Landscape Architecture: Innovation Project

Designing Open Spaces for an Adolescent Community

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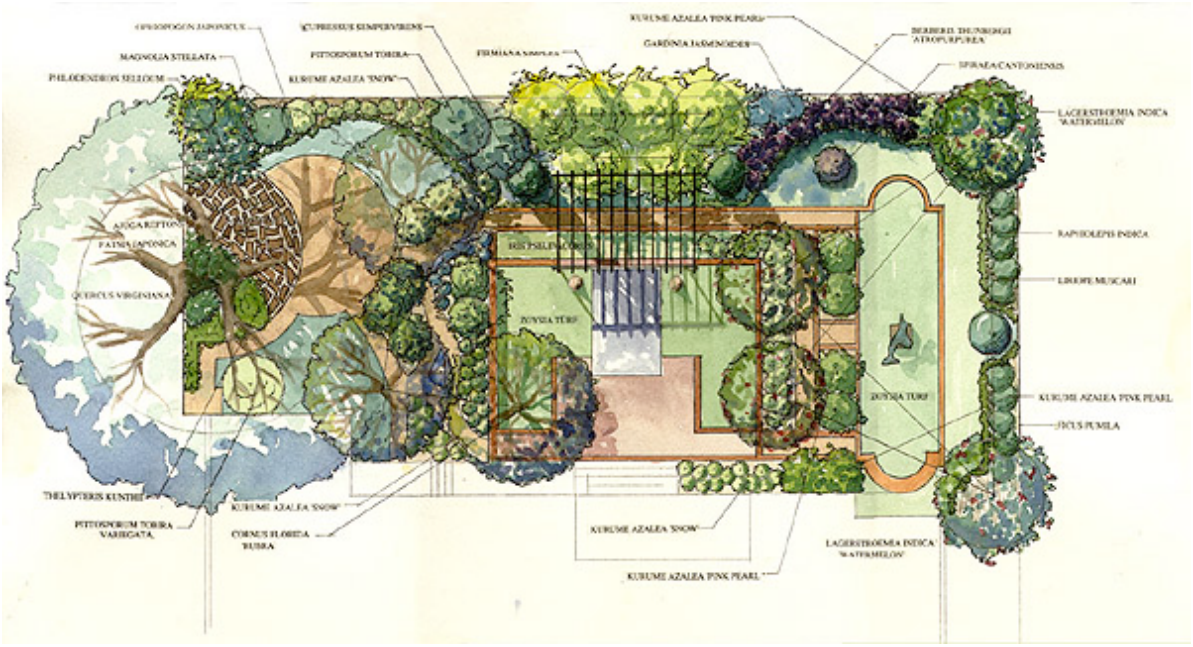
Samuel Jackman Middle School

8th Grade

Pre-Engineering



Design Process- Innovation Project

Landscape Architecture

Designing Open Spaces for an Adolescent Community

8th Grade Pre-Engineering

Preface

Our physical environment influences our thoughts, feelings and perceptions. The physical environment can serve an important role in the physical, social, and emotional transformations occurring during the adolescent years.

Landscape architects have the artistic and technical talents to create an interesting, functional, and enjoyable environment for any populace. They have the talents to help improve the way people react with the external environment. Landscape Architects are involved in the planning, design and sometimes oversight of an exterior landscape or place. Normally the job is managed by the **project manager** and supervised by the **construction manager**, **design engineer**, **construction engineer** or **project architect**.

Research suggests teenagers need places to:

- socialize with people their own age
- escape from being with adults
- experience and pursue youth activities with different age groups
- work in collaborative learning groups
- eat and relax comfortably
- feel safe
- feel independent and free
- develop their self-identity
- satisfy their basic needs
- express creativity

In order to help our youth develop and mature properly, the innovation and development of adolescent-friendly environments is needed. According to research, teens do feel schools are less likely to satisfy their social needs. In order to better understand this train of thought by teens, this innovation project is targeted for a middle school environment; however commercial areas, parks or even neighborhoods could be the intended target. (Owen, 1988, 2001, 2002, Dugdale, 2009, Travlou, 2003).

Big Idea:

The idea is to introduce the role of the Landscape Architect and their importance to planning projects supporting the construction industry. Students will work in teams to innovate, design and renew the exterior environments of an existing facility and enhance teen use of said facility.

