

HEAR FROM PROFESSIONALS. LEARN FROM EXPERIENCE.



## ARCHITECTURE AND CONSTRUCTION

This diverse Career Cluster prepares learners for careers in designing, planning, managing, building, and maintaining the built environment. People employed in this cluster work on new structures, restorations, additions, alterations, and repairs.



Learning that works  
for Nebraska

### WHAT TO EXPECT IN THIS GUIDE



#### INTERVIEWS

Each video contains interviews with employees and business representatives discussing work requirements, education levels, salary and job prospects.



#### TOURS

Experience virtual industry tours that provide a unique opportunity to get a glimpse inside Nebraska-based companies without leaving your home or classroom.



#### INFORMATION

Throughout the videos you will find valuable information regarding job markets, salaries, and educational requirements to help you identify a possible career path.

### **NOTE TO INSTRUCTOR:**

These are suggested activities and questions to accompany the virtual industry tour. Each component may be used individually or modified to fit the needs of the classroom. Use these websites for more information on this career cluster:

- [www.education.ne.gov/nce/career-clusters](http://www.education.ne.gov/nce/career-clusters)
- <https://www.education.ne.gov/nce/careerdevelopment/>
- [Nebraska H3 Reports](#)
- [www.nebraskacareerconnections.org](http://www.nebraskacareerconnections.org)

In addition, NEworks has an array of resources, including Nebraska Workforce Trends magazine, Labor Market Regional Reviews, Occupational Profiles, and Career Ladder Posters, available at <https://neworks.nebraska.gov> under Labor Market Information>Additional Services>Publications.

### **BELL RINGER:**



Post on a writing surface for students to answer as they enter the room. They will respond individually in their notes. Then have students share with a partner or discuss as a class.

**“In 2014, the world’s tallest building was the Burj Khalifa in Dubai, United Arab Emirates. It is over 2,716 feet tall, which is just over one-half mile. It has 163 floors. What is the tallest building in Nebraska? How tall is it?”**

***Answer: In 2014, the tallest building in Nebraska was the First National Bank Tower in Omaha. It is 634 feet tall with 45 floors.***

### **ANTICIPATORY SET:**



Guide students to think about the importance of the Architecture and Construction Career Cluster by dividing them into pairs. Each pair needs one piece of paper. Give these instructions:

**“Consider what you know about architecture and construction. When the time starts, write the alphabet A through Z down the left side of your paper. With a partner, brainstorm words associated with architecture and construction, one word for each letter of the alphabet. Questions?”**

***You will have two minutes. Begin!”***

Monitor pairs as they work. After two minutes, wrap up the activity by saying:

**“How many pairs were able to complete the entire alphabet A through Z? Our daily lives are influenced by the architecture and construction industries.”**

**For each letter of the alphabet, ask a different pair to share their word.**

## INTRODUCTORY QUESTIONS:



Ask the following questions to students either in journal form or aloud. If asking aloud, have students share with a partner first, then ask two or three students to share with the class. Responses will vary. Remember these responses are based on the students' knowledge prior to watching the virtual tour.

**“When you think of architecture and construction, what types of jobs come to mind?”**

**Are these careers YOU might be interested in?”**

## CONTENT:



Show the 16-minute virtual industry tour, which features three businesses to the class: [https://bit.ly/NECTE\\_ArcConTour](https://bit.ly/NECTE_ArcConTour). Students may individually view the video online as well. Have students complete the guided notes worksheet as they learn about the career cluster. Introduce the virtual tour by saying:

**“Today we will watch a video highlighting three different businesses in the Architecture and Construction Career Cluster. Each business will describe their involvement in the industry, as well as the different careers associated with this area.”**

## FOLLOW-UP QUESTIONS:



Ask the questions below to students after they view the virtual industry tour. Questions can be given as journal questions or asked aloud. Questions can also be assigned individually or in groups.

### **1. How would you define this Career Cluster?**

- The Architecture and Construction Cluster involves careers that design, plan, manage, build, and maintain the built environment. People employed in this Cluster work on new structures, restorations, additions, alterations, and repairs.

### **2. What surprised you about this Career Cluster?**

- Answers will vary.

