

Seating by Design

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Leaf Chair - La chaise feuille
Anthony G
Grade 4

The desire to enhance life is a basic human drive. By studying design education, students are taught about enhancing life through the structure of the design process. They analyze the considerations that a designer or team of designers make(s) in creating a functional, aesthetic object through understanding the cultural and technological influences that are an integral part of the progression.

Design is a study about societal issues, ergonomics, aesthetics, functionality, materials and technologies. Designed items are made within a particular social structure and reflect that structure, usually through a defining style that represents an historical era. In the most innovative designs, there is a unique solution that creatively satisfies a problem, as in a new invention. The product is the output of a defined process, which starts with a clearly defined purpose, passing through steps to the final evaluation.

A fun approach to teaching about design is by teaching a lesson on chairs. People have used objects to sit on for thousands of years. The first seats were tree trunks or large rocks. When someone deliberately crafted a seat for more comfort, they were designing. The handcrafted chair

emerged for a functional purpose, to provide a resting place. Eventually decorative elements were added to suggest meaning.

There are four headings under which to think about chairs:

- *Function* or how the chair will be used.
- *Social status*, how decorative elements and materials suggest a hierarchy of purpose.
- *Technical*, the equipment and materials that exist at a particular time and place influence how chairs will be designed.
- *Personal or Subjective* or how the form of a chair suggests meaning. The choice a person makes when purchasing a chair is a personal and subjective statement that suggests his or her identity, values and understanding of meaning.

Eventually, the chair adopted a social significance beyond comfort. It became a symbol of hierarchy and power in public life. There is a substantial difference in the status of a stool and a throne. Comfort and convenience may be usurped for social status. The more hierarchical the society the greater the emphasis on the roles within the society and the outward demonstration of those roles. As in government offices, the higher the position of office the seating is grander and more decorative. A “page” sits on a bench and the “speaker of the house” has a throne. There are many materials used to create chairs: wood, plastic, tubular steel, inflatable plastic, fiberglass, fabric, cast iron, papier-mache, and hard plastic. At times, the commercial aspect of selling chairs that are sturdy and functional sometimes usurps the creative aspect but at other times, the creative side or style is the focus.

The following lesson on chair design was taught to children in Vallauris, France, in grade 4 and 5 from École Pablo Picasso working at l'École Municipale de Beaux Arts. The same lesson will be taught to children in Canada, England and Australia with a data comparison on the choices that the students made and how their environment may have affected their choices. This lesson in modified form may be used for grades 3 and older.

Objectives: Students will:

- 1) Research information about chairs on the Internet/catalogues/magazines and share the most interesting/important things they find with the group.
- 2) View images of chairs and discuss the similarities and differences between designs and classify them according to the heading that they fit into. (Function, Social Status, Technical or Personal/Subjective Choice)
- 3) Understand how social values are displayed through the choice of materials, decorative elements, design, and details incorporated by the designer of a variety of chairs.
- 4) Each student completes sketches of chairs.
- 5) Work through the design process to create the best solution to their chair assignment, culminating in a small model chair. . Some classes may want to use clay others cardboard (foam core) or any other found objects.
- 6) Create a full-sized chair together (optional)
- 7) Present the chair “solution” to an audience, explaining why this was this best satisfies the assignment (optional)

Materials

Clay with a bit of a grog (*grog is little bits of sand like particles in the clay which gives it more body and durability when the children work with it*)

Various Clay tools

Kiln to fire projects

Various colours of glazes

Procedure

1. Show images of various chairs created by designers. You can access the PowerPoint presentation and the accompanying teacher guide on the webpage that was constructed for the project:



<http://www.scs.sk.ca/Van/chairs/chair%20design%20research.html>.

2. Have your students discuss the purpose for each chair and determine what features suggest their ideas. Research chair designs on the Internet/catalogues/magazines, it is advantageous to have the children compile the images onto one PowerPoint, with the designer's name.
3. Students select a design card/concept for their chair.
4. Follow the steps in the Design Process sheet (see explanation and diagram)

For this lesson Monique chose to make the chairs from clay, however they could be constructed from almost any materials.

Basic clay techniques were used to create the chairs but it is recommended using clay with some grog in it so as to support the structure of the chair and use spooze (recipe below) to make the legs and arms attach effectively. Spooze is like a clay glue, the students still must score the clay pieces that will be put together but they will attach together much more effectively. Spooze can also be used to repair any parts that may fall off of a clay piece prior to firing.

