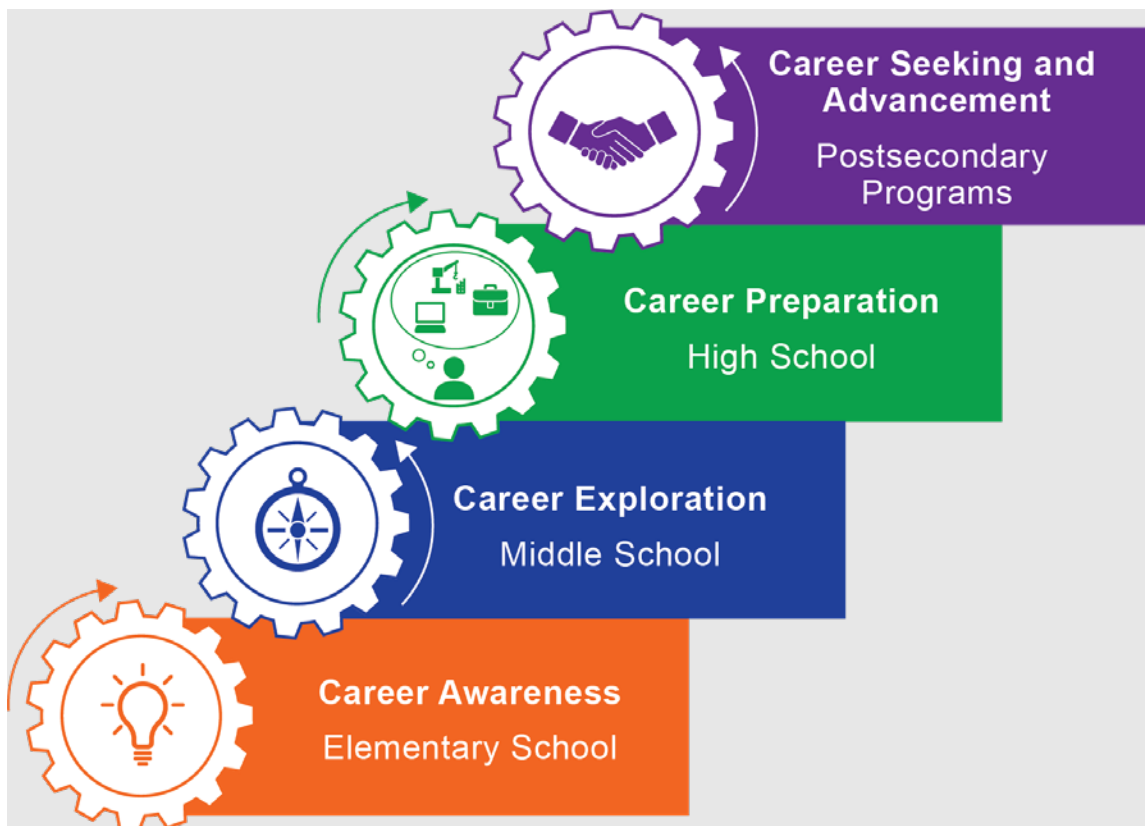


# MARYLAND'S WORK-BASED LEARNING CONTINUUM: Describing the Research and Common Practices



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This document describes the research around instructional practices that support work-based learning from pre-K through college. A cross-institutional team led by staff from the Region 4 Comprehensive Center created this document. Team members included:

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## WORK-BASED LEARNING CONTINUUM CONCEPT

Work-based learning is defined as “...an instructional strategy that enhances classroom learning by connecting it to the workplace” (U.S. Department of Education, 2017). Work-based learning experiences and programs are traditionally exemplified by job shadowing, internships, and student-based enterprises, and can include an even broader range of related experiences. Work-based learning experiences allow students to “...explore a variety of career options [and] connect the classrooms to the skills needed to be successful in the workplace... [The experiences] are supported by consistent mentoring” (Council of Chief State School Officers [CCSSO], 2014). A review of the work-based learning definitions from 28 state education agencies (SEAs) identified eight themes: workplace experience, skill and knowledge development, employability skills, career pathways, instructional strategies, connections to student plans, mentoring, and payment for work experience (Giffin, Neloms, Mitchell, & Blumenthal, 2018). According to the U.S. Department of Education, comprehensive work-based learning programs contain three key components:

- Alignment of classroom and workplace learning
- Application of academic, technical, and employability skills in a work setting
- Support from classroom or workplace mentors

The state of Maryland supports a continuum of work-based learning experiences from pre-kindergarten through college. Along this continuum, students learn four types of career-building competencies: career awareness, career exploration, career preparation, and career seeking and advancement. These four competencies develop over time and in a cumulative way. The most common types of these work-based learning experiences are outlined in the chapters below. Educators and counselors usually begin by implementing foundational career awareness experiences in elementary school. These experiences form a core foundation for work-based learning experiences in future grades. Over time, the mix of those who manage and deliver work-based learning experiences changes. For example, as career awareness continues beyond elementary school, students and employers take on a greater role in participating in and creating work-based learning experiences, while the educator’s role diminishes. Starting in middle school, educators and counselors coordinate more closely with employers to support career exploration and preparation experiences. In high school, educators coordinate regularly with employers to provide courses that prepare students for careers. Then, in postsecondary programs, students coordinate directly with employers, counselors, and educators to support career seeking and advancement experiences.

# PROGRESSION OF WORK-BASED LEARNING EXPERIENCES

		Elementary School	Middle School	High School	Postsecondary												
<b>Career Awareness</b>	Interest surveys																
	Diverse classroom career activities																
	Diverse employer job talks																
	Personal financial literacy																
<b>Career Exploration</b>	Career fairs																
	Workplace tours																
	Job shadows																
	Structured career exploration lessons																
	Informational interviews																
<b>Career Preparation</b>	School-based enterprises																
	Counseling																
	Career and technical student organizations																
	Career and technical education																
	Apprenticeships																
	Internships																
	Simulated work-based learning																
	Job-seeking training																
<b>Career Seeking and Advancement</b>	Job applications																
	Job training																
	Career management training																
<b>Audience (grade level)</b>		preK-3	4	5	6	7	8	9	10	11	12	13	14	15	16		

## DETAILED OVERVIEW OF MARYLAND’S WORK-BASED LEARNING CONTINUUM

	<b>CAREER AWARENESS</b>	<b>CAREER EXPLORATION</b>	<b>CAREER PREPARATION</b>	<b>CAREER SEEKING AND ADVANCEMENT</b>
	<i>Learning about work interests and options</i>	<i>Learning about work options and educational needs</i>	<i>Learning through work to apply skills and build knowledge</i>	<i>Learning for work to obtain credentials and careers</i>
<b>WORK-BASED LEARNING OUTCOMES</b>	Students understand: <ul style="list-style-type: none"> <li>• Their career interests</li> <li>• How education supports career access</li> <li>• How different careers serve society</li> </ul>	Students can: <ul style="list-style-type: none"> <li>• Explore career options</li> <li>• Make educational plans</li> <li>• Interview employers</li> <li>• Observe work processes</li> </ul>	Students can: <ul style="list-style-type: none"> <li>• Identify several future careers</li> <li>• Build career-related skills</li> <li>• Develop career adaptivity skills</li> </ul>	Students can: <ul style="list-style-type: none"> <li>• Explore career opportunities and required career skills</li> <li>• Achieve in training courses</li> <li>• Perform to employers’ satisfaction</li> <li>• Complete a personal and college budget</li> <li>• Find careers that match their interests, financial needs, and skills</li> </ul>
<b>BUSINESS COMMITMENT</b>	<ul style="list-style-type: none"> <li>• Coordinate classroom visits with preK–6 educators and counselors</li> <li>• Provide basic career information</li> </ul>	<ul style="list-style-type: none"> <li>• Engage small groups of students in observing or learning about several occupations</li> </ul>	<ul style="list-style-type: none"> <li>• Open workplaces to students for meaningful work</li> <li>• Support Career &amp; Technical Student Organizations with space, judges, equipment, and training</li> <li>• Help educators identify skills students should learn in school</li> </ul>	<ul style="list-style-type: none"> <li>• Hire, train, and compensate students</li> <li>• Coordinate school-based education with workplace needs</li> </ul>

	<b>CAREER AWARENESS</b>	<b>CAREER EXPLORATION</b>	<b>CAREER PREPARATION</b>	<b>CAREER SEEKING AND ADVANCEMENT</b>
<b>EDUCATOR COMMITMENT</b>	<ul style="list-style-type: none"> <li>• Create work-based learning stakeholder teams</li> <li>• Commit to assessing students' career needs in elementary school and regularly thereafter</li> <li>• Prepare teachers and counselors</li> </ul>	<ul style="list-style-type: none"> <li>• Provide repeated access to career exploration experiences and tools</li> <li>• Help students create and update education plans linked to career interests</li> <li>• Help counselors keep up to date with emerging careers</li> </ul>	<ul style="list-style-type: none"> <li>• Develop curriculum and lessons aligned with workplace needs</li> <li>• Set up service agreements with organizational partners</li> <li>• Promote work-based learning and industry membership groups</li> </ul>	<ul style="list-style-type: none"> <li>• Encourage students to engage in career seeking</li> <li>• Incentivize workplace experiences with school credits</li> <li>• Work with intermediary organizations to support career pathway navigation, financial literacy</li> </ul>
<b>METRICS</b>	<p>Constructs to assess:</p> <ul style="list-style-type: none"> <li>• Work-based learning program types</li> <li>• Quality of programs</li> <li>• Frequency of delivery</li> </ul>	<p>Constructs to assess:</p> <ul style="list-style-type: none"> <li>• Student access to and completion of exploration and planning</li> <li>• Career and college self-efficacy</li> <li>• Long-term educational outcomes</li> </ul>	<p>Constructs to assess:</p> <ul style="list-style-type: none"> <li>• Career adaptivity</li> <li>• High school graduation</li> <li>• College enrollment</li> <li>• Work-based learning participation</li> <li>• Access to work-based experiences for special populations</li> </ul>	<p>Constructs to assess:</p> <ul style="list-style-type: none"> <li>• Skills in career searching</li> <li>• Financial literacy</li> <li>• Technical skills</li> <li>• Employability skills</li> <li>• Job performance</li> </ul>
<b>EVIDENCE</b>	Two rigorous studies based on comparison designs; many practical ideas	Seven rigorous studies based on comparison designs; many practical ideas	Five rigorous studies based on comparison designs; findings clarify work-based learning program definitions and specify program features	No rigorous studies based on comparison designs; many practical ideas



# CAREER AWARENESS

## Introduction

When educators and school counselors help students develop career awareness, career development research indicates they primarily focus on two learning principles: helping students to identify their own career interests and engaging students in planning for education to prepare for different careers. Work-based learning experiences, which build career awareness by involving employers, can draw on both existing career developmental theory and existing instructional and counseling practices (Gottfredson, 2002; Holland, 1985; Savickas, 2013; Super, 1963, 1990).

Few career awareness interventions have been empirically tested. Educators and school counselors traditionally take a leading role in career awareness interventions starting in elementary school (Cerrito, Trusty, & Behun, 2018), but it is critical to include employers for these experiences to be truly “work-based learning” experiences (Linked Learning Alliance, 2012). For example, employers can support career awareness through classroom visits, workplace field trips, and virtual or in-person mentoring on student projects. Employers also may contribute to the realistic design of classroom-based career instruction or counseling activities. This chapter describes how educators may include employers in designing and delivering foundational career awareness experiences in elementary school, and how they may cultivate students’ capacities to build career awareness in both secondary schools and postsecondary programs.