### **3. What types of careers are included in this Career Cluster?**

- Architect, interior architect, landscape architect, architectural designer, engineers, mechanical engineers, electrical engineers, pipe fitters, electricians, welders, and construction manager.
- Other careers not mentioned in the video: Carpenter, iron/metalworker, safety director, system manager/designer, computer aided drafter (CAD), surveyor, boilermaker, demolition engineer, environmental engineer, equipment operator and specialty contractor.

- A few careers mentioned in the virtual tour are not technically part of the Architecture and Construction Career Cluster. However, these jobs are an essential part of the industry. They include: human resources, communications, IT (information technology) and accountants.
- Note to instructor: This would be a good time to explain to the students that this Career Cluster can be divided into three Career Pathways including:
  - Construction
  - Design and pre-construction
  - Maintenance and operations

#### **4. What are the differences between the different pathways of this Career Cluster?**

- Construction: These workers build! They build and remodel houses, apartments, industrial buildings, warehouses, office buildings, churches, schools, and recreational facilities.
- This pathway also includes the builders of highways, streets, bridges, tunnels, and airports, as well as power plants, chemical plants, refineries, and mills.
- Design/Pre-Construction: These workers create! They turn an idea into a set of plans. Their plans guide the builders as they construct the building process.
- Maintenance Operations: These workers keep everything intact. They unload, inspect, and move new equipment into position. They determine the optimal placement of machines in a plant, assemble machinery, install machinery, repair machinery, and perform preventative maintenance.
  - They detect, diagnose, and correct minor problems in machinery.
  - They keep the structure of an establishment in good repair.
  - They maintain the operation of refineries, power plants, chemical plants, and mills.
- This pathway also includes the maintenance of highways and roads.

#### **5. What careers and jobs in this Career Cluster could be obtained immediately after high school graduation?**

- Interns, mailroom employees and some of the trades laborers
- Other examples: Carpentry, iron working, masonry, electrical/electronics equipment installation and repair, grounds keeping, heating air-conditioning and refrigeration technology

**6. Where could you go to receive education and training for these careers?**

- Answers will vary.
- Remind students there are over 174 different architecture or construction related programs offered at Nebraska colleges. There are at least 30 construction programs offered in Nebraska community colleges.
- For more information about the education requirements of specific careers, have students create profiles and explore Nebraska Career Connections at: [www.nebraskacareerconnections.org](http://www.nebraskacareerconnections.org)

**7. What is an internship? What are some benefits of internships?**

- Answers will vary.
- Work experience to include on a resume and for future jobs, gain knowledge and experience, exposure to real tasks of the job to help determine if this is a future career, some internships are paid, potential to earn college credit, network with professionals in the career field, develop new skills and develop confidence.

**8. The video featured use of a computer program to draw plans for a building and for submitting a field design change on a construction project. What skills are needed to complete these tasks?**

- Answers will vary.
- Using high tech computer programs requires computer knowledge, attention to detail, and knowledge of architecture and construction.

**9. Core academic skills include reading, written communication, listening, speaking, and mathematical reasoning with problem solving. How might these core academic skills be used in this Career Cluster?**

- Answers will vary.
- Here are a few examples:
  - Construction workers must be able to read and interpret blueprints and work-related documents.
  - Proposals and reports are written documents that will be produced by architects and managers.
  - Listening and speaking is very important for an architect to clearly communicate with the client and produce blueprints for a project that meets the client's desires.
  - Math and problem solving is used daily by architects and engineers to construct strong buildings, bridges and roads.

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  - They must be able to calculate measurements and angles.
  - They must also have spatial reasoning and understand how the scale model (the blueprints) transfer to the actual product.
  - They must understand ratios i.e., one inch = 1 foot or 1 meter.

**10. The virtual industry tour mentioned two traits employers seek when hiring. What other Career Readiness Skills should a desirable applicant possess?**

- Answers will vary.

**11. Employers value workers who have the ability to work productively in teams. Why is this skill important? When have you been part of a successful team and what was your specific role?**

- Answers will vary.
- Some benefits of teamwork include:
  - Dividing up tasks so they are completed by the most qualified individual,
  - Complete tasks efficiently and quickly which allows the company to take on more projects and generate more revenue,
  - More ideas are generated during brainstorming sessions and reduce the pressure on individual employees.

**12. What contributes to make construction one of the largest industries in Nebraska? What recent projects in our local community are products of the Architecture and Construction Career Cluster?**

- Answers will vary. Construction is the largest and most diversified industry in the country. This Career Pathway involves the building of everything from houses to highways.