In this activity, teams of 4-5 are to target specific areas of the campus to make the academic experience at Jackman most pleasant and efficient by renewing the school's exterior environment. This environment would provide areas of relaxation, collaborative learning, leisure and social activities along with a feeling of safety and beauty. Teams would also add features to encourage a feeling of community pride within them culturally and socially.

Standards and Benchmarks Addressed

Standards for Technological Literacy

Standard 8:	Students will develop an understanding of the attributes of design.
BM E:	Design is a creative planning process that leads to useful products and systems.
BM F:	There is no perfect design.
BM G:	Requirements for a design are made up of criteria and constraints.
Standard 9:	Students will develop an understanding of engineering design.
BM F:	Design involves a set of steps, which can be performed in different sequences and repeated as needed.
BM G:	Brainstorming is a group problem-solving design process in which each person in the group presents his or her ideas in an open forum.
Standard 11:	Students will develop abilities to apply the design process.
BM H:	Apply a design process to solve problems in and beyond the laboratory-classroom.
BM I:	Specify criteria and constraints for the design.
BM J:	Make two-dimensional (and three-dimensional) representations of the designed solution.
BM K:	Test and evaluate the design in relation to pre-established requirements, such as criteria and constraints, and refine as needed.
BM L:	Make a product or system and document the solution.

Principles and Standards for School Mathematics

Problem Solving:	Instructional programs from pre-kindergarten through grade 12 should enable all students to apply and adapt a variety of appropriate strategies to solve problems.

Standards for the English Language Arts

Standard 5:	Students employ a wide range of strategies as they write and use different writing process elements appropriately to communicate with different audiences for a variety of purposes.
Standard 8:	Students use a variety of technological and informational resources (e.g., libraries, database, computer networks, video) to gather and synthesize information and to create and communicate knowledge.

Performance Objectives

It is expected that students will:

1. Work as a team to plan, design and draw one physical environment on campus based on innovation constraints
2. Calculate dimensions to a larger scale
3. Work within a larger group and report to the Project Manager
4. Know and do assigned job within the team
5. Follow a strict timeline to complete the assigned task
6. Draw an accurately scaled **Plan** with color
7. Create a clearly labeled **Legend**
8. Compile a Portfolio of required information
9. Communicate Team Plan via a presentation
10. **USE TIME WISELY**

Materials:

Index cards
Large roll of heavy weight paper
Paper for brainstorming and Plan (different sizes)
Template for drawing plan features
Colored pencils or water colors
Area map for each group
View binder for Portfolio *optional*
Sheet Protectors *optional*

Job List:

Architects

Team Lead

Security Engineer

Safety Engineer

Maintenance Supervisor

LEED Advisor

Exterior Designer

Assessment Tools

Application

1. Students will apply what they learned about the design process and solve a technical problem.

Documentation

2. Large Scale Drawing: Renewing Jackman Plan with Legend

3. **Optional:** Students will create a portfolio reflecting on their experiences while solving a technical problem including the following assignments as a guide:
   Portfolio Items
   See Checklist

Presentation

4. Team Presentation

Instructional Resources

Landscape Internet drawing examples
Constraints
Vocabulary List
Group Project Evaluation Rubric
Landscape Plan Summary
Team Reflection Questions 1-6
Student Score Card
Landscape Architect Article
Discussion Questions
Team Project Checklist
Design Process Worksheet
Technological Resource Worksheet
Presentation Worksheet

Suggested Activities:

- Scale drawing of an existing design (Use the Internet)
- Enlarge scale drawing and painting practice
- Short Vocabulary Exercise
- Determine area for class project and have students discuss what innovations would be of value to teens
- Math calculations for map enlargement
- Answer background and thought questions
- Brainstorm ideas in teams
- Teams create an Elevation Plan
- Teams create a Portfolio with required documents
- Present Plan to class
- Project Evaluation Form

Day-by-Day Activities

Time: 15- 20 days

Day 1:

Teacher and students will read the Preface and discuss their thoughts about teen needs. Students will read article about Landscape Architects while recording information in their Notebooks.