Research indicates that children begin considering potential careers in elementary school (Ray, 2010). Based on this finding, educators and counselors may find it helpful to provide information about a broad sample of careers, including those that reflect the work of students’ own families. Offering an expansive sample of career options may counter a young child’s relatively early bias toward self-identifying with careers by gender (Auguret al., 2005; Helwig, 1998, 2004; Tracey & Ward, 1998).

Further, since both people and the economy change over time, career awareness should be framed as a set of skills that students will use throughout life. Elementary educators and counselors coordinate with employers to establish a strong foundation for students to build career awareness, and then secondary educators and counselors deepen students’ career awareness skills. They teach them to update their career interests over time, plan education to support career access, and stay current with changing career options.

This chapter describes these core work-based learning experiences. To support educators, counselors, and their employer partners, this chapter also describes the associated learning outcomes of career awareness, the roles of business partners, educators, and counselors in developing and delivering career awareness work-based learning experiences, and the key points of developing career awareness based on the research evidence.

## Recommended Work-based Learning Experiences and Outcomes

An initial review of the literature revealed that career awareness experiences begin in elementary school and continue throughout all levels of school. The experiences that develop career awareness vary by grade level. The literature identified 14 different experiences

associated with developing career awareness. These may be simplified into four essential types:

- Experiences delivered by teachers or counselors (including lesson plans, simulations, and counseling)
- Interest surveys
- Employer job talks (including classroom visits, field trips)
- Online career exploration activities

All four types of experiences have been used in elementary contexts, but lesson plans guided by teachers and counselors are used most often to build basic career awareness. Such lessons may involve having students share what they know about the work their families and having them complete simple surveys of their interests. Employer-based career awareness experiences begin with job talks in elementary school and grow to include more expansive interactions (e.g., including field trips, career shadows, and mentoring).

### ***Work-based Learning Experience Design Guidelines***

Maryland's state regulations and the research literature indicate developing career awareness requires strengthening two forms of knowledge: self-awareness and knowledge of career options (Maryland State Department of Education, 2012; Hartung et al., 2008; Palladino Schultheiss, Palma, & Manzi, 2005; Super, 1963, 1990). First, students learn to develop self-awareness of their own interests and talents. Second, students develop awareness of career options. From kindergarten through college, students iteratively update and refine both types of awareness. Their awareness of career options evolves from inside out: young students understand their own interests and the careers of their families, and older students learn about the prominent careers in their local community and Maryland's career clusters (see Figure 1). At older ages, students begin to apply abstract concepts, such as economic status, to careers (Gottfredson, 2002).

**Figure 1: Maryland's Career Clusters, 2020**

- [Arts, Media, and Communications](#)
- [Business Management and Finance](#)
- [Construction and Development](#)
- [Consumer Services, Hospitality and Tourism](#)
- [Environmental, Agriculture and Natural Resources](#)
- [Health and Biosciences](#)
- [Human Resource Services](#)
- [Information Technology](#)
- [Manufacturing, Engineering and Technology](#)
- [Transportation Technologies](#)

Career awareness experiences change over time to reflect students' increasing agency and growing world knowledge. Elementary experiences focus on familiarizing students with the landscape of career options, often building on their basic knowledge of their own families' work. It is important to note that young children may not have realistic understanding of their own skills and may focus on highly concrete aspects of the work. Elementary teachers and school counselors may use the following strategies:

- Participatory simulations (such as role playing) to build students' appreciation for the variety of career roles
- Employer talks to make work more concrete
- Surveys of students' interests and discussions of the different careers aligned with those interests
- Various forms of counseling (one-to-one, classroom-based) to discover career interests

In secondary and postsecondary school, career awareness experiences support students as they explore specific careers aligned with their interests and assessments of their own skillsets. They may use this knowledge to support searches of career databases, conduct informational interviews, and connect with career mentors. Technology may be used to deliver such career awareness experiences all along the educational path.

## **Career Awareness Tools**

Tools for educators:

- [Maryland CTE Works](#): The Maryland CTE Works website allows users to complete a career interest survey and explore different career pathways. It provides an overview of Maryland's CTE programs of study and resources to help students search for jobs and prepare for job interviews, amongst others.



## Interest surveys

Educators may use interest surveys throughout students' entire academic careers to foster self-exploration and self-awareness. These surveys help students to assess their skills and areas for growth when considering academic and career pathways. Students typically answer questions related to their personal interests, which may be academic or career-related, or which may focus on hobbies, activities, habits, likes, and dislikes. Teachers or counselors may proctor these surveys and employers may administer them to support job placement. Counselors may assist teachers in interpreting the results to learn more about students and inform teaching, or to provide direct guidance to the students. In early grades (elementary, middle, and some early high school), teachers may develop their own informal surveys, which can be similar to formative assessments, or use freely available surveys to assess students' feelings about subjects, tasks, or topics. Some examples of questions that educators may want to ask students in early grades are:

1. What kinds of books do you like?
2. How does it feel to take a test?
3. What is your favorite subject and why?

In later grades (high school and postsecondary), educators can use advanced forms of interest surveys that target specific skills as they relate to personality domains or career fields (such as, Myers-Briggs Type Indicator, Holland's Vocational Preference Inventory, Strong Interest Inventory, Gallup CliftonStrengths). These self-report survey instruments have been found to provide valid and reliable results that help participants to identify primary areas of career interest and to understand how their own interests align with those who work in specific fields. Engaging a professional counselor supports accurate interpretation of the results. Sample questions often are on ratings scales, and check for the level of interest in specific kinds of tasks, such as:

1. I like to work on cars; I like to do puzzles; I am good at working independently; I like to work on teams (Sample questions from: Holland/Strong)
2. Parties and social gatherings energize you; You prefer to stick to tried-and-true methods - solutions and routines that have worked well for you in the past; You live in the moment and you don't spend too much time worrying about the past or distant future. (Sample questions from: Myers-Briggs)

### Business and Educator Commitment

While teachers and counselors have traditionally played a prominent role in delivering career awareness experiences, research indicates career topics often fall to the bottom of the long list of educator responsibilities (Knight, 2015). For this reason, counseling educator Jasmine Knight (2015) suggests ways to engage parents as well as local employers and postsecondary institutions to support educators and counselors. Business partners play advisory and supportive roles at the elementary and middle school levels and have a more substantial role at the secondary and postsecondary levels.

One recommended approach involves organizing a local, school-level career awareness team with representatives of local businesses, families, and postsecondary organizations. This team can provide resources to develop and deliver career awareness experiences. At the secondary level, a variety of supportive organizations also exists to augment career awareness, from intermediary organizations focused on specific industries (e.g., Career and Technical Student

Organizations (CTSOs) such as SkillsUSA for trade, technical, skilled service, and health science occupations; FFA [formerly Future Farmers of America] for agricultural sciences; and Future Business Leaders of America-Phi Beta Lambda [FBLA-PBL], afterschool clubs, student-run enterprises, and competitions focused on specific skills (e.g., robotics competitions, cybersecurity competitions). Elementary and middle school career awareness programs should build student awareness about these secondary-level career learning experiences.

## **Evidence**

The review identified nine peer-reviewed articles from the past decade that were focused on career awareness and efficacy of interventions to support it. Six studies used a descriptive methodology, two were randomized controlled trials (RCTs), and one was a correlational study.

With regard to age level, two articles described work-based learning programs and interventions administered in elementary environments, one article focused on middle school, three articles focused on both middle and high school, and three reported on high school only.

Since 2008, three articles explored the potential of classroom interventions or technologies to build students' career awareness, two articles described professional development for counselors and mentor-teachers to support career awareness, and one article reviewed surveys of practitioners to identify career awareness experiences offered to students with and without disabilities. Two articles focused on career awareness related to widespread public awareness (e.g., STEM technician fields), and one described systems for measuring the quality of career programming. A summary of the career awareness research articles informing this section appears in Appendix A.

# CAREER EXPLORATION

## Introduction

Career exploration begins early and evolves over time. During the elementary years, students explore careers held by their parents and other family members and use vicarious experiences provided by community members who work with youth to explore other career options. In middle school, students begin to eliminate careers from consideration based on estimations of their own skills (Patton & Porfeli, 2007; Super, 1963, 1990) and on the perceived social prestige of particular occupations (Gottfredson, 2002). Career development experts point out that middle school children risk limiting their options when they rely on these kinds of perceptions rather than on an informed understanding of different careers. Indeed, middle school students may know about the work products of different occupations but have little grasp of the specific work processes that create those products (Ray, 2010). When students enter high school, career exploration continues through experiences in career-related coursework, part-time work, and volunteering.

Experts underscore the importance of using structured career exploration experiences to help students keep their career options open, develop an orientation to envisioning and constructing their future, and instill positive beliefs about their self-efficacy in career skills (Savickas, 2013). Such experiences provide ways for students to see their pathways from school to work and prepare them for the life work of adapting to the everchanging career contexts they will enter. Offering such career exploration opportunities requires planning and access to working professionals, which involves collaboration among educators, school counselors, and employers.

Career exploration experiences seek to help learners keep their career options open, improve their educational engagement, build understandings of the work involved in different careers, and develop self-efficacy around career-relevant skills.

This chapter describes these work-based learning experiences, the key learning outcomes of career exploration, the roles of business partners, educators, and counselors in developing and delivering career awareness work-based learning experiences, and the key benchmarks of effective career exploration programs based on the research evidence.

## Recommended Work-based Learning Experiences and Outcomes

Although some educators and counselors have recommended using career exploration experiences as early as elementary school (Augst & Kos, 2008; Dayes & Khan, 2003; Nelson, 2003; Sensoy-Briddick & Briddick, 2019; Welde, Bernes, Gunn, & Ross, 2016), the research literature mostly focuses on career exploration experiences from middle school through postsecondary programs. Both elementary and middle school programs focus on experiences delivered by teachers or counselors. In secondary school and postsecondary programs, educators and employers increasingly emphasize:

- Structured career exploration lessons
- Career fairs
- Workplace tours
- Job shadows
- Informational interviews

To design and deliver structured career exploration and other work-based learning experiences, Maryland's state regulations (Maryland State Department of Education, 2012) emphasize:

- Familiarizing students with the state's career clusters
- Helping students develop individual academic and career plans aligned with high school graduation requirements and, if relevant, a Career and Technical Education (CTE) program of study
- Helping students follow a process or model for "knowing and thinking about" their education and career exploration decisions

Career exploration experiences should help students to achieve two broad categories of learning goals: (1) to build the capacities to review career options with their own interests and skills in mind; and (2) to build the capacities to create educational and work-based learning plans to develop their career-relevant skills. Supporting such capacities enhances students' feelings of confidence—or self-efficacy—around college and/or career. Relevant interventions have focused on achieving several specific outcomes:

- Career awareness
- Career readiness
- Student achievement
- High school graduation rates
- College enrollment
- College and career transition
- Employer satisfaction

### ***Work-based Learning Experience Design Guidelines***

To design experiences for reviewing career options, the literature describes the following approaches:

- Guided lessons integrated into the academic curriculum that explain how to search career options and set career goals (Curry et al., 2013; Grigal et al., 2019; Koivisto et al., 2011; Lapan et al., 2016; Logue et al., 2019; Schaefer & Rivera, 2012)
- Classroom-based lessons combined with ancillary experiences, such as college visits and school counselor facilitation (Glessner et al., 2017), parent engagement (Orthner et al., 2010), job shadowing (Choi et al., 2015), and various technologies, such as online tools, games, and mobile apps (Hämäläinen & Cattaneo, 2015; Lally & Sclater, 2013; Ohlson et al., 2020; Nota et al., 2016; Moyer et al., 2017)
- Employer participation that includes classroom visits, informational interviews, field trips, and virtual mentoring sessions (Lussier, 2011; Sowers et al., 2017)
- Career academy familiarization (Hemelt et al., 2019) with career-themed programs of study (Castellano et al., 2017), and work-based learning experiences integrated into CTE courses (Guy et al., 2009)

The literature describes the following approaches to design experiences for creating educational and work-based learning plans:

- Using individual career and academy plans (Solberg et al., 2012) and individual learning plans for students with disabilities to guide both education and work-based learning experiences based on career interests; the plans should be updated regularly

- Providing focused forms of counseling that recommend specific course-taking approaches to build self-efficacy in historically underrepresented groups in STEM (Falco, 2017)
- Offering informal learning programs to develop career and technical skills among historically underrepresented groups, such as Advancement via Individual Determination (AVID) (Hooker & Brand, 2009) and the Benjamin Banneker Scholars Program (Kendricks et al., 2019; Mainzer, 2011).

