



From Labor Market Information to Pathways Design

Foundational Information for Intermediaries

AT A GLANCE

This resource is designed to help intermediaries effectively design the aligned sequence of experiences that constitute strong college and career pathways. It lays out key areas in which knowledge is required and provides guidance about and examples of how to distill this information in order to share it with young people and partners.

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About JFF

JFF is a national nonprofit that drives transformation in the American workforce and education systems. For more than 35 years, JFF has led the way in designing innovative and scalable solutions that create access to economic advancement for all. www.jff.org

About Building Equitable Pathways

This work, funded by the Bill & Melinda Gates Foundation, aims to provide youth with the information and support they need to make informed choices for their futures—especially young people who have too often been denied access to these key resources. The goal is to dramatically increase the number of young people, ages 14 to 24, who are Black, Latinx, or experiencing poverty, who have the agency, social capital, skills, and credentials needed to thrive in the workforce and in life. A deep commitment to diversity, equity, and inclusion stands at the heart of this initiative. <http://www.jff.org/equitablepathways>

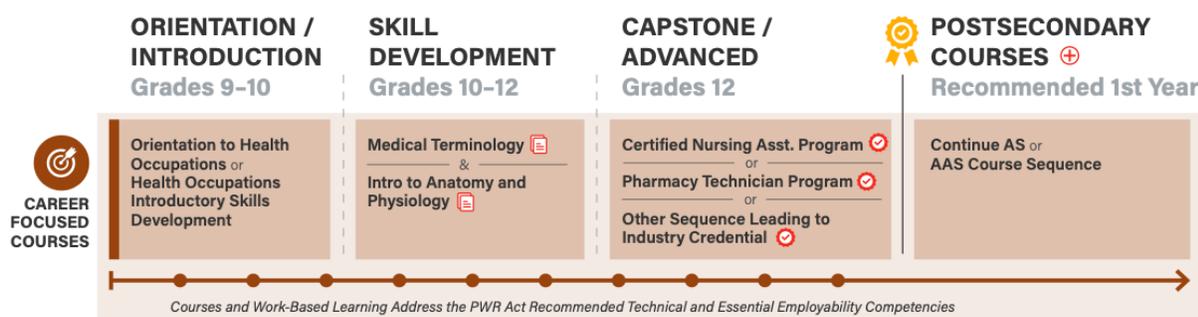
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Introduction

Purpose of This Guide

Career pathways aligned with regional labor markets are foundational structures put in place to ensure that youth are best positioned for economic advancement. While it is not difficult to describe an aligned pathway (also called a program of study) at a high level, actually designing a pathway with all of the required details is challenging. For example, the graphic below portrays a sequence of career-focused experiences from grade 9 through a community college program for health careers in a way that is likely familiar to educators. However, curriculum mapping is a step that must be preceded by research on the regional labor market and an assessment of opportunities for advancement in particular sectors appropriate for young people. Moreover, some employers and sectors value certifications or competency demonstrations whereas others place more value on work experience. In addition, this information must be presented in such a way that it is engaging and helpful to the young person whose choices it will guide.



The purpose of this guide is to aid stakeholders in the task of researching and assembling the appropriate knowledge base needed to design and communicate about career pathways experiences that are aligned with local labor markets. Because the volume of information available on regional labor markets and educational opportunities is overwhelming, this guide aims to assist in the following ways:

1. Define, distill, and provide resources for assembling each critical element of a pathway, including adapting for new regional labor market pathways, such as those included here.
2. Highlight how information should be communicated to young people at each stage of the adolescent developmental continuum. The linked examples were created by career pathways intermediaries that work with young people and have tested their messaging

carefully. Each example highlights three or four points that are most helpful and engaging for a young person.

3. Keep equity front and center by noting for each topic how the information can be presented to both prepare youth for barriers they may face in a particular sector and to ensure that they understand the benefits of all sectors that pay well and provide satisfying work.

Throughout this resource, we highlight a number of examples of documents developed by JFF and other intermediaries that effectively present key elements of pathways maps. They respond to common questions but also present other factors, such as living wages, career ladders, differences in types of credentials, and representation of people of color in the sector or industry. We invite readers to adapt these examples to meet the unique needs of their context.

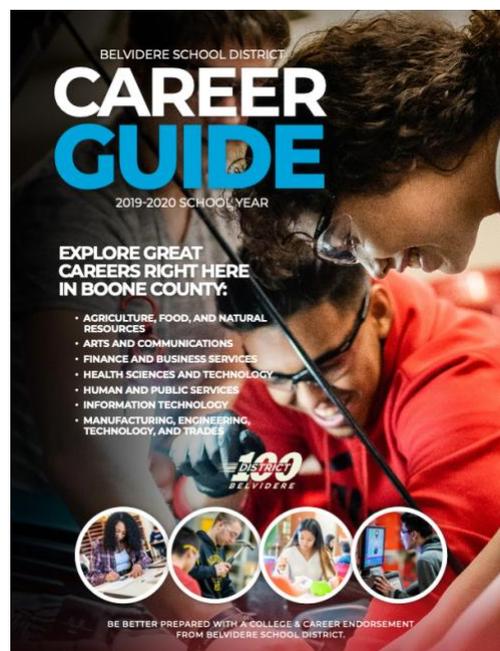
Designing Resources to Meet Audience Needs

Developing resources that speak to all of the elements of a pathway is a helpful way to document and share key information. It is important to consider the different goals for and potential audiences of any resource:

- *Is the goal to summarize the elements of the pathway for the cross-sector stakeholders involved?*
- *Is the goal to provide information to help students navigate various decision-making points along the pathway?*

When developing a resource for students, information should be communicated in a developmentally appropriate way. Students in grades 9 and 10 will be interested information such as the range of career pathways, how much an entry-level or midcareer employee earns, and how many years of schooling it takes to be qualified for a career of interest. In grades 11 and 12, students are likely to ask additional questions: *Why should I take this class? How do I know if this is a career I would like? Does this career require a college degree?*

Resources designed for stakeholders may have many goals: to widely communicate the region's/state's pathways vision, to persuade other stakeholders to get involved, to document pathways progress, and so on. Regarding the elements discussed below, the resources developed



for stakeholders primarily share the data that supports the vision for pathways design and implementation.

The Role of Intermediaries

To develop the elements outlined in this document, intermediaries facilitate cross-sector stakeholder meetings to ensure that pathways are designed “backwards,” or are reverse-mapped. This means connecting labor market needs to skills, competencies, and knowledge that youth must master, and to the education and work-based learning experiences that begin in high school or even earlier. Engaging stakeholders ensures that those adults working with young people buy into the process, have a voice in pathways design, and make a commitment to seeing young people successfully through a pathway. In addition, stakeholders also contribute sector- or industry-related resources and documents that make specific pathways “real” for a variety of audiences, including young people.

