

# Explore the Roles of Architects

**Unit:** Historical Perspectives of the Drafting and Design Field Industry

**Problem Area:** Historical Roles of Drafters, Designers, Engineers, and Architects

**Lesson:** Explore the Roles of Architects

- **Student Learning Objectives.** Instruction in this lesson should result in students achieving the following objectives:

- 1 Describe the role of architects.**
- 2 Describe the historical influence of architects.**
- 3 Identify career possibilities related to the field of architecture.**

- **List of Resources.** The following resources may be useful in teaching this lesson:

*AIA: The American Institute of Architects.* Accessed March 10, 2008.  
<<http://www.aia.org>>.

*American Design Drafting Association.* Accessed March 10, 2008.  
<<http://www.adda.org>>.

Brown, Walter C., and Cloise E. Kicklighter. *Drafting for Industry.* Goodheart-Willcox, 1995.

Kicklighter, Cloise E. *Architecture: Residential Drawing and Design.* Goodheart-Willcox, 2005.

*O\*NET OnLine.* Occupational Information Network. Accessed March 10, 2008. <<http://online.onetcenter.org/>>.

*Occupational Outlook Handbook.* U.S. Department of Labor. Accessed March 10, 2008. <<http://www.bls.gov/oco/>>.



Walker, John R., and Bernard D. Mathis. *Exploring Drafting*. Goodheart-Willcox, 2007.

## ■ **List of Equipment, Tools, Supplies, and Facilities**

- ✓ Overhead or PowerPoint projector
- ✓ Visual(s) from accompanying master(s)
- ✓ Copies of sample test, lab sheet(s), and/or other items designed for duplication
- ✓ Materials listed on duplicated items
- ✓ Computers with printers and Internet access
- ✓ Classroom resource and reference materials (i.e., *Occupational Outlook Handbook*)

## ■ **Terms.** The following terms are presented in this lesson (shown in bold italics):

- ▶ architects
- ▶ architectural drafters/technicians
- ▶ architectural drafting teachers
- ▶ estimators
- ▶ landscape architects
- ▶ marine architects
- ▶ surveyors

## ■ **Interest Approach.** Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

*Ask students to identify a building or structure that has caught their attention. Then ask them to describe the building in writing, verbally, and through a sketch. Have them share these descriptions with a partner or in a small group. Facilitate a discussion of the ways architects and designers must be able to communicate in written, verbal, and graphic forms and how that communication is variable based on the audience (e.g., client, other architect, construction supervisor, or carpenter).*

# SUMMARY OF CONTENT AND TEACHING STRATEGIES

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**Objective 1:** Describe the role of architects.

**Anticipated Problem:** What knowledge, skills, abilities, and tasks must an architect possess?

- I. Architects must be able to utilize knowledge in several areas in addition to practicing multiple skills and abilities while juggling a variety of tasks.
  - A. Knowledge
    1. Building and construction—Knowledge of materials, methods, and the tools involved in the construction or repair of houses, buildings, or other structures (e.g., highways and roads) is essential.
    2. Design—Knowledge of design techniques, tools, and principles involved in the production of precision technical plans, blueprints, drawings, and models is necessary.
    3. Mathematics—Knowledge of arithmetic, algebra, geometry, calculus, statistics, and their applications is needed.
    4. Language—Knowledge of the structure and content of the English language (e.g., the meaning and spelling of words, rules of composition, and grammar) is mandatory.
    5. Engineering and technology—Knowledge of the practical application of engineering science and technology is critical. This includes applying principles, techniques, procedures, and equipment to the design and production of various goods and services.
    6. Customer and personal service—Knowledge of principles and processes for providing customer and personal services is extremely useful. This knowledge includes customer needs assessment, meeting quality standards for services, and evaluation of customer satisfaction.
  - B. Skills
    1. Time management—Managing one’s own time and the time of others is a critical skill in this field.
    2. Active listening—Giving full attention to what other people are saying; taking time to understand the points being made; asking questions (as appropriate), and not interrupting are valuable skills.
    3. Reading comprehension—Understanding written sentences and paragraphs in work-related documents is necessary.
    4. Mathematics—Using mathematics to solve problems is mandatory.