Spooze

Equal parts

Clay

Vinegar

White corn syrup (White sugar can be substituted is you dissolve it first in water)

Let stand until it is a thick smooth mixture.



**Un fauteuil en nuages- Cloud
Armchair
Benedicte P
Grade 4**

(Tip on making smooth worm like shapes for legs of chairs or arms of chairs; use a ruler or a smooth piece of wood about the width of a ruler so that the pressure is even when rolling. Using a ruler stops the inconsistent finger pressure from happening and therefore breakage or unevenness of the roll.)

Final Project: Small model chairs

Students will select a card that has a design problem for a specific chair described. Using the design process (see appendix), they will create drawings and a final prototype model that is the best solution to the design problem. The students are pretending to create the chair for a potential client and must propose a design plan for presentation. A modified version of this can be done with younger children.

Here are some possible design cards with concepts for different chairs. The students could brainstorm more ideas. Each child can select one and create a detailed design for that chair using the design process sheet.

Design a chair that may be carried in a backpack
Design a chair with a built-in light
Design a chair for the beach that protects you from the sun
Design a chair for the art classroom
Design a chair for you and a yellow Labrador dog to share
Design a “smart” chair that may be programmed to do many things
Design a chair for a 7- foot basketball player
Design a chair that uses 4 shapes
Design a chair that floats
Design a chair that glides
Design a chair that goes in a garden
Design a chair that transports a person up a flight of stairs
Design a chair for an important person
Design a chair for a playground
Design an artistic chair
Design a chair that has 3 legs and works well
Design a chair for bird-watching
Design a chair for watching a golf tournament

Design a chair for going to a concert
Design a chair for working at a computer 8 hours per day
Design a chair that has a storage compartment
Design a chair that slides under the bed when not in use
Design a chair that uses 4 materials
Design a chair for a small child
Design a chair with a table attached
Design a throne
Design a chair for carrying someone
Design a chair with a dragon theme
Design a chair that is more comfortable than any other chair
Design a chair that has an underwater theme
Design a swan chair
Design a chair that is about you
Design a chair for Picasso
Design a chair for a rock star
Design a chair for a swimmer, hockey players etc.

Optional:

Option #1: Students may create a life-sized chair made of durable materials. It may be best to do this in an after-school program with parent helpers who could assist in cutting and constructing. Pre-cut wood, etc pieces help the process. Cushions may be made on sewing machines with fiberfill stuffing.

Option #2: Students may create paper plans for the chair and not construct a 3-dimensional product.

Assessment:

Assess that the objectives were met.
Assess the thoroughness of the design.
Using the “criteria for success”, established in stage four of the design process, check that the final product successfully fits the criteria.

If you would like to include your student work in the project that we are conducting you can send images to monique@moniqueart.com and rvandeza@kent.edu. We would love to see what your students create and post the images on the webpage <http://www.scs.sk.ca/Van/chairs/chair%20design%20research.html>
No student names will appear on the site, only their grade level.
We also would appreciate it if you would answer some questions for a data comparison on the choices that the students made and how their environment may have affected their choices.



**La chaise relax – The Relax
Chair
Antonin C
Grade 4**

The Design Process

The design process of problem solving, which provides a cognitive framework of analysis, synthesis, and evaluation is used by many professional designers to create a solutions to design problems. Students may be taught this process as an effective life skill, which starts with defining the problem and moving through steps to creating a logical solution.

At the heart of designing is the design process, which follows a planned sequence of analytical, synthetic, and evaluative steps until the optimum solution is finalized. It may involve contemplating, speaking, writing, drawing, modeling, and constructing. The process follows stages that may be used sequentially or that may require the student to loop back and modify an earlier stage. Prototypical models are often constructed, evaluated, and modified for solution development.

The Design Process

Stage One: DEFINE THE PROBLEM

First part: The teacher gives an assignment, which is presented as a problem to solve. The students answer the questions of *what, who, where, when, and how* to gain clarity in defining the problem. This could be done as a group or individually. At the elementary level, it may be easiest for the teacher to guide the questions and complete stage one as a group. At the middle or high school levels, it is up to the discretion of the teacher whether each team or individual is capable of completing this stage with little teacher guidance.

Stage Two: INVESTIGATE and RESEARCH TO COLLECT DATA:

Through interviews, articles, books, the Internet, observations, role-playing, and/or discussions, students research information that deals with the problem.

