

# STATEWIDE VALIDATION

*of*  
National Career Cluster Knowledge and Skills Statements  
*with*  
Suggestions to Better Prepare the Workforce of Tomorrow

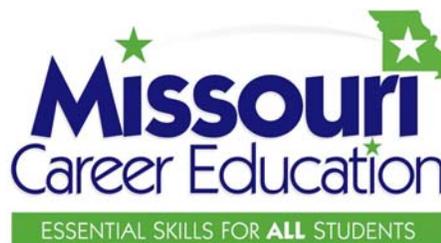
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*Responses Received from Online Survey of Missouri Business and Industry  
Conducted November 20, 2006 through January 8, 2007*

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## 16 Career Clusters

- *Agriculture, Food and Natural Resources*
- *Architecture and Construction*
- *Arts, Audio-Visual Technology, and Communication*
- *Business, Management and Administration*
- *Education and Training*
- *Finance*
- *Government and Public Administration*
- *Health*
- *Hospitality and Tourism*
- *Human Services*
- *Information Technology*
- *Law, Public Safety, Corrections and Security*
- **Manufacturing**
- *Marketing, Sales and Service*
- *Science, Technology, Engineering and Mathematics*
- *Transportation, Distribution and Logistics*



Department of Elementary and Secondary Education  
Division of Career Education  
Nancy J. Headrick, Assistant Commissioner  
P.O. Box 480  
Jefferson City, MO 65102-0480  
(573) 751-3500

How essential are the following knowledge and skill statements to a FOUNDATION in a career or continuing education in Manufacturing? COMMUNICATION:

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Comprehend the use of reading strategies to learn meaning, technical concepts, vocabulary, and to bring together information needed for a particular situation.	<b>55% (23)</b>	40% (17)	5% (2)	0% (0)	0% (0)	<b>1.50</b>
Locate, organize, and document written information from various sources needed by co-workers and clients/participants.	40% (17)	<b>48% (20)</b>	12% (5)	0% (0)	0% (0)	<b>1.71</b>
Use correct grammar, punctuation, and terminology to write and edit documents.	33% (14)	<b>50% (21)</b>	14% (6)	2% (1)	0% (0)	<b>1.86</b>
Develop and deliver formal and informal presentations using appropriate media to engage and inform audiences.	17% (7)	<b>39% (16)</b>	32% (13)	12% (5)	0% (0)	<b>2.39</b>
Interpret verbal and nonverbal behaviors to enhance communication with co-workers and clients/participants.	<b>38% (16)</b>	29% (12)	29% (12)	5% (2)	0% (0)	<b>2.00</b>
Apply active listening skills to obtain and clarify information.	<b>51% (21)</b>	44% (18)	5% (2)	0% (0)	0% (0)	<b>1.54</b>
Interpret and use information in tables, charts, and figures to support written and oral communications.	<b>45% (19)</b>	43% (18)	12% (5)	0% (0)	0% (0)	<b>1.67</b>
<b>Total Respondents</b>						<b>42</b>

How essential are the following knowledge and skill statements to a FOUNDATION in a career or continuing education in Manufacturing? **PROBLEM SOLVING AND CRITICAL THINKING:**

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Formulate solutions to problem using critical thinking skills while working independently and/or in teams.	<b>76% (31)</b>	17% (7)	7% (3)	0% (0)	0% (0)	<b>1.32</b>
<b>Total Respondents</b>						<b>41</b>

**SYSTEMS:**

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Demonstrate knowledge of how manufacturing businesses operate.	20% (8)	<b>51% (21)</b>	24% (10)	5% (2)	0% (0)	<b>2.15</b>
Demonstrate knowledge of how manufacturing businesses improve performance.	22% (9)	<b>59% (24)</b>	20% (8)	0% (0)	0% (0)	<b>1.98</b>
<b>Total Respondents</b>						<b>41</b>