EXTENDED  
LEARNING  
ACTIVITIES:



**The following are suggested activities that will increase student learning and exposure to this career cluster.**

- Analyze the classroom. Put together a plan to remodel the room to be a more engaging learning environment.
  - Select a building in the community. Learn about the history and construction of the building. Create a presentation for the class about the building.
  - Volunteer with Habitat for Humanity or for another community improvement organization on a project.
  - Create blueprints for your dream house. Have an architect or house builder view the plans for feasibility
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- Select a career from this Career Cluster. Research the career and present information to the class in the form of an oral presentation, poster, PowerPoint, iMovie or Prezi presentation. Information to find includes: Salary, education required, typical day schedule, positive aspects of the job and negative aspects of the job.
  - Make a list of the Career Readiness Skills that are personal strengths. Then make a list of the skills and behaviors required for a career in Architecture and Construction. Compare the list to determine what Career Readiness Skills need to be strengthened for employment in this Career Cluster.
  - Complete a mock job application and job interview with a local Architecture and Construction employer.
  - Construct a resume for a specific career in this Career Cluster.
  - Meet with your school counselor to discuss available classes (at the high school and local community college) that would help prepare a student for careers in this Career Cluster. Also, discuss certifications that can be obtained during high school.
  - Identify a post-secondary institution offering certification or degrees that could be utilized in this Career Cluster. Obtain and complete the admissions and scholarship applications for the school or program.

**THERE ARE MANY RESOURCES THAT CAN BE USED BY TEACHERS, PARENTS AND JOB SEEKERS FOR CAREER EXPLORATION.**

Some resources are tailored for Nebraska and some are national, but all provide valuable information and many incorporate information from the Nebraska Department of Labor Market Information (LMI). This list is not comprehensive, and only represents a sampling of the many resources available. Share the Career Exploration/ Planning resources table with students and have them do a review of what each offers them as a tool for finding the right career fit. Nebraska Career Connections is a totally FREE resource that is highly recommended for use by career and technical education students and teachers.

CAREER EXPLORATION & PLANNING		
Website	Type of Resources Available	Produced & Sponsored By
Nebraska Career Connections <a href="http://www.nebraskacareerconnections.org">www.nebraskacareerconnections.org</a>	Education and career planning resources for students, parents, educators, adults and employers. Students can explore career options, search for colleges, find out about applying for college, tuition, scholarships & financial aid, and create an e-portfolio and resume.	Nebraska Departments of Education and Labor, Nebraska VR, and Partnerships for Innovation.
Nebraska H3 Reports: <a href="https://bit.ly/neH3">https://bit.ly/neH3</a>	Information on High Wage, High Demand, High Skill jobs in Nebraska. Top H3 occupations are identified on the home page. Reports can be generated by each Nebraska Economic Development Region and also statewide. Reports include H3 Report, Nebraska Economic Industry Report and All Career Clusters Report, Jobs can be searched by Job Title or SOC Code.	Nebraska Departments of Education, Labor and Economic Development
O*NET OnLine <a href="http://www.onetonline.org">www.onetonline.org</a>	Occupation information: knowledge, skills, abilities, Career Interest profile, job outlook and wages	U.S. Department of Labor, Employment and Training Administration (sponsor)  Developed by the National Center for O*NET Development
My Next Move <a href="http://www.mynextmove.org/">www.mynextmove.org/</a>	Condensed version of information from O*NET OnLine	
Occupational Outlook Handbook <a href="http://www.bls.gov/ooh/">www.bls.gov/ooh/</a>	Nationwide data on occupation pay, work environment, job outlook, similar occupations, and more	Bureau of Labor Statistics
Nebraska Reality Check <a href="https://www.education.ne.gov/nce/career-readiness-videos/">https://www.education.ne.gov/nce/career-readiness-videos/</a>	Lifestyle cost information and occupations in corresponding wage range	Nebraska Department of Education

IN-DEPTH		
Website	Type of Resources Available	Produced & Sponsored By
CareerOneStop <a href="http://www.careeronestop.org">www.careeronestop.org</a>	Variety of resources related to career planning, job training, and job searches	U.S. Department of Labor, Employment and Training Administration (sponsor)
GetMyFuture (section of the CareerOneStop website) <a href="http://www.careeronestop.org/GetMyFuture">www.careeronestop.org/GetMyFuture</a>	IResources tailored to students and young adults such as career exploration, information on finding education and training programs, and how to conduct a successful job search.	U.S. Department of Labor, Employment and Training Administration (sponsor)



Instructions: Questions 1 and 2 should be answered by watching all three sections of the virtual industry tour.