## Career Exploration Tools

Tools for educators:

- [Maryland's STEM Innovation Network Volunteer Program](#): This program introduces students to real-world STEM applications through classroom visits from STEM professionals and hands-on learning activities.
- [Maryland State Department of Education's Career and Technical Education Programs of Study](#): Resources from this website include a complete list of approved CTE programs, as well as state and local policies and procedures concerning CTE program development and implementation.
- [Way to Be](#): A mobile application that extends and digitizes the Maryland Business Roundtable's college and career preparation resources for middle and high school students.



## Workplace tours

Students can learn about different careers through workplace tours, which expose them to a variety of fields and career paths. Educators and counselors organize these tours by partnering with employers, and the educator-employer relationship can play a critical role in the benefit that students receive from these tours. In primary and early secondary grades, these tours may take the form of field trips, while in later grades (late high school and postsecondary), employers may host recruitment events aimed at young adults starting their careers. Workplace tours should provide participants with a sense of both the general career field and the specific workplace environment. They should provide a structure through which students learn about various aspects of the profession. For example, if participants attended a tour of a dairy farm, the employer could show them a typical workday and give them a presentation on the business aspects of running a farm. Workplace tours are an important exploratory experience for students as they learn about different career options, and it is especially important to expose students to fields in which they are underrepresented, whether that be by gender, race, or disability or language status.



## Business and Educator Commitment

Offering career exploration experiences presents numerous hurdles to educators and their workforce partners. Research describes the following challenges:

- Increased workload: Incorporating these experiences increases the workload for educators, employers, and counselors
- Lack of sufficient training: Asking teachers to incorporate career development activities into their curriculum and asking employers to serve as mentors requires preparation for both
- Shifting work landscape: Helping counselors stay up to date with local labor market needs requires continual effort (Mupinga & Caniglia, 2019)
- Uneven student engagement: Ensuring students engage with the career experiences necessitates setting standards and gathering metrics, particularly if experiences are optional (e.g., using the campus career centers) or offered online (which introduces potential challenges with technology)
- Difficulty applying classroom knowledge to the workplace: Bridging the skills that students learn in school to those that employers seek involves planning and coordination
- Lack of equity: Making career experiences, particularly in STEM fields, available to all students requires focused outreach to students of color and female students (Carter et al. 2009).
- Logistical and workload constraints: Establishing transportation to and from activities, finding time in the day to include career experiences, and sustaining relationships with employers require dedicated personnel

Educators may use varied approaches to address these challenges. According to descriptive research, students and teachers indicate relevant professional learning experiences for teachers are important (Welde et al., 2016). Such programs can help teachers to incorporate real-world work tasks into classroom lessons and contextual teaching and learning methods that link to specific work tasks. Targeted professional learning also can help teachers provide students with disabilities with hands-on experiences to prepare them for work-based learning (Teixeira & Edwards, 2020).

Both teachers and counselors can benefit from receiving updates on current local workforce trends and developments (Ferguson et al., 2019) and learning about the specific gaps in career awareness among different segments of the student and parent populations they serve (Fletcher & Tyson, 2017).

When engaging students and their parents in using online or paper career exploration tools, it is critical to keep in mind the difficulties younger students may have with them (Galliott, 2017). By the time students enter college, many already have basic skills in place to use such tools. When college students learn to use online or paper career exploration tools, it has positive impacts on students' skills of career planning, exploration, and decisionmaking, and their knowledge of the world of work (Pordelan et al., 2018).

Linking the school and the workplace worlds requires focused planning and coordination, and the work involved exceeds the typical capacity of most teachers and counselors. Communities vary widely in access to employers (Hutchins & Akos, 2013). It helps to create positions for career specialists who can sustain partnerships with local employers (Hernandez-Gantes et al.,

2017). Educators should identify the workplaces and careers in their communities and develop strategies for ensuring a balanced set of opportunities for students to review jobs in all career clusters. According to Advance CTE (2019), educators can ask employers to play multiple roles in career exploration, including:

- Guest speaking
- Participating in career day events
- Judging competitions for career and technical student organizations (CTSOs), as well as providing equipment, space, and training
- Job shadowing
- Mentoring
- Serving on advisory councils

## Evidence

The review identified 28 peer-reviewed articles that in the past decade that focus on understanding the state of career exploration programming in middle schools and high schools and examine the efficacy of classroom and counseling interventions to support career exploration. Most studies (n=17) used a descriptive methodology, and the remaining articles were distributed among RCTs (n=4), quasi-experimental designs (QEDs) (n=3), and correlational studies (n=4). Most of the articles discussed secondary school career exploration interventions and the school conditions that support such interventions (n=23). The remaining articles addressed these topics for elementary school (n=3) or college (n=2).

Nearly half the studies examined the use of structured lessons around career exploration, and many of these also investigated the utility of using supportive activities or technologies. Other studies examined current career exploration practices at a sample of schools, mentoring interventions, professional development needs for counselors, career readiness quality indicators, and schoolwide programs (e.g., CTE, career academies).

In terms of results, the studies of interventions focused on structured career exploration lessons generally showed positive impacts on students' career goals and attitudes. Such programs ranged from a few hours or days in a classroom to a full course during a college term. In addition to checking students' outcomes relating to educational persistence and success (e.g., graduation, educational plans completed, college application), researchers evaluated the impacts of career exploration experiences focus on measuring critical career development skills associated with concepts described by Super (1963,1990). These include the capacity to plan for a career, explore career options, and make career decisions, as well as having some knowledge about the world of work. A summary of the career awareness research articles informing this section appears in Appendix B.

# CAREER PREPARATION

## Introduction

High school is a critical time for students to imagine various career directions and establish self-confidence in their work-related skills through direct work experiences. During this phase of career development, adolescents benefit from opportunities to see how their abilities can apply to different career options (Super, 1963, 1990), reconsider any careers they may have prematurely abandoned (Gottfredson, 2002), and engage in the work of revising, adapting, and considering multiple possible ideas about their future careers (Savickas, 2013). Over the last 20 years, career trajectories have become unstable due to economic globalization, increased automation, climate change, and, most recently, pandemic threat. Career development experts now de-emphasize traditional matching between identified personal interests and specific career tracks. They focus more on building students' capacities for career adaptivity. Work-based learning plays a critical role in this process.

To provide effective work-based learning experiences for career preparation, educators and counselors need to confront four key logistical and workload challenges.

- First, teachers and counselors need to coordinate with employers to increase opportunities for work-based experiences, which includes becoming familiar with workplace skills and the current labor market.
- Second, teachers and employers need to work together to design curriculum and experiences that help prepare students to apply classroom knowledge to workplace activities and supervisors to provide useful, individualized feedback to student workers.
- Third, teachers, counselors, and employers need to develop focused experiences for students who may face stereotyping and discrimination in certain careers (e.g., female students and students of color or low socioeconomic status in STEM or male-dominated fields) (Jackson et al., 2010).
- Fourth, educators and counselors need to engage parents, families, and guardians who play critical roles in shaping a child's career goals (Helwig, 2008).

Empirical studies of career preparation indicate responding effectively to changing career conditions includes being ready to adapt to future career demands, having the capacity to cope with career change, and being proficient in career learning skills. The work-based learning principles most frequently cited in the career preparation phase focus on engaging students in identifying and re-identifying career interests, building self-efficacy around a broad range of career-relevant knowledge and skills, and developing career-related social capital.

This chapter describes these work-based learning experiences and outcomes, the roles of business partners, educators, and counselors in developing and delivering career preparation work-based learning experiences, and the key benchmarks of effective career preparation programs based on the evidence.

## Recommended Work-based Learning Experiences and Outcomes

The literature focuses on career preparation experiences from high school through postsecondary programs, including:

- Internships and apprenticeships
- Counseling
- Job shadowing and mentoring
- Career search training
- School-based enterprises
- Simulated work-based learning
- Career and technical education or dual training programs
- Career and technical student organizations (CTSOs)

In general, career-oriented programming in traditional comprehensive high schools, as well as in career academies,<sup>1</sup> often provides several of these approaches (Hemelt et al., 2019; Lebow et al., 2012).

The outcomes most frequently mentioned in the career preparation work-based learning research include:

- Career awareness
- Career readiness
- Student achievement
- High school graduation
- Transition to college and career
- Employer satisfaction

### ***Work-based Learning Experience Design Guidelines***

To design and deliver structured career preparation and other work-based learning experiences, Maryland's state regulations (Maryland State Department of Education, 2012) emphasize:

- Offering sequenced academic and technical programs of study and related workplace experiences
- Building and maintaining a career folder or portfolio
- Applying and demonstrating career-related skills in project-based learning and, if applicable, through CTE programs of study and other career-connecting activities
- Helping learners develop a disciplined decision-making process to update and modify their academic and career plans to address skill gaps and support college and financial aid applications

Research indicates self-beliefs about ability play a central role in the career decision-making process, and so addressing such beliefs should be integrated into the design of work-based learning experiences that support career preparation. Designers of such programming draw from four influential sources of developing self-efficacy (Bandura, 1977):

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<sup>1</sup> Career academies are described as within-school, multi-year programs that integrate career and technical education (CTE) courses, project-based learning, internships, and other activities organized around specific career themes.

- Personal performance: Accomplishments—previous successes or failures (most influential)
- Vicarious experience: Watching others, modeling, mentoring
- Verbal persuasion: Verbal encouragement or discouragement
- Physiological and emotional factors: Managing stress reactions in one's body

Work-based learning programs should activate useful subskills that support productive career adaptivity such as: concern, control, curiosity, and confidence (Savickas, 2013). Concern involves becoming aware of and making plans for career transitions. Control includes the capability to make career-related decisions. Curiosity entails exploring the environment, the self, and one's past, present, and desired future. Confidence concerns developing students' problem-solving capacity and resources to effectively cope with obstacles, challenges, and barriers.

