

Introducing Students to Community Operations Research by Using a City Neighborhood as a Living Laboratory

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# OR FORUM

## INTRODUCING STUDENTS TO COMMUNITY OPERATIONS RESEARCH BY USING A CITY NEIGHBORHOOD AS A LIVING LABORATORY

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This paper describes a course taught in the College of Business and Administration at Drexel University in which students undertake real-world projects in an inner-city neighborhood. The course is an elective for students who have been exposed to the traditional techniques for problem solving in such courses as management science, operational research, statistics, organizational behavior, marketing, and economics. They address such public sector problems as people moving, traffic flow, trash removal, market promotion, and surveys. Typically, the students discover that these problems are complex and have many stakeholders with competing interests, so that they do not fit neatly into one of the problem types encountered in traditional course work. Thus, the students are encouraged to bring to bear a variety of traditional and nontraditional techniques from many disciplines. The work on large-scale problems is pursued in directed project teams that simultaneously offer the students a unique learning experience and real service to the community.

Classical operations research (OR) methods are useful in solving problems where the system can be defined to fit existing models, such as in production planning, airline scheduling, or inventory control. On the other hand, the problems encountered in local communities are characterized by great complexity and many stakeholders typically having competing interests, and they often emerge in content and form that is unexpected by OR workers with traditional experiences (Ackoff 1970). Recently, the term community OR has been used to describe the problems and approaches required by the multidisciplinary problems encountered in connection with community issues (Jackson 1988). The techniques of classical OR are seldom applicable in community OR.

The courses in a traditional business school curriculum cover techniques of classical OR, as well as other problem-solving approaches involving statistical decision making, organizational behavioral skills, and so

on; but little attention is paid to community OR techniques, in spite of the widespread need for them. As a separate but related issue, university curricula are also deficient in giving students an appreciation of the importance of public service, although some universities have addressed this issue in courses in which students become involved in community service projects (Miser 1976, Jackson 1988, Dodge 1990).

This paper describes a learning-through-doing approach to creating a course in which students develop and apply community OR techniques while, at the same time, offering real service to an urban neighborhood. This course is currently offered by the College of Business and Administration at Drexel University. The living laboratory for this course is South Street, an important commercial and residential area in Philadelphia. The laboratory provides students with an opportunity to participate in public policy projects.

*Subject classification:* OR/MS education: community OR/MS.

## 1. THE LABORATORY: SOUTH STREET

The South Street neighborhood is a section of the city of Philadelphia that is approximately 15 blocks by 4 blocks in area. It is both a commercial and a residential neighborhood, a fact that frequently causes tensions because of the competing interests of these two groups. After several decades of decline, this neighborhood has undergone a transformation and has become a Philadelphia tourist attraction that can be likened to New York's Greenwich Village. Within a few blocks of South Street one can find nationally recognized landmarks such as Penn's Landing, the United States Mint, Independence Mall, the Liberty Bell, and many historical documents. Particularly in the summer months, pedestrian and motor vehicle traffic becomes extremely heavy. Some of the problems that people perceive about South Street are messy areas due to littering and trash, congestion, noise, "undesirable" visitors, and crime.

The perceived problems have resulted in claims by some interested groups (e.g., South Street Area Residents Association and South Street Area Merchants Association) that the neighborhood is losing its cultural identity. Unfortunately, merchants, residents and visitors differ in their interests and hold conflicting views about the way in which the neighborhood's problems should be addressed. Conflicts between interest groups are often voiced publicly and are of interest to the local media. For example, the South Street merchants recently published a letter in a local paper (Anonymous 1990a) addressed to the Mayor of Philadelphia discussing the traffic problem on South Street. In an attempt to satisfy the interests of all involved parties, the city government has taken an active role in this neighborhood's planning efforts and is encouraging community self-determination.

