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ABSTRACT

The Calvin K. Kazanjian Foundation's 1973-74 selections of 20 award-winning classroom experiences in teaching economics are presented. The four best lesson units for each of the primary, intermediate, junior high school, senior high school, and college levels are provided in their entirety. Each unit contains actual classroom techniques including class situation, scope, educational goals and objectives, motivational devices, step by step teaching techniques, and evaluation procedures. Several teaching experiences that are described focus on careers and environmental education. Ten criteria for award winning lessons, provided in the introduction, include (1) originality, (2) class situation, (3) scope and sequence, (4) educational goals, (5) motivational devices and initiatory activities (6) teaching techniques, (7) samples of student work, (8) culmination activities, (9) evaluation techniques, and (10) neatness and orderly arrangement of materials. An appendix at the end of each chapter offers brief descriptions of additional award winning experiences. (Author/DE)

# ECONOMIC EDUCATION EXPERIENCES OF ENTERPRISING TEACHERS



A Report
Developed from the 1973-74 Entries in
The Kazanjian Foundation Awards Program
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GEORGE G. DAWSON, *Editor*

Joint Council on Economic Education
1212 Avenue of the Americas, New York, NY 10036

# FOREWORD

Although outstanding teachers never lose sight of the basics to be taught, whether in economics or any other subject, they distinguish themselves in their method of sensing and grasping opportunities to *vitalize* classroom experiences. They also are in tune with the times—eager to add dimensions to their teaching that promote student understanding and action on matters of personal and social concern. Readers of Volume 12 will find these characteristics apparent in the way economics teaching has been related to the environment, careers, productivity, consumption, unemployment, and life style. We anticipate that "enterprising teachers" will be relating economics to the Bicentennial Observance for the next few years.

In the Editor's Introduction to this volume, Dr. George Dawson has expressed our strong feelings of appreciation about the past and present support for the Awards Program and the complementary features of this publication and the Depository of Awards Materials at Ohio University. To this expression can be added one of appreciation to teachers who have made and will make this program valuable. We recognize the great effort it takes to create and carry out real learning experiences—and the added effort it takes to share the experiences with others by submitting an entry in the Awards Program. Please continue both efforts so that our linkage can be of service to you, and your colleagues, in advancing economic education throughout the nation.

The 13th Annual Awards Program is now underway and we once again invite teachers to submit entries. Application forms and assistance can be secured from Affiliated Councils and Centers for Economic Education throughout the nation or directly from the Joint Council.

The Joint Council offers its appreciation and commendation to Dr. George G. Dawson for serving as Editor of this publication. We are indebted to Mr. John C. Schramm, Managing Director, and the Board of Trustees of The Calvin K. Kazanjian Economics Foundation for their support of the Awards Program, this publication and the associated services to enrich the program.

GEORGE L. FERSH, *Associate Director*
*Joint Council on Economic Education* and
*Coordinator, Kazanjian Foundation Awards*
*Program for the Teaching of Economics*

# EDITOR'S INTRODUCTION

Volume 12 of *Economic Education Experiences of Enterprising Teachers* marks both an end and a beginning. It is an end because the Calvin K. Kazanjian Foundation, which supported the Awards Program for the first twelve years of its existence, is turning the reins over to another organization. It is a beginning because the International Paper Company Foundation has formally assumed sponsorship of the Awards Program. When the Awards Program was launched in 1962, no one could have predicted that it would be thriving twelve years hence, and that the annual booklets based upon the winning entries would have had such a profound impact on the teaching of economics in the United States. In large measure, the success of the Program and of the booklets is due to the imagination, foresight and dedication of Mr. John C. Schramm, Managing Trustee of the Kazanjian Foundation, and to the members of the Foundation's Board of Trustees who have so generously supported this endeavor. There are times when even the professional editor and writer is at a loss for words. This is one of those times, for I can find no way adequately to express my own personal appreciation to Mr. Schramm and to the Kazanjian Foundation, or to indicate how pleasant and fruitful it has been to work with them over the years.

But it is time also to look forward. We on the staff of the Joint Council, and surely all others involved in the Awards Program, can look ahead with confidence to many years of a productive and harmonious relationship with the new sponsors of the Awards Program—the International Paper Company Foundation. The same high standards will be maintained, and—if the past is any indication of the future—teachers at all levels will continue to exhibit their amazing capacity to develop new and creative ways of promoting economic literacy. It is fitting, therefore, for the Editor of this booklet to offer a few words of advice to those planning to submit entries.

Those who are contemplating submitting an entry to the Awards Program, and those who have submitted entries but failed to win, might profit from a generalized description of winning projects. It must be realized that the articles published in this book are usually condensed versions of the original reports, and that some of the material teachers submit cannot be depicted or even described easily. The characteristics of a prize-winner are as follows:

1. The project shows *originality*. It is more than a rehash of someone else's work, or at least it gives an entirely new "twist" to an idea developed in a previous year. Ideas that captured awards in years past tend to become "old hat." This does not mean that they are not good, but simply that the awards must go to those who come up with newer ideas.

2. The *class situation* is clearly described in the better reports. The judges want to know what ages, ability levels, or special characteristics apply.

If the students represent a particular socioeconomic or ethnic group, the judges should know this.

3. *Scope and sequence* are set forth. The reader should be told at the very beginning whether the project describes a year-long or semester-long course, a six-week unit, a special project of three-weeks duration, a single lesson, or whatever. If it is less than a full course, the author should show how the project fits into the course being taught, and how it was related to material that preceded or followed it.

4. *Goals are listed* in specific terms. How can a reader judge a project unless he or she knows what specific understandings, facts, skills, habits, attitudes, or behavioral changes the teacher wished to impart?

5. *Motivational devices* are spelled out and *initiatory activities* are described. How did the teacher get the pupils interested in the subject to be taught? How did he or she then start the course, unit, lesson, or project?

6. A step-by-step account of *teaching techniques* is given. It must be remembered that the basic purpose of the Awards Program is to help other teachers. These projects can serve others only if the author gives the details of the methods employed. It is not enough simply to say that a panel discussion was held—the reader should see exactly how the panel was set up, what preparations were made, how this activity fit into the total project, how it was evaluated, and so on. Where appropriate, sample lesson plans should be included, along with such items as assignment sheets, instruction sheets that might have been prepared for the students, and the like.

7. *Photographs* or *samples of student work* are included. Photographs of bulletin board arrangements, table displays, murals, and other items which cannot be shipped are welcome. It is not necessary to submit large posters or bulky objects if a photograph will suffice. Neither is it necessary to send in everything the students have done. One or two typical term papers, for instance, will do.

8. The *culmination* of the unit or project should be explained. Good teaching units have three basic parts: (1) initiatory and motivational activities; (2) developmental activities; and (3) culminating activities. The first help to get the pupils interested in the unit, project, or lesson; the second develop the ideas, concepts, skills, understandings and attitudes listed in the goals; and the third bring the experience to a close by summarizing and applying that which was taught. Plays, assembly programs, displays, field trips, the making of films or filmstrips, simulations, and many other activities can be used to culminate a unit.

9. *Evaluation techniques* should always be included in the reports. These generally include tests of all types (short-answer, essay, and performance examinations), but can also include less formal things, such as self-evaluations by individuals, groups, or the class; written or oral evaluations by outsiders; and observations of pupil behavior. Samples of testing instruments ought to be submitted with the reports, along with the results.

