Design Engineering
Architectural Design Problem-Floor Plan

Overview

I use this activity with my students after we've gone through learning about scales, drafting techniques and using drafting equipment. Overall I have been very impressed with the students final product. In this activity you will be an Architect and an Architectural Draftsman. As an Architect you must brainstorm, develop, and design plans for a house. You must include various rooms, and sizes of rooms to meet the state codes.

Standards

The enduring results specify what students should know and be able to do upon completion of the unit, as specified by The National *Technological Literacy Standards*.

Technological Literacy Standards and Benchmarks

A.12.3, A.12.6, A.12.7, B.12.2, B.12.3, B.12.8, C.12.2, C.12.4, C.12.6, C.12.9, C.12.11, D.12.4

Objectives

1. Students research floor plans of various styles and sizes.
2. Students brainstorm and design "rough" floor plan according to specified requirements.
3. Students use drafting tools to draft a 1500'-2000' floor plan according to specifications.
4. Optional-students use final floor plan to reproduce drawing on ACADD or another program.

Teacher Preparation

1. Background knowledge of building plans.
2. Get copies of real floor plans to show students.
3. Research the following websites.

www.coolhouseplans.com , www.homeplans.com,

Content Outline

Step 1. Research house plans and what you would like your house to be.
Step 2. Layout and turn in a Rough House Plan (not to scale, just shows where rooms will be) on 11x17 sheet of paper.
Step 3. Design, draw, and decorate a house on vellum paper that follows the various codes, sizes, and looks good. (Instructors Approval) Include your own personal tastes, ideas, and style.

Architectural Design Problem: Floor Plan

Time: 5-90 minute class periods

Assessment

See attached student rubric

Resources

See Problem Sheet

About the Author

My name is Ben Morey. I teach Technology & Engineering in the New Lisbon School District. This is my 4th year teaching. I graduated from UW-Stout in Dec. 2002 with a Bachelors Degree. I will graduate from UW-La Crosse with a Master's in Education-Professional Development in May of 2007.

Any Questions or Comments Please Contact:

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Design Engineering

Architectural Design Problem

In this activity you will be an Architect and an Architectural Draftsman. As an Architect you must brainstorm, develop, and design plans for a house. You must include various rooms, and sizes of rooms to meet the state codes. As an Architectural Draftsman you must draw the plan using the appropriate sizes, scales, and symbols. Your final drawing will be done on 11"x17" vellum paper with a scale of 1/4"=1'.

Problem:

Step 1. Research house plans and what you would like your house to be.
Step 2. Layout and turn in a Rough House Plan (not to scale, just shows where rooms will be) on 11x17 sheet of paper.
Step 3. Design, draw, and decorate a house on vellum paper that follows the various codes, sizes, and looks good. (Instructors Approval) Include your own personal tastes, ideas, and style.

Equipment/Supplies:

11"x17" paper
Drafting Board
T-Square
Masking Tape
Architectural Scales
Housing Templates
Pencil
Computer Lab- www.coolhouseplans.com , www.homeplans.com,

Specifications:

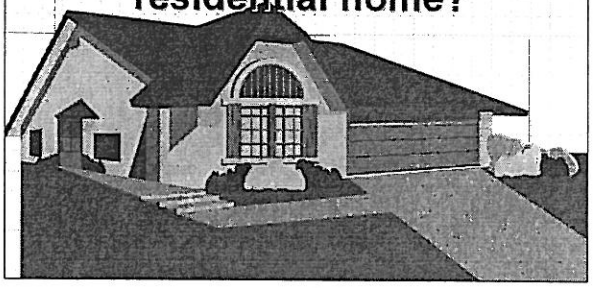
Must draw a first floor house plan that meets all the specifications/sizes
First floor plan must be between 1500-2000 sq. ft. of living space.
Exterior (outside) walls must be 6"
Interior (inside) walls must be 4"
Inside & outside doors will be 3' wide
Must have 10 exterior windows, (any size)