Key Design Elements of Career Pathways

1. **Industry overviews** help young people decide which pathways or credential program to enroll in.
2. **Career ladders with information about opportunities for advancement** help young people build knowledge and understanding about the potential for advancement in a specific career field.
3. Learning about **industry-recognized credentials with value in the labor market** informs the decisions young people make about their education trajectories that are sensitive to regional or local labor market needs.
4. A curriculum that is reverse-mapped from industry-specific **competency statements** ensures that young people have the opportunity to develop and demonstrate in-demand skills.
5. Access to **strategic course-taking guidance** saves young people time and money as they work to complete a credential efficiently.
6. **Work-based learning experiences** provide young people with opportunities to gain professional experience and explore careers of interest.

Fully developing and implementing these pathways elements to support educational and work-based experiences that are aligned with local labor markets requires time and cross-sector input. Partners might sequence the work to develop one element across several promising sectors or develop all of the elements of one pathway to a high-demand industry. The ultimate goal is to fully lay out a range of pathways so that students are able to make choices about the experiences

that will best meet their needs and aspirations. Ultimately, the choices young people make in their high school years will affect their ability to succeed in a first job and navigate or map additional education and work experiences that will ultimately impact their well-being as adults.

1. Industry Overviews

Why This Is Important

An industry overview outlines the projected economic health of an industry as a whole in a given region. Additionally, an overview lists a variety of popular occupations and employers within particular industries in the region. Listing employers that students may be familiar with or are curious about can lead to good discussions about work, kinds of careers, salaries, and the like.

How This Element Promotes Equity

Middle- and upper-class white youth are often advantaged through exposure to high-wage industries through their families' networks. Unless they are specifically taught about career options or learn about them on their own, youth of color and/or those who are experiencing poverty face a disadvantage in choosing high-demand, high-wage careers to explore. Industry overviews with information about the region's labor market and living wages provide all youth with the opportunity to learn about high-wage industries and to make informed decisions about their college and career pathways.

Other Considerations

Traditional labor market information (LMI) must be used with caution during a time of rapid economic upheaval, such as during the COVID-19 pandemic. Projections are based on past trends, which don't capture emerging occupations or skills. However, traditional LMI can provide big-picture and longer-term insights about industries in a given region.

Real-time LMI can provide helpful insights about current in-demand skills and credentials. However, real-time LMI is only as good as the data included on job advertisements, and it can generally be accessed only by purchasing a license from a proprietary software company, such as Emsi or Burning Glass. Learn more about traditional and real-time LMI in JFF's "[Labor Market Information 101 Presentation](#)."

Information to Include in This Element

- A list of the 10 occupations with the highest anticipated job growth
- A list of the 10 organizations that employ the largest number of workers in the region
- General descriptions of what each industry is, the kind of work involved, examples of occupations, and skills necessary to succeed in the industry
- Job growth data for each industry overall (growth patterns, anticipated retirements, the size and growth of the sector, etc.)
- Demographic information about the industry, including statistics about the race, age, and gender of the workforce (if available)
- Examples of occupations and median wages within the industry
- Links to easy-to-navigate sites like [O*Net](#), Burning Glass, [Emsi](#), and your state's labor market information and career guidance sites, as well as living wage data (JFF uses the living wage figure for one adult and one child, sourced from the [MIT Living Wage Calculator](#)).

Examples

Pages 7 & 8

[The NYC Department of Education's Business and Accounting Career Pathways Guide](#)

- Student facing
- Provides helpful examples of responsibilities for jobs in business and accounting
- Clearly describes how this field cuts across multiple industries and types of organizations
- Outlines key skills for this field
- Prompts students to consider their interests and whether they would enjoy working in this field

Page 9

[C-Town Tech Cybersecurity Pathway Guide](#)

- Student facing
- Gives a brief description of cybersecurity
- Lists sample job responsibilities of a cybersecurity specialist, a career path that provides a living wage
- Includes information about the local labor market, including median wages, typical entry-level education requirements, and anticipated job growth

Page 10 & 11

[Belvidere School District Health Sciences and Technology Career Guide](#)

- Student facing
- Provides a comprehensive overview of pathways available in the district
- Empowers students to think about their future and opens up opportunities for guidance with the following questions: Can I see myself doing this job? What jobs can this lead to? Does the salary and job growth matter? How much education is needed after high school?
- Includes a list of introductory courses in each pathway
- Is visually well organized and includes important information without being overwhelming
- Includes information about in-demand jobs, including median salary, preferred education level, and anticipated growth

Page 12

[Illinois Model Programs of Study Guide: Health Sciences and Technology](#)

- Stakeholder facing
- Shows the typical jobs that students can enter with a particular credential
- Lists median wages and explicitly states whether a position pays above a living wage
- Includes local annual job openings and anticipated growth over the next 10 years
- Notes whether a credential is stackable and, if so, how it stacks to other credentials

Business & Accounting Career Pathways

What are the career paths?

There are several possible career paths in business and accounting.

Many people who start out as accounting clerks become bookkeepers or may supervise other accounting clerks. Over time and with more experience and education, they can become office managers and then business managers.

About one in five people who begin work as an accounting clerk or bookkeeper completes a bachelor's degree in accounting or business to become a professional accountant. Accountants can move into various branches of accounting, such as financial accounting, government accounting, tax accounting, or auditing. With additional work experience and education, accountants can become Certified Public Accountants (CPAs), which offers more pay, responsibility, and opportunity.

Purchasing and procurement is another possible career track where professionals can become a contract manager or administrator. In many companies, a purchasing specialist works closely with the accounting and finance department.

These jobs can be found in all types of industries and for every type of employer.

Source: PayScale.com. Salary figures represent median pay in New York City for each job.





Cybersecurity

CONCENTRATION



What is cybersecurity?

Cybersecurity focuses on protecting computers, networks, systems, and information from digital attacks. These attacks usually aim to access, change, or destroy sensitive information, extort money from others, or interrupt regular business. Any device that connects to the internet is vulnerable to attack and needs to be protected.

What do Cybersecurity Specialists do?

- **Find risks** and possible information or data leaks
- **Protect information** on computer networks, cloud servers, mobile devices, payment software, and more
- **Analyze** where risks are and **develop strategies to prevent breaches**
- **Fight against cyber criminals** — people who use the internet and various hacking methods to steal sensitive or private information

Median Pay for Information Security Analysts

\$95,510

Median pay in 2017	\$95,510 per year \$45.92 per hour
Typical entry-level education	Bachelor's degree
Work experience in a related occupation	Less than 5 years
On-the-job training	None
Number of jobs in 2016	100,000
Job outlook from 2016 to 2026	Employment will increase by 28% (faster than average)
Employment change from 2016 to 2026	28,500

SOURCE: U.S. BUREAU OF LABOR STATISTICS



HEALTH SCIENCES AND TECHNOLOGY

HEALTH SCIENCES

ARE YOU INTERESTED IN BECOMING A DOCTOR OR NURSE? DO YOU LIKE HELPING PEOPLE?
Consider a career in Health Sciences.



WHAT IS IT?