The peer-reviewed literature and practitioner white papers describe the following specific approaches to offering career preparation work-based learning experiences:

- Hybrid school-to-work curricula that use different classroom experiences to simulate work experiences and contexts and build both technical skills and reflection skills (REL Appalachia, n.d.; Jackson, 2017; Zitter et al., 2016). Simulation technologies may be useful in such curricula (Rooney et al., 2015). Alignment of required knowledge and skills between schools and workplaces supports such efforts (Overton & Lemanski, 2016). Research indicates a need to develop focused career transition programming for students with disabilities (Chen, 2013; Povenmire-Kirk et al., 2010; Teixeira & Edwards, 2020), minority students (Kendricks et al., 2019), students at risk of dropping out (Balcazar et al., 2018), and immigrant students (Teräs & Lasonen, 2013).
- Mentoring experiences that provide students with ongoing access to workplace role models who provide guidance, instruction, and encouragement to develop the competence, character, and college-going interests of the protégé (National Center for Education Statistics [NCES], 2009; Ohlson et al., 2020; Sowers et al., 2017; Stephens et al., 2014).
- Classroom-supported internships or apprenticeships that focus on coordinated task development, feedback, and both formative and summative assessment between teachers and workplace supervisors (Chan, 2013; Henderson & Trede, 2017; Kenny et al., 2015; Lerman et al., n.d.; Maertz et al., 2014; Martin & Rees, 2019; Schaap et al., 2012; U.S. Chamber of Commerce Foundation, 2017). This research underscores the importance of training workplace supervisors to support this work (Kenny et al., 2015; Richardson et al., 2013; Rowe et al., 2012). Offering paid internships can expand participation among low-income learners (Cahill, 2016).
- Periodic counseling interventions that include a career guidance curriculum, career counseling, career inventories, department guides, lectures on career development, and job shadowing opportunities (Choi et al., 2015; Clayton et al., 2019; Koivisto et al., 2011; Logue et al., 2019). Offering these interventions twice over a couple of years is more effective than only offering them once (Choi et al., 2015). Such programs may be tailored to the needs of students with special needs, such as students with disabilities (Cmar & McDonnell, 2018). These may be offered online (Pordelan et al., 2018; Tirpak & Schlosser, 2012).

- School-based enterprises that involve running a business in which goods or services are produced by students as part of school (Guy et al., 2009). These enterprises typically involve students in managing a project that may lead to the sale of goods for use by others. An example would include CTE laboratories in constructing homes. Such programs rely on instruction that blends learning in both the classroom and workplace. One study of national statistical data found that an average of 4 percent of high school students participate in these programs (Hutchins & Akos, 2013). The same study found that both urban and rural schools lagged their suburban counterparts in offering these programs (Hutchins & Akos, 2013). Related to such enterprises are simulated workplace environments. These transform classrooms into “immersive, authentic workplace environments that combine individualized student supports with rigorous training and skill-building,” (Cox & Yee, n.d.).
- CTSOs—technical organizations such as FBLA, FFA, and SkillsUSA—that offer students access to industry mentoring, curricula, conferences, and national skill contests and competitions. Employers often work closely with these organizations to support student experiences and to serve as judges of student competitions.

Another key consideration in developing work-based learning focuses on providing equitable experiences to learners with diverse needs and life experiences. Historically, certain groups have had limited access to certain career options due to bias and stereotypes. To counter such historic trends, research indicates the importance of outreach to students who are underrepresented in certain careers as well as students with disabilities and diverse linguistic abilities. Additionally, focused counseling can support students to reflect on their sense of career self-efficacy and prepare them to respond to discrimination in their work lives. Related programming also may include offering training for school counselors to make them aware that existing career interest surveys and tools may not accurately capture information about the career aspirations of students from diverse cultural backgrounds (Fouad & Kantamneni, 2010; Giani, 2019; Jackson et al., 2010).

Besides such work-based learning opportunities, secondary and postsecondary educators need to focus on program-level designs that improve access to career preparation. In addition to career academies and traditional CTE programs, American educators have looked to Germany’s Vocational Education and Training System (VETS) approach (Spees, 2018). This program offers a flexible and integrated approach to preparing students for higher paying, technical middle-skill careers that require some college, but not a baccalaureate degree. The VET programs make it possible for students to spend 3-4 days per week at a company work site learning practical foundations and devote the other 1-2 school days to studying theoretical subjects. Another option, called “sandwich” programming, alternates students in full-time educational and workplace blocks for several weeks. Employers provide technical training meeting national standards and pay students stipends. Often these programs conclude with students taking certification examinations.

Currently, American high school CTE programs offer elective courses, access to career academies combining college preparatory courses with career training, and career tech-prep or dual-training programs that combine secondary and postsecondary courses leading to a certificate or an associate degree. Community colleges and for-profit colleges offer programs leading to certificates, degrees, and industry-recognized apprenticeships.

## Career Preparation Tools

Tools for educators:

- [Maryland Department of Labor's Division of Workforce Development and Adult Learning \(WDAL\)](#): WDAL offers a range of career development and job-seeking services for high school students and adults, including youth apprenticeships, information on career pathway programs, and youth workforce programs.
- [Maryland Apprenticeship and Training Program \(MATP\)](#): This resource provides information on apprenticeship benefits, how to become a registered apprentice, how to secure an apprenticeship, and how to hire apprentices.

Tools for state and district leaders:

- [Apprenticeship Maryland Program Proposal, Implementation Guide and Marketing Materials](#): This website offers resources to MSDE staff to implement apprenticeship programs. It also links to apprenticeship program websites in districts across the state.



## Internships and apprenticeships

Older students and graduates typically participate in internships and apprenticeships, which may be organized through their school or directly through an employer. Internships and apprenticeships provide participants with the hands-on experience they need to be able to make informed decisions about whether to pursue a given career. Internships are usually short-term (three months to a year) and focus on tasks associated with entry-level positions for those with minimal work experience, while apprenticeships can be longer-term positions that provide opportunities for progression within a field. Schools can include internships and apprenticeships as part of the curriculum for career and technical education classes, and many postsecondary schools require students to participate in an internship or apprenticeship to graduate. Some professions require apprenticeships as the entry point to a career. Professions such as manufacturing, carpentry, plumbing, and computer science offer paid experience and on-the-job training through apprenticeships for those new to the profession. Internships are also available in a wide variety of career fields, spanning from nonprofit/government service to finance and consulting. To attract students from a variety of socioeconomic backgrounds, it is important to offer paid positions. High school professional counseling offices or postsecondary career services centers should publicize opportunities for students through a variety of avenues and provide specific outreach to students who are underrepresented in certain fields. At this early point in their career exploration, students have more autonomy and can choose whether or not to participate in internships or apprenticeships. It is important for educators, counselors, and employers to encourage students and recent graduates to participate in these experiences because they provide opportunities to explore different careers. They also often serve as the foundation for a resume, which students and recent graduates should begin to build to be competitive for future career opportunities.

## Business and Educator Commitment

Supporting career preparation at the high school level helps educators keep students engaged in school and provides employers with various ways to attract future workers and increase public awareness of their business. Sustaining such career preparation programs requires focused effort across regional education institutions and employer/industry partners. In addition to the challenges listed in the career exploration chapter, educators and business partners implementing career preparation programs face other challenges:

- **Silos:** Responsibility for career preparation often falls to CTE teachers, with little input from other school staff. Career preparation should be a shared responsibility of all school staff, not just the CTE teachers.
- **Lack of communication:** Educators should engage employers in providing regular feedback for individual students rather than relying only on student accounts of work-based learning experiences.
- **Varied experience duration:** There are a variety of work-based learning experiences, and educators need to consider how long a student needs to participate in one to achieve results, such as career awareness, career readiness, high school graduation, college enrollment, or employer satisfaction.
- **Balancing career representation and student needs:** Maryland focuses on career clusters, and educators need to consider how to provide a balanced and representative collection of work-based learning experiences tailored to varied student needs (e.g., students with disabilities, students who speak English as a second language, and students from groups that are underrepresented in particular careers).

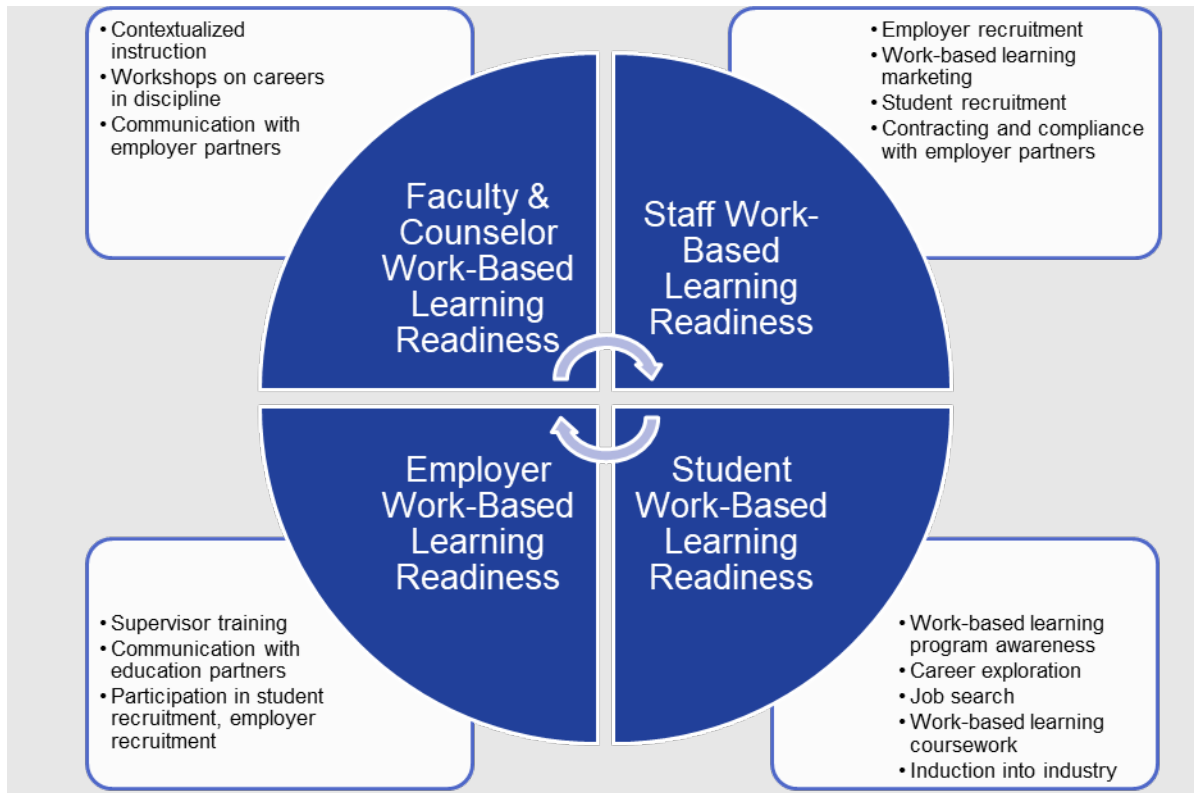
High school and college staff members seeking to integrate more work-based learning experiences need to distribute the workload associated with such activities. One study (Bates, 2011) canvassed university staff in Australia to describe the specific tasks associated with work-based learning; the responses have been adapted here for use in the Maryland high school context:

- Develop curriculum and lessons aligned with workplace needs
- Create service agreements with organizational partners
- Assure confidentiality and ethical behavior
- Promote work associated with marketing and work-based learning and elicit membership of industry reference groups
- Comply with legislative requirements that impact the educational and industry providers

Educators need to consider the role of administrators, staff, school counselors, and academic and CTE faculty in addressing these additional workload items. Figure 2 depicts the complex needs educators should consider.



**Figure 2. Workload associated with work-based learning programs at the secondary and postsecondary levels**



Note: Based on Bates, 2011

## Evidence

The review identified 37 peer-reviewed articles from the past decade that focus on understanding the state of career preparation programming in schools and examining the efficacy of interventions to support career preparation. Most studies (n=21) used a descriptive methodology, and the remaining articles were distributed among RCTs (n=3), QEDs (n=2), correlational studies (n=8), and literature reviews (n=3).

The articles were roughly divided between those discussing high school and postsecondary career preparation interventions (n=9 and n=19, respectively). The remaining articles discussed “secondary” interventions (n=6), “K–12” offerings (n=1), and adult programs (n=1). Most of the studies examined interventions to develop student readiness for career adaptivity (n=15) or to address faculty, counselor, staff, or employer readiness to support work-based learning program delivery (n=12). Seven articles examined the efficacy of work experiences or blended education-workplace programs to support career preparation.