Day 2-4:

The teacher will review scale drawing and provide a review lesson of drawing and measuring the perimeter, surface area and acreage of an area. Students will then copy and color a picture of a landscape as a guide. Teacher will also provide dimension calculation lesson

Day 5:

Teacher will provide students with lesson reviewing the 7 Steps for Solving Technical Problems and the school plan showing the designated innovation areas. Students will have time to look at magazines and other landscapes examples.

Day 6:

The teacher will introduce the job list and related Vocabulary. Students will begin choosing what area and job they would like. Students will submit to teacher on an index card the designated area they have chosen. *Teacher will use these cards to form the teams.*

Day 7:

Students will read and copy the Project Goal and Constraints in their Notebooks. Teams of 4-5 students are identified and areas designated. Students meet in teams to read though the Checklist, Rubric and establish team jobs; record team jobs on index card; turn into Project Manager, (teacher).

Day 8:

Students will copy short notes on scaling in their Notebooks. Students will be allowed to work in their teams to complete Background Questions and begin brainstorming ideas and sketches for their area on scratch paper.

Day 9:

Students will have another day for their brainstorming session recording team ideas and sketches.

Day 10:

Team leads will meet together to discuss and form a cohesive plan (common theme) based on team ideas. Team leads will then meet with the Project Manager for approval. Team Leads will complete the Landscape Summary. Team members will calculate scale for their designated area. Team will draw out their area.

Day 11-17:

Team leads share Landscape Summary with their team. Teams work together to complete the entire Checklist by each member doing their designated job.

Day 18-19: Teacher conducts final checklist discussion with whole class. Teams compile their Portfolio sheet, complete Team Reflection Questions, and Presentation worksheet. Homework, prepare for presentation and complete any necessary work.

Day 20: Presentations made while students complete Score Card

Best Careers 2009: Landscape Architect

*By **Marty Nemko***
Posted December 11, 2008

Overview. Yes, you might end up creating palatial backyards for rich people, but you might also help design restored wetlands, mountain resorts, urban plazas, and zoos. A landscape architect must have talent for the aesthetic and the functional, the art and the science—you're creating an ecosystem that must thrive over time. Indeed, sustainability has increasingly become a high priority among many landscape designers and clients. One of the latest innovations includes green roofs, which are plants set in a layer of compost over a moisture-proof barrier.

Since it costs little to open up shop, 20 percent of landscape architects are self-employed. Those who are less entrepreneurial work for firms or for the government. One thorn: Landscape architecture projects are subject to an ever growing thicket of government regulations. To be content in this career, it helps if you're an avid environmentalist and can tolerate the often labyrinthine approvals process. And if the stress builds, you can always seek a moment of peace in one of your landscape projects.

A Day in the Life. You've started a new assignment: designing the landscape for a school district's administration center. You've already met with the developer, project architect, civil engineer, hydrologist, and government regulators. Today, you're considering the site's sun patterns, land slopes, and soil characteristics. You read the results of a questionnaire you gave to the site's future users, trying to figure out what would make their experience most pleasant and efficient. Then, using a computer-design program, you sketch out a first draft of the site's land grading, building placement, walkways, and roadways, along with decorative features such as plantings and a fountain. Next, you head out to the work site for a walk-through, documenting your stroll with a camcorder. You get excited as you set up a meeting to present your draft plan to the client. If only you didn't have to spend two days writing a sheaf of land use and environmental documents for the government.

Smart Specialty
Ecosystem restoration. Governments and nonprofit groups are restoring increasing amounts of land to their primitive states. This trend will very likely accelerate in the new administration and Congress, and with environmentalism ever growing.
China. While the U.S economic slowdown is inhibiting demand for landscape architects, the situation is better in China. Yes, it will require significant additional training in China to acquire knowledge of its priorities, to learn Chinese business practices, and to develop the necessary relationships, but it could be a smart long-term decision.

Salary Data
Median (with eight years in the field): $62,000
25th to 75th percentile (with eight or more years of experience): $53,100-$77,100

Training
Typically, you can land a job with just a bachelor's degree and a one-year internship. If you already have an undergraduate degree in a field other than landscape architecture, the way in is a three-year master's program.

