

ADPSR



educational programs

INTRODUCTION

How are neighborhoods formed? How do cities take shape? The answer is in all different ways. Some start at a crossroad, or at a bend in the river or around a natural harbor. Some evolve out of old cow paths or around a fortress. And some are planned from scratch. Some of the fastest growing cities throughout the world are the result of large-scale squatter settlements ("shanty-towns"). In all cases, the leading factor is economic exchange.

In the developing world, **Megacities** (10 million+ inhabitants) can grow at a rate of half a million people per year. Where are the people coming from? And where will they live? Informal or squatter settlements are the product of courageous neighborhood-scale struggle between citizens and their own government, and are found throughout the developing world. They start as haphazard accumulations on barren land settled by people from the rural areas. Over time they may obtain infrastructure services such as water, electricity, telephony. As the community develops sidewalks, schools and houses of worship are built. Ideally they eventually become an integrated community like any other in the city; the residents own their land and the government collects taxes. The speed and extent of this process depends on the amount of cooperation between the residents and their government. To win over the land and services from landowners and the government is a complicated process that requires tenacity, endurance, patience, self-esteem and professional expertise in architecture planning, law, social work and political pressure.

Regardless of how big and sprawling cities are, people need decent and affordable housing near their jobs, schools and friends and families. Compare your house and your neighborhood to the houses and neighborhoods that you build in this program. How are they different? How are they similar? How did your neighborhood and city take shape? And how will its future be determined?



EDUCATORS AND DESIGNERS PARTICIPATE IN ADPSR'S SQUATTER COMMUNITIES EDUCATIONAL PROGRAM AT COOPER HEWITT SUMMER DESIGN INSTITUTE IN 2002

Squatter settlements occupy vacant land. They can grow to as many as 500,000 inhabitants.

ARCHITECTS / DESIGNERS / PLANNERS FOR SOCIAL RESPONSIBILITY

Architects/Designers/Planners for Social Responsibility is a 501c3 non-profit organization founded in 1982. ADPSR is committed to educating design professionals and the public about critical social and environmental issues. Established with a disarmament focus, during the last nine years ADPSR has expanded its concerns to include the protection of the natural and built environment and the promotion of ecologically and socially responsible development. ADPSR has three national chapters and is affiliated with ARC*PEACE which has United Nations accreditation. ADPSR members are actively involved in a wide variety of issues and areas including sustainable design, community planning, engineering and international policy through the United Nations.

ADPSR presents a socially responsibility program of interdisciplinary education that integrates design with education. The information is based upon the work of ADPSR member Luz-Maria Sanchez's firm ESTRAGEIA based in Lima Peru. ESTRAGEIA is a firm of professional from many fields who are concerned with the exponential growth of cities in the developing world. Their work transforms large, haphazard squatter settlements into viable communities.

The goal of ADPSR educational programs is to transform abstract concepts into workable models by establishing links between housing, transportation and memorial design with traditional subject areas like social studies, science, language arts and mathematics. This program on squatter communities was presented at a staff development conference at the Cooper Hewitt Summer Design Institute.

GRADE LEVEL & TIME FRAME

The following program is aimed, primarily at the middle school level. However, the program level and timeframe can be modified for older and younger students. Since design education is largely untaught outside of design schools, basic lessons are applicable from pre-K to post-grad.

MODEL BUILDING ENABLES STUDENTS TO TEACH THEMSELVES AND ONE ANOTHER.



CORE PRINCIPLES OF DESIGN EDUCATION

- The study of Space instead of/or in complement to the study of Time (history) is at least as important as the study of Time alone. For example, it is difficult to understand American history without knowing about its vastness and the role of the frontier in its formation.
- The practical study of Space—considering it, modeling it, refining it—lends itself to the study other subject matters by giving insight into objects in the physical world and by making abstract subjects tangible.
- Design activities teach students the art of revision.
- Because design education is largely untaught outside of design schools, basic lessons are applicable from pre-K to post-grad.
- Design education engages the creative process that helps students learn to do for themselves, set their own problems and solve them and work on multiple aspects of a problem. In addition, design education clearly demonstrates multiple right answers and actively involves students.
- Design lends itself to collaborative work.