The studies of interventions focused on work experiences or blended education-workplace programs and generally showed positive impacts on a range of student outcomes. Some studies showed positive impacts on students’ attendance, graduation rates, certificate attainment, college enrollment, and employment rates. Some showed positive impacts on elements of student career adaptivity, including students’ professional identity and attitudes, employability skills, and capacity to integrate theoretical and practical knowledge.

The expected duration of career preparation programs varied by type. For example, career and job search program durations ranged from 15 hours during one week to 15-week courses that included a series of experiences offered over an entire school year. Career counseling might take place only a few times over two years, and career academies unfold over a few years during high school. Supervisory mentoring interactions might take place once a week during the duration of the workplace placement. Faculty and workplace supervisors might meet once before a workplace placement to set expectations and then communicate periodically about student learning and performance during the placement. A summary of the career awareness research articles informing this section appears in Appendix C.

# CAREER SEEKING AND ADVANCEMENT

## Introduction

Career seeking and advancement focus on the specific tasks that students need to start a career, which include training in specific technical and employability skills, finding available positions, and applying and interviewing for a job. Students need to engage in such tasks to enter the job market and support themselves throughout their adult lives. Typically, learning experiences focused specifically on career seeking and advancement begin in high school and continue in postsecondary programs and beyond.

The career development literature indicates students use the time near the end of high school to crystallize their career preferences by trying out different types of careers (Super, 1963, 1990). Such experimentation also allows students to develop the skills and mindsets that will help them someday establish a career niche and to change jobs as needed to support career advancement and satisfaction (Wang & Wanberg, 2017).

Career seeking and advancement focuses on searching for, training for, and accessing workplace experiences, such as certified apprenticeships and internships. In addition, learners benefit from opportunities to reflect on these experiences to refine their career interests, determine new skills to develop, and select their next workplace experience.

Outcomes measured at this stage focus on student awareness of career opportunities and skills required, career search self-efficacy (which describes students' confidence in their ability to seek careers that match their interests, financial needs, and skills), student achievement in job training courses, career readiness, and employer and employee satisfaction.

Staff members who work in high school and postsecondary programs face multiple challenges in supporting career seeking and advancement, particularly when it comes to engaging students to use career seeking resources and supporting educators and counselors to coordinate workplace opportunities with employers (Basit et al., 2015; Hutchins & Akos, 2013; McKeown & Lindorff, 2011; Packard et al., 2012). To maintain program quality, educators should focus on the following questions:

- How can educators market career-seeking resources to students and spark engagement?
- How can educators help students translate classroom skills to the workplace?
- How can counselors and educators keep up with an everchanging career landscape?
- How can educators, counselors, and employers ensure students actively pursue career seeking and advancement experiences?
- How can apprenticeship and internship programs ensure participation of low-income students, foster youth, and young parents to address challenges around childcare, housing, and transportation?

This chapter describes these work-based learning experiences and outcomes; the roles of business partners, educators, and counselors in developing and delivering career seeking work-based learning experiences; and the key benchmarks of effective career seeking programs based on the evidence.

## Recommended Work-based Learning Experiences and Outcomes

The literature describes career seeking experiences in high schools and postsecondary programs. These programs include:

- Apprenticeships and internships
- Job applications and interviews
- Job training
- Career management training

The outcomes most frequently mentioned in the career seeking work-based learning research include:

- Career readiness
- Employer satisfaction
- Achievement in training courses
- Student awareness of career opportunities and required skills
- Student ability to complete personal and college budgets and financial aid applications
- Student career search self-efficacy (e.g., students' confidence in their ability to seek jobs that match their interests, financial needs, and skills)

### ***Work-based Learning Experience Design Guidelines***

To design and deliver structured career seeking and other work-based learning experiences, Maryland's state regulations (Maryland State Department of Education, 2012) emphasize:

- Demonstrating skills to secure, maintain, and advance in employment
- Understanding how lifelong learning helps to adapt to a changing economy
- Understanding the wide range of skills and competencies needed for workplace success
- Applying career management and decision-making skills to update career plans as needed

To design experiences for creating work-based learning programs that support career seeking, the research indicates there are several core principles, including helping students to refine their career interests, develop confidence in their career skills, plan their education around career needs and interests, and build social capital for their careers (e.g., networking).

Maryland's Stevenson University offers public resources and guidance for implementing successful career seeking programs. Sue B. Gordon, Stevenson's vice president of career services, focuses on raising student engagement by using a variety of policies and outreach techniques. The university requires all incoming freshmen to purchase a code to complete the proprietary CliftonStrengths survey (Buckingham & Clifton, 2001; Gallup, n.d.) and to complete an internship by the time they graduate. The CliftonStrengths survey scans students for 34 possible strengths, identifying the "top five." This information is a springboard for career exploration, preparation, and seeking. Stevenson has trained faculty to discuss the survey results with students majoring in their departments; advisors discuss the results with students who have not decided on a major. The survey works best for students 18 and older; a simpler version has been created for secondary students. The university also conducts regular outreach to faculty and student services personnel to encourage them to make students aware of the career center's services. The center uses social media and regular email outreach. Once students enter the center, the advisors on staff focus on one-to-one consultations. Ms. Gordon

estimates their policies and efforts result in 90 to 95% of students using the university career service center by the time they graduate.

The peer-reviewed literature, practitioner white papers, and websites describe the following specific approaches to offering career seeking work-based learning experiences:

- Offering Career Services Offices that provide career counseling/advising, career testing/assessment, classroom presentations, individual career information, resume and interview preparation, career fairs, mock interviews, online job bank, and on-campus recruiting by employers (McKeown & Lindorff, 2011; Vinson et al., 2014).
- Offering career courses or summer programs (credit-bearing) that introduce students to comprehensive career search processes, such as developing resumes and cover letters, interviewing, communicating with recruiters, and negotiating salaries. To evaluate such programs, sponsors should measure career skills proficiency and students' perceived career search self-efficacy (e.g., self-reported confidence around searching for careers that match one's interests, financial needs, and skills) (Cmar & McDonnall, 2019; McDow & Zabrocky, 2015).
- Integrating classroom and workplace preparation that fosters skill transfer into apprenticeships and internships. This approach may include pre-placement training, rigorous screening processes, strong support from workplace supervisors, familiarity of workplace supervisors of student coursework, and a collaborative workplace environment (Bauman & Christensen, 2018; Cahill, 2016; Chan, 2013; Jackson & Collings, 2018; Jackson et al., 2019; Martin & Rees, 2019; Prins & Clymer, 2018; Schaap et al., 2012).
- Engaging students in structured financial literacy activities that help students develop a personal budget, estimate the costs of college and continuing education after high school, and submit a financial aid application and a college financial plan (The Council, n.d.).
- Providing credit for part-time ad-hoc work and offering a module that engages working students in using their work experience to explore organizational and management issues with support from a faculty sponsor. The module features an introductory workshop followed by supportive lectures and tutorial support. Assessment focuses on producing a portfolio, a business improvement report, and participating in face-to-face presentations and discussion (Shaw & Ogilvie, 2010).
- Providing wrap-around services that support students in apprenticeships, including pre-employment training on technical skills, employability skills, and financial management skills. The services may involve leveraging the Temporary Assistance for Needy Families (TANF) program and Supplemental Nutrition Assistance Program (SNAP) to support low-income students during apprenticeships with support for food, housing, and child-care (Johnson & Spiker, 2018).
- Fostering partnership with employers through focused outreach and collaboration methods that include articulating return-on-investment, engaging multiple employers in a single career cluster in programs, developing accountability programs to ensure the quality of programs for educators and employers, forging links to local career pathways, and ensuring inclusion of small businesses (Brown, 2018; Chan, 2013).

## Career Seeking and Advancement Tools

Tools for educators:

- [Baltimore County Public Schools Work-Based Learning Information](#): This website defines work-based learning, provides learning objectives, and identifies the benefits of work-based learning experiences, in addition to requirements and responsibilities.

Tools for counselors:

- [CliftonStrengths for Students](#): Counselors and educators at Stevenson University can use this online survey with students to assess their alignment with the 34 strengths that the survey measures.
- [Way2Work Maryland](#): “Way2Work Maryland is a partnership between the University of Maryland’s Center for Transition and Career Innovation (CTCI) and DORS, the Division of Rehabilitation Services through the Maryland State Department of Education. It is a project designed to improve the academic and career success of students with disabilities in Maryland through work-based learning experiences.”



### Job training

Job training refers primarily to training opportunities for students to develop the necessary skills to succeed in a work-based learning program, apprenticeship/internship, or full-time job. Usually, participants gain in-person, hands-on professional experience as they work towards a recognized credential that will help them advance in their chosen field. Job training programs are typically executed over several months and are delivered by an experienced professional. Industry partners often help develop the program’s curriculum, and they also may provide program graduates with employment or apprenticeship opportunities. Often, industry partners agree to cover tuition costs for their employees to participate in job training programs. Other supports and services for such training programs include supporting students’ transportation to and from the worksite, assisting with career planning and job searching, and providing both financial literacy coaching and guidance on the professional attire appropriate for the workplace.

### Business and Educator Commitment

Communities benefit in multiple ways when employers and educators actively support youth in their first experiences in the workplace. Students gain marketable knowledge and skills, feel competent to make career choices, and may earn school credits while earning an income. Employers fill their needs for labor, both in the short and long term. Parents see their children learning about their career interests, being encouraged to reach their potential, and building positive attitudes, such as determination and self-direction. Communities have the opportunity to keep local talent and ensure sufficient labor for community businesses (Brigham & Taylor, 2006).

However, there are challenges to sustaining career seeking programs, including:

- Engaging youth early enough to support learning on the job

- Ensuring consistent employer engagement, which also includes sustaining the connections between educators and the employers they recruit
- Making sure internships and apprenticeships provide work opportunities of sufficient challenge to develop students' skills
- Providing support for students facing financial pressures and life responsibilities (e.g., parenthood) to increase access to workplace learning experiences
- Addressing resistance to youth internships from labor unions
- Confronting parents' assumptions that apprenticeships and internships carry a stigma of low-status work

Employers, legislators, and intermediary organizations play key roles in addressing the challenges of the career seeking and advancement stage. Educators can support these efforts by making students and their families aware of potential options. A white paper (Cahill, 2016) issued by Jobs for the Future, an advocacy organization, highlighted some strategies embedded in employer-centric solutions, as follows:

- Creating “career pathway navigators” through intermediary organizations to advise students and their families about labor market information and salary data and to help them identify the technical and professional skills required by the careers (Program: WorkSource)
- Designing work-based learning experiences with meaningful job tasks by closely linking school coursework with needs specified by local employers (Program: 12 for Life)
- Developing a clear compensation structure aligned with students' progression through and completion of both secondary and postsecondary programs of study across multiple companies in a single career cluster (Program: Apprenticeship 2000)

Educators can ensure curriculum alignment with employer needs, provide career centers that support career seeking, and explore innovative ways to provide credit for work-based learning, such as:

- Embedding on-the-job training in credit-bearing courses to build technical skills and academic knowledge for higher education and employment (Program: Jobs to Manufacturing Careers).

Legislators can smooth the transition to work-based learning experiences through specific actions (Johnson & Spiker, 2018), including:

- Using TANF to support pre-employment and childcare for work-based learning participants. States can grant TANF funds directly to successful training providers and align the requirements of these federal programs with work-based learning efforts.
- Creating a targeted work-based learning fund that supports apprenticeships and internships.

## Evidence

The review identified 15 peer-reviewed articles in the past decade that focused on understanding programs for career seeking and examining the efficacy of interventions to support career seeking. Most studies (n=10) used a descriptive methodology, and the remaining articles were distributed among QEDs (n=2), a correlational study (n=1), and mixed methods (n=2). No RCTs were identified.