**INFORMATION TECHNOLOGY APPLICATIONS:**

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Use Personal Information Management (PIM)/Productivity applications.	10% (4)	<b>35% (14)</b>	<b>35% (14)</b>	2% (1)	18% (7)	<b>2.36</b>
Use electronic mail applications.	35% (14)	<b>38% (15)</b>	25% (10)	0% (0)	2% (1)	<b>1.90</b>
Use Internet applications.	25% (10)	<b>35% (14)</b>	32% (13)	8% (3)	0% (0)	<b>2.23</b>
Use writing/publishing applications.	18% (7)	32% (13)	<b>40% (16)</b>	10% (4)	0% (0)	<b>2.43</b>
Use presentation applications.	12% (5)	22% (9)	<b>48% (19)</b>	18% (7)	0% (0)	<b>2.70</b>
Use spreadsheet applications.	<b>32% (13)</b>	<b>32% (13)</b>	<b>32% (13)</b>	2% (1)	0% (0)	<b>2.05</b>
Use database applications.	15% (6)	<b>48% (19)</b>	32% (13)	5% (2)	0% (0)	<b>2.28</b>

Use collaborative/groupware applications.	10% (4)	25% (10)	<b>48% (19)</b>	12% (5)	5% (2)	<b>2.66</b>
Use computer operations applications.	26% (10)	<b>46% (18)</b>	21% (8)	5% (2)	3% (1)	<b>2.05</b>
Use computer-based equipment (containing embedded computers or processors used to control electromechanical devices).	35% (14)	<b>42% (17)</b>	20% (8)	2% (1)	0% (0)	<b>1.90</b>
<b>Total Respondents</b>						<b>40</b>

How essential are the following knowledge and skill statements to a FOUNDATION in a career or continuing education in Manufacturing? LEADERSHIP AND TEAMWORK:

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Demonstrate leadership and teamwork skills in collaborating with others to accomplish organizational goals and objectives.	<b>49% (19)</b>	44% (17)	8% (3)	0% (0)	0% (0)	<b>1.59</b>
<b>Total Respondents</b>						<b>39</b>

EMPLOYABILITY AND CAREER DEVELOPMENT:

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Explain written organizational policies, rules and procedures to help employees perform their jobs.	28% (11)	<b>42% (17)</b>	25% (10)	2% (1)	2% (1)	<b>2.03</b>
Identify and demonstrate positive work behaviors and personal qualities.	<b>55% (22)</b>	42% (17)	0% (0)	0% (0)	2% (1)	<b>1.44</b>
Develop a personal career plan to meet career goals and objectives.	22% (9)	<b>50% (20)</b>	22% (9)	0% (0)	5% (2)	<b>2.00</b>
Demonstrate ability to seek and apply for employment.	28% (11)	<b>50% (20)</b>	15% (6)	2% (1)	5% (2)	<b>1.92</b>

Demonstrate ability to evaluate and compare employment opportunities and accept employment.	25% (10)	<b>45% (18)</b>	20% (8)	5% (2)	5% (2)	<b>2.05</b>
<b>Total Respondents</b>						<b>40</b>

How essential are the following knowledge and skill statements to a FOUNDATION in a career or continuing education in Manufacturing? SAFETY, HEALTH AND ENVIRONMENTAL:

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Demonstrate knowledge of safety, health, and environmental management systems.	<b>48% (19)</b>	40% (16)	12% (5)	0% (0)	0% (0)	<b>1.65</b>
<b>Total Respondents</b>						<b>40</b>

ETHICS AND LEGAL RESPONSIBILITIES:

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Demonstrate knowledge of and commitment to professional ethics and legal responsibilities.	<b>54% (21)</b>	31% (12)	13% (5)	0% (0)	3% (1)	<b>1.58</b>
<b>Total Respondents</b>						<b>39</b>

What other skills and knowledge are essential as a foundation for success in an array of careers and educational pursuits in Manufacturing?

<b>Total Respondents</b>	<b>11</b>
(See Comments page)	

Please select a career pathway:

		<b>Response Percent</b>	<b>Response Total</b>
Health, Safety and Environmental Assurance		20%	8
Logistics and Inventory Control		2.5%	1
<b>Maintenance, Installation and Repair</b>		<b>27.5%</b>	<b>11</b>
Manufacturing Production Process Development		25%	10
Production		22.5%	9
Quality Assurance		2.5%	1
<b>Total Respondents</b>			<b>40</b>

How essential are the following skills for the "Health, Safety, and Environmental Assurance" career pathway?