The research stage may be something the students would like to circumvent so motivational strategies such as the following are important: 1) Divide the students in groups of 3 or 4, which allows each person to concentrate on one part to research and not be overloaded with work plus gives each some responsibility; 2) Explain the importance of research with an example, illustrating the usefulness of obtaining and applying the information; 3) provide the instructional resources in easy access; 4) engage the students by asking questions to get them to be more interested in finding pertinent background information to answer the questions that may lead to a solution.

Stage three: GENERATE IDEAS

Once the research is completed, the students allow their ideas to flow freely before attempting to move to the final solution. Free association of ideas opens the possibilities for innovative and creative solutions to surface. Creative thinking should be used to get beyond the first ideas that come to mind.

To develop creative thinking, avoid the following practices: 1) Do not seek the right answer- in brainstorming, there is a danger in looking for THE right answer. There are many possible satisfactory solutions. 2) Do not apply logical thinking too early in the process- this closes off the chance of break-through ideas that may be pursued. 3) Do not try to be practical- this causes judgments of what works and what would not. Some of the least practical ideas may be the seed of thought for the final solution. 4) Do not worry about making a mistake- this prevents positive risk-taking. Creativity requires a leap into the unknown. 5) Believe that you are not creative- some students have decided that they are incapable of inventive thinking. Through the use of these strategies and additional encouragement the likelihood for student success will increase (Wycoff, 1991).

There are different ways to approach creative thinking. Three of these techniques are brainstorming, mindmapping, and rough sketching. Brainstorming is a procedure for generating solution possibilities through openly listing anything that comes to mind as it relates to the topic. When done in a group, the facilitator clearly states the topic and the

participants give suggestions. The facilitator includes any idea WITHOUT editing. Once a comprehensive list is completed and the participants think they have used all ideas, the facilitator asks for 3-5 more ideas to stretch their thinking.

Mindmapping is a form of visual outlining. The facilitator draws a rectangle or oval in the center of a paper. Inside this shape, write one or two words, which define the focus of the problem. The facilitator notes ideas as they are given, drawing lines out from the center focus and recording the idea. This is done quickly and everything that comes to mind gets recorded. If it is easier, draw pictures, symbols, or use color to represent ideas (Wycoff, 1991).

Rough Sketching is done with a sketchbook/journal to record ideas. For this form of creative thinking, multiple sketches are quickly made for possible solutions. Once many ideas are generated, the best 2 or 3 solutions for development are recorded. Rapid prototyping is a 3-dimensional version of this done by quickly constructing simple dimensional ideas with paper and tape.

Stage four: SELECT THE CRITERIA FOR SUCCESS

This stage reflects the objectives of the lesson and defines the components of the design problem. The student or team selects the best solution to develop based on these criteria: creativity, aesthetics, community values, safety, location, or cost.

Stage five: DETERMINE THE WORK PLAN

The students describe how the model prototype will be made, what materials are needed, and approximately how long it will take to complete.

Stage six: MAKE THE MODEL PROTOTYPE

A carefully crafted model is made.

Stage seven: TEST THE SOLUTION

In the final stage, the students may present the design solutions to other students, parents, faculty, administrators, or a group connected to the topic. The audience is the “focus group” who will give feedback on the effectiveness of the solution. The various approaches for presentations may involve a planned lecture, a digital program (such as PowerPoint), graphics, presentation boards, video and audio documents, among others.

In developing a presentation, here are some points to follow:

- 1) Clearly state the design problem, give a brief background of the research, quickly explain the considered solutions, and show the final model stating why it was the best solution.
- 2) Keep the presentation short and simple.
- 3) Be accurate and relevant to your audience.

In planning the *verbal* portion of the presentation, think of it as theater in three acts with an introduction, the body, and conclusion (Gottesman & Mauro (2001). The three acts include:

Act 1: The presenter starts the presentation with the introduction during which he/she clearly states the specific issue to be addressed, explains the points to be covered, and convinces the audience that they should care.

Act 2: The body of the speech incorporates what the audience needs to hear, in a way they understand.

Act 3: The conclusion should be persuasively stated, noting what the audience is supposed to understand and remember.

In preparing a *presentation board*, the students should include drawings, sample swatches of textures and colors, photographs, graphs, diagrams, pictograms, and any other pertinent visual materials. The textual information would include the most essential words and not any more. The text should be easily visible by the audience and organized in a logical fashion.

Stage eight: EVALUATION

The students need to answer whether the focus group understood the prototype. If the answer is no, then they determine what changes are needed and what is required to make those changes.

The Design Process

