

Lesson Title: Habitat for Humanity House Presentation

Career Cluster: Architecture and Construction

Essential Knowledge and Skills: Teamwork, Critical Thinking and Communications

Career Concepts: Extended Learning Opportunities, Postsecondary Options

Summary: Students will begin the lesson by getting first-hand knowledge from a guest speaker on what it takes to build a structure from design to finish. They will then be given an opportunity to design a home for Habitat for Humanity and build a model of it taking it through the entire process that would be completed by an architectural firm. This will include drawing floor plans and presenting their design to the client (class). It will require them to use both visual and oral communication skills.

Course Objectives:

- 1.2 Students will be able to identify compositions of career clusters and the relationship to a career field.
- 2.1 Students will be able to make connections between personal strengths/interests and careers.
- 2.2 Students will be able to define, identify and demonstrate the Essential Knowledge and Skills.
- 5.3 Students will be able to talk to people to access career resources.
- 6.2 Identify postsecondary options in relationship to the career clusters.

Lesson Objectives:

Students will...

- Collect information about the Architecture and Construction Career Cluster from a guest speaker.
- Explore volunteering through Habitat for Humanity.
- Design a home to be built by Habitat for Humanity.
- Present their model to a client.

Time: Five class periods

Required Materials: Graph paper, 2" strips of cardboard, scissors, glue, poster board, cutting surface, "Reflection" activity sheet

Optional Resources: Website with housing project and floor plan examples at www.uen.org/Lessonplan/preview.cgi?LPid=9047 and Habitat for Humanity at www.habitat.org

Guest presenters: Supervisor from the architecture/construction industry or Habitat for Humanity House Director and/or Habitat for Humanity House recipient. This can be anyone who has knowledge of the entire industry. See "Guidelines for Career Guest Speakers" found in the supporting documents section.

Content and Teaching Strategies:

Anticipatory Set

A guest presenter from the architecture industry should present an introduction of the cluster to the class. Suggest that the presenter use these talking points:

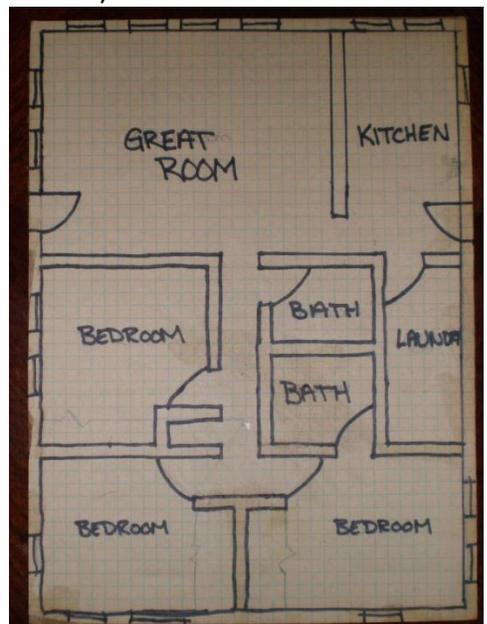


1. What careers fall into this cluster?
2. Who works these careers (stereotypes)?
3. What level of education is available to work in this cluster? (Be sure to include two year schools, four year schools, certificates, on the job training, etc.)
4. What are the steps in making a structure from design to building?
5. What are the careers involved in planning for and designing a structure?
6. What are the careers involved in building a structure?
7. What skills are needed to be in this career field?

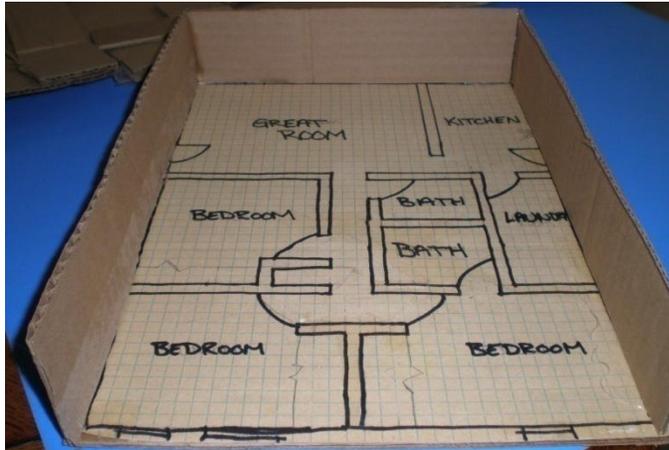
If a presenter is not available, the same information can be distributed by a teacher-led discussion.

