

Explore it!



Lesson Plan One

Audience: Middle or high school students in any academic course

Time needed: Day 1 takes approximately 30 minutes and does not require access to technology. Day 2 takes an entire class period (45-60 minutes) and requires individual access to technology.

Overview: This lesson exposes students to Ohio's construction industry and introduces them to a student workbook and online state resources so that they can explore information about careers, training and education, and wages in Ohio's industries. We recommend dividing the lesson into two days. Suggestions for varying the lesson based on access to technology are also provided.

Guiding Questions:

- What kinds of jobs exist in the construction industry?
- What opportunities in the construction industry exist for me, and what training or education would I need?
- What wage do I need to support my lifestyle choices, and which jobs would provide that wage?

Preparation: Arrange for post-it notes or small pieces of scrap paper, poster/flipchart paper, copies of *Build Your Future: Ohio's Construction Industry, a Workbook for Students and Their Families* for each student, and access to computers with internet. To complete the career inventory, each student will need a computer.* You may want to divide the lesson into two parts. That way the collaborative portion (steps 1-4) can be done in a space where students can sit in groups, and the computer portion can be done individually in a lab.

Instructions:

Day 1: 30 minutes

1. Give students 3 minutes to write the jobs they associate with construction, one per post-it note or piece of scrap paper.
2. In small groups, ask them to sort the jobs into similar piles. Let them decide how to label the piles. Give each group a piece of poster/flipchart paper, and ask students to arrange and tape their scraps of paper or post-it notes in a way that clearly shows the job groupings. Ask them to create and explain a classifying structure.** Give them 8-10 minutes to complete this activity and ask them to hang their posters around the room so that other students can see their work. It is ok if they are not completely finished, because the purpose is to get them to consider how they think about construction jobs.
3. Have students look at the posters and then conduct a 10-minute discussion on the ways the groups structured the classification of these jobs. Some might say they considered the training or education necessary for the job. Some might have used projected income. Look for similarities in the way they approached the classification. Refer to the myths in this workbook, and challenge the way that students conceptualized the industry based on those myths.
4. Pass out *Build Your Future: Ohio's Construction Industry, a Workbook for Students and Their Families* (or students can access it online). Have students do a 5-minute reading-around-the-text, a pre-reading strategy used to preview text. Below are the steps to facilitating this process, which can improve students' skills in reading across the curriculum.
 - a. Have students look at pictures and captions first. Ask: What inferences or predictions can they make about the content in the workbook?

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* You may need to schedule a computer lab at your school.

** This process could be connected to previous lessons on classification structures, such as plants and animals or matter and non-matter. In that case, students could be asked to create and explain their classifying structure.

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Lesson Plan One

Day 1 (continued)

- b. Have students look at the graphics or charts. Ask: What types of information do the graphics provide? What do the graphics tell me about the types of information that will be in this workbook?
 - c. Have students look for indications of big ideas: words or headings in bold type or in different colors. Ask: Do these words give any clues about the subject or main idea?
 - d. Have students read the first paragraph of the text (introduction) and the last paragraph (conclusion). Ask: What do you think is the purpose of the workbook? Based on that purpose, what are the key pieces of information you are going to pay attention to during your reading?
5. Have students review the contents of the workbook as homework.