BUILDING A SQUATTER HOUSE

SIZE: FULL SCALE BUILDING FOOTPRINT

SUMMARY

Students physically construct a 300 square foot floor plan with furnishings.

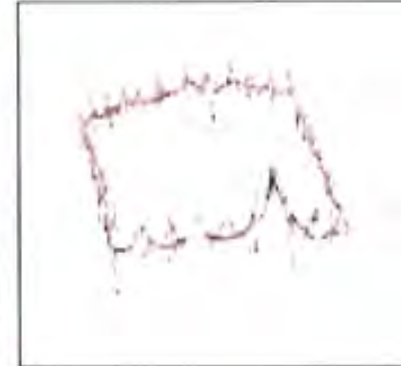
AIM

THEMATIC: To illustrate, by physically experiencing, housing space considered by many in the world as "adequate".

PRAGMATIC: To understand the representation of a scale drawing.

MATERIALS

- 80' (of string tied in a loop
- Full-scale (life-size) brown paper cutouts of furniture using architectural symbols—and/or additional lengths of string to represent furniture in full-scale.

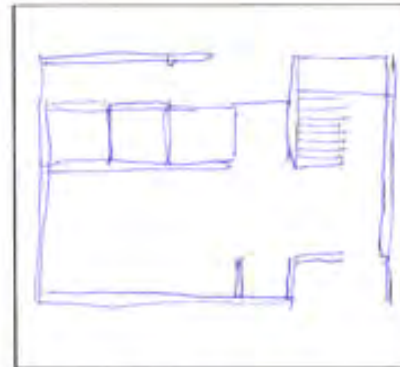


PROCEDURE

1. Select four people to be the four columns or posts of the house (10 feet x 30 feet).
2. Build the walls and door with more people by linking hands.
3. Discuss which furniture is needed for a family of five. "Furnish" the house with full-scale sheets of brown paper, paper can be drawn upon to represent specific pieces of furniture.

OPTION— additional loops of string, appropriately labeled, which outline the perimeter of the objects, e.g., a standard 40" x 80" single bed has a perimeter of 240" [20' lineal feet].

4. Fill the house with people.
5. Working in the space: Corner the rope and "build-out" the room along two walls. This may be the classroom working area.



FAMILIES LIVING IN SQUATTER SETTLEMENTS (AND MEGACITIES) OCCUPY THE SPACE EQUIVALENT TO A TYPICAL SUBURBAN LIVING ROOM.



2 DRAWING A FLOOR PLAN TO SCALE

SUMMARY

Students understand scale by learning to draw a scale floor plan with the aide of graph paper and by arranging furniture to suit a dwelling's requirements.

AIM

THEMATIC: Investigate space by representing abstract space with an analyzable document.

PRAGMATIC: Represent abstract concepts with drawings.

PROCEDURE

1. Students draw a 500 sq.' house in 1/4" scale (each box represents 1 foot; 4 boxes=1") that will fit onto a 20' x 45' lot.*
NB: Students must know the formula for the area: circle = $2\pi r$, rectangle =bh, etc.**
2. Draw doors and other architectural features, windows interior walls according to architectural convention.
3. Consider what furniture a family of five would need. Draw it or cut it out, and place in the floor plan.
4. Compare /contrast to a 2,000 square foot floor plan (see workbook).

TIME AND AGE MODIFICATIONS

* Younger students may count boxes or base their calculations on a per inch basis (i.e., use the ruler to "count" the squares: Example: 4 1/4" =15 boxes which represent 15 feet (15 divided by 4=4 1/4).



STUDENTS' UNDERSTANDING OF SPACE CORRESPONDS TO THEIR TRANSITION FROM WORKING ON GRAPH PAPER TO WORKING WITH DRAWING TOOLS.

why are houses in suburbs larger than houses in cities?



** Older students may have more freedom in designing the shape of their houses. In addition, in lieu of graph paper, they may also use architectural drawing tools: scales, T-squares and triangles.