Health Science careers focus on the health and well-being of their patients, and advancing the cause of medicine. Work is performed usually in hospitals or clinics, but can also be found in offices, nursing facilities, and increasingly people's homes. Technology has been transforming healthcare in recent years, allowing patients to be treated better and to live longer more productive lives.

LEADS TO THESE JOBS:

- Certified Nursing Assistant
- Dietician
- Health Information Technician
- Home Health Aide
- Medical Billing Coder
- Pharmacy Technician
- Physician
- Registered Nurse
- Surgeon
- Therapist



WHAT WILL I DO?

Physicians, nurses, and therapists work directly with patients to diagnose, treat, and comfort their patients. Researchers, biomedical engineers, and technicians work in the laboratory developing new cures for disease. You might also work as a medical assistant or health information specialist that keeps history of medical records for insurance or future use.

IS THIS FOR ME?

- People-person
- Patient
- Caring
- Flexible
- Detailed-oriented
- Good communicator





EMPLOYER SPOTLIGHT:

ACTIVATE HEALTHCARE
activatehealthcare.com



Activate Healthcare has developed a proactive and comprehensive approach to delivering primary care: an approach that gives providers the time, tools and support they need to make a difference in the lives of the patients they serve.

Activate Healthcare has proven that this approach works with dozens of clinics, including right here in Belvidere and Rockford, and more than 100,000 patients. Patients are activated. Health is improved. And health care costs are lower.

IN-DEMAND OCCUPATIONS IN ILLINOIS

Education Level	Career Path	Median Salary	Job Growth Over Next 10 Years	Job Openings Projected Over Next 10 Years
High School	Home Health Aide	\$23,280	25%	59,010
	Medical Assistant	\$33,337	13%	25,790
Certification	Nursing Assistant	\$26,521	5%	73,410
	Pharmacy Technician	\$31,301	5%	16,030
	Emergency Medical Technician	\$31,623	10%	9,160
Associate Degree	Radiologic Technologist	\$61,968	2%	3,810
	Dental Hygienist	\$73,531	9%	5,830
Bachelor's Degree	Registered Nurse	\$70,189	15%	86,920

Source – Illinois Department of Employment Security, 2019



HEALTH SCIENCES AND TECHNOLOGY ENDORSEMENT

STEP 1 To study **HEALTH SCIENCES**, make sure you select **"Intro to Healthcare Occupations"** as your elective.

STEP 2 By choosing **HEALTH SCIENCES** as your career pathway, you have the opportunity to receive a **Health Sciences and Technology Endorsement** on your diploma upon high school graduation.



SELECTED OCCUPATIONS, WAGES, & JOB GROWTH

Program	Typical Job	Near or Above Living Wage Threshold for 1 Adult + 1 Child ¹	Median Hourly Wage ²	Growth in Illinois: Annual Job Openings ²	Growth in Illinois: % Change Over 10 years ²	Stackable?
1 Pre-Professional Track	Pediatricans, General	Y	\$66.93	30	2%	Typically Requires Bachelor's Degree & Prof. School
	Dentists	Y	\$68.79	190	9%	
2 Nursing / Registered Nurse	Nursing Assistants	N	\$13.72	7,340	5%	Typically Required for LPN or RN
	Licensed Practical and Licensed Vocational Nurses	Y	\$24.24	1,640	2%	Can Stack to RN at Select IL Colleges
	Registered Nurses	Y	\$34.74	8,690	15%	Can Stack to BSN at Select IL Colleges
3 Surgical Technology Medical & Laboratory Tech. Radiography Respiratory Therapy Physical Therapist Assistant Occupational Therapy Assistant	Surgical/Pharmacy Technicians	Y	\$15.44 – \$23.05	220 – 1,600	1 – 5%	Not Typically Stackable
	Medical and Clinical Laboratory Technologists	Y	\$34.44	410	4%	
	Radiologic Technologists	Y	\$30.52	380	2%	
	Respiratory Therapists	Y	\$28.62	350	17%	
	Physical Therapist Assistants	Y	\$28.60	730	20%	
	Occupational Therapy Assistants	Y	\$29.75	380	21%	
3 Dental Hygiene	Dental Hygienists	Y	\$35.68	580	9%	Not Typically Stackable

1. Living wage calculations are based on MIT's Living Calculator (livingwage.mit.edu), where the "Living Wage" for 1 Adult + 1 Child is \$26.27/hour for the state of Illinois. "Near" defined as 85% of the statewide living wage, which is \$22.33/hour
 2. U.S. Department of Labor, CareerOnestop (careeronestop.org/explorecareers)

2. Career Ladders and Opportunities for Advancement

Why This Is Important

While most career pathways culminate in an industry-recognized and/or postsecondary credential that holds value *at entry level* in the labor market, young people should know that entry-level requirements and advancement opportunities differ among occupations. Some provide higher salaries as the years go on; others require additional education and/or training. Understanding what occupations and career fields provide advancement opportunities is crucial for entry-level positions that don't provide a family-supporting wage.

Information to Include in This Element

- In-demand occupations that offer at least a living wage and are accessible with the education/training offered at the culmination of the pathways program, including:
 - Job title
 - Median wage offered at entry level
 - Preferred education and experience requirements
- A graphic that shows a possible sequence of career advancement as an individual gains additional education, experience, and/or training
- Information about where individuals can access additional education and training
- The living wage for the region
- Advice about whether this is a good occupation for a young person just starting a career

How This Element Promotes Equity

Students of color may anticipate workplace barriers based on race or other factors and may lower their aspirations if they think a career area will not be welcoming to them. Adults must recognize this reality and help students deepen and draw on their resilience and courage to stick with their aspirations and interests. Providing information about potential career trajectories demystifies career paths and makes economic advancement more likely. Sometimes students are given the message that a college degree always leads to success, but discrimination exists in many fields. In addition, students may face difficulties in building a social network and the required professional skills that will aid them in their job search.

Other Considerations

Not all jobs have opportunities for advancement. JFF’s report “[When Is a Job Just a Job—and When Can It Launch a Career?](#)” describes three types of jobs:

- **Lifetime jobs** are careers in themselves. They pay well and offer long-term stability, but workers rarely advance to higher-level positions (e.g., dental hygienist, licensed practical nurse, machinist).
- **Springboard jobs** lead to careers. Workers often advance to different roles with more responsibility and greater pay within the same career area (e.g., HR assistant, computer support specialist, bookkeeper).
- **Static jobs** don’t typically lead to careers. They offer low pay compared with other middle-skill roles and suffer from high turnover (e.g., medical assistant, production assembler).

Social capital and social networks are additional critical considerations. It is important for young people to understand the role professional networks play in learning about job openings, moving up, and moving into new opportunities in order to launch and advance in their careers. Internships provide great opportunities for network building and may result in full-time springboard or lifetime jobs.