Day 2: 45-60 minutes

1. Open the lesson by reminding students of the way they classified construction jobs and what they learned about the industry in the previous activity. Introduce the idea of a career cluster inventory as a survey that can help them target their career aspirations based on their interests and aptitudes. Remark that the survey may uncover a good match for them in industries they never considered, such as construction. They should keep an open mind.
2. Have students visit OhioMeansJobs (OhioMeansJobs.com) to complete the career cluster inventory under the *Explore It* tab (click on Individuals; K-12 Student). When they are finished, have them record their results on a class chart so that you can see the distribution of interests in the class. Option: You could have students complete the inventory as homework after Day 1 if you do not have access to a device for each student. You could then open this lesson by having them share their results. Please note that you will need to ensure that every student has access to the internet to complete this assignment.
3. Direct students to the budget calculator at OhioMeansJobs.com (click on link below the landing page) to figure out how much money they will need to earn to support themselves. By answering key questions about their interests and lifestyles, students learn the target salary they would need to be financially stable. This target salary can help them to select the right career in construction. Option: This could also be completed as homework if you do not have access to a device for each student and every student has access to the internet outside of class.
4. Individually or in groups (depending on access to technology), have students explore OhioMeansJobs.com and BuildOhio.org to gather information about various careers in the construction industry that might match their interests and salary requirements. If you are asking them to explore in groups, you might use the chart from step 2 to group them strategically.
5. Ask students to select 2-3 jobs in the construction industry that they want to explore further, and have them justify their choices. Using OhioMeansJobs.com and BuildOhio.org as their sources, ask students to create a table like the one below with information about each job they selected. If they do not finish the table, have them complete it as homework.

Jobs	Tasks I would do	Tools and technology I would use	Knowledge and education I would need	Skills, abilities, and training I would need	Credentials or training certificates I would need	Average wage	Job openings in Ohio
1.							
2.							
3.							

Plan it!



Lesson Plan Two

Audience: Middle or high school students in any academic course

Time needed: 20 minutes

Overview: Learning a skilled trade, such as carpentry or welding, or studying the IT skills required for construction management or architecture, puts students on a career path where jobs are in-demand and growing. As of 2011, 26 million U.S. jobs—20 percent of all jobs—required a high level of knowledge in at least one STEM (science, technology, engineering, and math) field. Construction jobs are STEM-in-action; that is, architects’ and engineers’ designs come to life through the work of skilled laborers and technicians. Many people believe that STEM jobs require a bachelor’s degree, but in reality there are many pathways to STEM jobs, including employer-based training, registered apprenticeships, certifications, and associate’s degrees. This lesson helps students make connections between their current knowledge of STEM and the construction industry. It can also help overcome stereotypes about construction jobs by showing the high level of skills and knowledge required to be successful in the construction field.

Guiding Questions:

- How are the jobs I identified in the previous lesson related to STEM jobs?
- What science and math would I need to know for my selected jobs?
- What kinds of technology and engineering would be related to my selected jobs?

Preparation: Make copies of the STEM table on the next page to distribute to your students

Instructions:

Day 1: 30 minutes

1. Review the jobs students selected to investigate in the last lesson, and create groups based on similar jobs. BuildOhio.org breaks down construction jobs into the following categories, which you might use as well: Skilled trades, Administrative, Management, and Design/Engineering.
2. Share with students that construction is STEM-in-action and requires skills and knowledge in science, technology, engineering, and math. Share that 20 percent of all jobs in the United States, or about 26 million jobs, require a “high level of knowledge” in at least one STEM field, and construction is no different.
3. Ask students to look at each of the content areas in STEM. Have them work in groups to answer the prompts in the first row of the following table. Examples are provided.

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Plan it!



Lesson Plan Two

SCIENCE	TECHNOLOGY	ENGINEERING	MATH
<p>Identify science content that students need to know to do the job. Have students list specific subjects and how they would apply what they know in that job.</p>	<p>Identify the tools and technology the job requires. Have students find apps on the web to help them learn more about using the tools. Have them list the tools and explain how the technology works using scientific or mathematic principles.</p>	<p>Identify the type of engineer who would be most closely associated with the job and what that engineer designs and works on. Students can explore the wide variety of engineering specialties and positions, such as structural engineer or mechanical or electrical engineering technicians.</p>	<p>Identify the mathematical concepts that a person in the job would need to know. Have students identify key formulas that people might use in the job.</p>
<p>Example: Welders need to know chemistry, because they need to know which metals will create a strong bond.</p>	<p>Example: An electrician might need to use a tool to determine electrical current strength. The student would explain how one measures an electrical current and how the tool uses the technology to do it quickly, easily, and safely. Another example: a drafter needs to know Computer Aided Design (CAD) and the other software involved in creating 3D drawings.</p>	<p>Example: A structural engineer might be needed to determine whether the foundation of a building is strong enough for an addition.</p>	<p>Example: Someone interested in construction management might need knowledge in finance and budgeting, which would include percentages and ratios. A contractor would use formulas for area and perimeter. An engineer might use calculus.</p>

Find it!