## 2. COURSE DESCRIPTION

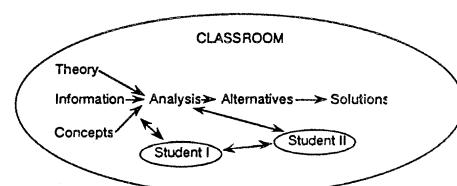
Drexel University is a large urban university in the Philadelphia metropolitan area. After negotiations with several individuals from the South Street community and the City of Philadelphia government, Drexel University's College of Business and Administration created a course in which teams of Drexel students were to tackle neighborhood problems. In the negotiations leading to the creation of the course, there was a conscious effort to create a win-win situation in which Drexel students, the various interested parties from South Street, and the City of Philadelphia could all receive benefits. Benefits to the university students include such things as the opportunity to apply problem skills to real problems, the opportunity to learn while performing a real service, and the opportunity to write reports for directly involved individuals. Benefits to the community and the city of Philadelphia include a new *no-cost* resource that offers a neutral forum for conflict resolution and can provide high-quality analyses.

### 2.1. Philosophy and Objectives

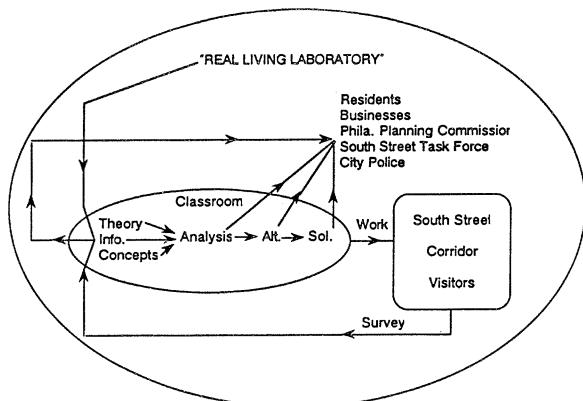
One of the basic features of the course is the learning-through-doing concept, which is applied to some of the important problems involving South Street. In the course introduction, Figures 1 and 2 are used to show how the learning-through-doing model of the South Street Project expands on the traditional classroom learning setting. Figure 1 is a conceptual model of a traditional classroom setting, in which students arrive at a solution given the framework of analysis presented in that class. The model is somewhat self-contained, with the only interaction typically occurring being between the instructor and the students.

Figure 2 shows how the student's participation as a member of a group in our living laboratory course is an enhancement and expansion over the traditional classroom experience. In Figure 2, the model for the traditional classroom setting is embedded in a larger model in which students have greatly increased opportunities to experience interactions with individuals and groups. This enhanced experience includes the opportunity to both learn and apply information gathering, analysis, and decision making to real-world problems.

A major objective of this course is to give students an appreciation of community public policy projects. Although these projects provide public service to the local community, they are typically not amenable to classical OR or management science techniques because of the lack of a single criterion for measuring success. A second objective is to have students use, sharpen, and refine concepts, theory and tools of analysis. These objectives are achieved while simultaneously introducing them to issues and public policy



**Figure 1.** The conceptual model of a traditional classroom setting.



**Figure 2.** The conceptual model of a living laboratory classroom setting.

frameworks. The concepts and tools of analysis required for these projects cut across various disciplines of study throughout the university. While the emphasis of this course is consistent with Halmos's (1975) "learning through doing" approach, a considerable theoretical foundation is required for the students to be effective problem solvers.

Our course goes beyond even the learning-through-doing approach because of the complexity of the projects. These large-scale interdisciplinary and multidisciplinary projects result in a real-world environment for student learning while simultaneously providing community service.

Each team learns through doing public service. Such approaches are potentially of benefit to the community, the students, and the faculty (for example, see Levine 1989). In fact, some researchers argue that it is necessary to use real situations for students to experience the scope of techniques that are necessary to solve community OR problems (Rosenhead 1986, Jackson 1988). Dodge (1990) states that some colleges even require students to do community work.

## 2.2. Unique and Innovative Features

We believe that the course has several unique and innovative features. First is the use of an interdisciplinary approach to identifying, characterizing and solving problems. Students enrolled in the course come from disciplines across the range of academic programs for the entire university. They are encouraged to approach the definition and solution of problems using a synthesis of the skills and knowledge of the various team members. Students thus gain an appreciation of how expertise in a variety of disciplines is required to solve community OR problems. The com-

munity also benefits because the solutions proposed by the teams are typically more innovative and workable than might have resulted from a single-discipline approach. Some student recommendations have received favorable public acknowledgment in such local publications as the *Philadelphia Business Journal* (Anonymous 1990b).