Examples

Page 15-16

[Youth Force NOLA Credential and Career Pathways: Computer Programmer](#)

- Student facing
- Includes title, range of pay, and expected education for jobs that require more training/experience than the starting position
- Lists institutions and programs where additional training is offered

Page 17

[CUNY Career Map: Tech Support and Beyond](#)

- Student facing
- Shows two levels of advancement from an entry-level position
- Provides brief descriptions of different types of occupations
- Includes a variety of titles for similar positions so students will know what to look for in job descriptions
- Includes the median pay and expected level of education for each position

CREDENTIAL & CAREER PATHWAYS

DIGITAL MEDIA/IT

Computer Programmer

JOB DESCRIPTION

Computer programmers write and test code that allow computer applications and software programs to function properly. Program design entails planning the software initially, creating models and flowcharts detailing how the code is to be written, writing and debugging code, and designing an application or systems interface.

Key duties for Computer programmers include: writing programs in a variety of computer languages, such as C++ and Java, updating and expanding existing programs, testing programs for errors and fix the faulty lines of computer code, creating and testing code in an integrated development environment (IDE).



WHAT SKILLS & TRAINING ARE NEEDED?

SOFT SKILLS:

- Must be able to identify simple and complex computer problems, analyze them, and solve them (Problem-solving).
- Must be able to understand the problems that your customer asks and know when to ask questions (Listening).
- Must be able to work well with others as a part of a team (Teamwork and Collaboration).

TECHNICAL AND ACADEMIC SKILLS:

- High school diploma or equivalent
- Familiarity with computers and/or computer software
- Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications

HOW DO I KNOW IF THIS IS A GOOD FIT FOR ME?

- You are interested in computers and how they work.
- You like solving problems and puzzles.

WHERE CAN I FIND TRAINING?

OPERATION SPARK	DELGADO COMMUNITY COLLEGE	NORTHSHORE TECHNICAL COMMUNITY COLLEGE
UNIVERSITY OF NEW ORLEANS	DILLARD UNIVERSITY	LOYOLA UNIVERSITY
SOUTHEASTERN LOUISIANA UNIVERSITY	TULANE UNIVERSITY	XAVIER UNIVERSITY

HOW MUCH WILL I BE PAID PER HOUR?

\$19.82

Entry Level

\$30.25

Typical

\$38.16

Experienced

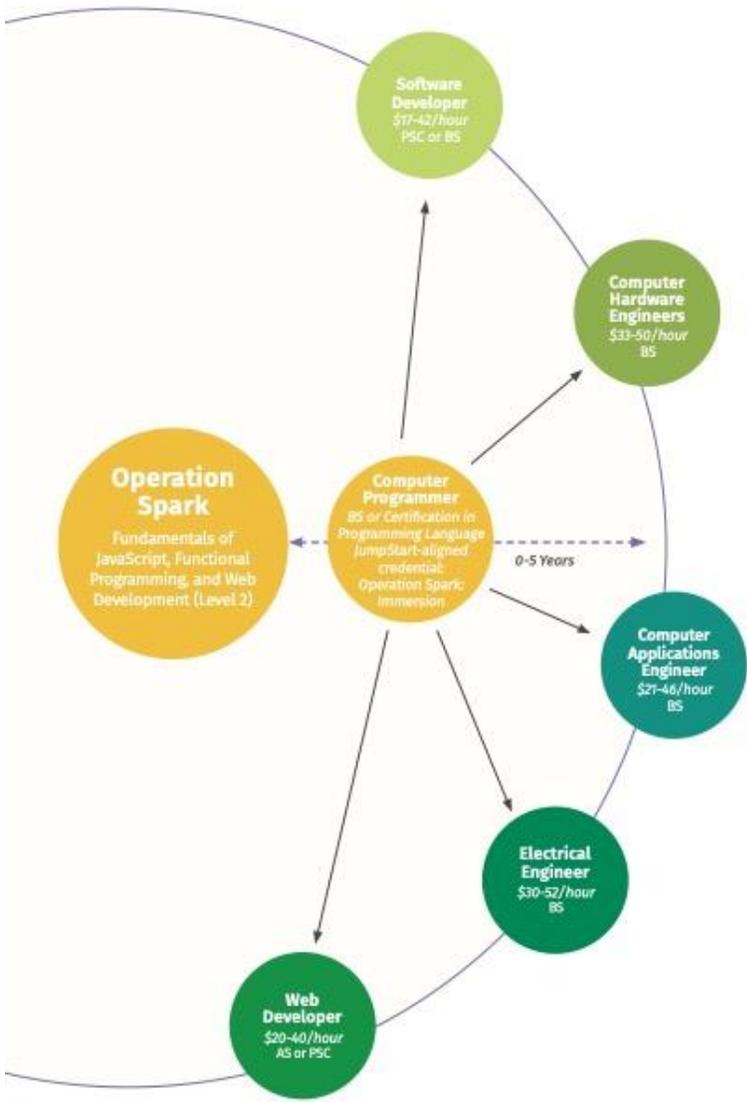


GREATER NEW ORLEANS
INC
REGIONAL ECONOMIC DEVELOPMENT

JPMORGAN CHASE & CO.

CAREER GROWTH TECHNOLOGY

Computer Programmer



GLOSSARY OF TERMS

PSC – Post-Secondary Certificate

AS – Associate of Science, two-year college degree

BS – Bachelor of Science, four-year college degree

WHAT DOES A CAREER IN TECH SUPPORT LOOK LIKE?

Jobs in tech support vary by the type of job and from employer to employer. Usually, the Help Desk function is tiered, with people at higher tiers handling more complicated problems. With more experience, education, and certifications, tech support professionals can move from entry-level jobs such as HELP DESK TIER 1, DESKTOP SUPPORT or IT SPECIALIST to other jobs on this career map.

This career map is based on the real experiences of actual people. The information comes from real online work histories of people who have worked in tech support in the New York City Metropolitan Area. Payscale, Inc. and Monster Government Solutions supplied this data.