Constraints:

1. Promote an atmosphere of academic excellence
2. Promote a both pleasant and positive feeling about the school
3. Promote a cleaner energy efficient environment
4. Promote a feeling of safety
5. Promote increased positive cross-cultural and ethnic interaction
6. Promote physical, mental, academic, and emotional health
7. Add color and art to the campus

Background:

Our physical environment influences our thoughts, feelings and perceptions. The physical environment can serve an important role in the physical, social, and emotional transformations occurring during the adolescent years. Landscape architects have the artistic and technical talents to create an interesting, functional, and enjoyable environment for any populace. They have the talents to help improve the way people react with the external environment. In order to help our youth develop and mature properly, the innovation and development of adolescent-friendly environments is needed. According to research, teens do feel schools are less likely to satisfy the social needs of teens. In order to better understand this train of thought by teens, this innovation project is targeted for a middle school environment; however commercial areas, parks or even neighborhoods could be the intended target. (Owen, 1988, 2001, 2002, Dugdale, 2009, Travlou, 2003).

Project Goal: Renovation Jackman (15+ days project)

The project goal is to make the academic experience most pleasant and efficient by renewing the school's exterior environment. This environment would provide areas of relaxation, collaborative learning, leisure and social activities along with a feeling of safety and beauty. Teams would also add features to encourage a feeling of community pride within them culturally and socially.

Criteria:

1. Work as a team to plan, design and draw one physical environment on campus based on innovation constraints.
2. Work within a larger group and report to the Project Manager
3. Know and do assigned job within the team
4. Follow a strict timeline to complete the assigned task
5. Draw an accurately scaled **Plan** with color
6. Create a clearly labeled **Legend**
7. Compile a Portfolio of required information
8. **USE TIME WISELY**

Suggested Vocabulary:

1. Landscape Architect- someone who arranges features of the landscape or garden attractively and through careful planning and oversight

2. LEED- Leadership in Energy and Environmental Design; they have created a rating system for green buildings. Green building refers to the design, construction, and operation of buildings in an environmentally friendly way.

3. Elevation- a scale drawing of any side of a building or other structure

4. Plan Legend- symbols used to represent real objects

5. Maintenance- activity involved in keeping something in good working order

6. Exterior - situated in or suitable for the outdoors or outside of a building

7. Project Manager- has the responsibility of the planning, execution, and closing of any project

8. Berm- a mound of earth with sloping sides that is located between areas of approximately the same elevation

9. Landscape Architecture- profession that seek to care for the Earth's landscapes in a truly holistic, creative and sustainable manner

10. Team Lead- someone who provides guidance, instruction, direction, leadership to a group of other individuals (the team) for the purpose of achieving a goal

11. Innovate- to introduce something new; make changes in anything established

12. Handicap accessible- used to describe the degree to which a product, device, service, and environment, is accessible by as many people as possible

13. Security Engineer- deals with the development of detailed engineering plans and designs for security features, controls and systems

14. Plan- a drawing made to scale to represent the top view or a horizontal section of a structure or a machine, as a floor layout of a building

15. Safety Engineer- they test and evaluate equipment and procedures to prevent accidents

16. Construction Industry- an industry that covers work on new or existing commercial, industrial or domestic buildings or structures

17. Scale- the ratio between the size of something and a representation of it

18. Energy Efficient- products that have been certified to be more energy saving than other products of the same size and quality

19. Environment- external factors that affect a community or organism and other atmospheric conditions

20. Architect- someone who creates plans to be used in making something

21. Landscape- an extensive area of land regarded as being visually distinct

22. Landscape Planner- creating and maintaining a plan; and thinking about the activities required to create a desired goal on some scale.

23. Collaboration- two or more people work together in a group to reach of common goal like for example, an intellectual endeavor

24. Physical Feature- something you can see or touch

25. Culture- refers to Ways of Life

26. Liability- the state of being legally obliged and responsible

27. Ethnic- a group of human beings whose members identify with each other, through a common heritage that is real or presumed

28. Cohesive- the state of being connected

29. Ecological- tending or intended to benefit or protect the environment

30. Perimeter- a path that surrounds an area

Concepts: Unit 1 Design and Modeling

1. Technology is the study of how humans develop new products to meet needs and wants.
2. The ability to create a rapid, accurate sketch is an important skill to communicate ideas.
3. Technological Resources are used in the development of a new product, process, or in the innovation of an existing product or process.
4. Design is a creative planning process that leads to useful products and systems.
5. There is no perfect design
6. Requirements for a design are made up of criteria and constraints.
7. Problem solving and design involve a set of steps, which can be performed in different sequences and repeated as needed.