Second, the several faculty members simultaneously involved in the course come from a variety of academic departments. The intent is to provide appropriate support for the students in various disciplines required by a multidisciplinary and interdisciplinary approach to problem resolution. As a side effect, the course fosters collegiality among faculty members from various disciplines.

Third, graduate and undergraduate students interact as a professional team, with graduate students acting as consulting experts for the teams. The graduate students are able to interact with the faculty to develop a professional result.

Fourth, the involvement of neighborhood decision makers, as well as those affected by the proposed solutions, enhances the reality of the student experience. Officials of the city, including the managing director, the city planning commissioner, and the streets commissioner, are involved. Residents and merchants from the city neighborhood and their associations also participate in the project. Our students present their findings to the individuals involved and receive feedback about the work, the recommendations and the solutions. Such real involvement gives the students' activities high visibility and offers them the opportunity for public recognition. For example, Diorio (1989) discussed one aspect of the student's community OR approach in a *Philadelphia Business Journal* article titled, "Student survey asks who meets on street." Unlike the solution to a problem in a classroom, our students' recommendations have the potential for real impact on the situation being studied and the people of the neighborhood.

Fifth, the involvement of real people from both the neighborhood and the city gives students a chance to develop and hone their interpersonal and communication skills as applied to real problem formulation, data collection, and problem resolution. This allows our students to apply their classroom learning as a tool for problem resolution. At the same time, the instructors use these life problems to illustrate that students should approach work as a series of projects that represent a continuation of the life-long learning experience.

Sixth, the ongoing nature of the course allows the selection of projects that are more complex than those

that must be solved within a single quarter. This increased complexity also enhances the reality of the experience for students. In addition, they have the opportunity of seeing how a complex project can be broken down into phases or sections, and how working groups can contribute individual pieces to the overall solution of a problem. Because students can enroll in this course for more than one term they have the opportunity to assume different roles on the project team and see the project from different perspectives.

### **2.3. Organization**

The course organization remains fairly constant from term to term but the students' tasks vary each term. During the first two weeks the students either form groups on their own or are assigned to groups by the instructors. After the groups have formed, projects are selected. In subsequent quarters ongoing projects are available. Newly formed student teams can either select one of the partially completed projects or begin a new one. At the start of each term, instructors present information to the students about ongoing projects and suggest new projects that are pedagogically appropriate.

Following the formation of groups and the selection of projects, the teams formulate an approach or plan of attack on the selected problem. After a series of problem definition and exploratory steps the approach has generally involved data collection. Student teams have collected various types of data through library research, interviews with involved parties, and/or questionnaires.

After the groups formulate their initial rough plan of attack, they present their suggested methodology to the entire class. We refer to this as the plenary session. In this phase, each student group finds out what the other groups are doing and can provide input on the approach suggested by the other groups. Some students have been attracted by the problem being discussed by another group and have decided to switch groups. Throughout the course, students are urged to expand their thinking to include approaches that are multidisciplinary in nature and represent a merger of two or more disciplines.

Following the project selection and identification phase, student teams begin to carry out their preliminary plans. The class meetings after this point tend to focus mostly on progress reports from the various groups, along with brainstorming about the suggested methodologies. At various points in the quarter, speakers address the class. In the past they have included members of a resident's association, members of the police department, and various members

of the community and the city government. These speakers often provide information to the students that is relevant to their projects, but not a direct part of the information gathering that the individual groups are conducting. Supplemental material is sometimes supplied to reinforce and increase the credibility of such presentations. For example, to supplement a local planner's presentation, an article by Krohe (1989) about neighborhood development was handed out to students.

