)
  - 1 Welding/machining
  - 1 Auto body
  - 1 Automotive
  - 1 Small engine repair
  - 1 Welding, automotive, and wood shop

- 1 sub-theme: High School CTE Classes and Community College Manufacturing Programs
Laying the Groundwork: The Importance of High School CTE

*In the participants’ own words:*

“We made blanket chests, tables, stuff like that. It’s similar principles because you’re using these tools. You always have to keep the tolerances. If you mess up one thing, you have to change these other dimensions to make it all fit. You have to take into account how fast you feed the wood into a table saw. That would transfer over into how fast you feed the metal into an end mill. It’s a lot of things like that. If you do it like this in wood shop, it would sort of apply like this in manufacturing.”

–Edward

“I remember going in [to my welding class] my senior year, and [was] just like, ‘What is this? What is that? Why is that thing moving at a rapid pace? Am I going to catch myself on fire?’ I think I got all that anxiety about what I did not know, [and now] it’s just gone. Now I have a background as to how complex some things are. Oh yeah, I definitely feel more comfortable after the fact that I took a class in high school, because now I have more background knowledge.”

–Lisa
## Sub-theme: High School CTE Courses and Manufacturing-Related Community College Programs

<table>
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<th>Name of Participants by Community College Program Enrollment</th>
<th>High School CTE Coursework Completed</th>
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<td>Automotive/Auto-body</td>
<td>Wood Shop</td>
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<tr>
<td><strong>Manufacturing/CAD Degree/Certificate</strong></td>
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<td>Alex</td>
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<td>Edward*</td>
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<td>James</td>
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<td><strong>Total for Manufacturing/CAD</strong></td>
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<td><strong>Total for Welding</strong></td>
<td>1</td>
</tr>
</tbody>
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*Edward is also pursuing a welding certificate in addition to his manufacturing AAS degree.*

**James also received automotive training/experience while working for a mechanic in high school.
We Didn’t Originally Intend to Go Down this Road

- 3 of the 11 participants entered their manufacturing programs immediately or almost immediately after high school; all three had taken manufacturing CTE courses in high school
  - 1 participant did not intend on going to college but entered the program about two years later

- 8 of the 11 participants were pursuing a different career before they chose manufacturing
  - 3 participants had begun pursuing a four-year degree but did not finish
  - 1 participant finished a four-year degree in his late 20s
  - 4 participants had attended a community college for a different program

Theme 11
We Didn’t Originally Intend to Go Down this Road

*In the participant’s own words:*

“I was working through the classes and I was taking one of the [major] classes that you need. It was metamorphic petrology. It’s about metamorphic rocks. I took that, got a ‘D’ in it. I don’t think I studied as hard as I should, and I was like, ‘Oh well, if I’m not motivated enough to study the material to get a ‘C’ in the class [then maybe this isn’t for me]. I could’ve moved on if I wanted to, but I was like, ‘Do I risk spending the extra $20,000 a year to possibly fail this? I know I want to learn welding at some point. Do I go into a technical field, which I know I work better with my hands and I can succeed in it?’”

—Edward
Entrepreneurial and Willing to Take Risks

- 9 of the 11 participants gave examples of situations where they were willing to take a risk or were interested in working for themselves
- Changing career paths and career choice were risks
- Some want to eventually start their own businesses
Entrepreneurial and Willing to Take Risks

*In the participants’ own words:*

“If you’ve got an idea [for] something, if you go with it, it could pay off. Everybody says it, but if you’re not going to take a risk, [then] there’s no reward [in] it. I took out a loan for six or seven grand when I was 19 years old to buy this [CNC] machine. I didn’t know if it was going to make it or not. In my mind, it’s [a] better [investment] than a Harley sitting in the garage collecting dust that I would have never rode.”

– Adam

“My response to my dad was initially I was really mad at him. I’m like, ‘Look, if it’s what I want to do to have fun. You should not be a horrible person about it. Eventually, I just calmed down and said, ‘If he doesn’t want me to do it, I’m going to do it anyway because I want to. And I’ll do what I want.’ I’ve never been a rebellious child, because I figured out very young that being rebellious has no benefits whatsoever. I never rebelled against my parents. . . . Even so, my one closest act of rebellion was the enhanced drive I got to pursue welding when my dad reacted poorly.”

– Trevor
Perceptions of Manufacturing and Encouraging Others to Go into the Field

- 7 of the 11 participants discussed the perceptions of others regarding the manufacturing field and also suggestions for encouraging others to pursue manufacturing.
- It is important to dispel the myths surrounding skilled trades.
Perceptions of Manufacturing and Encouraging Others to Go into the Field

In the participants’ own words:

“I think every type of employment out there or every type of workforce has its stereotypes, and, to a degree, a lot of them are true. But at the same time a lot of them are not. Like I was saying a minute ago, people probably off the top of their heads think industrial workers are just the blue collar beta males, the mouth breathers, but I’m generally a pretty smart, artistic guy. I don’t know. I do this because I like it. I don’t do this because I feel like I don’t have any other options, or like I’m escaping something. I don’t know. This intrigues me.”