With regard to age level, five articles described work-based learning programs and interventions administered in postsecondary environments. Three articles focused on both postsecondary students and working adults. The remaining articles discussed programs and initiatives that targeted middle school students (n=1), high school students (n=1), high school students and working adults (n=1), high school and postsecondary students (n=1), secondary students (n=1), and postgraduates (n=2).

Ten articles focused on different interventions. Two studies discussed the effects of apprenticeship programs on young adults, one of which limited its focus to just high school students. One study focused on an expanded summer work experience program that incorporated a research-based job search intervention. Three studies assessed the value of Work Integrated Learning (WIL) on students' personal and professional growth, their ability to transfer skills between the classroom and the workplace, and postgraduate employment. One study evaluated the impact of enrolling in a college career development course on job seeking-related competencies, including resume writing, creating cover letters, interviewing skills, and communicating with recruiters. Two studies discussed career planning practices offered by university programs and career planning service centers to current students. One study focused on the impact of part-time employment on undergraduate students' academic achievement. Another study described aspects of career pathways programming offered by adult education agencies in three U.S. cities.

Positive results included one study showing a positive impact of enrolling in a college-level career development course on students' resume writing skills. Another case study of apprenticeship experiences found apprentices developed a strong sense of occupational identity and self-worth by doing work within a particular industry. The assessment of part-time employment on academic achievement found that workplace experience enriched student learning, particularly when connected to an undergraduate course of study.

Several articles described challenges. For example, studies of career planning programs and initiatives showed that a lack of resources, time, and staff expertise limited capacity to support students throughout the career-seeking process. Some studies indicated that students do not take advantage of the existing resources of career service centers, possibly due to lack of awareness of these services. A summary of the career seeking and advancement research articles informing this section appears in Appendix D.



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## Appendix A. Peer-reviewed journal articles focused on experiences to develop career awareness

Author	Pub. Year	Age or Grade level	Evidence	Research Question	Intervention (if applicable)
<b>Carter, Trainor, Cakiroglu, Cole, Swedeen, Ditchman, &amp; Owens</b>	2010	High school	Correlational	What high school career development and vocational education activities are offered to transition-age youth? What is the participation level of youth with disabilities?	N/A
<b>Cerrito, Trusty, &amp; Behun</b>	2018	Grades 4 and 5	Randomized control trial	What is the impact of a web-based counseling vs. traditional career counseling for 4th and 5th graders?	Four 45-minute career development sessions, either web-based or traditional
<b>Falco</b>	2017	Middle and high school	Descriptive	How can counselors better support STEM career development?	Descriptive analysis of current research on STEM counselors
<b>Ferguson, Kluttz-Drye, &amp; Hovey</b>	2019	High school	Descriptive	How familiar are current high school career counselors with Bright Outlook technician or technologist careers, and what impact do they feel this familiarity has on their ability to advise students?	N/A
<b>Knight</b>	2015	Early elementary	Descriptive	What is theory and practice to guide elementary school counselors in developing students' career awareness?	N/A
<b>Grigal, Cooney, &amp; Hart</b>	2019	Middle school	Descriptive	What are current and best practices for introducing college and career readiness practices into middle school?	Implementation of "Future Quest Island," a curriculum project for middle school
<b>Lally &amp; Sclater</b>	2013	Age 13–17	Descriptive	What is the potential of virtual reality in career and counseling work?	Ten youth participated in 40 sessions in which they interacted with virtual worlds to develop life skills

<b>Author</b>	<b>Pub. Year</b>	<b>Age or Grade level</b>	<b>Evidence</b>	<b>Research Question</b>	<b>Intervention (if applicable)</b>
<b>Sowers et al.</b>	2017	Grades 9–11	Randomized control trial	Does STEM mentoring affect career planning outcomes?	Mentors met with students 12 times over 6 months and engaged them in activities and discussions related to career choice, preparation, and selection, including job shadowing, internship, relationship building, and family meetings
<b>Xing, Shaw, &amp; Gordon</b>	2017	Secondary	Descriptive	What are quality indicators for secondary career and technical education programs of study?	N/A

## Appendix B. Peer-reviewed journal articles focused on experiences to develop career exploration

Author	Pub. Year	Age or grade level	Study type	Research Question	Intervention
<b>Castellano, Richardson, Sundell, &amp; Stone</b>	2017	High school	Quasi-experimental design	What is the impact of career and technical education programs of study on high school achievement outcomes?	Three programs of study in high schools within one school district
<b>Choi, Kim, &amp; Kim</b>	2015	High school	Correlational	What is the impact of participation in career education experiences on career development skills and school success?	Six different career education experiences: career guidance curriculum, career inventory, department guide, lectures on career development, job shadowing, and career counseling
<b>Curry, Belser, &amp; Binns</b>	2013	Middle school	Descriptive	How can middle school level educators integrate postsecondary education and career exploration throughout the curriculum?	Literature review of best practices
<b>Falco</b>	2017	Middle and high school	Descriptive	How can counselors better support STEM career development?	Descriptive analysis of current research on STEM counselors
<b>Glessner, Rockinson-Szapkiw, &amp; Lopez</b>	2017	Grade 8	Quasi-experimental design	Does participation in the intervention significantly affect the college self-efficacy and career self-efficacy of eighth-grade students while controlling for the pretest?	Four-day intervention that combined Florida CHOICES, a virtual career exploration curriculum, with a college visit: one class period per first three days devoted to virtual career exploration, with school counselor facilitating, and college visit on the fourth day
<b>Grigal, Cooney, &amp; Hart</b>	2019	Middle school	Descriptive	What are current and best practices for introducing college and career readiness activities into middle school?	Implementation of "Future Quest Island," a curriculum project for middle school
<b>Guy, Sitlington, Larsen, &amp; Frank</b>	2009	High school	Descriptive	What are the patterns in employment preparation courses offered? What is primary intent, method of instruction, and location of the classroom-based and work-based components?	N/A

<b>Author</b>	<b>Pub. Year</b>	<b>Age or grade level</b>	<b>Study type</b>	<b>Research Question</b>	<b>Intervention</b>
<b>Hämäläinen &amp; Cattaneo</b>	2015	High school	Descriptive	What is the impact of different Technology Enhanced Learning (TEL) settings?	Three case studies of different TEL settings, including a scripted technology-enhanced classroom, a scripted 3D game setting, and a non-scripted mobile and online tools setting
<b>Hemelt, Lenard, &amp; Paepflow</b>	2019	High school	Quasi-experimental design	What is the contemporary profile of students entering career academies and what is the impact of participation on high school and college outcomes?	Enrollment in an information technology (IT) academy, where students had workplace learning through paid internships, job shadowing, and a career development day; non-academic supports; and IT-specific courses
<b>Kendricks, Arment, Nedunuri, &amp; Lowell</b>	2019	Under-graduate	Descriptive	What is the impact of participating in a scholars program on academic preparedness and career readiness?	Benjamin Banneker Scholars Program trained students specifically on the expectations of a STEM career and partnership with local businesses through the Center for Student Opportunities on campus
<b>Koivisto, Vinokur, &amp; Vuori</b>	2011	High school	Randomized control trial	What is the impact of theory-driven career choice interventions on competence and attitudinal factors of career preparation among adolescents?	Towards Working Life (TWL) intervention, a highly structured and intensive workshop (15 hours in 1 week) where participants received counseling and constructed career plans and interviewed older students
<b>Lally &amp; Sclater</b>	2013	Ages 13–17	Descriptive	What is the potential of virtual reality in career and counseling work?	Ten youth participated in 40 sessions in which they interacted with virtual worlds to develop life skills
<b>Lapan et al.</b>	2016	Grade 7	Correlational	What is the career development of urban 7th-grade students? What is the impact of an integrated career development and English language arts classroom curriculum?	Prepare, Look, Answer, and Network (PLAN) curriculum, which required a capstone career goal essay and was conducted 1 hour per day for 8 weeks
<b>Logue, Zins, Flynn, &amp; Dewhurst</b>	2019	Under-graduate	Correlational	What is the efficacy of a career exploration course at an Appalachian institution in improving college and career decision self-efficacy?	A 15-week career exploration course at an Appalachian institution, covering topics such as self-exploration, leadership potential, understanding the world of work, and job search preparation
<b>Ohlson, Shope, &amp; Johnson</b>	2020	Grades 8–12	Descriptive	What is the impact of university partnerships programs to promote college and career readiness?	Partnerships with two universities in rural areas in Florida and Ohio to provide web-based mentoring and online career exploration



<b>Author</b>	<b>Pub. Year</b>	<b>Age or grade level</b>	<b>Study type</b>	<b>Research Question</b>	<b>Intervention</b>
<b>Orthner et al.</b>	2010	Middle school	Descriptive	What are lessons learned and best practices gained from implementing CareerStart in middle school?	Curriculum innovation that provides teachers with career-linked lessons to integrate career exploration directly into their program
<b>Schaefer &amp; Rivera</b>	2012	Middle school	Descriptive	How can “The Career Institute (CI)” help middle school students prepare for college with a career goal? In what ways might CI activities help students think about their interests and abilities and how these related to their educational and career goals?	School-wide activities over a 4–6-week period delivered by teachers in the advisory period, with support from counselors, and differentiated by grade (e.g., grade 6 focuses on exploration of self with worksheets, grade 7 completes interest surveys and reflects on how these interests relate to college and careers, and grades 8/9 continue exploring but with specific research)
<b>Solberg et al.</b>	2012	High school	Descriptive	How did individualized learning plans (ILP) emerge, and what are promising practices of using ILPs as career development strategies?	Descriptive analysis of emergence of ILPs
<b>Sowers et al.</b>	2017	Grades 9–11	Randomized control trial	What is the impact of a STEM mentoring intervention on career planning outcomes, specifically for students with disabilities?	Mentors met with students 12 times over 6 months and engaged them in activities and discussions related to career choice, preparation, and selection, including job shadowing, internships, relationship building, and family meetings
<b>Welde, Bernes, Gunn, &amp; Ross</b>	2016	Elementary school	Descriptive	What is the effectiveness of career education projects and interventions implemented by intern teachers?	Included 25 career education projects and 56 career education interventions in elementary schools in Canada

## Appendix C. Peer-reviewed journal articles focused on experiences to develop career preparation

Author	Pub. Year	Age or Grade level	Study type	Research Question	Intervention
Balcazar et al.	2018	High school	Correlational	What are the short-term transition outcomes of youth who participated in a Jobs for Youth program? Specifically, (1) Were there any differences in the demographic characteristics of the cohorts? (2) Were there any differences among the cohorts with regard to the outcomes attained? (3) What types of training certificates did the participants attain? (4) What were some of the life changes that participants reported as a result of the intervention?	Jobs for Youth Program, including the following key components: inclusion in general education, inter-agency collaboration, vocational education, paid internships, case management support, and family engagement
Bates	2011	Undergraduate	Descriptive	What are equitable workloads for academic and administrative personnel in the delivery of work-integrated learning (WIL) courses?	Current practices in one university in Australia
Carter et al.	2009	High school	Correlational	How have employer networks partnered with local high schools to provide career development opportunities and what is the influence of the disability status of the youth on those opportunities?	Current practices in 34 high schools in 26 school districts
Chan	2013	Adult	Correlational	What is the contemporary apprenticeship experience?	Baking apprenticeships
Chen	2013	Undergraduate	Descriptive	How do needs for transition services change for students with disabilities during college?	Survey conducted 1 year apart in college students in Taiwan about needs and services provided