10. Finally, attention to the *requirements* as set forth in the Awards Program application form, an *orderly arrangement* of the material, and simple *neatness* are appreciated.

The educator who attempts to include each of the 10 characteristics outlined above will have a good chance of winning. It should be noted, however, that the competition is keen, and that each year it becomes more

difficult to win than it was the year before. Prospective entrants would be well advised to seek the comments and criticisms of others before submitting their projects. In particular, the teacher whose formal preparation in economics is minimal should consult an economist regarding the accuracy and appropriateness of the economics contained in the report. Many projects which represent an enormous amount of time and effort, and which contain superb ideas and materials for teaching, fail to capture an award simply because they contain little or no economics or because the economic content is inaccurate.

The Editor hopes that this brief summary of what constitutes a good project will be useful to educators. He deeply appreciates the work of those teachers (nonwinners as well as winners) who are contributing so much to the elimination of economic ignorance in our society. It is hoped that more and more teachers will enter the Awards Program in the future, sharing their knowledge and experience with others for the good that this can do as well as for the possibility of financial rewards.

The Editor acknowledges with sincere thanks the cooperation of the teachers whose ideas appear in this volume. They have been most patient and understanding in permitting us to use their material and in agreeing to our many editorial revisions.

GEORGE G. DAWSON

# Contents

CHAPTER ONE

# The Warm Fuzzy Company

## Economics in Third Grade

**Susan Amedeo and Diane Greene**

Firestone Park Elementary School, Akron, Ohio

### Background and Rationale

I hear, and I forget;
I see, and I remember;
I do, and I understand.
—Chinese Proverb

This proverb was the rationale for a project which became an unbelievable experience for us, our two classes, the parents and our entire school. Our school has been part of a pilot program in career education for four years, and it was at a Career Education In-service Workshop that we came up with the basic idea for including economics in our classrooms. Little did we know, however, that successful businesses would develop, that the profits would be large enough to pay dividends and still make substantial contributions to worthy causes, and that we would become television and movie "stars"!

Career education provides experiences which develop positive self-concepts, an appreciation of all vocations, and healthy attitudes toward work and the dignity of labor. It does not devalue the liberal arts, nor does it stress job preparation at the expense of personal and humanistic development. An important aspect is to broaden the thinking of students and make them aware of the career selection process. Young people know too little about occupations other than those of family members and friends.* Interesting and meaningful economic education activities can provide students with knowledge and understanding relating to any particular career choice. Feeling that teachers should relate life-centered activities to the school's subject matter,

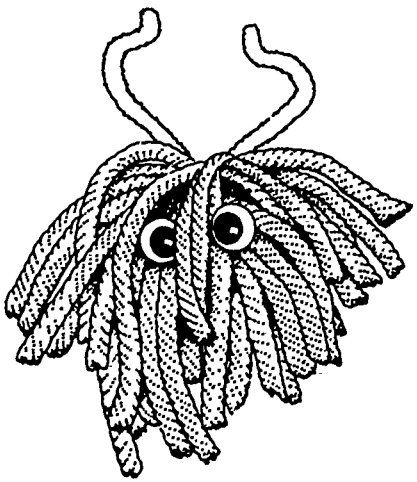
* For some interesting research data on this topic, see Abraham Resnick, "Children's Perceptions of Various Workers," *The Journal of Economic Education* (Fall 1972), 61-63; and William Luker, Floyd Jenkins and Lewis Abernathy, "Elementary School Basal Readers and Work Mode Bias," *The Journal of Economic Education* (Spring 1974), 92-96.—*The Editor.*

we designed lessons that would enable children to learn how decisions are made, to develop their own plans, and to see the consequences of their own choices.

### Development of the Project

Before Christmas we read our classes the story "Warm Fuzzies" from the *HDP Supplementary Idea Guide* (Institute for Personal Effectiveness in Children, Inc., 1972). The story is about little people who lived long ago, and who exchanged "warm fuzzies" when they met. (See the picture below.) This was their way of saying "I like you." With great enthusiasm, each class decided to make warm fuzzies, which require nothing more than yarn, pipe cleaners, glue and glass eyes. We felt, then, that we could capitalize on the children's interest in warm fuzzies to give them a first-hand experience in dealing with the business world. We planned to relate the specific activity to the American economic system as a whole, in order to achieve such goals as the following:

- Help students to understand the free enterprise system.
- Show students how they function as both consumers and producers in our economy.
- Have the students acquire an understanding of how a business operates—how capital is raised, how the factors of production (labor, natural resources, capital equipment) are used, and how goods are marketed.



**It's made of yarn, it's fuzzy, it's warm and it's comforting. It's a product of The Warm Fuzzy Company, a sucessful new Akron group.**

(Drawing reproduced from *Firestone Non-Skid*, Vol. 59, No. 7 (March 28, 1974), courtesy of The Firestone Tire & Rubber Company, Akron, Ohio.)

It was hoped, also, that they would improve self-concepts and acquire greater feelings of worth, show initiative, take responsibility for their own actions, make intelligent choices, learn the problem-solving method. cooperate with others, and learn to adapt to new situations.

When we asked our classes if they would be interested in starting their own companies, the answer was an overwhelming "yes"! It is a serious mistake to plunge into a business venture without adequate background and preparation, however, so we spent several weeks learning business terms and principles, and consulting resource people about forming a corporation, keeping books, banking and advertising. Several field trips were taken to introduce the children to different types of production lines and to the concept of division of labor. An attorney explained how to incorporate a firm, showed the pupils the books of a corporation, told about stockholders' meetings, and explained why a Board of Directors is needed. The rights and powers of shareholders were explained, along with such basic ideas as profit and loss.

After the attorney's visit, the children voted to name the firm "The Warm Fuzzy Company," sold shares of stock at ten cents each, and elected the Board of Directors. Officers were chosen by the Board. A banker visited us to explain savings and checking accounts, bank loans and interest. The children decided to open a savings account rather than a checking account, for the former would earn interest. Now we had to move ahead quickly to be able to have our "Grand Opening" in time for Valentine's Day.

We decided that 19 different jobs would have to be performed, and job descriptions were prepared for each. The pupils had to make formal applications (submitting a form listing their job preferences, educational backgrounds and experiences) and be interviewed. Stockholder meetings were held to discuss the need for materials and such "capital goods" as scissors, wire cutters, storage containers and art supplies. Newspaper advertisements were compared so that material could be obtained at the lowest prices, and the money raised from the original stock offering was used to purchase supplies. A Production Department was set up to produce the goods, and and Advertising Department to promote them.

After the workers had written a set of safety rules, five production lines were set up. Each line had nine workers, who were assigned to shape, cut, comb, trim, glue and wrap the goods. There was also a supervisor and a quality control person for each line. Some children served as custodians and others handled supplies. After the first production "run" we determined the number of fuzzies that could be made from each skein of yarn, calculated the cost of producing each item, and established prices ranging from 15¢ for the smallest to 50¢ for the largest size fuzzy. (Note that mathematics was an integral part of the project.)