–Tony

“No, my advisors in high school reacted kind of like my dad when I told them I was going into welding. They’re like, ‘Trevor, you know you scored like straight A’s without even trying in bio and chemistry. You have a lot of offers there,’ and I’m like, ‘Yeah, but I don’t want to do that. That’s a lot of paperwork and sitting behind a desk. That sounds awful, and also the job market is terrible.’”

–Trevor
Internal and External Motivating Factors of Participants Who Chose to Pursue Manufacturing as a Career
ANSWERS TO RESEARCH QUESTIONS, RECOMMENDATIONS, AND REFLECTIONS
Summary

- There are more than 600,000 unfilled manufacturing jobs in the US due to the skills gap.
- There are currently 570,000 workers in manufacturing in Illinois (J. Nelson, personal communication, January 13, 2017).
- Automation has caused a decline in the number of manufacturing firms, and thus, manufacturing workers since the recession.
- Illinois is in need of 25,000 manufacturing production workers annually through 2027 due to retirements and new manufacturing processes that require specialized skills.
- Negative perceptions of manufacturing and general push from parents and educators for four-year degrees means less students are considering manufacturing or skilled trades.
- Why aren’t people choosing manufacturing as a career?
- Findings from this study of 11 participants at four Illinois community colleges revealed 13 major themes and 2 sub-themes.
What are the Perceptions and Experiences that Led a Small Group of Students to Choose a Career in Manufacturing and to Enroll in a Manufacturing Degree or Certificate Program at Community Colleges in Illinois?

- Enjoy working with their hands and things – creating and fixing
- Given opportunities to discover their handiness
- Wanted to know how things work and are made
- Interested and skilled in artistic, creative, and mechanical endeavors (Holland, 1997)
- 9 of 11 participants were enrolled in high school CTE
- Surrounded by people who were handy or worked in manufacturing
- Influenced to pursue manufacturing or the community college program by someone they know
What Information Related to the Field of Manufacturing are Students Exposed to and How and When are They Exposed to it? What Influence Does This Have on Their Career Choice?

- Working with their parents or others at home, school, or work
- High school CTE for 9 of the 11 participants
- 3 participants had worked in manufacturing prior to enrolling
- 6 of 11 participants had close family members who worked in manufacturing or who had been enrolled in a community college manufacturing program
- 6 of the 11 participants grew up in towns that had a large manufacturing company as a major employer
- All participants were influenced by a conversation about manufacturing or a manufacturing program
- They felt manufacturing field offers good paying jobs and opportunities and a chance to work with their hands
What Motivated These Students to Pursue a Career in Manufacturing? What Internal and External Factors Influenced Them to Pursue a Career in Manufacturing?

- Someone they knew who told them about manufacturing or the community college program
- Self-awareness (Holland, 1959)

**Internal Factors**
- Handy and pragmatic
- Satisfaction in making, fixing, or taking apart things
- Job satisfaction and a sense of pride and accomplishment in their work

**External Factors**
- Money and job opportunities
- Support from family and friends
- Working for themselves
What Challenges Have they Faced Along the Way?

- Career indecision
- Non-technical coursework
- Inexperience in manufacturing
- Feeling inadequate/inexperienced about entering manufacturing field
- College enrollment issues
- Time management
What Motivated These Students to Enroll in a Manufacturing Degree or Certificate Program at a Community College?

- Motivation was intertwined with wishing to pursue manufacturing as a career
- Close family and friends’ success in manufacturing programs or careers
- Good salary and job opportunities
- Would rather work with hands than sit at a desk
- Preferred applied coursework
- Reputation of the community college
- Encouragement from CTE teacher for two participants
- Admiration of community college instructors may have led to persistence
Recommendations for Educators, Parents, and Manufacturers

- Provide Opportunities for Student Self-Awareness
  - Project-based learning, integrate hands-on elements into K-12 curriculum, career exploration, part-time employment, opportunities to discover handiness, field trips, job shadowing

- Promote Career and Technical Education
  - Require CTE in junior high and high school, understand post-secondary CTE options, expand dual credit, market community college programs, promote job opportunities in the field

- Enhance or Create Comprehensive Career Planning and Occupational Awareness Programs
  - Offer self-assessment and exploration of world of work to students, exploration of career pathways, promote community college programs in K-12, job shadowing, internships, assistance to non-traditional students; parents should focus on career options, not college
Reflections

- Why do negative stereotypes persist?
- Why isn’t handiness and mechanical ability given the same weight as being “book smart”?
- Why do we continue to push students toward a four-year degree?
- What are we doing to help students discover their handiness and mechanical abilities? What are we doing to develop those skills, beginning at a young age?
- What are we doing to ensure all students are given the opportunities to discover their strengths and corresponding career fields?
- Why do we continue to talk to kids about college and not about careers?
“I do this because I like it. I don’t do this because I feel like I don’t have any other options, or like I’m escaping something… This intrigues me.”

Tony

Pursuing a Welding Technology Certificate
Questions or Comments?
Key References


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