Team Project Check List: Check off as completed

- ❖ Teams meet, read through Check List, Rubric, and establish team jobs; record jobs on index card provided; turn card in to Project Manager
- ❖ Shade and number map area assigned
- ❖ Discussion questions answers recorded on sheet provided
- ❖ Team brainstorming session of ideas and sketches on paper
- ❖ Use large template provided to scale design for larger sheet
- ❖ Team Leads to meet and discuss central theme ;(campus cohesiveness)
- ❖ Each Team Lead completes Landscape Summary
- ❖ Team Leads discuss Landscape Plan with Project Manager
- ❖ Team Leads share Landscape Plan with their team
- ❖ Team members create innovative Plan using template and color providing a Plan Legend
- ❖ 7 Step Design Process handout completed
- ❖ 7 Technological Resources listed on handout; list at least 2 examples for each resource used on this Innovation Project
- ❖ Answer the Team Reflection Questions as a team
- ❖ Complete Portfolio: type Cover Page, Plan Legend and organize documents
- ❖ Prepare for Team Presentation

Group Project Evaluation Rubric

Assessment	Excellent 100	Very Good 80	Satisfactory 70	Needs Work 50	Score
Plan	**Plan clearly outlines features for academic excellence objective** Plan is scaled accurately on large paper Plan is neat and colorful with no extra lines Plan Legend is neat in black and easily read	**Plan shows features for academic excellence objective** Plan is scaled adequately on larger paper Plan is neat and colorful with no extra lines Plan Legend is neat and easily read	**Plan shows a few features for academic excellence objective** Plan is somewhat scaled on larger paper Plan is neat but not colored with some extra lines Plan Legend provided but not neat	**Plans for academic excellence objective unclear** Plan is not scaled on larger paper Plan is not neat or colored excess amount of extra lines Plan Legend is missing	
Portfolio	All of required papers completed and organized neatly Cover page complete Additional pictures and sketches added	Most of required papers completed and organized neatly Cover page complete Additional pictures and sketches added	Most of required papers completed Cover Page complete Unorganized 1 or 2 additional pictures and sketches added	Some required papers complete No Cover Page Unorganized No additional pictures and sketches added	
Presentation	All members spoke clearly and could answer questions about the **academic innovations** outlined in their plan and its **cohesiveness** All members stood straight, were engaged in the presentation and looked forward	Most members spoke clearly and could answer questions about the **academic innovations** outlined and its **cohesiveness** Most members stood straight, were engaged in the presentation and looked forward	Some members spoke clearly about **academic innovations** but the group needed prompting: **cohesiveness** questionable Some members stood straight, were engaged in the presentation and looked forward Some members had a tendency giggle	Few members spoke clearly about any **academic innovations** and needed prompting: **cohesiveness** not mentioned Members were not engaged in the presentation and could not answer questions Some members had a tendency giggle, looked down, and did not participate	

Discussion Questions:

1. What is the function of this school?
2. What do you and your friends need to do better academically?

*Project thoughts about the **exterior environment** on campus*
3. What exterior features do you need to make you feel safe and comfortable on campus?
4. What features would help you and your friends learn better?
5. What features would help you and your friends take more pride in the
school?
6. What features would make this a more enjoyable place before, during
and after school?
7. What type of activities would you and your friends like to participate in
before, during and after school?
8. What would a common area for studying, eating, or relaxing look like?
9. If the campus had a garden, what would make it appealing to you? Would you be willing to maintain the garden?

Landscape Plan Summary for Team Leads to complete

Area 1

Area 2
Area 3
Area 4
Area 5
Area 6
Area 7

Technological Resources

Landscape architects have the artistic and technical talents to create an interesting, functional, and enjoyable environment for any populace. They have the talents to help improve the way people react with the external environment. Landscape Architects are involved in the planning, design and sometimes oversight of an exterior landscape or place. Normally the job is managed by the **project manager** and supervised by the **construction manager**, **design engineer**, **construction engineer** or **project architect**.