Lesson Components

1. Students should discuss the importance of organizations like Habitat for Humanity and the advantages of volunteering for one. They should also discuss the educational benefits of volunteering. A fact sheet about Habitat can be found at www.habitat.org/how/factsheet.aspx
2. Explain the design prompt:
 - a. Students should create a single family dwelling that can be built by Habitat for Humanity. This means that while it should be nice, there should be few frills. The house should be approximately 1320 sq. ft. It will be your job to draw, model and present your design to the client. You will be working with a design team of two to three architects.
 - b. Discuss the following talking points:
 - Floor plans relate to visual communication.
 - There are basic rooms needed in a home and certain things are generally found in each room for which space will need to be left (a bathroom needs room for a bathtub, toilet, sink, walking, linen closet). Show students how to create a floor plan on graph paper. They will then create a design as a team for their design prompt. A sample of a floor plan is shown below as well as a list of suggested requirements.
 - c. Students should build a model of the home they designed using the steps below.
 1. A standard 8 ½" by 11" sheet of ¼" graph paper is 1320 sq. ft. if you use a scale of ¼":1'.
 2. Walls should be 1 square thick.
 3. Hallways should be 3 squares wide.
 4. Doors should be 3 squares wide.
 5. Windows should be 3 squares wide.
 6. Each house must have two exterior doors.
 7. Each bedroom must have a closet.



2. Have student mark the length of three out of four of their exterior walls, cut and glue them in place one at a time.



3. Students should then begin to cut and place their interior walls.



4. Cut and place the final exterior wall.
5. Create two pieces of 2" cardboard that are the exact length of the short side of the house.
6. Mark the middle on one edge of each piece.
7. Draw a line from that mark to each corner and cut along that line. This creates your roof trusses.

8. Laminate this piece on top of the exterior wall.



- 9.



10. Cut a piece of poster board 12" long and wide enough to cover the roof trusses you created. (for an exact scaled width measure one hypotenuse of the truss, multiply by 2 and add one inch)
11. Fold the poster board in half and lay it on top of the model. Do not glue it in place so that the interior can be seen by lifting the poster board.



If time allows, you may consider having students cut their doors and windows into the model as shown in the interior pictures above.

To cut a window:

1. Measure up $\frac{1}{2}$ " and draw a horizontal line. This line is the bottom of your window.
2. Measure up $\frac{3}{4}$ " from the bottom of the window and draw a horizontal line. This line is the top of the window.
3. Draw a vertical line at each edge of the window as marked on the floor plan.
4. Cut out the rectangle that was drawn.

To cut a door:

1. Measure down $\frac{1}{4}$ " and draw a line. This is the top of the door frame.
 2. Draw vertical lines at each edge of the door as marked on the floor plan.
 3. Cut all of the way through the top and one side of the door.
 4. Cut $\frac{1}{2}$ way through the other side of the door. This should create a door that swings.
- d. Students will prepare a presentation of their design to the client (class) that is two to three minutes in length and highlights the features of their house as well as the careers that would be involved in making the house.
 - e. Students will present to the class and fill out the "Reflection" activity sheet.

Optional Activity

1. Using graph paper students draw their floor plans rather than to build their home.
2. Working in small groups students will build a selected Habitat for Humanity Home using all required EKS.

Lesson Closure

Students should complete a reflection form about their project and presentation. This can be completed in their student notebook.



Essential Knowledge and Skills Connection

The components of this lesson emphasize **teamwork, problem solving, critical thinking, and communication**. Choose one of the following activities to help students connect the lesson with their own development of EKS:

- Write a journal entry, reflecting on one of the EKS used in this lesson. Students could choose a strength or weakness they wish to improve or enhance.
- Students complete a graphic organizer (see Supporting Documents—Teacher Resources) to emphasize EKS used in this lesson connected to home, school, and work.
- Have students use the model to identify EKS used during the activity.