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Ensure that equipment is being used safely in the workplace.	<b>100% (9)</b>	0% (0)	0% (0)	0% (0)	0% (0)	<b>1.00</b>
Plan for safety in new production processes.	<b>67% (6)</b>	22% (2)	0% (0)	11% (1)	0% (0)	<b>1.56</b>
Conduct health, safety, and/or environmental incident and hazard investigations.	<b>62% (5)</b>	25% (2)	12% (1)	0% (0)	0% (0)	<b>1.50</b>
Conduct preventive health, safety, and/or environmental incident and hazard inspections.	<b>78% (7)</b>	11% (1)	11% (1)	0% (0)	0% (0)	<b>1.33</b>
Implement health, safety, and/or environmental programs, projects, policies, or procedures.	<b>78% (7)</b>	22% (2)	0% (0)	0% (0)	0% (0)	<b>1.22</b>
Implement continuous improvement in health, safety, and/or environmental practices.	<b>44% (4)</b>	<b>44% (4)</b>	11% (1)	0% (0)	0% (0)	<b>1.67</b>

Promote health, safety, and/or environmental assurance programs. Conduct job safety and health analysis for jobs, equipment, and processes.	<b>67% (6)</b>	33% (3)	0% (0)	0% (0)	0% (0)	<b>1.33</b>
Maintain a safe and productive workplace.	<b>89% (8)</b>	11% (1)	0% (0)	0% (0)	0% (0)	<b>1.11</b>
Train workers in health, safety, and/or environmental issues.	<b>56% (5)</b>	33% (3)	11% (1)	0% (0)	0% (0)	<b>1.56</b>
<b>Total Respondents</b>						<b>9</b>

What additional skills and knowledge are essential for careers in this pathway?

<b>Total Respondents</b>	<b>1</b>
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How would you characterize your relationship to the workforce in the career pathway of Health, Safety and Environmental Assurance? Answer as many as applicable.

		<b>Response Percent</b>	<b>Response Total</b>
I make hiring decisions		55.6%	5
I supervise people who are in this career field		66.7%	6
I work in this career field		66.7%	6
I have a friend or relative who works in this career field		33.3%	3
<b>I have an interest in improving the quality of the workforce in this area</b>		<b>100%</b>	<b>9</b>
I have an interest in attracting more people to this career field		77.8%	7
I have no professional connection with this career field		0%	0
Other (please specify)		0%	0
<b>Total Respondents</b>			<b>9</b>

Thank you for your responses. Please indicate what you would like to do next.

		<b>Response Percent</b>	<b>Response Total</b>
<b>Continue to the final wrap-up questions of this survey</b>		<b>87.5%</b>	<b>7</b>
Return to the Manufacturing career cluster list to select another pathway.		12.5%	1
<b>Total Respondents</b>			<b>8</b>

How essential are the following skills for the "Logistics and Inventory Control" pathway?

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Communicate with co-workers and/or external customers to ensure production meets business requirements.	<b>50% (1)</b>	<b>50% (1)</b>	0% (0)	0% (0)	0% (0)	<b>1.50</b>
Ship and receive products and materials.	<b>50% (1)</b>	<b>50% (1)</b>	0% (0)	0% (0)	0% (0)	<b>1.50</b>
Maintain a safe and productive workplace.	<b>100% (2)</b>	0% (0)	0% (0)	0% (0)	0% (0)	<b>1.00</b>
Manage inventory to meet production.	<b>50% (1)</b>	<b>50% (1)</b>	0% (0)	0% (0)	0% (0)	<b>1.50</b>
<b>Total Respondents</b>						<b>2</b>

What other skills and knowledge are essential for this career pathway?

<b>Total Respondents</b>	<b>0</b>
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How would you characterize your relationship to the workforce in the career pathway of Logistics and Inventory Control? Answer as many as applicable.