3 STAGE CONSTRUCTION

FROM 2-DIMENSIONS TO 3-D

SUMMARY

The walls of the floor plan are built-up. Students compile their lots onto blocks.

AIM

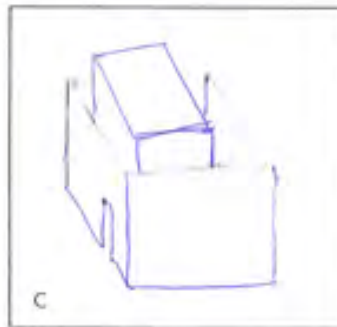
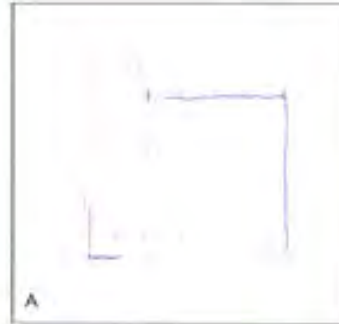
Students learn the relationship between wall height and floor space to further understand space and scale.

MATERIALS

- Heavy paper or cardboard (may be precut to 4-inch heights that represent 12 feet of wall height)
- Tape or other adhesive
- Scissors

PROCEDURE

1. Draw a 20' x45' (900sq') lot in 1/4" scale and position the floor plan from Exercise One on to it.
2. Build up the walls of your lot and/or the walls of your lot lines.



DRAWING AND BUILDING MODELS FROM DRAWINGS—BUILDING FROM THE GROUND UP—PROMOTES UNDERSTANDING OF THEIR REPRESENTATIONAL POWER AND THE CREATIVE PROCESS.

what is the purpose of a fence?

are there fences in your neighborhood?

why do you think they are there?

who put them up?

4 BUILDING BLOCKS OF COMMUNITY

STAGE CONSTRUCTION AND LOT MANAGEMENT

SUMMARY

Students compile their lots onto blocks.

AIM

Students learn how communities take shape.

PROCEDURE

1. Students determine the size of the blocks and construct a city block in 1/4" scale, on large sheets of cardboard; include lot lines (the block will be about 3 feet x 12 feet or larger).
2. Set individual lots beside one another.
3. What problems arise? Is there space for all the windows and doors? Is there space for a car? Adjust houses accordingly.
4. How much space is needed for sidewalks and street width? Build-in or draw on street furniture and vegetation (street signs, lights, traffic signals, trees, planters, benches, bus shelters, trash cans, etc.).
5. How many car lanes? Consider a comparison of one-way and two-way streets.
6. Repeat Exercise with a change in FAR. Experiment with different configurations that yield the same amount of floor space. What are the advantages/disadvantages of having multi-story structures? Did students remember to allocate for staircases? How does one multistory structure affect its neighbors? Discuss technical problems that the class encounters in building taller models.
7. Discuss the advantages and disadvantages of working in this scale for models of this size.

MATERIALS

- Large sheets of paper or cardboard to form a city block in 1/4" scale.
- Students' models from Lesson Three



ARCHITECTS AND PLANNERS SEEK TO BALANCE ECONOMY OF SCALE WITH DIVERSITY AND INDIVIDUALITY.



...from open spaces to built environments
...you'd like to see? Why?

5 SUSTAINABLE SETTLEMENTS

MATERIALS

- MAPS (Included)
- "Map A", a large city in 1:1000 scale, with the targeted neighborhood indicated.
- Look at the targeted area in 1:250 scale ("Map B")
- The area in 1:50 scale ("Map C")
- A comparable area without a street plan but with basic topographical features, such as hills, electrical lines, a highway and/or major road, water/sewer lines, foot paths, pond, etc. (the "Site Plan")
- An informational page (Included) which outlines the total population needing housing in the area, and sample block sizes/shapes.
- Colored pencils, markers or crayons.



200 UNITS OF HOUSING IN A TRANSFORMED LIMA SQUATTER SETTLEMENT COST \$900,000. HOW MIGHT ONE RAISE THE MONEY? COMPOSE A GRANT LETTER?