5. Judgment and decision making—Considering the relative costs and benefits of potential actions is useful in helping to choose the most appropriate course of action.
6. Writing—Communicating effectively in writing (as appropriate for the needs of the audience and the purpose of the document) is an essential skill.
7. Critical thinking—Using logic and reasoning to identify the strengths and weaknesses of alternative solutions, conclusions, or approaches to problems is critical in this career.

#### C. Abilities

1. Oral comprehension—The ability to listen to and understand information and ideas presented through spoken words and sentences is necessary.
2. Oral expression—The ability to communicate information and ideas in speaking so others will understand is much needed.
3. Deductive reasoning—The ability to apply general rules to specific problems to produce answers that make sense is extremely valuable.
4. Originality—The ability to create unusual or clever ideas about a given topic or situation or to develop creative ways to solve a problem is useful.
5. Written comprehension—The ability to read and understand information and ideas presented in writing is important.
6. Problem sensitivity—The ability to tell when something is wrong or is likely to go wrong is essential. This ability does not involve solving the problem, only recognizing that a problem exists.

#### D. Tasks

1. Architects prepare information regarding design, structure specifications, materials, color, equipment, estimated costs, and/or construction time.
2. They consult with clients to determine functional and spatial requirements of the structure.
3. Architects direct the activities of workers engaged in preparing drawings and specification documents.
4. They plan the layout of the project.
5. They prepare contract documents for building contractors.
6. Architects prepare scale drawings.
7. They integrate engineering elements into unified designs.
8. They conduct periodic on-site observations of work during construction to monitor plan compliance.
9. Architects administer construction contracts.
10. They represent clients when obtaining bids and awarding construction contracts.

*Ask students to describe the role of an architect in a one-minute essay. Collect their writings, and share them with the class. Write the correct information on the board, and add to the list.*

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**Objective 2:** Describe the historical influence of architects.

**Anticipated Problem:** How have and do architects influence society?

- II. Architects have always been historically influential.
  - A. Architecture has a well-documented history.
  - B. Architectural drawings and sketches date back millions of years when primitive man illustrated daily life, births, deaths, hunting expeditions, and worship on cave walls.
  - C. The greatest changes in documentation are noted during the Egyptian and Chinese Empires, including the development of rice paper. This was the beginning of drafting/architecture as we know it today, aside from the tools used to make drawings more accurate and legible.
  - D. From the Age of Empires through the Industrial Revolution, drafting and architecture experienced numerous changes, especially in equipment and precision (e.g., printing press and mechanized printing press).
  - E. The creation of modern electronic devices during the past 25 years—CADD: Computer Aided Drafting and Design and 3-D Modeling—have revolutionized the architecture and product development industries.
  - F. Many American architects have had historical influences upon society.
    - 1. Thomas Jefferson, 1723 to 1826
      - a. Education: College of William and Mary
      - b. Influences: U.S. President, architect, and founder of the University of Virginia
      - c. Design credits: Monticello, the University of Virginia, and Virginia’s State Capitol Building. Jefferson’s buildings helped initiate the ensuing American fashion for Federal Architecture.
    - 2. Daniel Hudson Burnham, 1846 to 1912
      - a. Education: Apprenticeship under William Jenney
      - b. Influence: Plan for Chicago, City of Chicago Lakefront Plan
      - c. Design credits: Plan for the City of Chicago was published in 1909 and was designed to give the city international recognition on the same level as London or Paris, the Flatiron Building in New York City, and Union Station in Washington D.C.
    - 3. Louis Henry Sullivan, 1856 to 1924
      - a. Education: High school diploma and one year at the Massachusetts Institute of Technology (MIT)
      - b. Influence: Considered America’s first truly modern architect
      - c. Design credits: The Auditorium Building in Chicago; Guaranty Building in Buffalo, NY; and the “form follows function” philosophy of architecture