		<b>Response Percent</b>	<b>Response Total</b>
I make hiring decisions		0%	0
I supervise people who are in this career field		0%	0
I work in this career field		0%	0
I have a friend or relative who works in this career field		0%	0
<b>I have an interest in improving the quality of the workforce in this area</b>		<b>50%</b>	<b>1</b>
<b>I have an interest in attracting more people to this career field</b>		<b>50%</b>	<b>1</b>
<b>I have no professional connection with this career field</b>		<b>50%</b>	<b>1</b>
Other (please specify)		0%	0
<b>Total Respondents</b>			<b>2</b>

Thank you for your responses. Please indicate what you would like to do next.

		<b>Response Percent</b>	<b>Response Total</b>
<b>Continue to the final wrap-up questions of this survey</b>		<b>100%</b>	<b>1</b>
Return to the Manufacturing career cluster list to select another pathway.		0%	0
<b>Total Respondents</b>			<b>1</b>

How essential are the following skills for the "Maintenance, Installation and Repair" pathway?

	<b>Very important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Maintain a safe and productive workplace.	<b>79% (11)</b>	21% (3)	0% (0)	0% (0)	0% (0)	<b>1.21</b>
Communicate with others to ensure that maintenance and repairs meet business needs.	<b>57% (8)</b>	36% (5)	7% (1)	0% (0)	0% (0)	<b>1.50</b>
Maintain hands-on knowledge of equipment operation to identify maintenance needs.	<b>57% (8)</b>	43% (6)	0% (0)	0% (0)	0% (0)	<b>1.43</b>
Ensure that equipment is being used safely in the workplace.	<b>57% (8)</b>	36% (5)	7% (1)	0% (0)	0% (0)	<b>1.50</b>
Identify, diagnose, and/or repair equipment problems.	<b>100% (14)</b>	0% (0)	0% (0)	0% (0)	0% (0)	<b>1.00</b>
Support the installation, customization, or upgrading of equipment.	<b>50% (7)</b>	43% (6)	7% (1)	0% (0)	0% (0)	<b>1.57</b>
Follow a preventative maintenance schedule to maintain equipment, tools and workstations.	<b>50% (7)</b>	<b>50% (7)</b>	0% (0)	0% (0)	0% (0)	<b>1.50</b>
Coordinate predictive and preventive maintenance to ensure that production process runs smoothly.	<b>43% (6)</b>	<b>43% (6)</b>	14% (2)	0% (0)	0% (0)	<b>1.71</b>
<b>Total Respondents</b>						<b>14</b>

What other skills and knowledge are essential for this career pathway?

<b>Total Respondents</b>	<b>5</b>
(See Comments page)	

How would you characterize your relationship to the workforce in the career pathway of Maintenance, Installation and Repair? Answer as many as applicable.

		<b>Response Percent</b>	<b>Response Total</b>
I make hiring decisions		57.1%	8
I work in this career field		78.6%	11
I supervise people who are in this career field		71.4%	10
<b>I have an interest in improving the quality of the workforce in this area</b>		<b>85.7%</b>	<b>12</b>
I have an interest in attracting more people to this career field		64.3%	9
I have no professional connection with this career field		0%	0
I have a friend or relative who works in this career field		21.4%	3
No response		0%	0
<b>Total Respondents</b>			<b>14</b>

Thank you for your responses. Please indicate what you would like to do next.

		<b>Response Percent</b>	<b>Response Total</b>
<b>Continue to the final wrap-up questions of this survey</b>		<b>76.9%</b>	<b>10</b>
Return to the Manufacturing career cluster list to select another pathway.		23.1%	3
<b>Total Respondents</b>			<b>13</b>

How essential are the following skills for the "Manufacturing Production Process Development" career pathway?