For the **successful** execution of a project, **effective planning** is essential. Those involved with the design and execution of the infrastructure in question must consider the environmental impact of the job, the successful **scheduling**, **budgeting**, and site **safety**, availability of **materials**, logistics, and inconvenience to the public caused by construction delays.

Directions: List at least **two** examples for each category that could be used by your Team for this Innovation Project

1. PEOPLE	2. INFORMATION
3. CAPITAL	**4. MATERIALS**
5. TOOLS AND MACHINES	**6. ENERGY**
7. TIME	

7 Step Design Process

Team	1. Define the Problem	2. Set Goals and Consider Criteria	3. Gather Information

1. Team Lead 2. 3. 4. Area # ____ Map Area: #_____ Location_____ _			
4. Develop Alternatives	**5. Select the Best Solution**	**6. Implement the Solution**	**7. Evaluate the Results**

Team Reflection Questions 1-6

1. Tell and explain the job titles used in your team.
2. Explain how you used the Elements of Design in your plan.

3. Explain any energy efficient or green power features created for your area.
4. Did you have to add handicap access features? Where? How? Why?
5. How will the features in your area be maintained?
6. Is the team pleased with the plan? Did the team satisfy the constraints?
Explain. If not, what would you change?
7. Team Lead-what decisions did you have to make for the team? How did
they respond to your decisions? Would you change any of the decisions?

Presentation Outline Practice

Add Feature	Objective Explanation

Score Card

Area #_____	Area #_____
Best Feature and Why?	Best Feature and Why?

Area #_____	Area #_____
Best Feature and Why?	Best Feature and Why?
Area #_____	Area #_____
Best Feature and Why?	Best Feature and Why?

Project Evaluation Form

1) What area on campus were you involved with for this renewing Jackman project?

2) Approximately how many days did you spend working on this project?

3) How often did you meet to work on the project?

- Daily

- More than Once A Week
- Once A Week
- Once A month

4) How productive did you find your team?

- Very Productive
- Somewhat Productive
- Not Very Productive
- Not At All Productive

5) How often was the team able to reach a consensus on project decisions?

- Often
- Sometimes
- Occasionally
- Never

6) How often did all the team members come prepared to work on the project?

- Often
- Sometimes
- Occasionally
- Never

7) How often did you feel engaged?

- Often
- Sometimes
- Occasionally
- Never

8) How often did you feel overwhelmed while working on the project?

- Often
- Occasionally
- Never
- Sometimes

9) How effective were you in communicating your ideas to the team?

- Very Effective
- Somewhat Effective
- Not Too Effective
- Not At All Effective

Please tell me how strongly you agree or disagree with the following statements:

10) In general, the project members got along well and were respectful.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

11) The project addressed a real life problem.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

12) The project was challenging.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

13) Our idea could be used by Landscape Planners for a real school.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

14) In general, the project guidelines and constraints were clear and meaningful.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

15) Working on this team project was a valuable experience.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

16) Overall, I enjoyed working on this project.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

17) Were the project goals accomplished in the time frame required?

- Yes
- No
- Don't Know

18) I understand the connection between Landscape Architecture and the Construction Industry.

- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

18) Please give me any suggestions you have that would enhance this project.

Resources

Nicolaus, John H. | FASLA Principal Landscape Architect
The HLA Group | Landscape Architects & Planners
1050 Twentieth Street, Suite 200 Sacramento, CA 95811

Porter, Marsha Rosemont High School, Language Arts

Articles:

Dugdale, Shirley (March/April 2009) *Space Strategies for the New Learning Landscape.* EDUCAUSE Review, Vol. 44, No. 2.

Owens, Patsy Eubanks (Summer 1988) *Natural Landscapes, Gathering Places, and Prospect Refuges; Characteristics of Outdoor Places Valued by Teens.* Children's Environment Quarterly, Vol. 5 No. 2.

Owens, Patsy Eubanks (2001) *Recreation and Restrictions: Community Skateboard Parks in the United States*. Urban Geography, 22, 8,782-797.

Owens, Patsy Eubanks (2002) *No Teens Allowed: The Exclusion of Adolescents from Public Spaces*. Landscape Journal, 21(1):156-163.

Travlou, Penny (July 2003) *Teenagers and Public Space*. Literature Review