COMPUTER USER SUPPORT SPECIALIST \$43K

- + IT SUPPORT SPECIALIST/TECHNICIAN
- + DESKTOP SUPPORT TECHNICIAN
- + HELP DESK ANALYST

HS + TECHNICAL CERTIFICATION OR ASSOCIATE DEGREE

COMPUTER USER SUPPORT SPECIALIST \$54K

34% OF COMPUTER SUPPORT SPECIALISTS STAY IN THIS POSITION

- + IT SUPPORT SPECIALIST/TECHNICIAN
- + HELP DESK / DESKTOP SUPPORT TECHNICIAN TIER 2

ASSOCIATE OR BACHELOR'S

NETWORK & COMPUTER SYSTEMS ADMIN \$77K

19% OF COMPUTER SUPPORT SPECIALISTS MOVE TO THIS POSITION

- + SYSTEMS ADMINISTRATOR
- + NETWORK ENGINEER
- + NETWORK ADMINISTRATOR

BACHELOR'S

PROJECT MANAGER \$90K

11% OF COMPUTER SUPPORT SPECIALISTS MOVE TO THIS POSITION

- + IT PROJECT MANAGER

BACHELOR'S

COMPUTER & INFORMATION SYSTEMS MANAGER \$110K

9% OF COMPUTER SUPPORT SPECIALISTS MOVE TO THIS POSITION

- + IT MANAGER
- + VP OF INFORMATION TECHNOLOGY

BACHELOR'S

COMPUTER SYSTEMS ANALYST \$84K

7% OF COMPUTER SUPPORT SPECIALISTS MOVE TO THIS POSITION

- + BUSINESS ANALYST
- + SENIOR BUSINESS ANALYST

BACHELOR'S

COMPUTER USER SUPPORT SPECIALIST \$60K

- + IT SUPPORT SPECIALIST / TECHNICIAN
- + HELP DESK / DESKTOP SUPPORT TECHNICIAN TIER 2 / 3

BACHELOR'S

NETWORK & COMPUTER SYSTEMS ADMIN \$86K

- + SYSTEMS ADMINISTRATOR
- + NETWORK ENGINEER

BACHELOR'S

PROJECT MANAGER \$107K

- + IT PROJECT MANAGER
- + SENIOR PROJECT MANAGER

BACHELOR'S

COMPUTER & INFORMATION SYSTEMS MANAGER \$131K

- + IT MANAGER
- + IT DIRECTOR
- + VP OF INFORMATION TECHNOLOGY

BACHELOR'S

GENERAL & OPERATIONS MANAGER \$109K

- + OPERATIONS MANAGER
- + DIRECTOR OF OPERATIONS

BACHELOR'S

COMPUTER SYSTEMS ANALYST \$98K

- + BUSINESS ANALYST
- + SENIOR BUSINESS ANALYST

BACHELOR'S

NETWORK AND COMPUTER SYSTEMS ADMINISTRATOR
 Computer networks connect devices such as computers, smartphones, and printers. Network administrators manage the day-to-day operation of these networks. They make sure that email and data storage networks work properly. They help make decisions about buying new hardware and software for their organization's network. People who work in these jobs are a critical part of almost every organization. Popular certifications include: Network+, CCNA, and MCSE.

PROJECT MANAGER
 There are many types of project managers. Some plan and manage IT projects like network design, while others may oversee software projects. They serve as a liaison between business and technical aspects of projects. They make sure that deadlines, standards, and cost targets are met. The most popular certification for this job is Project Management Professional (PMP).

COMPUTER AND INFORMATION SYSTEM MANAGER
 People in these jobs plan, direct or coordinate activities in technology fields. They help determine the IT goals of an organization and are

responsible for implementing computer systems to meet these goals. People in these jobs often work more than 40 hours per week and are "on call" in case of IT emergencies.

COMPUTER SYSTEMS ANALYST
 People in this role bring business and technology together.

They understand the needs of users and potential problems. They may adapt computer systems to serve new purposes or improve work flow. People in these jobs may have backgrounds in technology and business administration. Many people have experience working in a specific industry like advertising, health care, or finance.

GENERAL AND OPERATIONS MANAGER
 Some people move out of specializing only in IT. They oversee larger parts of an organization. People in these jobs plan, direct, or coordinate the operations of public or private sector organizations. They may be responsible for technology as well as other functions.

3. Industry-Recognized Credentials With Value in the Labor Market

Why This Is Important

An industry-recognized credential (e.g., a certification, certificate, license, or degree) verifies an individual's qualifications or competence and is issued by a third party with authority. Such credentials have value in the labor market and are generally transferable from one company to the next or one region to another.

Industry-recognized credentials are increasingly promoted as a way to enter the labor market in the COVID-19 recovery economy, and some pay well at entry levels.

Demand for such credentials varies by region and sector, so a specific credential may be a good investment in some sectors and places but not in others.

How This Element Promotes Equity

Making young people aware of credentials with high value in the labor market allows them to make more strategic decisions about their education, but these credentials should not be promoted as an alternative to postsecondary education. Most students seek further education primarily to achieve economic advancement. Short-term industry credentials can help students experiencing poverty earn money during the summer and while in college for tuition and living expenses. If conveyed by a community college, an industry credential can provide credits that

Information to Include in This Element

- The most sought-after industry credentials in the regional labor market
- Whether such credentials can result from Registered Apprenticeship programs
- The organizations and institutions providing such credentials. These could be high schools, vocational schools or programs, community colleges, nonprofit and for-profit organizations, and unions
- The value of a short-term, standalone noncredit credential versus one embedded in a postsecondary or college program
- The admissions criteria, the duration of the program, its cost, the assessment or test required to confer the credential, and the percentage of completers finding a position
- Data about hiring based on industry-recognized credentials, including:
 - Entry-level median hourly wage
 - Projected growth of the occupation over 10 years and/or annual openings
 - Important employability, technical, and software skills needed
 - The names of companies hiring for this occupation
 - The preferred entry-level education
 - Preferred entry-level experience (if applicable)

can start a student on a path to a degree; being matriculated opens a wide array of opportunities beyond the credential itself.

Other Considerations

Developing this element with postsecondary and employer partners can spark important questions that affect pathways designs, such as the following:

- *What if in-demand credentials aren't being offered in the region?*
- *What if there are credentials that are being offered that aren't valued in the labor market?*
- *What are the online offerings that can be promoted for their quality and reasonable costs?*

These cross-sector discussions are crucial to set young people up for success.

For some occupations, specific credentials are essential (you cannot be a teacher or nurse, for example, without the proper degrees and certifications), and licensure is often required and tied to state or national requirements. However, for other fields and occupations, such as cybersecurity, employers aren't necessarily looking for a particular credential but want to see evidence that a job candidate has the skills needed to do the job, such as programming, malware analysis, and risk mitigation. Research into which industry certifications are of high quality, and which promote higher salaries and for whom, is in its early stages. [The Rutgers School of Management and Labor Relations created a resource](#) that gives a thorough overview of industry certifications, with a focus on quality, and another, from [the Georgetown University Center on Education and the Workforce](#), presents a broader look at certificates and associate's degrees.

Examples

Page 20

[Illinois Model Programs of Study Guide: Manufacturing and Engineering](#)

- Stakeholder facing
- Connects secondary and postsecondary coursework with examples of postsecondary credential options, including certificates, associate's degrees, and bachelor's degrees
- A table that connects each program of study to a typical job and includes information about wages and anticipated job growth

 **POSTSECONDARY OPTIONS**



4. Competency Statements

Why This Is Important

Competency statements concisely summarize the skills and knowledge employers are looking for in a given industry or field and emphasize mastery, not hours of learning. When a young person has demonstrated a competency in line with an industry standard, it signifies their employability. Young people will benefit from becoming familiar with competency statements so they can more strategically plan their coursework, work-based learning opportunities, and other college and career preparation activities, to ensure that they are developing those skills.

How This Element Promotes Equity

When career preparation, training, and hiring are focused on assessed skills, the process is less subjective and can decrease bias. The focus is on the core question “Does this person demonstrate the skills necessary to perform the job well?” rather than on other factors, like whether the person will “fit” the company culture or is similar to other employees.