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Produce a product to satisfy customer desires.	<b>100% (13)</b>	0% (0)	0% (0)	0% (0)	0% (0)	<b>1.00</b>
Implement new manufacturing process.	<b>69% (9)</b>	23% (3)	8% (1)	0% (0)	0% (0)	<b>1.38</b>
Maintain a safe and productive workplace.	<b>77% (10)</b>	23% (3)	0% (0)	0% (0)	0% (0)	<b>1.23</b>
Maintain quality and implement continuous improvement processes.	<b>92% (12)</b>	8% (1)	0% (0)	0% (0)	0% (0)	<b>1.08</b>
Communicate with co-workers and/or external customers to ensure production meets business requirements.	<b>77% (10)</b>	23% (3)	0% (0)	0% (0)	0% (0)	<b>1.23</b>
Suggest and/or implement continuous improvement actions.	46% (6)	<b>54% (7)</b>	0% (0)	0% (0)	0% (0)	<b>1.54</b>
Produce new product to meet customer needs.	<b>46% (6)</b>	38% (5)	15% (2)	0% (0)	0% (0)	<b>1.69</b>
Improve production processes.	<b>69% (9)</b>	31% (4)	0% (0)	0% (0)	0% (0)	<b>1.31</b>
<b>Total Respondents</b>						<b>13</b>

What other skills and knowledge are essential for this career pathway?

<b>Total Respondents</b>	<b>3</b>
(See Comments page)	

How would you characterize your relationship to the workforce in the career pathway of Manufacturing Production Process Development? Answer as many as applicable.

		<b>Response Percent</b>	<b>Response Total</b>
I make hiring decisions		61.5%	8
I supervise people who are in this career field		69.2%	9
<b>I work in this career field</b>		<b>92.3%</b>	<b>12</b>
I have a friend or relative who works in this career field		15.4%	2
I have an interest in improving the quality of the workforce in this area		69.2%	9
I have an interest in attracting more people to this career field		46.2%	6
I have no professional connection with this career field		0%	0
Other (please specify)		0%	0
<b>Total Respondents</b>			<b>13</b>

Thank you for your responses. Please indicate what you would like to do next.

		<b>Response Percent</b>	<b>Response Total</b>
<b>Continue to the final wrap-up questions of this survey</b>		<b>76.9%</b>	<b>10</b>
Return to the Manufacturing career cluster list to select another pathway.		23.1%	3
<b>Total Respondents</b>			<b>13</b>

## How essential are the following skills for the "Production" career pathway?

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Correct processes to assure that products meet quality standards.	<b>100% (10)</b>	0% (0)	0% (0)	0% (0)	0% (0)	<b>1.00</b>
Maintain equipment, tools and workstations.	<b>70% (7)</b>	30% (3)	0% (0)	0% (0)	0% (0)	<b>1.30</b>
Maintain a safe and productive workplace.	<b>78% (7)</b>	22% (2)	0% (0)	0% (0)	0% (0)	<b>1.22</b>
Employ audits and inspections to maintain quality and continuous improvement processes.	<b>60% (6)</b>	20% (2)	20% (2)	0% (0)	0% (0)	<b>1.60</b>
Communicate with co-workers and/or external customers to ensure production meets business requirements.	40% (4)	<b>50% (5)</b>	10% (1)	0% (0)	0% (0)	<b>1.70</b>
Coordinate work teams to produce product.	30% (3)	<b>70% (7)</b>	0% (0)	0% (0)	0% (0)	<b>1.70</b>
Ensure that equipment is being used safely in the workplace.	<b>90% (9)</b>	10% (1)	0% (0)	0% (0)	0% (0)	<b>1.10</b>
Produce a product to satisfy customer desires.	<b>70% (7)</b>	30% (3)	0% (0)	0% (0)	0% (0)	<b>1.30</b>
<b>Total Respondents</b>						<b>10</b>

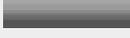
## What other skills and knowledge are essential for this career pathway?

<b>Total Respondents</b>	<b>2</b>
(See Comments page)	

How would you characterize your relationship to the workforce in the career pathway of Production? Answer as many as applicable.