<b>Author</b>	<b>Pub. Year</b>	<b>Age or Grade level</b>	<b>Study type</b>	<b>Research Question</b>	<b>Intervention</b>
<b>Chin, Blackburn Cohen, &amp; Hora</b>	2019	Undergraduate	Descriptive	How are students using and experiencing career services center programs and services? From which sources are students acquiring information about careers and the world of work? What are the contributions of these information sources on students' career exploration and early career decisions?	Current practices in a single university
<b>Choi et al.</b>	2015	High school	Correlation	What is the impact of participation in career education experiences on career development skills and school success?	Six different career education experiences: career guidance curriculum, career inventory, department guide, lectures on career development, job shadowing, and career counseling)
<b>Clayton, Wessel, McAtee, &amp; Knight</b>	2019	Undergraduate	Correlational	What is the impact of participation in the Knowledge + Experience + You (KEY) careers, a career intervention program to all incoming matriculates, on 1-year retention and 4-year graduation rates?	Four-step program: (1) survey to assess vocational identity clarity and confidence; (2) online learning experience/exploration; (3) on-campus programming including peer groups, events, and mentoring; (4) post-test My Vocational Situation (MVS) survey
<b>Cmar &amp; McDonnell</b>	2019	Ages 15–22	Quasi-experimental design	What is the impact of adding a job search training program to a summer work experience on youth with visual impairments?	Expanded a summer work experience program to include all six components of effective job search interventions (teaching job search skills, improving self-presentation, boosting self-efficacy, encouraging proactivity, promoting goal setting, and enlisting social support)
<b>Giani</b>	2019	High school	Correlational	How did Perkins IV affect career and technical education (CTE) course participation in high schools? How does CTE participation in high school influence students' postsecondary outcomes? How does the specific CTE concentration influence students' postsecondary outcomes?	Programs of study with a sequence of at least two courses worth at least three credits in one of the 16 Texas Career Cluster areas

Author	Pub. Year	Age or Grade level	Study type	Research Question	Intervention
<b>Guy, Sitlington, Larsen, &amp; Frank</b>	2009	High school	Descriptive	What are the patterns in employment preparation courses offered? What is the primary intent, method of instruction, and location of the classroom-based and work-based components?	Current CTE offerings in 42 high schools in one state
<b>Helwig</b>	2008	K–12	Descriptive	How did several career development concepts change for students from the 2nd to 12th grade and into adulthood?	Current practices in elementary, middle, and high schools
<b>Hemelt, Lenard, &amp; Paepflow</b>	2019	High school	Quasi-experimental design	What is the contemporary profile of students entering career academies and what is the impact of participation on high school and college outcomes?	N/A
<b>Henderson, &amp; Trede</b>	2017	Undergraduate	Descriptive	How does collaborative governance impact student learning outcomes in work-integrated learning?	N/A
<b>Hutchins &amp; Akos</b>	2013	Grade 10	Descriptive	What percentage of rural, urban, and suburban schools provided work-based career exploration opportunities and school-based learning opportunities and do rural schools differ in availability of these programs?	Current practices including cooperative education, internships, job-shadowing, mentorships, community services, and school-based enterprise of a random samples of more than 15,000 10th graders from 750 randomly selected schools
<b>Jackson</b>	2017	Undergraduate	Descriptive	What is the role of work-integrated learning (WIL) and work placements on development of pre-professional identity among undergraduates? How can industry and education practitioners improve the development of pre-professional identity in WIL?	Undergraduate business majors with a 100-hour minimum credit-bearing program with on-campus sessions with workplace learning and assessments, including employer feedback and reflection activities collated into an e-portfolio.
<b>Kendricks, Arment, Nedunuri, &amp; Lowell</b>	2019	Undergraduate	Descriptive	What is the impact of participating in a scholars' program on academic preparedness and career readiness?	Benjamin Banneker Scholars Program trained students specifically on the expectations of a STEM career and partnership with local businesses through the Center for Student Opportunities on campus

<b>Author</b>	<b>Pub. Year</b>	<b>Age or Grade level</b>	<b>Study type</b>	<b>Research Question</b>	<b>Intervention</b>
<b>Kenny et al.</b>	2015	Secondary	Descriptive	What is the role of work-based learning (WBL) supervisors?	Twelve WBL supervisors for high school students from one high school, 1 day of WBL/week; the model includes student preparation for the work setting, quarterly student evaluations from work supervisors, and job sharing in entry-level positions
<b>Koivisto, Vinokur, &amp; Vuori</b>	2011	High school	Randomized control trial	What is the impact of theory-driven career choice interventions on competence and attitudinal factors of career preparation among adolescents?	N/A
<b>Logue, Zins, Flynn, &amp; Dewhurst</b>	2019	Undergraduate	Correlation	What is the efficacy of a career exploration course at an Appalachian institution in improving college and career decision self-efficacy?	N/A
<b>Maertz, Stoeberl, &amp; Marks,</b>	2014	Undergraduate	Literature review	What kinds of internships are possible? How should we decided whether to utilize internships, and if so, how can we ensure they will pay off?	N/A
<b>Martin &amp; Rees</b>	2019	Undergraduate	Descriptive	What are student insights of the added value of work-integrated learning (WIL) and their development of personal and professional graduate attributes?	One-year course in which students are based at a sports organization and work on a specific project for a minimum of 180 hours; used a detailed learning contract, students keep reflective journals
<b>Mupinga &amp; Caniglia</b>	2019	Middle school	Descriptive	What do middle school students know about careers, what factors influence their career choices, and what do they know of the educational requirements for entry into these fields?	Reality Store program, which provides financial simulation opportunities, in a public middle school in Northeast Ohio
<b>Ohlson, Shope, &amp; Johnson</b>	2020	Grades 8–12	Descriptive	What is the impact of university partnerships programs to promote college and career readiness?	N/A

<b>Author</b>	<b>Pub. Year</b>	<b>Age or Grade level</b>	<b>Study type</b>	<b>Research Question</b>	<b>Intervention</b>
<b>Overton &amp; Lemanski</b>	2016	Undergraduate	Descriptive	What is the effectiveness of using industry champions (ICs) to inform curriculum development for work-based learning?	A suite of industry-bespoke foundation degrees, which used a partnership approach between higher education, industry, and employer organizations in order to deliver level 4 and 5 knowledge and skills to employees in several STEM industries
<b>Pordelan, Sadeghi, Abedi, &amp; Kaedi,</b>	2018	Undergraduate	Randomized control trial	What is the impact of online career counseling interventions on the career development of students?	Five sessions of career counseling, either in-person or online, with 15 students in each group
<b>Povenmire-Kirk, Lindstrom, &amp; Bullis</b>	2010	Undergraduate	Descriptive	What are the needs of Latino youth with disabilities who transition from school to adulthood in Oregon?	N/A
<b>Richardson, Jackling, Henschke, &amp; Tempone</b>	2013	Undergraduate	Descriptive	How can you integrate industry feedback into work-integrated learning assessment practices to maximize student learning outcomes and capture the depth of learning during a work placement?	Collaborative model of industry feedback based on interviews with program supervisors
<b>Rooney, Hopwood, Boud, &amp; Kelly</b>	2015	Undergraduate	Descriptive	What is the impact of simulation pedagogy implemented through a practice-based lens?	Ten simulations in an elective final semester subject within a 2-year Australian Bachelor of Nursing degree
<b>Rowe, Mackaway, &amp; Winchester-Seeto</b>	2012	Undergraduate	Descriptive	What is the role of the host-supervisor in experience-based learning (e.g., cooperative education, work-integrated learning, work-based learning, practicums)?	Current practices
<b>Schaap, Baartman, &amp; de Bruijn</b>	2012	Secondary and undergraduate	Literature review	How can students in vocational education integrate knowledge, skills, and attitudes from two different learning processes: learning and theory (schools) and working and practice (workplace)?	Literature review of best practices
<b>Sowers et al.</b>	2017	Grades 9–11	Randomized control trial	What is the impact of a STEM mentoring intervention on career planning outcomes, specifically for students with disabilities?	Program with required number of mentoring meetings, activities, and uniform mentor training
<b>Stephens, Doherty, Bennett, &amp; Margey</b>	2014	Undergraduate	Descriptive	What are the key challenges experienced by employers, employees, and academics during work-based learning (WBL) programs at the undergraduate level?	N/A

<b>Author</b>	<b>Pub. Year</b>	<b>Age or Grade level</b>	<b>Study type</b>	<b>Research Question</b>	<b>Intervention</b>
<b>Author</b>	Pub. Year	Age or Grade level	Study type	Research Question	Intervention
<b>Teixeira &amp; Edwards</b>	2020	Secondary	Descriptive	What major federal legislation addressed the needs of students with disabilities in U.S. public schools? How did school-based, agricultural education respond over time to the need to educate student with special needs?	N/A
<b>Teräs &amp; Lasonen</b>	2013	Undergraduate	Descriptive	How do teachers prepare immigrant students for working life? What challenges related to intercultural competence do teachers preparing immigrant students for working life face?	Change laboratories, which are a cycle of expansive learning, typically organized within a workplace and take place over 8-10 sessions; the study reviewed two change laboratories: one on preparatory training and another on vocational training
<b>Tirpak &amp; Schlosser</b>	2012	Undergraduate	Correlational	What is the impact of a computer-assisted career guidance system (FOCUS-2) on first-year college students' social cognitive career development?	Computer assisted guidance system (FOCUS-2) with career-related features, including self-assessment and exploration of career options
<b>Zitter, Hoeve, &amp; de Bruijn</b>	2016	Secondary	Descriptive	How can an intended hybrid vocational education and training (VET) curriculum at the micro level be characterized? How does an implemented hybrid VET curriculum at the micro level operate in real life?	A hybrid school-to-work curriculum at a Hospitality School; the curriculum was comprised of three aspects: kitchen skills lab, kitchen practice, and culinary knowledge in a classroom

## Appendix D. Peer-reviewed journal articles focused on experiences to develop career seeking and advancement

Author	Pub. Year	Age or Grade level	Evidence	Research Question	Intervention (if applicable)
Basit et al.	2015	Postsecondary and working adults	Descriptive	What are the perspectives of University staff regarding how to provide accredited higher education classes to incumbent workers?	N/A
Brigham & Young	2006	Secondary	Descriptive	What are some of the challenges faced by Aboriginal youth in specific northern areas of Alberta, and how does the Aboriginal Youth Initiative attempt to address these? How successful has this initiative been as measured against the goals of the initiative?	Youth apprenticeship program that enables students to simultaneously earn money and high school credits
Chan	2013	High school and working adults	Descriptive	What is the contemporary apprenticeship experience?	Apprenticeship program with features that shift from school-like to work-like
Cmar & McDonnall	2019	High school and postsecondary	Quasi-experimental design	What is the impact of adding a job search training program to a summer work experience on youth with visual impairments?	Expanded summer work experience program administered by a state agency to add research-based job search intervention that included all six components of effective job search interventions over 5 days
Hutchins & Akos	2013	High school	Correlational	What percentage of rural, urban, and suburban schools provide work-based career exploration opportunities and school-based learning opportunities? Do rural schools differ from urban and suburban schools on the availability of these career exploration opportunities after controlling for characteristics of the student body, school, and community? What percentage of	N/A