4. Frank Lloyd Wright, 1867 to 1959
  - a. Education: High school diploma, some college at the University of Wisconsin, and an apprenticeship with Louis Sullivan
  - b. Influence: Prairie Style Architecture
  - c. Design credits: Fallingwater Residence in Pennsylvania; Unity Temple in Oak Park, IL; Guggenheim Museum in New York City, NY; Frank Lloyd Wright Home and Studio in Oak Park, IL; and 500 other projects
5. Joseph Baermann Strauss, 1870 to 1938
  - a. Education: University of Cincinnati
  - b. Influence: Bridge architecture
  - c. Design credits: Golden Gate Bridge in San Francisco, CA; Burnside Bridge in Portland, OR; and the Lewis and Clark Bridge in Rainier, OR
6. Ludwig Mies van der Rohe, 1886 to 1969
  - a. Education: Apprentice of Bruno Paul, a famous interior designer
  - b. Influence: The “less is more” philosophy, pioneering master of modern architecture and of steel and glass skyscrapers
  - c. Design credits: Illinois Institute of Technology Campus in Chicago, IL and the Farnsworth House in Plano, IL

*The development and presentation of an architectural timeline may help students visualize the history of architecture, design development, and documentation processes. Use VM–B and VM–C to present various architectural designs to reinforce this objective. Have students complete LS–B as you present VM–B and VM–C.*

**Objective 3:** Identify career possibilities related to the field of architecture.

**Anticipated Problem:** Which careers are associated with the field of architecture?

III. Career possibilities in the field of architecture

- A. **Architects** plan and design structures (e.g., private residences, office buildings, theaters, factories, and other structural property). They must pass a certification examination to obtain a license to practice. The job involves a great deal of creativity and sensitivity to form and materials, and architects must be able to complete tasks by specific deadlines. Most architects are licensed professionals.
  1. Education required: A bachelor’s degree is the minimum formal education required for this occupation; jobs may also require graduate school. It is common for architecture candidates, depending on their speciality, to have a program that requires a master’s degree. Some programs require a Ph.D., M.D., or J.D. (law degree). Certification by the American Institute of Building Design (AIBD) or the American Institute of Architects (AIA) is also common.
  2. The median wage is \$30.84 hourly and \$64,150 annually.



- B. **Architectural drafters/technicians** prepare detailed drawings of architectural designs and plans for buildings and structures, according to specifications provided by the architect.
1. Education required: Most occupations require training in a vocational school setting, related on-the-job experience, and/or an associate's degree. Some positions require a bachelor's degree.
  2. The median wage is \$20.17 hourly and \$41,960 annually.
- C. **Architectural drafting teachers** instruct students in architecture and architectural design courses, such as architectural environmental design, interior architecture/design, and landscape architecture.
1. Education required: A bachelor's degree is the minimum formal educational requirement.
  2. The median wage is \$64,620 annually.
- D. **Estimators** prepare cost estimates for product manufacturing, construction projects, or services to aid management in bidding on or determining the price of products or services. Estimators may specialize their services to a particular service, industry, or type of manufactured product.
1. Education required: Most occupations require a bachelor's degree, but some may not.
  2. The median wage is \$25.45 hourly and \$52,940 annually.
- E. **Landscape architects** plan and design land areas for projects (e.g., parks, recreational facilities, airports, highways, hospitals, schools, and land subdivisions in addition to commercial, industrial, and residential sites).
1. Education required: Most occupations require a bachelor's degree, but some positions may not. Certification by the American Institute of Building Design (AIBD) and/or the American Institute of Architects (AIA) is recommended.
  2. The median wage is \$26.51 hourly and \$55,140 annually.
- F. **Marine architects** design and oversee construction and repair of marine craft and floating structures (e.g., ships, barges, tugs, dredges, submarines, torpedoes, floats, and buoys). Marine architects may confer with marine engineers.
1. Education required: Most occupations require a bachelor's degree, but some positions may not. Certification by the American Institute of Building Design (AIBD) and/or the American Institute of Architects (AIA) is recommended.
  2. The median wage is \$35.09 hourly and \$72,990 annually.
- G. **Surveyors** make exact measurements and determine property boundaries. They provide data relevant to the shape, contour, gravitation, location, elevation, or dimension of land or land features on or near the earth's surface for engineering, mapmaking, mining, land evaluation, construction, and other purposes.
1. Education required: Most occupations require training in a vocational school setting, related on-the-job experience, and/or an associate's degree. Some positions require a bachelor's degree.
  2. The median wage is \$23.22 hourly and \$48,290 annually.