		<b>Response Percent</b>	<b>Response Total</b>
I make hiring decisions		50%	5
I supervise people who are in this career field		50%	5
I work in this career field		60%	6
I have a friend or relative who works in this career field		50%	5
<b>I have an interest in improving the quality of the workforce in this area</b>		<b>80%</b>	<b>8</b>
I have an interest in attracting more people to this career field		60%	6
I have no professional connection with this career field		0%	0
Other (please specify)		0%	0
<b>Total Respondents</b>			<b>10</b>

Thank you for your responses. Please indicate what you would like to do next.

		<b>Response Percent</b>	<b>Response Total</b>
<b>Continue to the final wrap-up questions of this survey</b>		<b>80%</b>	<b>8</b>
Return to the Manufacturing career cluster list to select another pathway.		20%	2
<b>Total Respondents</b>			<b>10</b>

How essential are the following skills for the "Quality Assurance" career pathway?

	<b>Very Important</b>	<b>Important</b>	<b>Slightly Important</b>	<b>Not Important</b>	<b>No opinion</b>	<b>Response Average</b>
Communicate with co-workers and/or external customers to ensure production meets business requirements.	0% (0)	<b>100% (1)</b>	0% (0)	0% (0)	0% (0)	<b>2.00</b>
Monitor production operations for product and process quality.	0% (0)	0% (0)	<b>100% (1)</b>	0% (0)	0% (0)	<b>3.00</b>
Correct the product and process to meet quality standards.	<b>100% (1)</b>	0% (0)	0% (0)	0% (0)	0% (0)	<b>1.00</b>
Suggest and/or implement continuous improvement actions.	0% (0)	<b>100% (1)</b>	0% (0)	0% (0)	0% (0)	<b>2.00</b>
Coordinate work teams to produce product.	0% (0)	0% (0)	<b>100% (1)</b>	0% (0)	0% (0)	<b>3.00</b>
Produce a product to satisfy customer desires.	<b>100% (1)</b>	0% (0)	0% (0)	0% (0)	0% (0)	<b>1.00</b>
Maintain a safe and productive workplace.	0% (0)	<b>100% (1)</b>	0% (0)	0% (0)	0% (0)	<b>2.00</b>
Maintain quality and implement continuous improvement processes.	0% (0)	<b>100% (1)</b>	0% (0)	0% (0)	0% (0)	<b>2.00</b>
<b>Total Respondents</b>						<b>1</b>

What other skills and knowledge are essential for this career pathway?

<b>Total Respondents</b>						<b>0</b>

How would you characterize your relationship to the workforce in the career pathway of Quality Assurance? Answer as many as applicable.

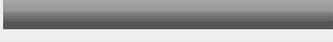
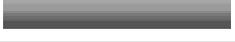
		<b>Response Percent</b>	<b>Response Total</b>
<b>I make hiring decisions</b>		<b>100%</b>	<b>1</b>
<b>I supervise people who are in this career field</b>		<b>100%</b>	<b>1</b>
I work in this career field		0%	0
I have a friend or relative who works in this career field		0%	0
<b>I have an interest in improving the quality of the workforce in this area</b>		<b>100%</b>	<b>1</b>
I have an interest in attracting more people to this career field		0%	0
I have no professional connection with this career field		0%	0
Other (please specify)		0%	0
<b>Total Respondents</b>			<b>1</b>

Thank you for your responses. Please indicate what you would like to do next.

		<b>Response Percent</b>	<b>Response Total</b>
<b>Continue to the final wrap-up questions of this survey</b>		<b>100%</b>	<b>1</b>
Return to the Manufacturing career cluster list to select another pathway.		0%	0
<b>Total Respondents</b>			<b>1</b>

In which state do you live?			
		Response Percent	Response Total
Missouri		91.9%	34
Other (please specify)		8.1%	3
<b>Total Respondents</b>			<b>37</b>

Please indicate the professional area in which you work:			
		Response Percent	Response Total
Business/Industry		86.5%	32
State Agency		0%	0
Federal Agency		0%	0
Association/Chamber		0%	0
Secondary Education		5.4%	2
Postsecondary Education		5.4%	2
Other (please specify)		2.7%	1
<b>Total Respondents</b>			<b>37</b>

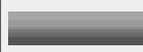
Years of work experience:			
		Response Percent	Response Total
Student		0%	0
0-1		0%	0
2-5		2.7%	1
6-10		0%	0
11-20		10.8%	4
21-30		51.4%	19
31+		35.1%	13

<b>Total Respondents</b>	<b>37</b>

What other comments would you like to add related to career education in Missouri?