SUMMARY

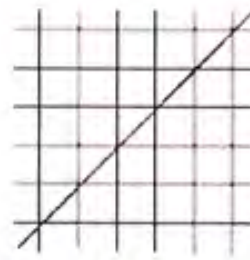
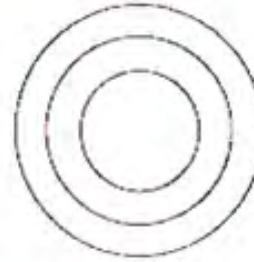
Students investigate problems of human settlements on a larger scale

AIM

To understand working in a large scale and to consider the balance between economies of scale and depersonalization.

PROCEDURE

1. Discuss the resolution of detail of maps A, B & C.
2. Compare the Map C with the site plan.
3. Determine the size, frequency and placement of public buildings (Schools, Churches, Hospitals, firehouses, community centers, etc.)
4. Determine the size and pattern of streets and public buildings.
5. Determine the building heights of housing on various lots and blocks, consider the advantages and disadvantages of tall buildings.
6. Color code building types & heights, streets, open space, etc. label appropriately.
7. Have the students' pin up their work and discuss it. How has their ideas evolved throughout the exercises? What would they do differently if they had to do it again?



which drawing most resembles your neighborhood?

was your neighborhood planned? was it replanned? did it evolve?

what do you like about your neighborhood? what do you dislike?

Compare the single-story 450 square foot houses to other types of urban fabric: e.g., high rise blocks, row houses, suburban subdivision lots, 8-story tenement houses.

Calculate FAR (Floor Area Ratio). FAR is the ratio of building floor space to the size of the lot, e.g., a one-story 450sq' house on a 900sq' lot is 1:2 whereas a four-story house on a 450sq' "footprint" on the same lot is 2:1. (A building's footprint is the outline of the ground floor). Floor area ratios can be demonstrated with toy blocks, Lego or bookcases of various sizes with various numbers of shelves.

Calculate Density (people per mile or acre) and Crowding (people per room). Planners generally try to increase Density and decrease Crowding. Why might this be? How could you fulfill these goals in this exercise?

Have students consider the size and scale of public buildings (in their area) like schools, churches, hospitals, firehouses, etc. How much space is devoted to these services relative to the physical space and population of different neighborhoods?

When designing streets, urban designers sometimes try to make building heights equal to the space between buildings on opposite side of the streets (lot line to lot line). Given the parameters of your building on your lot, what floor area ratio is needed to achieve a 1:1 relationship between building heights and street width.

Calculate the size and number of lots of a typical block in the neighborhood.

Compare with other neighborhoods. Look at a city street map, does block size vary throughout the city?

Calculate the amount of 900 square foot lots that could fit on the two WTC tower footprints (Floor area: 207' x 207', Service core: 137' x 87'). How many city blocks would accommodate the yield of 900 square foot lots?

PROFESSIONAL PRACTICE

What is architecture? What is planning? What is Landscape architecture? What is transportation planning? What is urban design?

SOCIAL RESPONSIBILITY

What is socially responsible design and planning? What role can design practice play in social and economic policy? What is the difference between sustainable and sustainability?

CLASSROOM APPLICATIONS

SOCIAL STUDIES

How can the modeling of comparative building styles be used to teach social history? What is the relationship between building physical models and conceptual social scientific modeling, e.g., "economic model?" What does the study of space illuminate about the relationship of people to that space and the interrelationship of people occupying enable the relations of people between people and groups in a society? What role/responsibility should government and the international community play in the provision of adequate housing?

ART EDUCATION

How can the precise drawing of space enrich a program of visual education? How can design education enhance problem solving skills?

MATHEMATICS

Architecture and planning was once closely associated with the field of mathematics. Today the training is more qualitative, with engineering taking over the quantifiable issues. What imperative is there to make design more objective and engineering more subjective?

LANGUAGE ARTS

How can one use close reading novel to create a model of the physical setting of a descriptive novel.

SCIENCE

How can scale modeling be used to demonstrate scientific projects?