At the end of the quarter, each team writes up a progress report and presents the results to the rest of the class. The format of the presentation made on a particular project depends on the progress made by the group. If the problem has been more or less brought to a conclusion, a presentation of the results to the class is followed by a presentation to a wider audience of concerned individuals. For example, the students involved in the Fall term of 1989 made a presentation to representatives from the city of Philadelphia, the Residents and Merchants Associations, and the Drexel University community (the university president, administrators, academic deans, faculty, and students).

In the first few quarters that the course was offered, the student projects constituted the only course requirement. However, in later quarters the students have been given a final examination. The Appendix gives an example from a recent quarter.

### **2.4. Participants**

This course is an elective for both undergraduates and graduate students (using different course numbers). Although the primary academic affiliation of our students is with the College of Business and Administration, the course is open to students campus-wide, and many students have come from other colleges. Students who come from different disciplines with different areas of expertise are encouraged to interact with one another to maximize the potential for creative, multidisciplinary solutions to problems. In order to facilitate interaction among students in different disciplines, multidisciplinary teams are formed to work on projects for the course.

As is the case for the students, the faculty who are involved in the course come from a variety of academic areas. The various faculty members serve several roles for the students in the course: one is to present material regarding techniques and methodologies that are felt to be of value to the group of students as a whole; another is to serve as expert resources who can provide specific information from their own disciplines on an as-needed basis to teams when

particular problems arise. Additionally, each student team has an associated faculty facilitator, whose job it is to make sure that the group is making progress on its project, and that the individual members are participating. Table I lists the colleges and departments that have had faculty and student participation in the course so far.

In addition to students and faculty, some of the stakeholders in the South Street neighborhood are participants in the course. These individuals include representatives of neighborhood organizations (e.g., South Street Area Residents, South Street Area Merchants), Philadelphia city government (e.g., Planning Commissioner, Office of Managing Director, Streets Commissioner, Police Department, Parking Commission), as well as other individuals. The role of these individuals is to provide information on current conditions in the neighborhood, formulate policy alternatives, and evaluate the consequences and utility that would arise with the implementation of these alternatives.

## 2.5. Material Presented to Students

No textbook is required for this course because no single book covers the entirety of the materials that the students require for their community OR projects. However, we often provide them with selected readings to supplement course lectures. Examples include literature on neighborhood development (e.g., Wiewel, Brown and Morris 1989, or Bartsch 1989), supporting material for the lectures on statistical research methodologies, such as material on interview studies (Golden 1982, Chapter 8), questionnaire construction (Golden, Chapter 6), and sampling (Campbell 1987, Chapter 2). In addition, we require

students to read about the team and the learning-through-doing approaches to problem solving (see, for example, Etzioni 1988, Levine 1989, and Watkins 1989).

Our students are exposed to an overwhelming amount of material from a variety of sources. It is our assumption that their dedication makes the large quantity of work tolerable. Much of the material that is presented varies each quarter as required for the students to achieve their project goals. However, the fundamentals of research methods are presented each quarter because these topics are integral to the concept that data are required to guide decision making processes. Other topics that were covered in various terms include aspects of sociology, history, operations research (traffic flow), marketing, and conflict resolution. Each topic was presented by a faculty member with expertise in that area. For example, the material on statistical methodologies and operations research was presented by members of the Department of Quantitative Methods.

## 3. STUDENT PROJECTS

The types of problems that students address in this course include transportation, people moving and control, streetscape and signage, architecture and engineering design, and various economic and marketing issues. These types of problems involve complicated systems with many stakeholders having competing interests. Often such settings are not amenable to conventional OR techniques, but rather to community OR techniques (Miser 1976, Jackson 1988). The student projects are critical to the course because they immerse the students in the interactive multidisciplinary approach that is the basis of community OR.

Each team, consisting of students and a faculty advisor, is expected to: 1) immerse itself in the city neighborhood by visiting the area, talking to individuals that represent various constituencies, and reading about the area; 2) identify a task or project to carry out that is related to one or more of the following: the collection of data in order to identify a problem, the descriptive analysis of data that have been collected, the identification of alternative solutions to the problem, the recommendation of a "solution" to the problem, or the analysis of data to confirm hypotheses about relationships; and 3) to carry out their task in a timely manner.