<b>Total Respondents</b>	<b>6</b>
(See Comments page)	

Would you be willing to participate in future surveys like this related to Missouri Career Education and workforce development?

		<b>Response Percent</b>	<b>Response Total</b>
<b>Yes</b>		<b>75.7%</b>	<b>28</b>
Maybe		21.6%	8
No		2.7%	1
<b>Total Respondents</b>			<b>37</b>

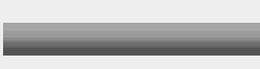
Would you be willing to serve on a local or state advisory council for the betterment of career education and workforce preparation in Missouri?

		<b>Response Percent</b>	<b>Response Total</b>
<b>Yes</b>		<b>40.5%</b>	<b>15</b>
Maybe		32.4%	12
No		27%	10
<b>Total Respondents</b>			<b>37</b>

If you indicated "yes" or "maybe" to either of the two questions above, please provide DESE your contact information (include name, company, address, telephone number, and e-mail address). This information will be used solely for the purposes described.

<b>Total Respondents</b>	<b>22</b>

## Through which channel did you receive this survey?

		<b>Response Percent</b>	<b>Response Total</b>
Trade association or professional society		5.4%	2
Chamber of Commerce or industry group		2.7%	1
Business colleague		10.8%	4
<b>e-mail from Department of Elementary and Secondary Education</b>		<b>40.5%</b>	<b>15</b>
Educator		24.3%	9
Website link		0%	0
Word-of-mouth		2.7%	1
Other (please specify)		13.5%	5
<b>Total Respondents</b>			<b>37</b>

## Was this survey easy to use?

		<b>Response Percent</b>	<b>Response Total</b>
<b>Yes</b>		<b>94.6%</b>	<b>35</b>
No		0%	0
Somewhat		5.4%	2
Comments		0%	0
<b>Total Respondents</b>			<b>37</b>

**COMMENTS FOR MANUFACTURING:****FOUNDATION Knowledge and Skills:**

What other skills and knowledge are essential as a foundation for success in an array of careers and educational pursuits in Manufacturing?	
<u>1.</u>	Math skills of four years in High School at minimum. Writing skills to organize thoughts, good vocabulary and able to be clear and convey a message.
<u>2.</u>	Work ethic understanding and skills
<u>3.</u>	Get to work on time, learn what I teach you, and work 8 hours for 8 hours pay.
<u>4.</u>	For my particular field, there are quite a few, most in basic scientific, mathematical, and physics knowledge. Without a firm foundation in these, success is more difficult and for some, impossible.
<u>5.</u>	Time management skills
<u>6.</u>	Skills are needed that emphasize the concepts of VOC (Voice of the Customer), Lean manufacturing concepts, and the benefits of Six Sigma in manufacturing. The only way that America can compete in a global manufacturing economy is through a thorough understanding of these skills and how to effectively apply these skills in all elements of the manufacturing environment.
<u>7.</u>	Most students today do not understand how components and assemblies are built and manufactured. They lack the understanding of machining and fabricating techniques, casting, mold making and material applications. Overall we are losing our ability and knowledge of manufacturing processes and methods. Because of this fact, our design and innovation is suffering and organizations are losing their competitive advantage.
<u>8.</u>	Mathematics and Science. All graduates should at least have a solid understanding of math, algebra, and geometry. Additionally, a basic understanding of elementary physics (how things work) and elementary chemistry (how materials function). These courses also teach problem solving and logic.
<u>9.</u>	Design and fabrication of Tooling required in some product manufacturing operations.
<u>10.</u>	Math skills. This may sound very basic but other than personality driven behavior that's difficult for an employer to change or impact, if an individual has good math skills (minimum 10th grade proficiency) they can learn anything. If they do not, they will have difficulty being successful in any manufacturing related job.
<u>11.</u>	In the past, the ability to manage has been a critical success factor. Today it is the ability to lead!

