

**Age Level:**

Third grade and up

Subjects:

Visual Arts
Language Arts
Social Studies
Math
Science

Time:

Set limits on the time, to about an hour for the construction—the students will not want to quit.

Materials:

- Assemble a variety of scrap materials, such as drinking cups, straws, paper, plastic, cardboard, fabric, etc.
- Have each student bring a box no larger than a shoe box and only one per student
- Copy of the Design Development Sheet for each student
- Three-inch by five-inch cards
- One Client Slip for each student
- Scissors, tape, glue and string

Learning Objectives:

- To increase creativity through manipulation of Presenting the Activity: objects, recording and drawing
- To gain an understanding of relative scales and two and three-dimensional relationships
- To understand a process for implementing a project
- To learn to work with design criteria

Design Professional:

Students love this type of activity and will quickly forget the criteria in the fun of making a little building. It will be important for you to keep the focus on the learning objectives - what they are doing and how it relates to their Client Slip.

Teacher:

Because student enthusiasm will be very high in implementing this activity, it is easy for the students to lose track of the reasons for doing this.

As you walk around the room, make comments about things the students are doing that demonstrate ways they are using their Client Slips to provide the elements in their design criteria.

Rationale:

This is an activity in creative problem solving through architectural design and construction techniques that can stimulate interest in developing a variety of three-dimensional forms.

The activity also demonstrates the process for developing criteria and using it as a guide for creating a solution.

The students will be able to be more creative if they have previously done the activity, “How it Feels to be a Structure” and “What Makes Structures Stand Up?”

Presenting the Activity:

Students are apt to become quite carried away with their structures, so it is advisable to keep the design solutions fairly simple, and to limit both the size and construction time. The involvement should be commensurate with the learning taking place.

While this activity could be done in small groups, the students enjoy it more as an opportunity for individual expression.

Suggested dialogue...

“You are to be the architect and builder of a structure for a special client. Your project is to develop the design and build a model of a structure for the very special client that will be described on the Client Slips you will receive.

As I go around the room with this container, you will each receive one slip. You are not to exchange slips. Each person will keep the one they have drawn. When architects accept clients that come to them, it is their job to listen to what the client needs and make sure the client gets what they are hoping for. Since you are the architect for this structure, you will need to address your client’s needs.”



Give them a few minutes to read their Client Slips. You might have the students share them. It doesn't matter if some have the same client. It will be interesting to see how their solutions differ.

Hand out a copy of the Design Development Sheet to each student. Go through it with them as they fill it out. Explain that the design criteria for this project will be the things the students will have to think about as they design the structure that will meet the needs of their client.

"From the design criteria you will develop by filling in the blanks on this sheet, you are going to design and build a structure that will meet the needs you have determined for your special client. Another part of your criteria is your structure must be built from the materials that are available, and that you must make the structure the right size for your client."

"Let's go down the sheet. First, write the name of your client. It will be important that you know what your client looks like before you build the client a structure."

Hand out three-inch by five-inch cards and ask the students to draw a picture of what they think the client would look like. If there is more than one client, draw a separate picture of each one on a separate card. If the client is small, it may not fill the card. If the client is large, the drawing should fill the whole card. Using three by five-inch cards keeps the scale small enough to keep the size of the structures down to a manageable size.

"When you have finished your picture, cut your client out and tape it on the top of the client sheet. This will remind you that you must design your structure to fit the size of the client—not too big or too little, but the right size for going through doors and looking out the windows. This picture gives you the scale of your structure."

"Now look at number three. You are to list the things that you think will meet the needs of your client. Think about things like recreation, food, entertainment, hobbies, etc. Be sure to fill in all the blanks—write on the margin if you think of more things than there are spaces."

"Under number four, list the things you will design to meet the needs you have listed for your client. Some examples are given on the sheet. Ask for help if you need it."

"The next step is to design and build your model structure. Be as creative and original as you can. You may want to make some sketches before you start. Architects usually do that."

"Keep your Design Development Sheet handy, so you can refer to it as you design the structure to meet the needs you have determined should be met for your client."

Keep reminding the students that they are developing a design to meet specific needs.

"The last steps on the sheet will be filled in after you have completed your structure."

"Now you are ready to decide what materials you will need from what is available and get started on your structure."

The students should be encouraged to do the structure as they interpret the steps in the design program. The fewer ideas given on how it is to be done, the better. This is a test of their ability to use the design criteria and materials creatively. However, because their enthusiasm for the building process usually reaches a high level, it will be necessary to remind them to refer to their Design Development Sheet as they work.

When you feel the building project has reached its limits of productivity, give a 10-minute warning, then call time.

Ask the students to look at items five and six on their sheets.

The drawing of a floor plan and the elevations of the front and a side emphasizes the three-dimensional relationships. Placing the drawing of the client in the drawing emphasizes comparative scales.