The multidisciplinary nature of community OR projects is apparent from an examination of the student projects listed in Table II. A brief description of two of these projects is provided below; one group of

**Table I**  
List of Colleges and Departments Involved in the  
South Street Project

College of Business and Administration
Department of Economics
Department of Quantitative Methods
Department of Marketing
Department of Management and Organization Sciences
Department of Legal Studies
College of Arts and Sciences
Department of History and Politics
Department of Humanities and Communications
Department of Psychology, Psychology and Anthropology
College of Engineering
Department of Civil and Architectural Engineering
Nesbitt College of Design Arts
Department of Architecture
Department of Photography

**Table II**  
List of Student Quarterly Projects

South Street Projects
Visitor profile
Nonvisitor profile
Resident profile
Merchant profile
Failed business profile
Nontraditional people-control technology
Trash control/signage design
Marketing promotion
South Street case study
Economic analysis of businesses on South Street
Video documentation
4th and South of South Street Projects
Visitor survey
Merchant survey
Marketing promotion of 4th and South Streets
Management and Information System Analysis
Philadelphia Parking Authority employee time-control system
A New Resource Looks at a New Resource
New Jersey clean shores
Where have all the tires gone?
Special Services District
Video and photo team
Survey team

students worked on improving the trash situation, while another group worked on the traffic problem in the neighborhood.

Student teams have designed and administered intercept questionnaires to collect data about the involved constituencies (e.g., residents, merchants, visitors, and individuals within the metropolitan area that do not visit South Street). As an example, a sample of individuals from randomly selected locations around the city were asked whether or not they visited South Street. Individuals who responded negatively were queried about their reasons for not visiting South Street.

### 3.1. Example 1: Parking and Traffic Control on South Street

**Project Genesis.** In the first quarter that the course was offered, several student teams worked on a project geared toward identifying problems that were perceived as being deterrents to people visiting or revisiting the South Street area. Anecdotal evidence suggested that parking and traffic flow were problems that fell into this category.

Student teams created and administered a general survey questionnaire to 334 visitors to South Street. The questionnaire asked whether visitors perceived

parking and traffic flow as important problems, and also asked for more detail on the specific nature of these problems. For example, the survey included the following questions on parking:

- How long did you search for a parking spot?
- What type of parking do you prefer?
- What type of establishment are you visiting on South Street?
- How severe is the traffic congestion problem?

Interviews were conducted during four different times: weekday afternoon, weekday night, weekend afternoon, and weekend night.

In this survey, visitors consistently and strongly identified parking and traffic flow as important perceived problems. Based on the results of this survey, student teams in subsequent quarters decided to tackle the parking problem in order to make recommendations.

**The Barricade Issue.** During the various studies of South Street, an issue was discovered that formed the basis for the creation of a group to study and make recommendations regarding the conflict between merchants and residents about the placement of police barricades on the street. In particular, to control traffic resulting from the multitude of people that South Street attracts during weekends, the residents had asked the police to erect automobile barricades on weekend evenings and nights. With such barricades in place, a portion of the major artery through the neighborhood would be used as a pedestrian walkway during certain peak visitor hours.

The student team that dealt with this problem gathered additional information from the stakeholders in the implementation of such a policy. The merchants and the residents were surveyed regarding their attitudes on the barricade issue. The results of these surveys provided the following summaries of the two opposing positions on the barricade issue.

**Merchants.** Merchants believed that barricades would have an adverse impact on their ability to do business. Specifically, the merchants were concerned that barricades would turn people away from South Street; moreover, the mere appearance of the barricades might suggest that the street has undesirable aspects. Merchants also believed that the residents' objective would not be met because traffic would be re-routed along streets which are parallel to South Street on the north and south sides, thereby negating any gain achieved by barricading the street.

**Residents.** The residents wished to substantially limit vehicular traffic each Friday and Saturday night. They also believed that the barricade is directed at people who conduct little or no commerce with the businesses on the street, but rather were there for “cruising” and socializing; as a result, eliminating this traffic would have little economic impact.