**PATHWAY Knowledge and Skills:****PATHWAY – HEALTH, SAFETY AND ENVIRONMENTAL ASSURANCE**

What additional skills and knowledge are essential for careers in this pathway?	
<u>1.</u>	This may be assumed in the above competencies, but students should also be exposed to the laws and regulations regarding this area.

**PATHWAY –LOGISTICS AND INVENTORY CONTROL**

No comments.

**PATHWAY – MAINTENANCE, INSTALLATION AND REPAIR**

What other skills and knowledge are essential for this career pathway?	
<u>1.</u>	Communications skills. Constantly upgrading skills through further education. Certifications certificates.

<u>2.</u>	·Ability to think logically, starting from the broadest view of systems and their surroundings and narrowing down logically to specific parts of a system that affect the particular problem at hand. ·Ability to communicate those thoughts clearly, concisely, and accurately.
<u>3.</u>	same as last time
<u>4.</u>	Math and Science. Logic and Problem Solving. Elementary Physics. Electricity and Electronics.
<u>5.</u>	Maintenance has evolved. It is no longer about turning a wrench, it's about supporting technology.

### PATHWAY – MANUFACTURING PRODUCTION PROCESS DEVELOPMENT

What other skills and knowledge are essential for this career pathway?	
<u>1.</u>	Think logically, relating the details of the customer's need to the capabilities and new possibilities of the manufacturing process. ·Communicate logically, concisely, and precisely to assure the best ideas are brought to bear on the best products practicable in the available markets.
<u>2.</u>	The most important objective for an organization is to produce a product that satisfies the customer and build on customer loyalty.
<u>3.</u>	Again, math and science skills. Problem solving. Creative thinking.

### PATHWAY – PRODUCTION

What other skills and knowledge are essential for this career pathway?	
<u>1.</u>	·Be alert to abnormalities in production processes, think about them, and engage the attention of those who can respond. ·Communicate clearly, precisely, and effectively with colleagues and customers to assure production of the product best suited to the customer's needs.
<u>2.</u>	I chose this one because it had Tool and die maker in it and that is an area I am familiar with. It could fit in this category, but a true Tool and die maker requires more skill and education than the average production worker.

### PATHWAY –QUALITY ASSURANCE

No comments.

### OTHER COMMENTS:

What other comments would you like to add related to career education in Missouri?	
<u>1.</u>	I believe each student should be equipped with the skills to think clearly, objectively, and innovatively about any new field. The fields keep changing in industry, but the methods don't. This includes the abilities to communicate logically, clearly, and concisely. It includes the abilities to analyze any new situation, relating it to the big picture of business, customers, suppliers, and technology, and then logically narrowing down to a particular detail of that big picture. The newly fashionable concerns about work ethics and morals is not an appropriate burden to place on public education. A few hours of class instruction will not fix fundamentals of society. However, the ability to think and communicate clearly and logically will serve both society in general and industry in particular.
<u>2.</u>	If I wanted to validate what I'm already doing, I'd use this survey. No questions regarding coming to work on time, creativity, work ethic, responsibility, quality and basic skills. No high school student on God's green earth knows what production process management is. For that matter, I worked in manufacturing as an engineer and most of your terms looked made up by an educator. Let employers (not HR or Educators)make up this survey.
<u>3.</u>	I believe that Missouri needs to identify and fund training opportunities for emerging technologies as well as current technologies.
<u>4.</u>	Interest in manufacturing needs to start early in the education process. Middle school is not

	too early. Manufacturing is one of the key industries for creating wealth in any community. It is vital that we support any industry that can effectively create wealth.
<u>5.</u>	none
<u>6.</u>	We need to increase the knowledge of our educators in math, science, and engineering. Our math and science teachers in Missouri are not good enough. I do not agree with the concept that you do not have to know a subject to teach it. That concept, in my opinion, is most of what is wrong with our technical education in Missouri. The teacher needs to understand the applications of advanced math and science as it applies to engineering and technology in order to instill the knowledge in the student.