While production was taking place, the Advertising Department was preparing for the "Grand Opening." Advertisements were placed throughout the school and announcements were made over the public address system. The stockholders met and decided that everyone buying a fuzzy during the first week of sales would be eligible for a "Grand Prize." Pupils in grades K through two would receive pictures of fuzzies to color and would deposit their pictures in the contest box. Grades three through six received lists of business and economic terms which they were to find in a word search puzzle and then deposit them in a different contest box. The Board of Directors drew two

entries from each box. These winners each received a giant warm fuzzy and a gift certificate to use at a hamburger restaurant.

Initial sales greatly exceeded expectations, and we opened a savings account with $122.00! It was time now for an interim evaluation, so we had each pupil fill out a "Reaction Sheet" in which they indicated whether or not they liked their jobs, how well their groups had worked together, how helpful the supervisors had been, how they thought production might be improved, what other jobs they would want to try, and the like. The responses showed that young children can be objective and reasonable, for children who indicated that they did not like their jobs might, at the same time, state that their supervisors had been helpful and that the line had worked well. Some who *did* like their jobs would want to change and would give valid reasons. (A girl who wanted to become a supervisor explained that this would give her a greater opportunity to help others.)

We continued to have guest speakers, such as an accountant who explained the importance of inventories, keeping accurate records, and determining production costs. There were also more field trips and stockholder meetings. As our business (and reputation) grew, other classes wanted to know more about warm fuzzies, so several children visited other classrooms and read the warm fuzzy story. Our "fame" spread to other schools as well. When the principals in the area held a meeting in our building, several pupils made a presentation and each principal received a gift of a warm fuzzy from our principal. Several teachers placed orders for fuzzies to be used as Valentine gifts, and our salesmen took orders, made deliveries, accepted payments and wrote receipts. By special invitation, one child explained our company and its product to the Superintendent of Schools. *The Chalkboard*, a teacher newspaper in Akron, wrote about our company in a special issue on economics.

Around the time of our "Grand Opening" we visited the *Beacon Journal*, a local newspaper, and saw a different kind of production line in operation. We also learned more about advertising and decided to produce our own paper, *The Warm Fuzzy Co. News*. A person in the advertising business spoke at one of our stockholder meetings, told about the different jobs available in the industry, and gave us much good advice on improving our own advertising. The owner of a small local candy company traced the history of his own firm, comparing its establishment and growth with that of the Warm Fuzzy Co. He offered to buy between 400 and 800 warm fuzzies to use as "Easter basket stuffers" which he would be selling in his 15 outlet stores. Thus, we became wholesalers as well as retailers! A boutique across from the school also agreed to handle our product, keeping 30 percent of the sales revenues and returning 70 percent to our company. Similar arrangements were made with church bazaars and flea markets.

Business was booming, and at the end of February the company declared a dividend of five cents. These payments were made by check, with the teachers serving as bankers. Letters were sent to parents to keep them informed of the details of our business venture. New ideas continued to emerge, and the children decided to put on a play about the Warm Fuzzy story and to make a film. We were invited to be in a film about Career Education, which showed such things as our production lines, meetings and sales. The

economics of film-making was incorporated into our lessons, as we learned about the costs involved in producing films.

Our artists went to work designing sets for the play, and we held tryouts for the various parts. Each child would have a role, and after many weeks of making sets and holding rehearsals we presented the play to the entire school and to visiting parents.

As profits continued to mount, the stockholders met to decide what to do with them. We had already donated Easter baskets (containing candy and fuzzies) to 35 women in a nursing home, and the children decided upon further charitable work. Food, toys, clothing and Easter baskets were donated to Good Neighbors, an organization that helps the needy. The stockholders also voted to contribute $100 to the building fund for the Children's Hospital of Akron.

Easter baskets were added to our production. We used margarine containers of three different sizes, and filled them with candy and fuzzies. Plastic eggs with small fuzzies inside were also sold. The new products were a huge success, and we had to expand our factory and use two rooms instead of one. Of course, changes had to be made in the production process. Word of our activities continued to spread, and we became the subject of an article in *The Firestone Non-Skid*, a newspaper published by employees of The Firestone Tire & Rubber Company. A television reporter read the article, interviewed our President, and filmed our production lines. The film was shown on two newscasts. This led to further publicity, for an educational TV station then decided to include our story in programs for social studies classes. We are still waiting for a call from Walter Cronkite!

Suddenly we found ourselves nearing the end of the school year and we began to make plans for liquidating our company. As a way of thanking the entire school community for its support, the stockholders decided to rent a Walt Disney movie for the school. They also voted to have a pizza party as a fringe benefit for all our employees. A "going-out-of-business sale" was held, wherein buyers of one fuzzy could receive a second one at half price. A second dividend of five cents per share was paid, and each stockholder's original investment was returned. We were invited to attend a meeting of the Board of Education, where we told about our company, set up a demonstration of our production line, and presented each Board member with a fuzzy and copies of the articles written about us. We also presented our principal with a check for $250.00 to be used to buy a record player, two tape recorders and some athletic equipment. Many ideas for continuing to operate the company were presented, but none proved to be feasible and we all sadly agreed that we would shut down for good.

## Conclusion

When we conceived of a simple project to show our classes how the American economy operates, we never dreamed that it would grow and expand to the point where it would require eight hours a day outside of the classroom to keep it going. Material for pupil use had to be prepared, forms had to be developed and duplicated, purchases had to be made at various places, and arrangements for speakers and field trips proved to be highly time-consuming. Keeping financial records, going to the bank, talking to

resource people, going through catalogs, setting up production lines, and preparing a variety of evaluation instruments took far more time than we had anticipated. In spite of all the extra work, however, we have a great sense of accomplishment, and we will try other projects of this type in the future. Comments from parents, school administrators and the general public provided encouragement, and the enthusiasm of the children themselves was infectious.

Formal tests showed that third graders can learn many basic concepts about our economy and how it operates. Clearly, the pupils gained in self-confidence, in working with others, and in becoming more independent. They learned that everyone can play an important role in our economy, regardless of differences in ability. We asked them to evaluate every part of the project. While some, of course, were critical of certain things (one girl liked her job but wanted to change "Because I got blisters"), the overall reaction is best summarized by the pupil who rated it—

"GRATE, GRATE, GRATE, TERRIFIK!!!"

# Sing for Your Supper—There's Money in Music


**Anna Rose Miller**

Sutton Elementary School, Fort Smith, Arkansas


## Introduction

At Sutton Elementary School the teachers are free to try new methods and techniques of teaching. In fact, the principal and higher administrators encourage us to do so. My second-grade class was made up of seventeen boys and ten girls, many of whom were from low-income families. To teach economics to these children it would be necessary to find a medium that would have immediate appeal. Children love music, and my years of experience as a private teacher of piano, pipe organ and music theory, and my service as accompanist and director of children's choirs, led me to select this art form as a way of incorporating economic concepts into the curriculum.

The music industry is an important one in the United States, and it serves to illustrate many of the institutions and principles related to the American

economy. My goal was not only to acquaint the second-grade pupils with music as a profession they might want to consider for themselves, but to help them to explore music-related occupations and to learn how such basic economic concepts as interdependence apply in this field. Art, English and mathematics would also be related to this study of music.