**Objective.** As a step in the process of coming up with recommendations, the student team decided to collect data on the barricade issue instead of relying on the arguments of the residents and merchants to gauge the impact of the use of traffic barricades. Specifically, they set out to:

- measure the extent of traffic flow on the street for Friday and Saturday using vehicle counts;
- survey the late-night visitors to the street to determine the purposes of their visits (why had they come?);
- evaluate the impact of the barricades on pedestrian traffic.

**Methodology.** Using Thursday night for control, it was decided that a straightforward count of people and traffic for Friday and Saturday nights might be a reliable basis for impact estimation. The student team counted automobiles and surveyed occupants of automobiles as they were stopped in the slow-moving traffic during the night. The questionnaire had three options to the question, “Why have you come to South Street?”

- have no destination;
- going home;
- have a set destination.

The student group also set up a method of ranking business activity for businesses that were open in an effort to evaluate the impact of the barricades on pedestrian traffic. Team members walked the north and south sides of South Street from 9th to Front Streets: each had a list of the establishments that were open and closed for business at the 9 p.m. targeted start time for the barricades. Before making the surveys, the team members had agreed on a numerical ranking:

- 1 = very busy;
- 2 = moderate customer traffic relative to the store's capacity;
- 3 = slow or little activity;
- 4 = establishment open for business with no customers;
- 5 = establishment closed.

**Recommendations.** The student teams considered using traditional operations research techniques (such as simulation) on the data collected in the various surveys and traffic counts to develop an approach to the problem, but they found these techniques unable to accommodate either the entire scope or a meaningful subset of the problem. This difficulty arises in part because of the complexity of assigning weights to the different options favored by merchants, residents, and the City's parking authority. In developing their recommendations the students discovered that community OR approaches require integration of multiple ideas using structured team problem-solving approaches. Such approaches are useful for assigning priorities and weights to problems and the associated recommendations. As a result of integrating group techniques with the data collection and analysis the student teams came up with the following recommendations regarding parking and traffic flow.

#### Parking Recommendation

Merchants should institute some form of a free parking validation sticker. This would enable the public to shop the street without the cost of expensive parking fees or the threat of tickets for a parking violation.

#### Transportation Recommendations

a. Specifically for the routes that go to South Street, improve public transportation's lighting, security, cleanliness, and scheduling. This might involve some merchant lobbying efforts and/or monetary contributions to the public transportation agency.

b. Improve the public's knowledge of the availability of public transportation by publishing schedules and distributing pamphlets that detail South Street events and provide key train and bus arrival/departure times.

c. Encourage biking to South Street; install secured bike stands for the shoppers using bicycles as transportation.

#### 3.2. Example 2: Trash Control, Signage Design, and Overall Atmosphere

**Project Genesis.** The original survey of South Street visitors that was referred to in the description of the preceding project also provided information attesting to visitors' dissatisfaction with other aspects of the street. Some of the most commonly cited problems could be lumped together into a category that might be called overall atmosphere of South Street. Two such problems were excessive trash and the public consumption of alcohol by pedestrians “cruising” the

neighborhood. In response to these perceived problems, in the spring term of 1990 a group was formed to address the issue of the overall atmosphere of the South Street corridor.

**Data Collection.** The group set out to gather data on approaches that had been attempted in similar situations in the past. For example, the group reviewed trash and litter reduction campaigns that had been used in Texas ("Don't Mess With Texas"), Georgia, and New York City. Similar research was conducted involving the public alcohol consumption issue.

In addition to the search for procedures that had worked elsewhere, further survey data collection was conducted involving residents, merchants, and visitors. These surveys sought to elicit people's suggestions as to appropriate measures and their evaluation of different proposals to address the various problems.

**Recommendations.** Based on the data that had been collected and an analysis by the group, the following recommendations emerged:

1. increase the number of trash receptacles on South Street and have the trash picked up more frequently;
2. enact stricter rules/regulations for litterers;
3. use an "international" sign to prohibit drinking in the streets;
4. place signs in subways with a logo saying "Help Keep South Street Clean!"
5. institute a "Clean Team" program on South Street to foster pride and responsibility to the community.