Other Considerations

Many industry and sector competency statements already exist and can be modified or adapted to suit your purposes, so developing new statements may not be necessary. Developing new competency statements requires substantial cross-sector input, primarily from employers but also from K-12 and higher education partners. Typically, for each industry, two sets of competency statements are designed with employer feedback: a set that names and defines the top 10 employability skills, and a set that lists the top 10 technical skills that are most valued in the industry.

This is a time-intensive process—especially if you are developing competencies for multiple industries—but it can be a valuable one to develop strong working relationships that span education and industry partners.

Information to Include in This Element

- The 10 most desired employability skills by industry, informed by employers, with subcompetencies specified
- The 10 most desired technical skills by industry, informed by employers, with subcompetencies specified
- Standard competencies, such as OSHA 10 certification, that are required across fields
- Information about how each competency is assessed (e.g., testing, skill demonstrations, essay writing, or observation of the candidate at work)
- Whether the competency requires a specific training program or can be assessed based on work or other learning experiences
- Whether available coursework or work-based learning opportunities prepare the learner for competency assessment

Examples

Page 22 & 23

[Recommended Technical and Essential Employability Competencies Report](#)

(Cross-Sector; Arts and Communications)

- Stakeholder facing
- Includes cross-sector employability skills, as well as skills that apply to many occupations in the health sciences and technology fields
- Was developed through an intentional process that incorporated the expertise and input of all pathways partners
- Written concisely; the competency statements are each about one sentence long
- Useful to all partners: Employers can use the competencies to write job descriptions, educators can use them to inform their curricula, and students can use them to think about their skill development

**TOP 10 CROSS-SECTOR
ESSENTIAL EMPLOYABILITY COMPETENCY STATEMENTS**

Teamwork & Conflict Resolution	Students can use their understanding of working cooperatively with others to complete work assignments and achieve mutual goals.
Communication	<p>Verbal: Students can use their understanding of English grammar and public speaking, listening, and responding, convey an idea, express information, and be understood by others.</p> <p>Written: Students can use their understanding of standard business English to ensure that written work is clear, direct, courteous, and grammatically correct.</p> <p>Digital: Students can use their understanding of email, keyboarding, word processing, and digital media to convey work that is clear, direct, courteous, and grammatically correct.</p>
Problem Solving	Students can use their critical thinking skills to generate and evaluate solutions as they relate to the needs of the team, customer, and company.
Decision Making	Students can use their understanding of problem solving to implement and communicate solutions.
Critical Thinking	Students can use their understanding of logic and reasoning to analyze and address problems.
Adaptability & Flexibility	Students can use their understanding of workplace change and variety to be open to new ideas and handle ambiguity.
Initiative & Self-Drive	Students can use their understanding of goal setting and personal impact to achieve professional goals and understand personal impact.
Reliability & Accountability	Students can use their understanding of commitment, time management, and follow through to ensure that a professional team functions properly and meets collective goals.
Cultural Competence	Students can use their understanding of diversity and inclusion to communicate and work effectively across a multitude of abilities, cultures, and backgrounds.
Planning & Organizing	Students can use their understanding of time management to plan effectively and accomplish assigned tasks.

**ENTREPRENEURIAL
COMPETENCIES**

Principles of Entrepreneurship

Students can apply their understanding of the process and characteristics of business development and promotion in order to apply strategies of innovation to personal and professional business pursuits.

Innovation & Invention

Students can use their understanding of idea generation, design thinking, product and business development in order to introduce and process new and effective ideas.

Growth Mindset

Students can use their understanding of learning from challenges, set-backs, and failure in order to adapt strategies and continue efforts to achieve personal goals.



ARTS & COMMUNICATIONS 		TOP 10 TECHNICAL COMPETENCY STATEMENTS FOR ARTS AND COMMUNICATIONS
CREATIVE PROCESS COMPETENCIES		
Creating	Students apply their understanding of idea generation, conceptualization of work, and work plans in order to produce, adapt, refine, and complete work.	
Presenting, Performing, & Producing	Students can use their ability to select, interpret, and present artistic work in order to convey meaning and share ideas with an audience.	
Responding	Students can use their ability to perceive, analyze, and interpret work in order to evaluate and apply meaning to a creative presentation.	
Connecting	Students can use their understanding of how societal, cultural, and historical context influences ideas and works in order to deepen understanding and evaluation of creative work.	
Investigation & Research	Students can use their ability to identify and evaluate appropriate content and data in order to apply knowledge, revise, and refine individual works and presentations.	
CREATIVE CAREERS COMPETENCIES		
Project Management	Students can use their understanding of setting project deadlines, task-breakdown, and delegation in order to successfully complete projects independently or as part of a team.	
Creative Technology & Design	Students can use their understanding of digital technology, cloud computing artistic elements, and composition techniques in order to create, edit, and complete work.	
Resource Management	Students can use their understanding the principles of managing, monitoring, and controlling resources including assets, money, and products in order to successfully achieve project expectations.	
Brand Identity, Marketing, & Brand Management	Students can use their understanding of developing and adhering to an identity and core message in order to maintain consistency, market, and influence customer and community behavior.	
Human Interaction	Students can use their understanding of communication, listening, and collaboration in order to ensure audience, customer, and team satisfaction.	

5. Strategic Course-Taking Guidance

Why This Is Important

Young people must make decisions about which courses they will take at multiple points during their career pathways experience. These decisions will have an impact on the courses they can take in the future, the credentials they can earn, their ability to access financial aid, and, ultimately, their ability to enter and move up in the labor market. Guidance counselors, teachers, and other supportive adults are tasked with advising students as they make these

Information to Include in This Element

- A pathway-specific sequence of coursework from grades 9 through 14 (the beginning of high school through an associate's degree)
- Dual enrollment and/or early college courses that students can take during high school, and how those courses apply to postsecondary and/or industry-recognized credentials
- Other advanced courses (such as Advanced Placement or International Baccalaureate courses) that students can take during high school, and how they apply to postsecondary and/or industry-recognized credentials
- Information about transfer agreements (e.g., which bachelor's-granting postsecondary institutions accept most credits, majors, full degrees, or individual courses)

decisions, but they often lack up-to-date information about the impact of taking different courses on long-term outcomes. With up-to-date information in hand—pathways maps and course sequences that are planned backward, starting from employer requirements, to postsecondary education and training, to high school—students can become partners with adults in assessing their schools' offerings. With pathways maps, students are also better positioned to seek supplemental learning opportunities (online and/or dual enrollment options) if necessary.

How This Element Promotes Equity

Outlining a sequence of courses necessary to complete high school and a postsecondary credential helps students more strategically plan for their transition from secondary to postsecondary education. Opportunities like dual enrollment allow students to save time and money by earning college credits for free while they complete high school.

A [JFF study of Texas high school graduates in 2012](#) found that dual enrollment students were more than twice as likely to enroll in a two- or four-year colleges and were more likely to earn a college degree. The benefits held true for all racial groups and for students from low-income backgrounds.