### Development*

My pupils were using economic terms in daily conversation even before they knew we were studying economics. Wants, needs, choice, opportunity, profit, gain, bargain, goods, consumer, trade and purchase were some of the terms being used in connection with various classroom subjects. To emphasize these terms, I had each child make a card file on economics words and their definitions. As a new term was learned it was added to the files, and eventually we made our own economics dictionary. To introduce the basic unit I initiated a discussion of family wants and needs and asked the class to categorize the needs as being food, shelter, clothing or transportation. Wants, of course, covered a greater variety of materials and services. The class arranged a bulletin board display to illustrate these wants and needs.

The bulletin board display served as the basis for a discussion of the circular flow. The class had discussed family income, and now we saw how people leave their homes to work, receive income which they in turn spend for the kinds of items we had listed, and then again receive payments in the form of wages, rents and so on. Each child made a circular flow chart based upon the wants and needs of his or her family. Music is something most people want in some form or other, and our study of music literally started with a bang when a six-member rock group was in Fort Smith for a nightclub engagement. One of the musicians visited the class and told us how the band functions. The children learned that the band performs a service, and that people who listen are the consumers of that service. The band, in turn, is the consumer of a service performed by its manager who arranges schedules and performances. The group exemplified specialization and interdependence, for they relied upon one another and upon their manager, and each specialized in what he could do best. We categorized the musicians as human resources (labor) and their instruments as capital items. The class made a circular flow chart on the musician's work and income.

In February the National Ballet Company appeared in Fort Smith, and two of my students interviewed one of the co-directors. They learned how money was invested in such things as costumes, how each member of the company is paid, and how the dancers depend upon many other people such as musicians, directors, stage crews and even truck drivers (who deliver scenery and equipment). We touched upon taxation when it was learned that our tax revenues help to pay the costs of the ballet. When the two pupils made a report to the class on their interview, it was pointed out that they were performing a service in so doing. The students missed little in noting the way in which the ballet relies upon division of labor, and how it depends upon others in the

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* This is an abbreviated version of the original report and the supporting material. The complete project can be obtained from the Vernon R. Alden Library (Depository of the National Economic Education Awards Program), Ohio University, Athens, OH 45701.—*The Editor.*

economy—from motels which house the dancers to the firms which manufacture scenery.

Mr. and Mrs. Joel Ferren, known professionally as the Dorian Duo, gave two performances at assembly programs in our school. Mr. Ferren is a cellist, Mrs. Ferren plays the violin. Following their second program they came to my classroom to speak with my pupils. They pointed out that long hours of practice were required to become specialists in their field, and that their capital equipment (the instruments) could be very expensive. Rare old violins have been sold for as much as $3 million—a good example of a very limited supply affecting price. They explained the costs involved in modern factories which manufacture violins, such as wages, raw materials, utilities, insurance and taxes; and they pointed out that the entrepreneur's profit is what remains after all costs have been paid. We noted, then, that the entrepreneur uses his income to buy goods and services for his family.

In a follow-up discussion after the Ferrens' visit, the class agreed that the Ferrens performed a service, that they are specialists, that their intruments are physical capital, that they had invested time, talent and money in their work, that scarcity of talent affects the income of performers, that in choosing to be musicians they had sacrificed the chance to do something else (this was their opportunity cost), and that they were helping to meet consumers' demands for a service. We also noted some of the principles of the market economy, for the musicians had exercised the right to select their own occupations and to try to improve their material well-being.

The concepts were reinforced in discussions of other solo artists and of choral groups, and new concepts were introduced. For example, we concluded that the output of musicians is nondurable (except for recordings, of course), while their instruments are durable goods. The pupils showed their understanding of these terms by identifying other items to be so classified. They noted that their teacher's car is a durable good and that she is a producer of services. When a junior high school student told the class that he spends several hours a day practicing the violin, one pupil pointed out that one of the opportunity costs involved was that the student could not use that same time to go out and play. Brian Johnson, another junior high school student who actually plays with the Fort Smith Symphony, also served as a valuable resource person. He told us that his violin had cost $400 and that he had raised the money to make a down payment, borrowing the remainder from a bank. Thus, the class learned some of the functions of banks and were introduced to the concept of interest.

A visit to the Kimmons Junior High School band, choral and string groups enabled us to review the application of such terms as durable goods, services, interdependence, capital and specialization to the field of music, and to move into some new economic topics as well. The children were fascinated by the bow used by a music teacher in playing the violin, and they wanted to handle it. The teacher loosened one end of the bow strings and let them hang free so that the pupils could feel them. They immediately asked what the strings were made of. After a fruitless guessing contest, the teacher informed us that the strings are made from horse hair imported from Russia. (One boy exclaimed: "A natural resource!") This incident gave me the opportunity to teach the class about international trade, specialization and interdependence.

After additional exposure to the economics of music-making, through

such things as attendance at Northside High School's Spring Choral Concert (which included a talk backstage with Miss Massey, the choral director), we began to probe into related occupations. "What is required of a musician before he or she can give a performance?" "Where does music come from?" Questions like these led the class to a discovery of the work of composers and publishing companies. We noted the large number of jobs related to music publishing, which furnishes work for printers, editors, proofreaders, illustrators, artists, typesetters, clerks and many others. There must be an entrepreneur in the business, and the capital goods include such things as instruments, tape recorders, microphones, metronomes, record cabinets, speakers and amplifiers. The publishers need an outlet for their goods, so we had to study the role of retail stores. Committees were formed, with each child assigned to a group to study an establishment in the music industry.

Three boys went with me to a music store, where the owner told about costs and how the oil shortage may affect the supply of records. (Records are made from plastic, and plastic is made from petroleum.) Production may be decreased, and prices may rise. Another group visiting a different music store took note of the many materials that go into the making and packaging of the goods for sale. A group visited a recording studio and learned about the many specialists and the large amount of durable capital equipment that are needed to make a recording. The costs were noted, and it was surprising to see that a band may spend seven hours making a recording that will last for less than one hour.

One of the most interesting findings was that music can have an effect on the productivity of workers. Music is transmitted to many places in and around Fort Smith, and it has been found that there is less absenteeism in plants and offices where music is played. The children listed all the places in Fort Smith where they have heard music being played, and we decided to make a model village showing where and how music is heard. The use of music as a marketing device was studied, and the children had fun singing the various commercials with which they were familiar. One boy noted that these commercials provide jobs for writers, composers, actors, artists and technicians. We also studied printed advertisements, examining their cost, the jobs they help to create, and the role they play in a market economy.

Reading lessons were related to music through such stories as *The Toy Trumpet* by Ann Grafalconi. This book contained many of the economic concepts we had been studying. The children were also asked to write stories of their own, relating economics to music. They also wrote a poem in the style of "This is the House That Jack Built"—only their poem was entitled "This is the Drum That I Play." The poem lists all the resources needed to manufacture the drum—from the seed that became the tree for the wood in the drum, to the factory in which it was made. Economic words were continually added to our spelling list, and each word would be defined and used in sentences. Writing skills were practiced through such activities as recording information gathered during trips and composing letters of invitation to parents. Math lessons were used to deal with the statistics we gathered. For example, when a musician told us how his band's fee was divided among the members of the group we had to make the necessary computations to see how much each person received. The cost of Brian's violin, the interest on the bank loan, the differences between sale prices and regular prices on items we

had seen in music stores, the costs of making recordings, and the like, all presented opportunities to use math skills. There were plenty of chances to include art work as well, for the children illustrated the poem and drew pictures depicting economic concepts.