1. List eight careers mentioned during the virtual industry tour:
  1. **Architect**
  2. **Landscape architect**
  3. **Mechanical engineer**
  4. **Electrical engineer**
  5. **Pipe fitter**
  6. **Welder**
  7. **Construction manager**
  8. **Interior architect**
  
2. List two Career Readiness Skills employers want to use every day on the job:
  1. **Ability to work productively in teams**
  2. **Ability to make decisions and solve problems**

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Instructions: The following questions are specific to the Clark Enersen section section.

3. Where is Clark Enersen located? Lincoln, Nebraska
  
4. Describe what Clark Enersen does:

**Design places, both indoor and outdoor. Recent projects have included: Memorial Stadium at the University of Nebraska - Lincoln and Centennial Mall in Lincoln.**
  
5. On average, mechanical engineers make how much per hour? \$36-39
  
6. Architecture is a unique combination of what three subjects?
  1. **Art**
  2. **Science**
  3. **Mathematics**
  
7. Describe what an architectural designer does:

**Visits the job site, talks with the client about ideas, draws pictures, takes pictures of existing facilities, uses computer programs to create models and sends contract documents to construction managers.**

8. How many different architecture or construction related programs are offered at Nebraska colleges? 174

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*Instructions: The following questions are specific to the Kiewit section.*

9. Where is Kiewit headquartered? Omaha, Nebraska

10. Describe what Kiewit does:

**Construction, engineering and mining across the U.S., North America, and Australia. They build everything except for houses. Recent projects have included: Omaha Zoo, TD Ameritrade Park in Omaha, Century Link Center, power plants and mining coal for power plants.**

11. Kiewit is a Fortune 250 company. What does this mean?

**Kiewit's total revenues ranked in the top 250 of U.S. companies in 2014.**

12. On average, what do electricians make per hour? \$24-26

13. Describe the responsibilities of a construction project manager:

**Manage the overall success of the project including safety, quality, and schedule. Also, manage people and risk to make sure everyone goes home safe at the end of the workday.**

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*Instructions: The following questions are specific to the Ho-Chunk section.*

14. Where is Ho-Chunk headquartered? Winnebago, Nebraska

15. Within seven Nebraska community colleges, how many construction science programs are offered? 30

16. Describe what Ho-Chunk does.

**Ho-Chunk is a general contractor overseeing projects across the U.S. At any one time, they have up to 100 different projects. Recent projects include: sports fields, wind energy buildings, projects for the National Park Service, Air Force base, housing developments and commercial developments.**

17. On average, construction managers in Nebraska make how much per hour? \$37

18. What percent of Nebraska construction trade community college graduates are employed in Nebraska? 7



## ABOUT THIS PROJECT

The virtual industry tours provide a unique opportunity for students, parents and job-seekers to experience Nebraska-based industries without leaving the home or classroom.

The videos showcase different businesses and industries in each of the sixteen Career Clusters plus Entrepreneurship in the Nebraska Career Education Model. In addition to the tour of the business or industry, the videos also contain interviews with employees and managers discussing work requirements, education levels, salary and job prospects. The videos provide an accurate picture of today's workplace, breaking down stereotypes and assumptions while emphasizing the knowledge and skills required to be successful.

The teacher and student guides are designed to enhance student learning for each virtual tour. For the students, a guided notes worksheet is included to help them record important information about the career cluster. The teacher's guide includes a lesson plan complete with anticipatory set, introductory questions, and discussion questions to follow the virtual tours.

Discussion Guides and Career Readiness Resources are available at:  
**[WWW.NEBRASKACAREERCLUSTERS.COM/RESOURCES](http://WWW.NEBRASKACAREERCLUSTERS.COM/RESOURCES)**



It is the policy of the Nebraska Department of Education not to discriminate on the basis of sex, disability, race, color, religion, marital status, age, national origin, or genetic information in its educational programs, admission policies, employment, or other agency programs.

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