Lesson Plan Three

Audience: Middle or high school students in any academic course

Time needed: Four 45- to 60-minute class periods (could be facilitated individually or connected as part of a research and career exploration unit)

Overview: Preparing students for their futures requires both setting clear goals and establishing pathways to achieve them. The previous lessons have helped students define their career goals. Hopefully many of them are now considering options in the construction industry. The activities in this lesson are designed to help students build a career plan to achieve their goals. The sources we recommend are useful in all industries. Although we encourage students to explore the construction industry, this assignment could be useful to students with any career interests.

Guiding Questions:

- What type of education and training will I need to reach my career goals?
- What educational pathways might be the best approach for me?
- What essential skills should I focus on developing as I prepare for my future?

Preparation: Invite a school counselor, recruiter from a local career center, or community college admissions representative to talk with your students about academic opportunities and pathways. Make copies of the Essential Skills on p.6 of this workbook. Consult *Five Ways That Pay Along the Way to the BA* (Georgetown Center for Education and the Workforce: <https://cew.georgetown.edu/cew-reports/career-and-technical-education/>) to learn about postsecondary pathways outside of a bachelor's degree to high-skill, high-wage, and high-demand careers. Note that Days 1 and 3 require computer access, but you can place students in groups if you do not have access to individual devices for each student.

Instructions:

Day 1: What can I do now?

1. Invite a school counselor, recruiter from a career center, or community college admissions representative to talk with your students about academic opportunities and pathways. Ask your presenter(s) to prepare a 20-minute presentation with time for questions.
2. Using presentation handouts, course planning documents from your school, and the internet, ask students to list courses they need to take to graduate and additional courses, electives, or activities that would help them prepare for their career path.
3. In a column next to the anticipated coursework, have students identify the specific skills and academic content in each course that will directly relate to their chosen career option. Remind them to look back at the STEM table they completed, which identified some of the academic and technical skills they need to develop. Make sure they explore career and technical education courses as well.

Day 2: What essential skills can I work to develop?

1. Distribute the Essential Skills from p.6 (also found on p.5 of the student workbook) and ask students to rate themselves on each skill. Students can perform this activity individually or in groups. Have them identify the classes and activities, including academic courses, electives, extracurricular activities, and other opportunities your school, which that build these essential skills.
2. Do a gallery walk to gather students' responses. For a gallery walk, create one poster per essential skill. Give students 2 minutes at each poster to record their responses. If the response is already written, ask students to put a star next to it. This will allow you to see the frequency of the responses and to keep the poster a bit more organized and easy to interpret.
3. Conduct a discussion about the responses most often cited (based on the ones with the most stars) and discuss how these essential skills are worthwhile for any career.

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Lesson Plan Three

Day 3: What do I do after high school?

1. Ask students to refer back to *Build Your Future: Ohio's Construction Industry, a Workbook for Students and Their Families* for additional information. Discuss the misconceptions that students have about postsecondary pathways.
2. Ask students to identify the postsecondary pathway that would lead to the career they chose or were assigned. This information is available for a wide variety of jobs at OhioMeansJobs.com and BuildOhio.org. To download a list of useful websites to help students explore and plan their futures in construction, do a keyword search "construction" at the Ohio Department of Education website (Education.ohio.gov). Career-related advocacy groups also educate students about opportunities to prepare for their dream job. For example, the National Coalition of Women of Color in Construction (<http://buildingbusinesscapacity.blogspot.com/>) advocates for women to have greater opportunity and voice in the construction industry.
3. As students are researching, remind them that not all jobs require, or even prefer, a college degree. In some cases, a college degree will have a very poor return on investment, because it is a credential not needed to compete for the job. It is important to help students choose the most sensible and affordable pathway to their future in construction. Remind students of any information related to education and job training pathways provided by the local career and technical center recruiter or school counselor provided. The student stories in the workbooks are also great illustrations of potential pathways.
Optional addition: Distribute *Five Ways That Pay Along the Way to the BA* (Georgetown Center for Education and the Workforce: <https://cew.georgetown.edu/cew-reports/career-and-technical-education/>). Students can either complete this reading as homework or in class. NOTE: This reading could be used to inform questions that students might have for a recruiter, school counselor, or community college admissions representative. You might consider assigning it as pre-reading for the Day 1 lesson.
4. Have students take notes from their sources and write a persuasive essay about their identified pathway and why it is the best option for them.
5. Use the rubric on the following page to help you assess their arguments. This table contains the grade-level standards in Ohio's Learning Standards: Writing in the Content Areas 6-12. You can use this learning progression to evaluate and provide feedback on student work.