Other Considerations

It's important to consider which general education college courses students can take through dual enrollment, as well as which technical courses are required for a particular credential. Course requirements for higher education programs can change frequently—it's important for intermediaries to be in communication with [community college partners](#) to ensure that strategic course advising information is still accurate.

JFF has identified two types of dual enrollment courses to consider in establishing which to offer in a particular pathway:

- **Door-opener courses:** Door-opener dual enrollment courses are college-level courses for high school students that provide foundational industry exposure and apply to the highest number of options for postsecondary credentials within a career pathway. They are especially beneficial for students who are interested in an industry but do not know what specific career they want to pursue.
- **Strategic courses:** Strategic dual enrollment courses are college-level courses taken by students in high school that fulfill requirements for credentials that lead to specific high-growth, high-wage careers.

Examples

Page 26 & 27

[C-Town Tech Business Career Pathway Map](#)

- Student facing
- Provides a visual representation to help high school students choose business courses that meet requirements for multiple concentrations, maximizing their options
- Each concentration leads to an associate's degree at the partner college
- Narrowed down from all of the college partner's offerings to highlight general education courses that help business pathways students meet requirements for an associate's degree

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[Illinois Model Programs of Study Guide: Education](#)

- Stakeholder facing
- Lays out a potential sequence of courses to take from high school through postsecondary education
- Includes core academic subjects (math, science, English, and history), career-focused courses, and work-based learning experiences



A Guide to Choosing the Right Courses FOR YOUR CONCENTRATION

What business courses should I take?

The table below will help you prioritize foundational business courses that meet requirements for multiple business concentrations and/or degrees. Some of these courses also satisfy requirements for business bachelor's degree programs at four-year institutions that are part of the University of Massachusetts system (check the last column in the table). To learn more about the MassTransfer program visit: www.mass.edu/masstransfer/home.asp.

A good rule of thumb is to take as many courses in the table below as you can. Since so many of these courses apply to multiple degree options at both BHCC and in the UMASS system, feel free to explore a range of business skills and careers that interest you!

C-Town Business Pathway Courses	Accounting	Business Transfer	Entrepreneurship	Finance	Management	Sport Management	UMASS Transfer
BUS-101: Introduction to Business	●	●	●	●	●	●	●
ACC-101: Principles of Accounting I	●	●	●	●	●	●	●
ACC-102*: Principles of Accounting II	●	●	●	●	●	●	●
MAN-112: Organizational Behavior and Design	●	●	●	●	●		
MAN-105: Principles of Marketing	●	●	●		●		●
MAN-111: Principles of Management	●	●	●	●	●		
ECO-201: Macroeconomics	●		●	●	●	●	
ECO-202: Microeconomics	●	●	●	●	●		●

Prerequisites:

- ESL-098/99 or RDG-095 and ENG-090 or placement
- *ACC-101 is a pre-req for ACC-102



Recommended General Education Courses FOR C-TOWN BUSINESS PATHWAY

General education courses help you prepare to thrive in today's workforce and society.

The courses below satisfy general education requirements for BHCC and the MassTransfer program. Once you complete any necessary prerequisites, you can start taking the recommended general education courses on this list. You can also place into a course—talk to your guidance counselor to learn about placement requirements.

ENG-111: College Writing I

Prerequisites:

- ENG-095
- **And** a grade of C or better in ESL-098 **or** RDG-095
- Prerequisites can be taken at the same time as this course

PSY-101: Principles of Psychology

Prerequisites:

- ESL-098 **or** RDG-095

PSY-107: Group Dynamics

Prerequisites:

- None

SOC-101: Principles of Sociology

Prerequisites:

- ESL-098 **or** RDG-095

PHL-101: Introduction to Philosophy

Prerequisites:

- Grade of C or better in ENG-095
- **And** grade of C or better in ESL-098 **or** RDG-095

MAT-181: Statistics I

Prerequisites:

- Grade of C or better in MAT-097 **or** MAT-098

For the list of all BHCC general education courses, visit:

www.bhcc.edu/programsofstudy/generaleducationrequirements.



Model Programs of Study Guide: Education

Education Systems Center | ICCB
MONTGOMERY COLLEGE

	ORIENTATION / INTRODUCTION Grades 9-10	SKILL DEVELOPMENT Grades 10-12	CAPSTONE / ADVANCED Grade 12	POSTSECONDARY COURSES Recommended 1st Year
CAREER FOCUSED COURSES	Foundations to Teaching	Intro to Education Educational Methodology Human Growth & Development or Child Growth & Development	Diversity in Education Education Workplace Experience Foreign Language Seal of Biliteracy Course(s) aligned with a Gateways ECE Level 2 Credential	Child Growth and Development The Exceptional Child Educational Psychology Technology in Education Continue Early Childhood Education AA or AAS Course Sequence Aligned with Gateways ECE Credentials
	Courses and Work-Based Learning Address the PWR Act Recommended Technical and Essential Employability Competencies			

	ORIENTATION / INTRODUCTION Grades 9-10	SKILL DEVELOPMENT Grades 10-12	CAPSTONE / ADVANCED Grade 12	POSTSECONDARY COURSES Recommended 1st Year
WORK-BASED LEARNING	Career Exploration (2) Team-Based Challenge	Team-Based Challenge Career Development Experience or Youth Apprenticeship	Team-Based Challenge Career Development Experience or Apprenticeship	Team-Based Challenge Career Development Experience or Apprenticeship
SCIENCE	Science Sequence	Science Sequence	Science >>	Science
SOCIAL SCIENCE	Social Science Sequence	US History >> US Government & Politics >>	Psychology >>	Psychology Sociology
MATH	Algebra Geometry	Geometry Algebra 2 Pre-Calculus	Transitional Math: Quantitative Literacy Statistics Pre-Calculus Calculus >> General Education Statistics	General Education Statistics Mathematics for Elementary Teaching I & II
ENGLISH	English Sequence	English Sequence	Transitional English English Composition >>	English Composition Oral Communication

>> AP or Dual Credit
 📖 Dual Credit Course
 📖 Dual Credit Course Affiliated With IAI Code
 🏆 Course or Program Prepares for Industry Credential
 📖 Postsecondary Course Affiliated with IAI Code
 🏆 College and Career Pathway Endorsement Earned
 + If courses in this column were accomplished through early college credit, students should take the next required course in the sequence or, if none, additional AAS or Major Courses

6. Work-Based Learning Experiences

Why This Is Important

[Work-based learning](#) is a key pillar of career pathways. It offers young people the opportunity to get professional experience while still in school and to connect their academic learning to a potential career. Work-based learning also helps student begin to develop their identities as young professionals and to build their resumes. Students are able to build networks and social capital as they meet and get to know employers where they may eventually work.