The final recommendation of a "clean team" approach involved the following steps:

1. use mailings and/or personal contact to inform merchants of their responsibility to maintain cleanliness and to remove litter from the sidewalks in front of their establishments;
2. periodically rank establishments on a 1-10 scale based on their accomplishments in litter removal;
3. If an establishment receives a low score:
  - a. a letter is written stating reasons for failure;
  - b. a copy of the city's ordinance is given to them;
  - c. they are informed of the day that they will be retested.
4. establishments that did well would receive seals of approval to display, which would result in a certain amount of positive publicity.

#### 4. DISCUSSION AND CONCLUSION

The course's unique feature is its commitment to an *interdisciplinary approach to problem solving*. In no

other course in our university does a student encounter the variety of material that is found in the course that we are describing. In fact, we believe that, after having participated in our course and having helped to bring a project to fruition, students will be less likely to approach problems from the viewpoint of a single narrow discipline, and be more likely to consult with experts in other areas and utilize their inputs in problem solution. As a result of this course, students are better able to see the connections between the classroom and the real world. We hope that this makes our students more interested in continuing their professional growth and development beyond school learning.

So far, the course has been offered five times, and the faculty is committed to its continuation. If one measure of success is student acceptance, the course is successful because enrollment is steadily increasing from 20 to about 80 now. In spite of the considerable workload associated with this course, the increasing enrollment is largely due to the good student press the course receives.

We also have several subjective indications that this course is effective. As a result of our involvement with the students and a review of their work, the instructors believe that the students are enthusiastic, hard-working, motivated, and productive. The student presentations have been professional and well received by audiences both inside and outside the university community. Their reports and analyses have demonstrated the extent of the students' involvement and their concern for the projects.

Most importantly, it is the judgment of the instructors that students have gained an appreciation and acceptance of the premise that an interdisciplinary approach to problem solving will yield results to multifaceted problems that exceed the scope of a single discipline. We believe that students are not inculcated with such an appreciation elsewhere in the university curriculum.

The course structure we describe can be used with other settings besides the particular neighborhood that is the current focus of the course. The individuals running the class continuously hold discussions with city government officials and resident groups from other neighborhoods where this approach might be fruitful. As a result of these discussions our students have agreed to review the city's tire disposal problem (where have all the tires gone?).

We believe our own extensions of this work show that the approach of having a neighborhood as a living laboratory can be used by other institutions. A major selling point for all concerned parties is that this is a win-win situation for the university and the

neighborhood. The university students gain such things as the opportunity to apply problem skills to real problems, the opportunity to learn while performing a real service, and the opportunity to write reports for directly involved individuals. The community gains a new, *no-cost* resource that offers a neutral forum for conflict resolution and can provide high quality analyses.

Although other institutions cannot exactly match the features of South Street, we believe that there are many public arena problems that a university can use as a living laboratory and build a course with the same goals as ours. In fact, the focal point of such a course need not be a neighborhood. As our tire project shows, other types of problems can be addressed and projects can be organized using a variety of laboratories, such as municipal facilities or sports stadiums.

## APPENDIX

### Sample Final Examination

- Given your group's task, demonstrate to everyone how creative and experienced you are by applying some tool or set of tools of analysis that you have learned in your 5 years at Drexel (e.g., concepts, facts, theory, empirical information, quantitative methods, experiences, history and intuition) to an issue in your Tax Team Group (TTG). Be specific.
- Write your own question relative to your specific TTG task with reference to the framework outlined in Etzioni's *The Moral Dimension* and Levine's "Learning By Doing Through Public Service" and give a complete answer. The question should focus on how Etzioni and Levine help in providing you with a framework of analysis. How do you handle the *diversity issue*? Both the question and the answer will be evaluated.
- Critically assess the article on the following page titled, "Congress moves closer to national service for college students," based on your South Street experience. Be specific and support your answer with concrete items.
- Given your team's task, what is the one single most important outcome of your effort? Be specific, explain in detail and provide support for your answer.

### ACKNOWLEDGMENT

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