Day 4: How do I finance this pathway?

1. Have students visit OhioMeansJobs.com and select Fund It! Here, they can access budget tools and information about financial aid and assistance programs. Fund It! connects students to organizations that provide financial aid, grants, and loans as well as Ohio-Based Employment Programs, including registered apprenticeship opportunities where they earn while they learn. Students can also search for scholarship opportunities tailored to their intended majors and interests. You might also suggest students look for advocacy and union organizations that offer scholarships and registered apprenticeships. For example, the National Association of Women in Construction awards more than \$25,000 to students in construction-related programs each year (www.nawic.org).
2. Many community and technical colleges in Ohio provide substantial scholarships to students who complete career and technical programs in high school and matriculate to the college during the fall following their graduation. Students are only eligible for these scholarships during their senior year. More information on these and other opportunities can be found at OhioHigherEd.org (click on Students; Pay for College).
3. Have students create a plan detailing how they will fund their postsecondary pathway.

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Lesson Plan Three

Ohio Learning Standards: Science/Technical and Social Studies Common Core Grades 6-12

GRADES 6-8	GRADES 9-10	GRADES 11-12
TEXT TYPES AND PURPOSES WRITE ARGUMENTS FOCUSED ON DISCIPLINE-SPECIFIC CONTENT*		
<p>Introduce claim(s) about a topic or issue, acknowledge and distinguish the claim(s) from alternate or opposing claims, and organize the reasons and evidence logically.</p>	<p>Introduce precise claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that establishes clear relationships among the claim(s), counterclaims, reasons, and evidence.</p>	<p>Introduce precise, knowledgeable claim(s), establish the significance of the claim(s), distinguish the claim(s) from alternate or opposing claims, and create an organization that logically sequences the claim(s), counterclaims, reasons, and evidence.</p>
<p>Support claim(s) with logical reasoning and relevant, accurate data and evidence that demonstrate an understanding of the topic or text, using credible sources.</p>	<p>Develop claim(s) and counterclaims fairly, supplying data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form and in a manner that anticipates the audience's knowledge level and concerns.</p>	<p>Develop claim(s) and counterclaims fairly and thoroughly, supplying the most relevant data and evidence for each while pointing out the strengths and limitations of both claim(s) and counterclaims in a discipline-appropriate form that anticipates the audience's knowledge level, concerns, values, and possible biases.</p>
<p>Use words, phrases, and clauses to create cohesion and clarify the relationships among claim(s), counterclaims, reasons, and evidence.</p>	<p>Use words, phrases, and clauses to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p>	<p>Use words, phrases, and clauses as well as varied syntax to link the major sections of the text, create cohesion, and clarify the relationships between claim(s) and reasons, between reasons and evidence, and between claim(s) and counterclaims.</p>
<p>Establish and maintain a formal style.</p>	<p>Establish and maintain a formal style and objective tone while attending to the norms and conventions of the discipline in which they are writing.</p>	
<p>Provide a concluding statement or section that follows from and supports the argument presented.</p>		

* Ohio Department of Education. (2014). Ohio's New Learning Standards: English Language Standards. Available at <https://education.ohio.gov/getattachment/Topics/Ohio-s-New-Learning-Standards/English/ELA-Standards.pdf.aspx>