Present VM–B, and have students complete LS–A during the presentation. A class discussion of architectural career options can be used to help students master this objective. Visit any career or occupational related Web sites. Highlight the career demand for the next 10 years using the following Web sites: <http://online.onetcenter.org> and the <http://www.bls.gov/oco/home.htm>.

- **Review/Summary.** Use the student learning objectives to summarize the lesson. The lab worksheet will help summarize information once it has been filled out. Have students discuss which career most appeals to them and why. Student responses can be used in determining which objectives need to be reviewed or taught from a different angle.
- **Application.** Use the included visual masters and lab sheets to apply the information presented in the lesson.
- **Evaluation.** Evaluation should focus on student achievement of the objectives for the lesson. Various techniques can be used, such as student performance on the application activities. A sample written test is provided.
- **Answers to Sample Test:**

#### Part One: True/False

1. T
2. T
3. T
4. T
5. T
6. T
7. F
8. T
9. F
10. F

#### Part Two: Short Answer

1. Any three of the following careers could be mentioned: architect, architectural drafter/technician, architectural drafting teacher, estimator, landscape architect, marine architect, and surveyor.
2. Any two of the following (or others) are acceptable: Occupational Outlook Handbook, high school counselor, Career Center, and Occupational Information Network.
3. Drafting is an important part of modern architectural practice because it is the ability to take ideas and concepts and translate them into buildable plans. Drafting is an important part of modern industry because drawings are often the only way to explain or show our ideas. (Other responses may be evaluated individually.)



### Part Three: Matching

1. a
2. d
3. b
4. c
5. g
6. i
7. h
8. e
9. f

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## ► Part One: True/False

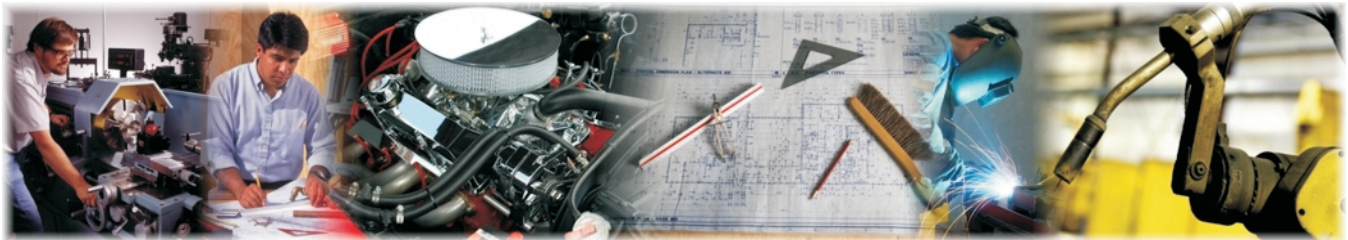
**Instructions:** Write *T* for true or *F* for false.

- \_\_\_ 1. An estimator calculates the costs of materials and labor for a building.
- \_\_\_ 2. Architects must pass a certification exam to obtain a license to practice.
- \_\_\_ 3. An architect's job involves a great deal of creativity and sensitivity to form and materials.
- \_\_\_ 4. CADD is an acronym for computer-aided drafting and design.
- \_\_\_ 5. Architects must be able to complete tasks by specific deadlines.
- \_\_\_ 6. Most architects are licensed professionals.
- \_\_\_ 7. To become a certified architectural drafting teacher, a minimum of four years of high school training is required.
- \_\_\_ 8. Drawings can be completed manually or with a CADD system.
- \_\_\_ 9. In most cases, postsecondary training is not required to become an architect.
- \_\_\_ 10. Most architects design residential machines as part of their work.