How This Element Promotes Equity

Work-based learning solves a challenge that many young people face: You need experience in order to get a job, but you need a job in order to get experience. Work-based learning provides young people with valuable opportunities to gain professional experience and disrupts false or biased ideas about “work readiness” and “professionalism” by allowing students to build professional skills and gain support from adults. It creates a broader understanding of how to develop skills within a workforce. Students of color and those who are experiencing poverty are often locked out of the very opportunities that could help them advance in their careers. Unpaid internships, for example, perpetuate inequity because the cost barriers make them inaccessible to many young people. Paid work-based learning experiences are an equitable approach to helping young people gain career experience.

Information to Include in This Element

- Examples of [work-based learning](#) activities that show the range of opportunities along the continuum of career exploration, exposure, engagement, and experience; generally, the activities become more advanced as students progress through their education
- Information about the benefits of work-based learning for both young people and employers, with an emphasis on the expectation that young people will contribute to the bottom line and do productive work
- Success stories from local students
- Required professional experiences within an industry; for example, a health care credential might require clinical experience
- Required entry requirements, such as a drug test or a driver’s license

Other Considerations

JFF’s Center for Apprenticeship and Work-Based Learning offers many useful resources, including “[The Business Case for Work-Based Learning](#)” and “[Benefits of Work-Based Learning](#).”

Examples

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JFF’s Work-Based Learning Framework

- Stakeholder facing
- Outlines the preparation students need to be ready for work-based learning in the “Career Exploration” section
- Defines the experiences that constitute work-based learning (exposure, exploration, and engagement) and provides examples of activities that fall within each category

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Hawai’i Work-Based Learning Continuum

- Stakeholder facing
- Defines the stages of work-based learning (awareness, exploration, preparation, and training) and provides examples of activities within each stage
- Outlines the state’s vision, which specifies that work-based learning experiences should be informed by LMI

Work-Based Learning Framework

Work-based learning looks beyond the classroom to expand academic and technical learning and accelerate advancement along career pathways. Work-based learning is defined as a student or worker completing meaningful job tasks in a workplace that develop readiness for work, knowledge, and skills that support entry or advancement in a particular career field.

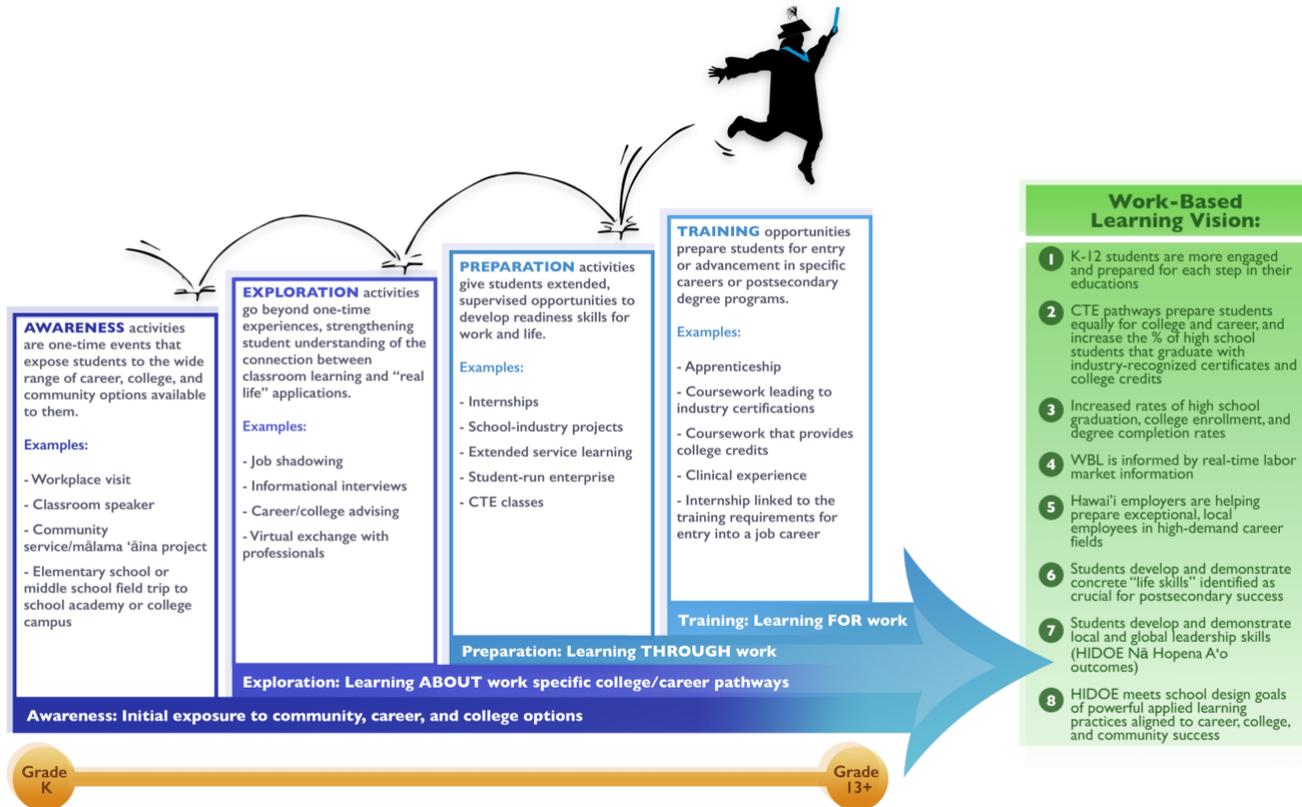
Work-based learning supports a continuum of lifelong learning and skill development for a range of workers and learners—K-12 students, young adults, college students, adult jobseekers, and incumbent workers.



Visit **JFF's Center for Apprenticeship & Work-Based Learning** for more information: jff.org/center.

Hawai'i Work-Based Learning Continuum for Career, College, and Community Readiness

The Hawai'i Work-Based Learning Continuum builds students' academic skills, life skills, and experience as they progress from learning **ABOUT** work to learning **THROUGH** and **FOR** work that connects to their career, college, and community goals.



Conclusion

Intermediaries play a crucial role in bringing stakeholders together to design and ensure the successful implementation of career pathways from high school to postsecondary learning to a first career. When students and advisors have information about these elements, they are empowered to make strategic decisions about:

- Selecting a career pathway, using industry overviews to learn about the high-wage, high-demand fields in their region.
- Choosing their coursework, using strategic course-taking resources and their knowledge of what competencies and skills are most valuable in the local labor market.
- Determining a postsecondary degree program, considering which credentials are valued in the labor market.
- Applying for jobs, drawing on their foundation of work-based learning experience and knowledge about their opportunities for career advancement in the future.

Intermediaries and cross-sector stakeholders that develop and communicate these elements take on an intensive and challenging endeavor that is well worth the effort. Working for greater equity and putting in place strategies that promote economic advancement among all young people are among the most important issues to address for the years ahead. The COVID-19 pandemic has imperiled the economic well-being of many youth, with consequences now and in the future. It is urgent that Black and Latinx youth and those who are experiencing poverty have access to well-designed career pathways that put them on a track toward good jobs and economic advancement.