## Conclusion

The completed model village was a source of great satisfaction to the class, as they not only admired their work but discussed the way in which each building illustrated some economic concept they had learned. Upon completion of our poem the children suggested that we perform a play based upon it. Parents and other classes were invited to attend the choral reading of the poem. As we read about each resource used in making the drum, a child representing that resource would appear on stage. Goods, services, producers, consumers and entrepreneurs were clearly identified. In addition to the poem the class wrote two songs. One was entitled "Our Second Grade Had a Band," and was sung to the tune of "Old MacDonald Had a Farm." The other, "There's Money in Music," was sung to a tune composed by our pianist, Mrs. Hatfield. A portion of the song follows:

Oh sing for your supper
like little Tommy Tucker;
For there's money in music—money in music!
There's the salesman and the store
And accessories galore;
There's the beaters and the shakers,
And many music makers.
Music, music—there's money in music.

The parents and other visitors not only heard the choral reading but listened to tapes we had made at the recording studio and examined the work we had done. During a self-evaluation session I asked the class: "In what way has this study of economics been important to you?" All the answers were gratifying, as the pupils pointed out that they had learned how we all depend upon one another, that our market economy gives us important rights and privileges, and that because of limited resources we can't have everything we want (and many more). There had been continual evidence of student learning. For example, as he was looking at the model village, one boy said: "Look, I can trace a circular flow with my finger." He then proceeded to do so, starting with a home and showing the flow of economic activity and how it comes back to the home again. Parents reported that their children had mastered many basic principles of our economic system, such as supply and demand. Professional educators, such as our Director of Elementary Education, gave very favorable evaluations on the amount of economics the class had learned. Our Principal, Mr. William A. Freeman, summarized it best by saying: "The economic awareness which your students gained will follow them for years to come."

# Productivity and Profits

## Economic Activities for the Upper Primary Grades

Marilyn Cali

Waverly Elementary School, Waverly, Pennsylvania

### Introduction

As many teachers know, it is not always easy to hold pupil interest as the end of the school year approaches. Although economics can be included in the elementary curriculum at any point in the academic year, the variety of interesting and exciting activities one can use in teaching this subject provides an effective means of keeping student attention from waning or disappearing altogether during those critical last few weeks of the spring term. It was in early May that we started our unit on economics, and little did we know that it would develop to the point where five business ventures would be established, where people from the community as well as other students and teachers in our school would become involved, and where a substantial contribution to the American Cancer Society would result. In the process, the pupils learned many basic economic concepts about the consumer in the private enterprise economy, the role of government, the profit system, principles of production, how prices are established, the impact of competition, and taxation.

### Activities

The key to learning economics is showing the students that the principles of this discipline are useful tools to help them to live better and more productive lives. Relate the concepts to their own needs, interests and experiences, and you have all the motivation necessary to capture and hold their attention. Youngsters have inquiring minds and will react readily to an interesting puzzle or question. I began by showing the class two cans of vegetables and asking them why the prices differed. The answers were many and varied, and most of the responses led to further questions that would call for economic analysis. One popular activity was having the children taste products to see if qualitative differences might explain the variations in prices. Such terms as quality, quantity, wholesale, retail, consumer, producer and cost had to be discussed and defined during this period. We discussed the question of whether it would be better to have one company producing a product or to have competition. This led to a study of the impact of supply and demand on r ces.

As is always the case in a study of economics, one thing led quickly to another, and we were soon analyzing the factors needed to start a new

business—capital, workers, natural resources, a marketable product and an efficient means of production. In a controlled experiment (producing paper cats) we established that division of labor through an assembly line process results in greater output at lower real cost. By viewing the film "What is Money?" and taking a trip to a bank we saw how banks help to promote business growth by providing liquid capital. To probe more deeply into supply and demand, why some products sell better than others, how advertising works, why some businesses fail, and how government enters the picture, we divided the class into five groups. The groups worked at learning stations, doing research, discussing their topics, and then making presentations to the whole class. This was followed by a study of the American economic system, and the construction of a chart that set forth both our freedoms (such as the right to start a business) and our responsibilities (such as producing a high-quality product).

English and math were included in this unit as well. The students were given the opportunity to show their creative writing abilities as they wrote advertising copy and prepared television commercials. They could express themselves orally as they engaged in role-playing situations. In one role-playing situation the children pretended to be members of the board of directors of a fruit jelly firm, discussing the problem of falling sales and trying to suggest ways of saving the company. In another, a union representative asks a company president to increase wages, while the president replies that the workers are already adequately paid. There were discussions of what the owner of a small store might do to survive when a new supermarket opened nearby.

The class was again divided into five groups to discuss possible businesses they could lauch in the hope of making profits. They would make market surveys to see if there would be a demand for their products, and then borrow five dollars to get started. Each company would elect the necessary officials, such as business manager and treasurer. To give them practice in dealing with problems that might arise, we set up a small store and engaged in role-playing to answer such questions as: What would you do if you bought a quart of milk and later discovered that it was spoiled? What would you do if you found that the cashier forgot to charge you $2.98 for the meat you purchased? What would you do if you found bugs on the store shelf? What would you do if you found that several jars of pickles on the shelf have been opened? There were also discussions of the responsibilities of both buyers and sellers.

When each group had decided upon its product, lists were made of the materials that would be necessary, where these might be obtained at the lowest cost, and what price should be charged. Consideration would have to be given to wages, sales taxes, interest paid on loans, advertising, projected gross profits and net profits. Of course, math lessons were integrated with the social studies project at this point. The children read books and stories relating to earning money, how goods are produced, markets and various workers. They viewed filmstrips on money and its functions, listened to a tape on labor unions, and wrote stories about businesses.

Soft drinks, cup cakes, popcorn and other snack foods were the goods to be produced by the five firms. The pupils learned that one should "shop for money" just as one shops for goods to get the lowest price. When they found that local banks were charging eight percent on loans, while money could be

obtained from the school contingency fund at only six percent, they naturally opted for the latter. They had learned enough about comparison shopping, taste testing and other wise consumer practices to know that their own output would have to be of high quality. Thus, business boomed when the students set up their wares in the school cafeteria. Financial records were kept in an orderly way. After paying for the materials, wages to workers, interest on loans, taxes and other costs, each firm made a profit. Total profits ranged from a low of $3.91 for the soft-drink company to $18.94 for the cup cake producers. Total profits for all firms combined were $42.36. After a discussion of what to do with the money, it was decided that the entire amount would be donated to the American Cancer Society.

### Evaluation

Evaluation was a continuous process, and a variety of techniques was used. For example, after reading the book *Earning Money* the children were asked to write the answers to such questions as: "Where does the money come from that Mr. Carter earns?" and "What is the income tax and what is it used for?" To show how well they understood the meaning of land (natural

Marilyn Cali's pupils at the Waverly Elementary School in Waverly, Pa., borrow money to launch their own business firms. Although profits varied, each firm ended up "in the black," and the money was donated to the American Cancer Society. —Photo by Angelo Rose

resources), labor and capital, they were asked to draw pictures illustrating each of these factors of production. After hearing an audiotape of the story "The King and the Market," the pupils responded to questions of the following type:

- In a market system, how do we decide what will be produced?
- What decides the market price?
- What happens when too many people produce the same thing?