## ► Part Two: Short Answer

**Instructions:** Answer the following.

1. Name three occupations that require the ability to read and/or draw architectural graphic information.



2. List two sources of information about architectural careers.

3. Why is drafting such an important part of modern architectural practice?

► **Part Three: Matching**

**Instructions: Match the term with the correct definition.**

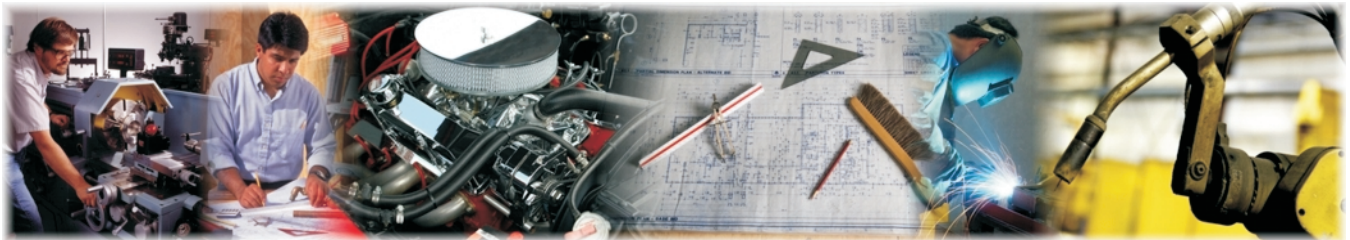
- |                          |                            |
|--------------------------|----------------------------|
| a. architect             | f. Frank Lloyd Wright      |
| b. architectural drafter | g. Ludwig Mies VanderRohe  |
| c. estimator             | h. Thomas Jefferson        |
| d. surveyor              | i. Joseph Baermann Strauss |
| e. Daniel Hudson Burnham |                            |

- \_\_\_ 1. A person who creates a design based upon a client's requirements
- \_\_\_ 2. A person who establishes areas and boundaries of real estate property
- \_\_\_ 3. A person who draws the details of working drawings
- \_\_\_ 4. A person who calculates the cost of materials and labor
- \_\_\_ 5. Farnsworth House
- \_\_\_ 6. Golden Gate Bridge
- \_\_\_ 7. Monticello
- \_\_\_ 8. Chicago Lakefront Plan
- \_\_\_ 9. Fallingwater Residence

# HISTORY OF ARCHITECTURE AND DESIGN

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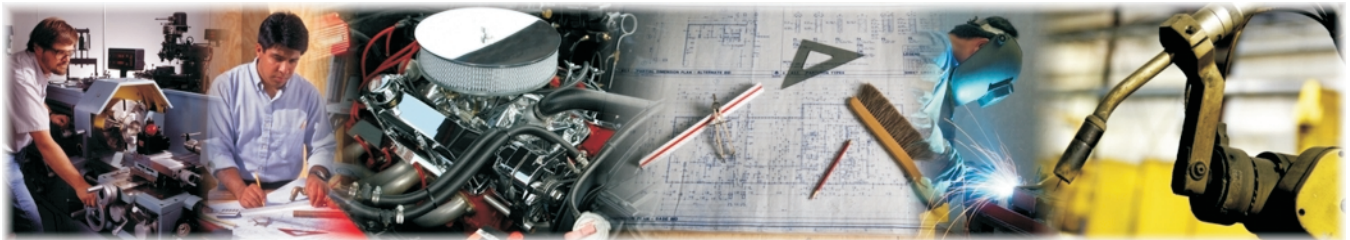
- ◆ Primitive Man
- ◆ Chinese Architecture
- ◆ Egyptian Architecture
- ◆ Age of Empires Architecture
- ◆ Industrial Age Architecture
- ◆ Technological Age Architecture



# ARCHITECTURAL CAREERS

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- ◆ Architect
- ◆ Architectural drafter
- ◆ Architectural drafting teacher
- ◆ Estimator
- ◆ Landscape architect
- ◆ Marine architect
- ◆ Surveyor