Have the students assemble their models, drawings and hand-out sheets in a nice display format.

**Closure:**

Have each student present their project to the class, explaining what they did and how it met the design criteria. Having this visual reference is an aid to students in verbalizing ideas.

Ask the students to critique the designs in relation to creativity of the solutions, meeting of design criteria and overall aesthetic quality of the visual presentation.

Plan a display in the media center or school display case.

Teacher Evaluation:

“This activity is extremely beneficial to the students. For one thing, it is one time during the year everyone seems so totally involved and committed to a project.

“Regardless of anyone’s reading ability or math expertise, students can feel successful in this activity. It involves so many educational steps that really make students think and draw out their individual creative abilities.

“It leads students into the higher levels of thinking, such as application, analysis, synthesis and evaluation, which sometimes get slighted. Students must brainstorm, or in some way share ideas that will benefit their client. They must then apply these ideas to the design of their structure, analyze the reasons for their decisions, synthesize or create the actual structure, and evaluate the end product.

“The fact that there is an actual concrete end product, is also a positive aspect of this project. The decision-making steps and cooperation required by the group is a terrific experience for the students. We feel this activity is, overall, one of the most effective we have ever used with students. It is “their” project, totally using “their” ideas and a concrete example of “their” success.”



Design and build a home for a near sighted dolphin who likes to exercise with his toys.

Design and build a home for a bashful dragon, who likes to cook and entertain.

Design and build a home for a very old elephant, who likes to relax and watch television.

Design and build a home for an intelligent crocodile, who reads a lot of books and invents things.

Design and build a home for an imaginary creature, who wants an imaginary house.

Design and build a home for a lazy grass-hopper, who needs help keeping house and hopping.

Design and build a home for a sick owl, who needs to be cared for and comfortable.

Design and build a home for three frisky cocker spaniels, who like to play with bones and balls.

Design and build a home for a butterfly, who takes very good care of her beautiful wings.

Design and build a home for an anteater, who likes to have friends in for ice cream cones.

Design and build a home for a strong gorilla, who likes to keep in shape by working-out.

Design and build a workshop space for a Leprechaun, who likes mushrooms to eat or to sit under.

Design and build a home for a Tyrannosaurus Rex who likes to dance, but has trouble finding room.

Design and build home for an astronaut, who likes to float around in his antigravity suit.



Design and build a home for a giraffe, who can not climb stairs but he likes natural light and views at multiple levels.	Design and build a home for a parrot that is very neat and likes all of his rooms in order.
Design and build a home for Miss Kitty who likes to be outside gardening more than she likes to be inside. Miss Kitty would also like to control her yard debris and food leftovers somehow.	Design and build a home for a busy fox that likes her new home to be in the middle of the city.
Design and build a home for a bear who is adapting an old school into his new home.	Design and build a home using environmentally friendly materials for a porcupine who likes to read.
Design and build a home for a dog that likes the wind and wants a roof to lure slugs.	Design and build a home that makes its own energy and faces south for a polar bear who likes to fish.
Design and build a home for a monster that likes to recycle and jump in leaf piles from her deciduous trees in autumn.	Design and build a home that uses no carpet or paint (that can sometimes offgas smelly fumes) for an allergic penguin.
Design and build a home for a beaver that collects rain water to take care of his flowers in the garden.	Design and build a workshop space for a chipmunk, a chicken and a woodpecker to be able to all work together.
Design and build a home for a mouse who likes to heat her home from the earth instead of using electricity.	Design and build a home that is green for a lion who likes sunlight and cool breezes.

“Green” Elements/Concepts:

ADA, Built Environment, Building Reuse/Adaptation, Composting, Daylighting, Deciduous, Design Charrette, Earth Sheltered Design, Eco-Roof, Environmentally Preferable, Geothermal Power, Green Building, Indoor Air Quality, Integrated Design, Offgas, Organic, Natural Ventilation, Net Zero Energy, Rainwater Harvesting, Renewable Energy, Solar Power, Recycling, Universal Design, VOC’s, Wind Power, Xeriscape.

DESIGN DEVELOPMENT SHEET**4.97***A Special Structure for a Special Client*

NAME	DATE
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You are to be the architect and the builder of a special structure for a special client. Architects and builders design and build their buildings to fit the needs of the client who will live in the building. You will need to fill in the blanks below, and then use the information as you design and build the model of your structure.

1. Your client's name

2. Draw a picture of your client (or clients) on your three by five-inch card. If you drew your client life-size, it would be hard to build a structure that would fit and still get it in this room, so this drawing will become the scale for the building.

3. List the activities you think your client would like to do or need to do in their daily life. They probably all like to eat. Some may like to play musical instruments, watch TV, have hobbies, etc. Think about ideas. Try to be specific about them, as you list them. Don't just put down, "sleep." Think about where and how they would sleep. Architects call these things design criteria.