Formative Assessment:

Students should be assessed based upon their reflection form.

Reflection

Name: _____

The thing I like most about my project is...

The career(s) that was/were involved in this part of the project was/were...

The thing I like least about my project is...

The career(s) that was/were involved in this part of the project was/were...

I rate my presentation _____ because...

One thing I learned about this career pathway is...

What would be the benefit of completing a task like this for a volunteer organization rather than a paid company?

What would be a disadvantage of completing a task like this for a volunteer organization rather than a paid company?

What would happen if there were no volunteers?

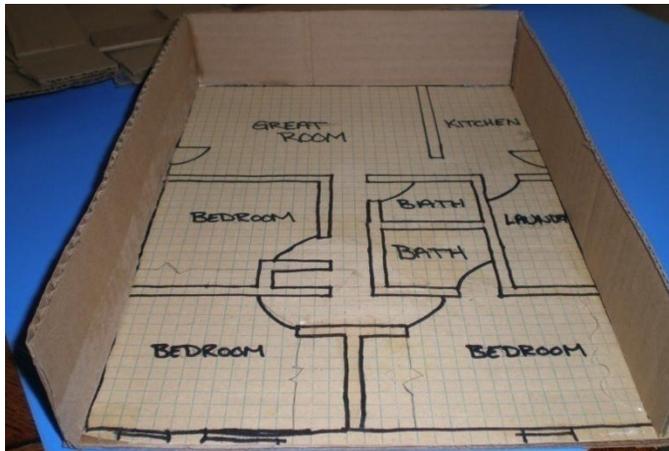
From this activity I have learned teamwork, critical thinking and communication are important because...

Student Handout

Name: _____

Habitat for Humanity House Directions for Students

1. Access a fact sheet about Habitat, which can be found at www.habitat.org/how/factsheet.aspx
2. You will create:
 - f. A single family dwelling that can be built by Habitat for Humanity. This means that while it should be nice, there should be few frills. The house should be approximately 1320 sq. ft. It will be your job to draw, model and present your design to the client. You will be working with a design team of two to three architects.
 1. A standard 8 ½" by 11" sheet of ¼" graph paper is 1320 sq. ft. if you use a scale of ¼":1'.
 2. Walls should be 1 square thick.
 3. Hallways should be 3 squares wide.
 4. Doors should be 3 squares wide.
 5. Windows should be 3 squares wide.
 6. Each house must have two exterior doors.
 7. Each bedroom must have a closet.
 - g. You will build a model of the home you designed using the steps below.
 1. Glue the floor plan to a piece of cardboard as was done in the picture below.
 2. Mark the length of three out of four of their exterior walls, cut and glue them in place one at a time.



3. You will begin to cut and place your interior walls.



4. Cut and place the final exterior wall.
5. Create two pieces of 2" cardboard that are the exact length of the short side of the house.
6. Mark the middle on one edge of each piece.
7. Draw a line from that mark to each corner and cut along that line. This creates your roof trusses.



8. Laminate this piece on top of the exterior wall.



9. Cut a piece of poster board 12" long and wide enough to cover the roof trusses you created. (for an exact scaled width measure one hypotenuse of the truss, multiply by 2 and add one inch)
10. Fold the poster board in half and lay it on top of the model. Do not glue it in place so that the interior can be seen by lifting the poster board.



If time allows, you may consider having students cut their doors and windows into the model as shown in the interior pictures above.

To cut a window:

1. Measure up $\frac{1}{2}$ " from the bottom and draw a horizontal line. This line is the bottom of your window.
2. Measure up $\frac{3}{4}$ " from the bottom of the window and draw a horizontal line. This line is the top of the window.
3. Draw a vertical line at each edge of the window as marked on the floor plan.
4. Cut out the rectangle that was drawn.

To cut a door:

1. Measure down $\frac{1}{4}$ " from the top of the wall and draw a line. This is the top of the door frame.
2. Draw vertical lines at each edge of the door as marked on the floor plan.
3. Cut all of the way through the top and one side of the door.
4. Cut $\frac{1}{2}$ way through the other side of the door. This should create a door that swings.