# INFLUENTIAL AMERICAN ARCHITECTS

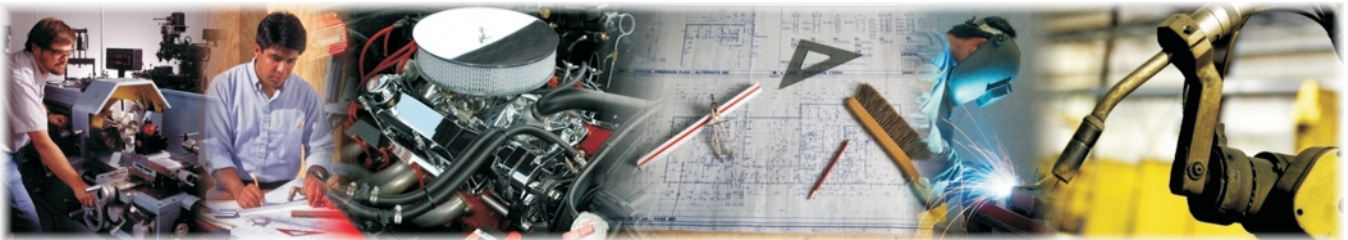
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## ◆ Thomas Jefferson, 1723 to 1826

- Education: College of William and Mary
- Influence: U.S. President, architect, founder of the University of Virginia
- Design credits: Monticello, the University of Virginia, and Virginia's State Capitol Building. Jefferson's buildings helped initiate the ensuing American fashion for Federal Architecture

## ◆ Daniel Hudson Burnham, 1846 to 1912

- Education: Apprenticeship under William Jenney
- Influence: Plan for Chicago, City of Chicago Lakefront Plan
- Design credits: Developed a plan for Chicago that was published in 1909 in hopes of giving the city international recognition on the same level as London or Paris; the Flatiron Building in New York City, NY; and Union Station in Washington D.C.





## ◆ Louis Henry Sullivan, 1856 to 1924

- Education: High school diploma and one year at Massachusetts Institute of Technology (MIT)
- Influence: Considered America's first truly modern architect and the "form follows function" philosophy of architecture
- Design credits: The Auditorium Building in Chicago, IL; the Guaranty Building in Buffalo, NY

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## ◆ Ludwig Mies VanderRohe, 1886 to 1969

- Education: Apprentice of Bruno Paul, famous interior designer
- Influence: The “less is more” philosophy, pioneering master of modern architecture and steel and glass skyscrapers
- Design credits: Illinois Institute of Technology Campus in Chicago, IL; and the Farnsworth House in Plano, IL

# Architectural Careers

## Purpose

The purpose of this activity is to review various careers related to architecture, job descriptions, educational requirements, and salaries.

## Objectives

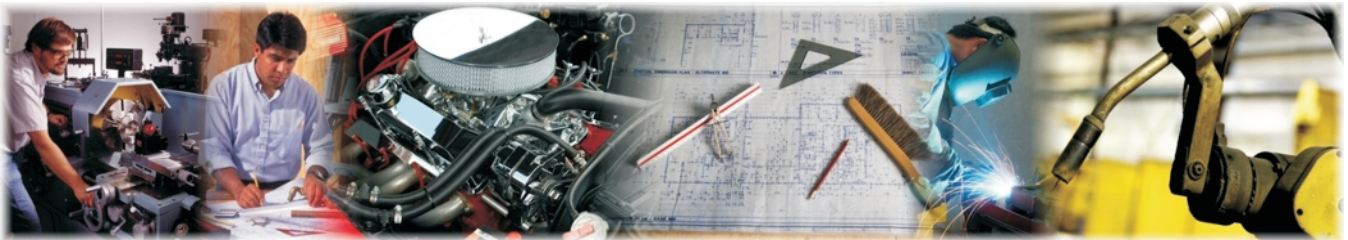
1. List the various architectural careers as presented by your instructor.
2. Make notations of job descriptions, educational requirements, and salaries.

## Materials

- ◆ lab sheet
- ◆ writing utensil

## Procedure

Use the space on the back of this worksheet to further communicate the careers associated with the field of architecture.



# Influential American Architects

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## Purpose

The purpose of this activity is to review influential American architects, their biographies, significance to architectural history, and their design credits.

## Objectives

1. List the various architects as presented by your instructor.
2. Make notations of their biographies, significance to architectural history, and their design credits.

## Materials

- ◆ lab sheet
- ◆ writing utensil

## Procedure

Use the space on the back of this worksheet to further communicate the information about these architects and their influence on the field of architecture.