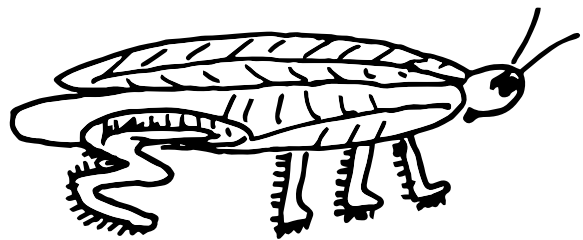
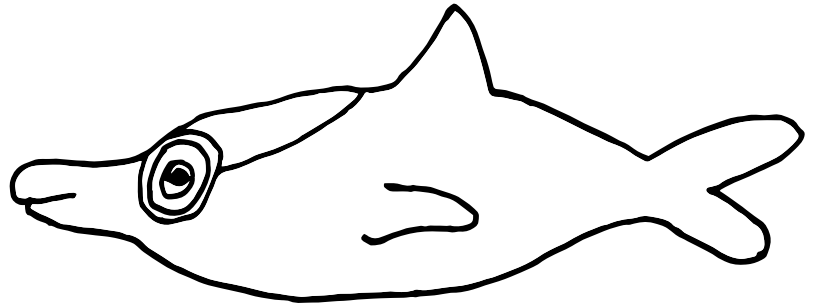
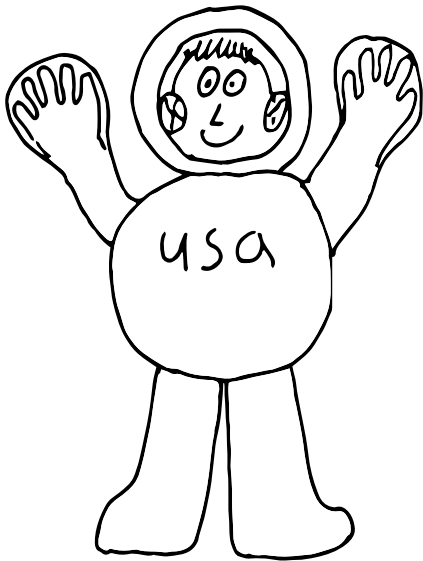
A.	E.
B.	F.
C.	G.
D.	H.

4. Now list the spaces you will have to design to be built to fulfill the needs you have determined for your client. For example, if there is a need to eat, you will have to provide places for cooking, storing food and dishes and for eating. If there is a need for exercise or comfortable relaxation, you will need to provide for that.

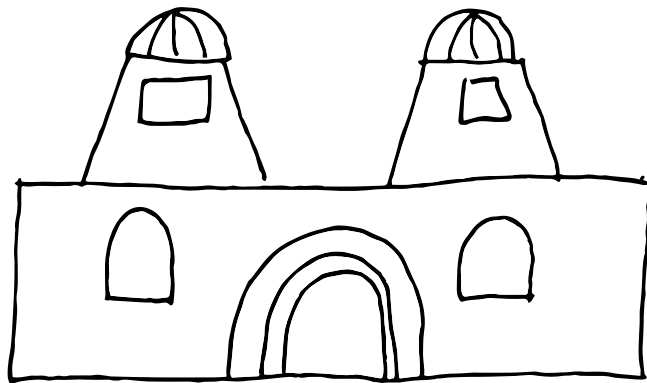
A.	E.
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C.	G.
D.	H.

5. Draw a picture of your structure from the front, one side and looking into it straight down from the top. You will then have a front elevation, a side elevation and a floor plan. Put the cut-out of your client against the front of the structure and include the client in the drawing.

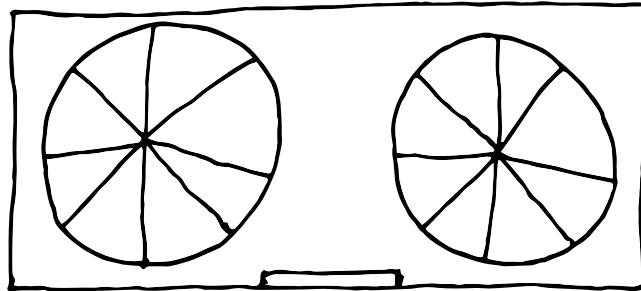
6. On the back of this sheet, write a paragraph about why you think your client likes the structure you have designed.



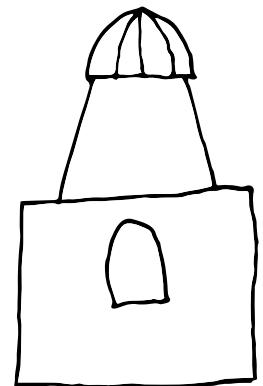
*A dragon's
Castle*



Front View



Plan View



Side View