Similar questions were prepared (in worksheet format) for each major topic covered in the unit.

Some of the evaluation items gave pupils the opportunity to express their values and to show how well they could write about economic issues. For instance, they were asked to select an advertisement they liked and explain why they liked it, and then select one they did not like and tell why. In another exercise they were told to explain what the creator of an advertisement was trying to show. Interpretation of simple graphs was called for in an exercise in which the students would see such things as the break-even point. They also revealed the extent of their knowledge and understanding during the role-playing activities. Their math worksheets not only required practice in computation, but called for them to explain the relationship between prices and the demand for goods.

Finally, the students were given the chance to evaluate the unit by responding to such questions as:

- Should this unit be taught to another class? Why? Why not?
- Did you enjoy our study of economics? If so, what did you like about it?
- What other ideas would you like to study about in economics?

The answers to the last question were varied, but there was obviously a keen interest in learning more about business in our economy and in learning about other economic systems as well.

In summary, there is no doubt that economics can be taught effectively to children in the upper primary grades, and that it can be integrated with other subjects in ways that youngsters will find exciting and meaningful.

# Economics Activities in Grades Three and Four

Virginia Buzzard, Cheryl Carver
and Gail Popp

Harmar Elementary School, Marietta, Ohio

## Introduction

The third and fourth graders of today are active members of our economic society. Because they are often confronted with emotional advertising appeals, have easy access to shopping centers, and may be imbued with the idea that one must "keep up with the Joneses," it is important that children be exposed to economic education at an early age. Thus, our units were designed to help the pupils to develop their own value systems, engage in sound decision-making practices, and understand their rights and responsibilities as producers and consumers. Simulations in which the children earn, spend, borrow, save, invest and participate as citizen-voters in economic decision-making are useful educational tools. In addition to learning some basic economics, they become aware of how people interact, become sensitive to the problems of others, develop critical thinking skills, learn to express ideas clearly and employ deductive reasoning and problem-solving techniques. Role-playing sessions can be related to a wide variety of activities and make it possible for pupils of varying abilities to participate both verbally and physically, and to maximize the use of their potential. The teacher becomes a facilitator, reinforcing positive and meaningful behavior.

Among the many economic topics included in our units were consumer, producer, income, banking, specialization, interdependence, the factors of production (natural resources, labor and capital), supply and demand, competition, prices, profits, forms of business organization, scarcity, opportunity cost, money, the circular flow, and the role of government. Economic education activities were integrated with the language arts, mathematics, art, and other parts of the curriculum. For example, the pupils were given practice in presenting their ideas orally to an audience, in doing arithmetical computations, in working with arts and crafts media, and in such social skills as conversation and cooperative group work.

Our objectives were stated in behavioral terms. The following are but a few samples of the nearly 70 that we listed.*

- The students will show through a simulation that specialization results in greater efficiency in producing goods or services.

* The complete list is contained in the original report which may be obtained from the Vernon R. Alden Library (Depository of the National Economic Education Awards Program), Ohio University, Athens, OH 45701.—*The Editor.*

- While engaging in a business venture the students will analyze costs and determine which product would yield the greatest profit.
- The students will demonstrate skills in reading and comprehension through the completion of business forms, information sheets and research reports.
- Pupils will show mastery of mathematical concepts by recording computations in savings books, bank record cards, business receipts and disbursement sheets.
- Courtesy will be demonstrated as pupils express opinions in group meetings and in sales situations.
- Proper use of arts and crafts media will be indicated when pupils show ability to use such media in preparing products and advertisements.

## Development

The efforts of 145 students, six teachers, four student teachers, and a work-study student were combined in the development of our economic education units. A team approach was used. The capstone project was to be the establishment of a shopping mall that would incorporate all the economic concepts the teams had learned, with new principles being studied and with earlier studies to be pursued in greater depth. Several months of preparation would be necessary, however. For example, each team established a savings bank where students could deposit their "pay checks." Our monetary units were known as "Harmies," and were made of bottle caps painted different colors to represent different denominations. Although the teams worked independently, they kept one another informed.

The third-grade activities were planned and executed by Virginia Buzzard, with the assistance of team teachers Verneda Kalar and Emily Buckman. It is not possible to list every activity planned for the period from January 28 through May 17 (the detailed plans can be found in the original report on file at Ohio University), but the following will suffice to serve as a representative sample.

A bank was set up, with students taking turns as tellers (four new ones each week). Such concepts as money, interest, income, wages and credit were studied in relation to the bank experience, all relevant terms being listed and defined. Materials in the math learning center were related to the economics activities, and games as well as the more traditional worksheets were used to promote skills in measurement and other basic computational operations. English lessons were used to develop different methods of mass communication which would prove useful in sales and promotion. The pupils learned to distinguish between producers and consumers, between goods and services, and between durable and nondurable goods by such activities as locating pictures of these items in magazines and making charts illustrating the terms with the pictures.

Pantomime and other role-playing activities were employed from time to time. Division of labor was demonstrated in this way, and the pupils had to use their reading and comprehension skills in applying for jobs. Elaborate simulations are not needed to show that specialization and division of labor result in more efficient production. For example, simply give a group of students a sack of bottle caps and ask them to sort them. There will be mass

confusion. After about three minutes, stop the activity and have a discussion on how they might do it better. Then engage in division of labor and do the same task. Invariably, it will be completed quicker and more efficiently.

Because the children would have a choice in selecting the kinds of businesses to establish, we had lessons on the various forms of business organization—proprietorship, partnership, corporation and cooperative. They also learned about business costs and how profits are determined. Nearly 30 different products were suggested, ranging from popcorn to pencil-holders. In each case, the students had to find out what materials, equipment and other inputs would be necessary in order to plan their production and estimate costs and prices. Role-playing situations were used to show how money is superior to barter, how supply and demand work, and how banks help to provide capital. We also viewed films and filmstrips on money and its uses. The kinds of jobs that would be needed for each business were listed, and we discussed the rights and responsibilities of both employer and employee.

Managers were chosen for each business, and their responsibilities were listed. The children chose real-life producers and wrote stories about them and their work. A discussion was held to consider ways of avoiding such things as false advertising, the use of inaccurate labels and price discrimination. Potential labor-management problems were studied through role-playing situations. (For example, what should be done about workers who are lazy or who return late from coffee breaks?) Posters, signs and other advertisements were prepared during art sessions. A large area in the basement was to be used for the shopping mall, and much work was involved in establishing the stores and other businesses there. Of course, each firm had its own account books and checks. Investors purchased stock in the companies, and some of the money had to be used to pay bills for materials and "rent" for the "lots." Of course, the employees had to receive their wages as well. We took a field trip to a local bank and a large retail store to learn more about their operations before actually starting the production lines.

Production began in mid-April, and selling took place as soon as the goods were ready. Thus, our Westside National Bank and Mall were in operation from April 17 to May 17. Parents came to the Mall to shop, and our principal, Mrs. Mildred Villani, awarded ribbons to various businesses for such things as having the best advertising, selling the most creative products, and achieving the greatest financial success. The pupils prepared written evaluations of the project, and these statements often showed the development of such values as respect for the rights of others. The students were tested on vocabulary, understanding of concepts, and ability to draw inferences from the experience.