Mandatory Rooms Needed in Drawing	Minimum Square Feet of Room
-Living Room (5 fixtures)	250
-Dining Room (2 fixtures)	100
-Kitchen (4 fixtures)	90
-Bathroom (3 fixtures)	40
-Master Bedroom (3 fixtures)	150
-Additional Bedroom (3 fixtures)	120
-Laundry Room (3 fixtures)	40
-Office (2 fixtures)	40

*Student must dimension outside & interior walls/rooms and write dimensions on drawing
*Dimension outside of exterior wall to middle of interior wall, middle of interior wall to middle of interior wall
*Must include the total sq. ft. of entire house on plan (in title block)
*Students can add additional rooms or parts to their home if they choose to
*No garages or decks included in the living area
*Student's name must be written in 1/2" block letters at bottom of drawing
*Students must turn in 11"x 17" Rough Draft of House
*Students must turn in 1/4"=1' drawing of a first floor house plan that is between 1500-2000 sq. ft. of living space on 11"x17" vellum paper.
*Student will be given points for turning in rough draft of house, student's floor plan will be graded based off of a rubric

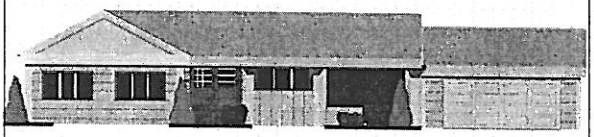
Determining Needs

What is required in a residential home?



Types of Spaces

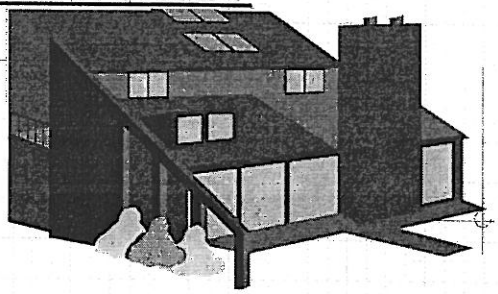
- Living
- Utility
- Sleeping



Considerations

- Number of occupants
- Age of occupants
- Hobbies
- Budget
- Effect (form vs. function)
- Zoning
- Lifestyle of occupants

What Do You Need in a home?



Architectural Design Problem

Design Engineering

Teacher Name: **Mr. Morey**

Student Name: _____

CATEGORY	10	7	4	0
1500-2000 Square Feet	House Between 1500-2000 Square Feet of living space			Living Space is not between the mandatory Square Feet of living space
Interior/Exterior Walls Dimensioning	**10** Walls are drawn to the correct size, House is completely dimensioned	**7** Walls are drawn to the correct size, Most of the house is dimensioned	**4** Walls are not drawn to the correct size, Parts of house are not dimensioned.	**0** Walls not right size, house not dimensioned
Mandatory Rooms & Sizes	**20** 8 or more rooms drawn to the correct size according to specifications	**13** 5-7 rooms drawn to the correct size according to specifications	**7** 3-4 rooms drawn to the correct size according to specifications	**1** 1-2 rooms drawn to the correct size according to specifications
Doors/Windows Fixtures/Details	**20** All required fixtures included in mandatory rooms, Lots of extra details and fixtures included,	**13** Most of the fixtures included, could have used more detail in the floor plan,	**7** Many fixtures missing, not much detail included on the floor plan	**1** Floor plan looks quite bare, no extra details or fixtures included in plan
Aesthetics/ Looks Good Lots of thought and detail	**20** Floor Plan looks professional. Lots of hard work put into plan	**13** Floor plan looks pretty good, could have done a little more to improve it	**7** Floor plan looks average, just did the minimum, didn't include much detail	**1** Floor plan doesn't look good, I wouldn't live in it
Work Ethic/On Task/ Self Reliance	**20** Student works hard and stays on task as well as answers their own questions.	**13** Student worked hard but didn't always stay on task, needed some extra help	**7** Student needed to work harder and stay on task.	**1** Student did not do what was asked of them.

Score:_____/100

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Please answer these questions honestly and completely. Your comments will help in the planning of other independent projects.

1. What did you like about this project?

2. What didn't you like about this project?

3. Any suggestions to make this assignment better?

4. Was this assignment challenging?

5. Did you have to use what you've learned in class to help complete this project? What?

6. What would you do differently if you could do this project again?

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