Author	Pub. Year	Age or Grade level	Evidence	Research Question	Intervention (if applicable)
				rural, urban, and suburban students take part in work-based career exploration opportunities? Do rural high school students differ from urban and suburban high school students in their use of career exploration opportunities after controlling for program availability; schooling experience variables; and characteristics of the student body, school, and community?	
<b>Jackson &amp; Collings</b>	2018	Postgraduate and working adults	Descriptive	What impact does practical experience have on graduate employment outcomes in an Australian setting?	Work Integrated Learning (WIL) and paid work
<b>Jackson, Fleming &amp; Rowe</b>	2019	Postsecondary	Mixed method	What is the nature of transfer across classroom and work settings in WIL and what are influencing factors and principles that optimize transfer?	WIL; intersection of learning in classroom and workplace settings
<b>Martin &amp; Rees</b>	2019	Postsecondary	Descriptive	What are student insights of the added value of WIL and their development of personal and professional graduate attributes?	One-year course in which students are based at a sports organization and work on a specific project for a minimum of 180 hours; used a detailed learning contract; students keep reflective journals
<b>McDow &amp; Zabrucky</b>	2015	Postsecondary	Quasi-experimental design	What is the impact of a credit-bearing career course on students' resume writing, interviewing skills, and job search self-efficacy?	Career development course designed to introduce students to the comprehensive job search process, including developing resumes and cover letters, interviewing, communicating with recruiters, and negotiating salaries

<b>Author</b>	<b>Pub. Year</b>	<b>Age or Grade level</b>	<b>Evidence</b>	<b>Research Question</b>	<b>Intervention (if applicable)</b>
<b>McKeown &amp; Lindorff</b>	2011	Postgraduates and working adults	Descriptive	What are the job search expectations and job seeking strategies of Australian graduates? What services do University Career Centers (UCCs) provide?	UCC services, including professional resume writing, cover letters, job interview preparation, career fairs, and cooperative work experience programs
<b>Packard et al.</b>	2012	Postsecondary and working adults	Descriptive	How do secondary career and technical education (CTE) graduates construct their careers and make meaning of the barriers and facilitators they experience in the year after high school graduation? How did working, social support, and higher education influence their experiences?	N/A
<b>Prins &amp; Clymer</b>	2018	Postsecondary and working adults	Mixed method	The research questions examined the key features of adult education career pathways in each city; career pathways outcome measures; how selected programs design and implement career pathways; how policies and practices shape career pathways programming and coordination across systems; and the programmatic features, policies, and other factors that contribute to student success.	Career pathway programs

<b>Author</b>	<b>Pub. Year</b>	<b>Age or Grade level</b>	<b>Evidence</b>	<b>Research Question</b>	<b>Intervention (if applicable)</b>
<b>Schaap, Baartman, &amp; de Bruijn</b>	2012	Middle school	Descriptive	How can students in vocational education integrate knowledge, skills, and attitudes from two different learning processes: learning and theory (schools) and working and practice (workplace)?	N/A
<b>Shaw &amp; Ogilvie</b>	2010	Postsecondary	Descriptive	Does student part-time employment detract from academic attainment?	Undergraduate students who need to work are allowed to use their work experience to gain academic credit and enhance understanding of theoretical concepts in real-life situations
<b>Vinson, Reardon, &amp; Bertoch</b>	2014	Postsecondary	Descriptive	According to senior student affairs officers, what are career planning programs and career services offices (CSOs) at U.S. colleges and universities offering?	Current career planning practices and services at colleges and universities

## Appendix E. Additional work-based learning resources

Work-based learning stage	Name, author, and year	Description	Audience	Link
<b>Career Awareness</b>	Preparing Elementary School Counselors to Promote Career Development: Recommendations for School Counselor Education Programs. Knight, J. (2014)	From the abstract: "This article explores the theoretical and empirical support for career development at the primary level and the challenges in training elementary school counselors. Recommendations for modifications to school counselor educator programs are offered, and future research and continuing education needs for school counselors are explored."	Counselors	<a href="https://journals.sagepub.com/doi/10.1177/0894845314533745">https://journals.sagepub.com/doi/10.1177/0894845314533745</a>
<b>Career Awareness</b>	It Takes a Team to Run a Restaurant: Introducing Elementary Students to the Interrelatedness of Occupations. Beale, A. V. (2003).	From the abstract: "This action-oriented classroom career guidance activity introduces elementary school students to the need for workers to work together in operating a newly opened restaurant. Through the use of pantomime and role play, students quickly realize that running a restaurant requires a variety of employees who work well together as members of a team."	Educators	<a href="https://link.springer.com/article/10.1023/A:1021422314412">https://link.springer.com/article/10.1023/A:1021422314412</a>
<b>Career Awareness</b>	The Use of Genograms in Career Counseling with Elementary, Middle, and High School Students. Gibson, D. M. (2005).	From abstract: "Genograms have been used successfully in career counseling with adults; however, there has been limited use of genograms in career counseling with elementary, middle, and high school children. This article focuses on the benefits of using genograms and the reasons for them to be integrated into the comprehensive developmental guidance programs used by professional school counselors."	Educators	<a href="https://pdfs.semanticscholar.org/d0aa/7f334eef54ea014a44478c4df41a3e0e66b2.pdf">https://pdfs.semanticscholar.org/d0aa/7f334eef54ea014a44478c4df41a3e0e66b2.pdf</a>
<b>Career Exploration</b>	Hands-On Career Awareness Activities	A lesson plan for K–2 students that spans across two days of instruction. It introduces students to the overall	Educators	<a href="https://www.ncda.org/aws/NCDA/pt/sd/news_article/5501/_PARENT/CC_layout_details/false">https://www.ncda.org/aws/NCDA/pt/sd/news_article/5501/_PARENT/CC_layout_details/false</a>

<b>Work-based learning stage</b>	<b>Name, author, and year</b>	<b>Description</b>	<b>Audience</b>	<b>Link</b>
	for Early Elementary Students. Brink, M. (2008).	concept of a career and then allows them to explore different career pathways through hands-on stations.		
<b>Career Exploration</b>	E-Mentoring: A Middle School Experience. Lussier, S. (2011).	This article describes how a small rural K-8 school utilized e-mentoring to promote career exploration.	Employers	<a href="https://www.ncda.org/aws/NCDA/pt/sd/news_article/48025/_PARENT/CC_layout_details/false">https://www.ncda.org/aws/NCDA/pt/sd/news_article/48025/_PARENT/CC_layout_details/false</a>
<b>Career Exploration</b>	With All Your Power, What Will You Do? A Strengths-Based Career Unit for Elementary Students. Augst, K., & Akos, P. (2008).	This article highlights the power of counselors to promote career development in early childhood. The authors argue for the benefits of using a strength-based school counseling approach (e.g., identifying personal powers) and promoting self-efficacy.	Counselors	<a href="https://www.ncda.org/aws/NCDA/pt/sd/news_article/5482/_PARENT/CC_layout_details/false">https://www.ncda.org/aws/NCDA/pt/sd/news_article/5482/_PARENT/CC_layout_details/false</a>
<b>Career Preparation</b>	Supervised Agricultural Experience	The approach to implementing experiential/work-based learning in agricultural education. It should align with one of the Agriculture, Food, and Natural Resources (ANFR) career pathways.	Educators	<a href="https://thecouncil.ffa.org/sae/">https://thecouncil.ffa.org/sae/</a>
<b>Career Preparation</b>	The Industry Champion Approach to Developing Work-Based Learning. Overton, T., & Lemanski, T. (2016).	From the abstract: "The purpose of this paper is to investigate the effectiveness of using industry champions (ICs) to inform curriculum development for work-based learning and to probe their perceptions of and attitudes towards work-based learning."	Educators	<a href="https://www.emerald.com/insight/content/doi/10.1108/HESWBL-02-2015-0008/full/html">https://www.emerald.com/insight/content/doi/10.1108/HESWBL-02-2015-0008/full/html</a>
<b>Career Preparation</b>	Delaware Employer Playbook	The playbook offers guidance for employers to engage their businesses in various phases of the work-based learning pipeline.	Employers	<a href="https://deowbl.org/wp-content/uploads/2020/05/owbl-employer-playbook-2020.pdf">https://deowbl.org/wp-content/uploads/2020/05/owbl-employer-playbook-2020.pdf</a>
<b>Career Preparation</b>	Effects of Career Choice Intervention on Components of Career Preparation.	From the abstract: "This randomized experimental study ( $N = 1,034$ ) examines both the direct and the indirect effects of the Towards Working Life intervention on 2 components of	Counselors	<a href="https://deepblue.lib.umich.edu/bitstream/handle/2027.42/89533/j.2161-0045.2011.tb00074.x.pdf;jsessionid=2F6ADB174012E11BB2A0BEC56FB0149E?sequence=1">https://deepblue.lib.umich.edu/bitstream/handle/2027.42/89533/j.2161-0045.2011.tb00074.x.pdf;jsessionid=2F6ADB174012E11BB2A0BEC56FB0149E?sequence=1</a>

Work-based learning stage	Name, author, and year	Description	Audience	Link
	Koivisto, P., Vinokur, A., & Vuori, J. (2011).	adolescents' career preparation: preparedness for career choice and attitude toward career planning. The intervention comprised a 1-week workshop program, the proximal goals of which were to enhance ninth graders' career choice preparedness and attitude toward career planning. Participants were assessed at baseline and immediately after the intervention. The results showed that the intervention had directly improved the students' career choice preparedness, which in turn increased positive attitude toward career planning. Implications for both theory and practice are discussed."		
<b>Career Preparation</b>	Examining U.S. Business Undergraduates' Use of Career Information Sources During Career Exploration.  Chin, M. Y., Blackburn Cohen, C. A., Hora, M. T. (2019).	From the abstract: "Campus career services are increasingly scrutinized as the primary career development resource for undergraduates. The purpose of this paper is to use Career Construction Theory to examine all sources of career information used by undergraduate business students and their contributions toward career exploration and development."	Counselors	<a href="https://www.emerald.com/insight/content/doi/10.1108/ET-05-2019-0103/full/html">https://www.emerald.com/insight/content/doi/10.1108/ET-05-2019-0103/full/html</a>
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<b>Work-based learning stage</b>	<b>Name, author, and year</b>	<b>Description</b>	<b>Audience</b>	<b>Link</b>
	Chin, M. Y., Blackburn Cohen, C. A., Hora, M. T. (2019).	their contributions toward career exploration and development.”		
<b>Career Seeking and Advancement</b>	O*Net	The career exploration and assessment tools help students navigate the classroom-to-career shift.	Educators	<a href="https://www.onetonline.org/">https://www.onetonline.org/</a>
<b>Career Seeking and Advancement</b>	Careership	Students can use Careership to learn more about different career pathways that are aligned with their interests.	Educators	<a href="http://mappingyourfuture.org/planyourcareer/careership/">http://mappingyourfuture.org/planyourcareer/careership/</a>
<b>Career Seeking and Advancement</b>	TalentFOUND	Colorado’s TalentFOUND tool connects employers with apprenticeships, internships, and organizations focused on K–12, STEM, and CTE education and training.	Employers	<a href="https://talentfound.org/">https://talentfound.org/</a>
<b>Career Seeking and Advancement</b>	Making Work-Based Learning Work  Jobs for the Future. (2016).	The report outlines seven principles for creating and implementing effective work-based learning models, including strategies for employers to create meaningful experiences for interns and apprentices	Employers	<a href="https://jfforg-prod-prime.s3.amazonaws.com/media/documents/WBL_Principles_Paper_062416.pdf">https://jfforg-prod-prime.s3.amazonaws.com/media/documents/WBL_Principles_Paper_062416.pdf</a>
<b>Career Seeking and Advancement</b>	Work-Based Learning Toolkit  Department of Education. (n.d.).	The toolkit provides resources for setting up work-based learning programs, as well as information on establishing relationships with employers, collecting data, and expanding work-based learning programs.	Counselors	<a href="https://cte.ed.gov/wbltoolkit/index.html">https://cte.ed.gov/wbltoolkit/index.html</a>

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