The fourth-grade teaching team was made up of Cheryl Carver and Gail Popp, assisted by Helen Nealis. Part One of the unit centered around the television series "Adventure Economics," while Part Two involved simulations of earning and banking money, creating business, producing goods and services, and selling the output in a market situation. The children were introduced to such concepts as barter, specialization and interdependence in simple role-playing activities before viewing the TV films. For example, one group of pupils would have cookies while another would have a soft drink, and they would be asked to determine how best to share the benefits of their

respective specializations. Favors were made for local rest homes and hospitals, with the pupils organized to work individually and in specialized groups of various sizes. After the items had been produced, the class would analyze the situation and note which method of production resulted in the highest quality and quantity, and why. These activities dominated the first week of economics instruction.

During the second week, opportunity cost and the factors of production were learned. Pupils would be permitted to choose one food item from among a variety on display, the *real* cost (opportunity cost) of the item chosen being the sacrifice of other possible choices. Local industries were studied and the students listed the factors of production employed in those firms. During the third week we dealt with competition, resource scarcity and the market system. The energy crisis was a good example of resource scarcity, and the pupils were asked to show how the problem would be approached in three different economic systems—traditional, command and market. Marketing and retailing were studied during the fourth week. Business people were invited to describe their services, and stories were written to compare retailing with wholesale operations, and to show how the two are related. A store was set up in the math center, stocked with goods, and operated with play money. Investment, capital formation and interest were taken up in week five, with several children operating a class bank and extending loans to others for a variety of purposes. Pupils who were advanced in mathematics compared interest rates of different banks and credit companies, those of average ability explored the reasons why people borrow, while students whose grasp of math was poor took an inventory of items in the room. Representatives of the three groups then made large group presentations.

Money and its uses became the major topic of the sixth week. In a simulation, individuals would approach a storekeeper and try to pay him with various goods, such as salt and bottle caps. The class then explored the meaning of "medium of exchange" and formulated a definition in their own words. This led to a study of banking in the seventh week, a local banker explaining such things as borrowing, lending, the transfer of purchasing power, and how a bank earns money for its services. During the eighth week we related money and banking to the total economy, and concentrated on the problem of inflation. Some of the causes of inflation were learned through a role-playing situation in which the children obtained loans from the banker in order to buy magic markers from the storekeeper. Of course, the demand for markers now exceeded the supply, and the price rose. We also developed an "Inflation Game" in which each child was assigned a job with an appropriate monthly wage or salary (each day represented one month). Pictures of items were placed on display to represent the kinds of things they might purchase. Each pupil kept a record of his or her expenditures in a notebook and made a bar graph of those expenditures. Increased spending resulted in rising prices, and the entire class then discussed means of coping with inflation. If they decided that increased salaries would help, they got more money and resumed spending. Of course, prices continued to rise, and the group then took up the question: "Who suffers when prices increase?"

Through simulations in the ninth week, the children learned about investment, growth and the GNP. They found, through role-playing, that if interest rates are high and bank loans are scarce there can be too little for

investment in capital goods. When rates are low and funds are available, investment increases, growth occurs and the GNP rises. Government entered the picture in the tenth week, both as a consumer and producer. Societal goals were listed, and government's role in achieving those goals was examined. Government economic activity, from the provision of such services as mail deliveries and police protection to transfer payments and promoting the general welfare, was studied. The room was divided into districts, and children played the roles of city officials and citizens interested in park development, street repairs, obtaining building permits and the like. Decisions had to be made on raising money through new taxes or bond issues. A simulation of this sort can be made even more realistic by taking trips to City Hall or having a government official visit the classroom.

Foreign trade, with an emphasis upon the law of comparative advantage, was the subject of the work of the eleventh week. The children played the roles of different countries engaging in trade in order to enjoy the benefits of specialization on an international level. They also did research on tariffs, embargoes and other trade restrictions. In the twelfth week we studied insurance, introducing the children to some simple probability theory so that they might understand how insurance firms rely upon actuarial studies. An insurance agent can serve as a resource person to explain the way in which the industry determines risk.

The problems of inflation and unemployment were studied in the thirteenth and fourteenth weeks, building upon the previous learnings regarding inflation by considering other causes, such as the impact of war on the economy. The fifteenth week was used for summarizing previous learnings. We used a matching game to see how well the economic terms were understood, administered a formal test developed by economic education specialists Dr. Kenneth Light and Mrs. Constance Van Scoy (Ohio University), and had the students write their reactions to the activities or record them on audio tape. (Dr. Roman F. Warmke, Professor of Economic Education, Ohio University, surveyed the progress of the third-grade team.)

Because of space limitations, we can only sketch the activities of Part Two.* Following the viewing of the TV series "Adventure Economics," we had 23 lessons covering a period of about four months. Many of the activities were similar to those reported for the third grade—the establishment of a bank, the use of "Harmies" for money, the setting up of businesses, the production and sale of goods and services, taking field trips and inviting resource persons to supplement classroom activities, and so on. Some of the real-life problems that emerged during this phase were incidents involving a depositor overdrawing his account at the bank, a "law suit" over ownership of some materials, and the formation of a detective agency because of missing property. A damage suit was brought against one firm when a customer was shot in the head with a rubber dart. One worker was fired for leaving his post, but quickly obtained employment elsewhere. Some of the "entrepreneurs" learned—the hard way—that goods of poor quality will not sell. Others found that hard work, diligence, careful planning, keeping accurate accounts, and following other sound business practices paid off.

As with the third-grade groups, we enjoyed excellent support and

* The original report is 97 pages long.—*The Editor.*

participation from the parents. The chaos and confusion that had reigned during some of the early days of the simulation were replaced by orderly and businesslike behavior by the time of the final sales days. The children had learned from hard experience that cooperation and responsibility are essential. Again, the principal awarded ribbons to the firms showing the most creativity, having the best advertising, and experiencing the greatest financial success. (The third graders received ribbons separately.)

### Evaluation

On the whole, the goals of the project were achieved. Formal tests showed that the children had learned the economic concepts. Their behavior at the end of the simulation indicated that they had mastered the problem-solving approach, learned how to assume responsibility, and acquired important social skills as well. The students were asked to evaluate themselves (Did I work well with others? Did I finish what I started? Did I help others?), the teachers evaluated each pupil (Did he or she show interest when guest speakers made their presentations? Did social habits improve?), and the teachers evaluated themselves (Did I use community resources as much as possible? Did I provide a good variety of materials? Did I provide ways of making concepts clear?). Of course, these are but a few of the evaluation questions raised.

In conclusion, we believe we have shown that it is not impossible to plan and carry out constructive projects on a cooperative basis—even when faced with the seemingly insurmountable task of uniting nearly 150 third and fourth-grade pupils in a joint effort, coordinating the work of several teachers and classes, involving many members of the community, and teaching some sophisticated economic concepts to young children.

## APPENDIX TO CHAPTER 1

### Good Ideas in Brief: Primary Level

CATHERINE VAN REEKUM of the *Wakarusa Valley School* in *Lawrence, Kansas*, has developed materials and activities useful for teaching economics to kindergarten children and other primary grades as well. She has written a book of stories with economic content which are of great interest to young children, and illustrated each story with a photograph of a child in a related situation. Follow-up activities and word lists are appended to each story. One story draws upon her own childhood experiences when her father told her that to have her own horse she would have to raise the money for it. It shows how she became a producer of various goods and services to earn

sufficient funds. Class work is supplemented by field trips to such establishments as banks, bakeries and farms. Another interesting activity was having the children trace the source of the money given to them by parents (such as money earned for doing jobs at home). Thus, they would learn that a parent received the money for providing goods or services, and that the payer of the money in turn obtained it from consumers. The pupils put into practice the ideas learned from the stories, for they raised the money themselves when they wanted to make a trip to the zoo. One rather sophisticated project for children of this age was the planting of vegetable gardens and then comparing the cost of raising one's own vegetables with the price one would pay in a store. Comparing their experiences with those of "real" farmers, they learned that farmers often have to borrow from banks to pay for capital equipment and that there are other important factors of production sharing in the income.

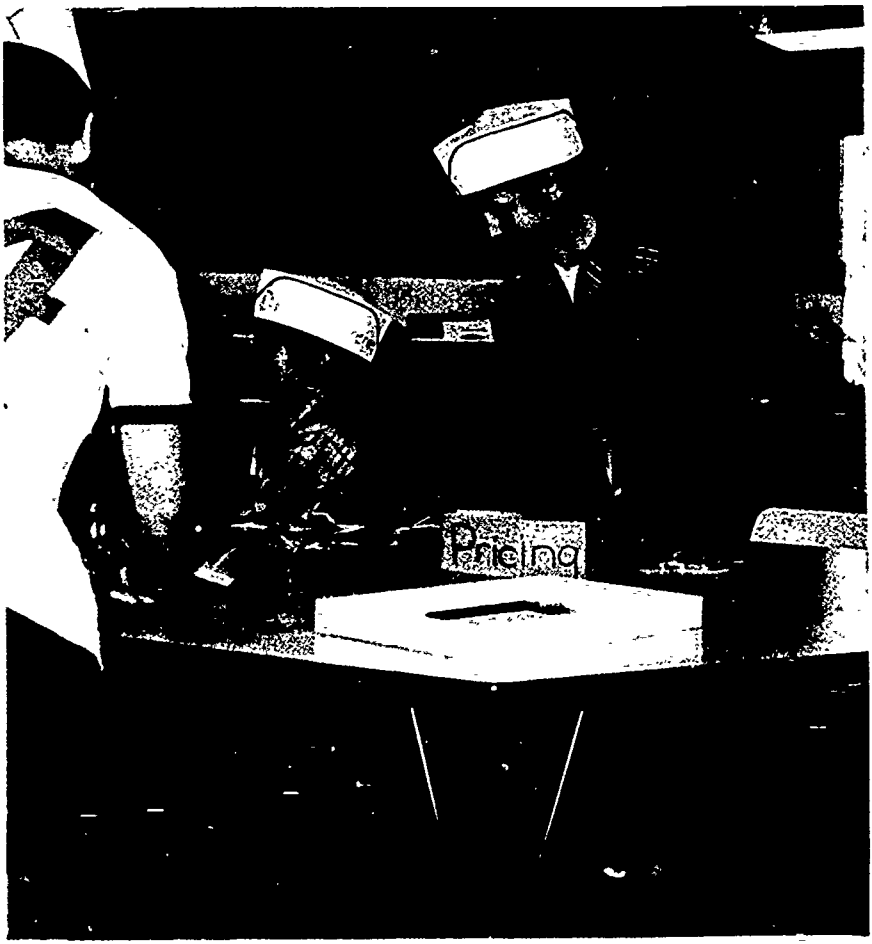
BETTY MUENCH of *Fair Park Primary School, Little Rock, Arkansas,* integrates economic concepts into the curriculum throughout the school year. A wide variety of activities is employed. One of the most interesting projects during the 1973-74 year was a study of the energy crisis. Her first graders understood the basic problem of scarcity, and the dramatic energy shortage of last winter served to illustrate this problem. The various types of energy were listed, and the children gave their ideas for personally saving this scarce resource. Poems, songs, stories and drawings were used, and the industries hurt most by the crisis were listed and discussed. The class made posters with such titles as: "How Have YOU Saved Energy Today?" The opportunity cost principle was related to this problem, for the children could see that resources used for one thing (such as gasoline for private autos) cannot be used for another (such as fuel to run industry), and that the real cost of using the scarce resource for one product or service is the sacrifice of some other item that could be produced with the same resource. The law of supply and demand was taught at this point also—the supply of oil was low and the demand high, thus the price rose. Charts were made, with barrels depicting oil and with prices rising. The pupils were also introduced to the term "inflation." Finally, this problem showed how nations are economically interdependent, for the oil-consuming countries rely heavily upon the output of the oil producers. In another interesting activity, parents became valuable resource persons. Questionnaires were sent to the parents, asking them to describe their jobs, what sort of training they needed, how they are paid, what working conditions prevail, what they like and dislike about their jobs, and so on. Parental job experiences ranged from unskilled labor to psychiatry and college professorships, but all were considered to be productive and useful occupations worthy of respect. Many of the parents agreed to visit the classroom and explain their jobs.

JEAN WOODWARD and DORIS KELLEY of the *Garfield Elementary School, Portsmouth, Ohio,* have developed a very detailed resource unit entitled "The American Indian: Economics Then and Now." The unit contains, in outline form, a great deal of material on Indian family life, social organization, food, clothing, shelter, tools, weapons, health, education, tribes, religion, trade, transportation, arts and crafts, music and folklore, and other related subjects. There are long lists of objectives, questions, books and

activities which can be used to construct teaching units on the Indians. Many basic economic concepts (such as interdependence, scarcity, specialization and division of labor) can be included in a study of the American Indian. The unit can be obtained from the Vernon R. Alden Library (Awards Program Collection), Ohio University, Athens, OH 45701.

MARY FRANCES HUGHES of the *First Ward Elementary School* in *Pine Bluff, Arkansas,* taught many basic economic concepts to her first graders through such projects as a classroom bank and a class vegetable garden. Coming from low-income households, the children were well aware of the economic problem of scarcity and were receptive to the idea of renting school land for a garden. Such services as picking up litter on the school grounds were provided by the pupils in lieu of money rent for the land. The class visited a farm to see how the factors of production are used in agriculture and to get ideas for operating the class garden. They placed an "ad" in a local newspaper to notify the public of the availability of their output, learned the principles of good salesmanship, had to confront competition from a fourth grader who was selling tomato plants at a lower price (they lowered their price to meet that of the competitor), paid their production costs, and emerged with a profit of $50.00 This was used to buy clothing for a boy whose home had been destroyed by fire. The class also showed compassion for a pupil whose dog had been picked up by a dog warden and placed in a public shelter. The pupil was able to borrow money from the class bank to reclaim the pet and purchase a dog license. The other students agreed to let him establish a paper and pencil store in the classroom to enable him to earn enough money to repay the loan and the interest.

BERNA JO GAYLER of *Vegas Verdes Elementary School* in *Las Vegas, Nevada,* started teaching her third graders some basic practical economics and soon found a complex "microeconomy" developing in the classroom. It began with a decision to pay the pupils in play money for work done in the classroom. The money could be used to buy school supplies and to pay for special privileges. The students had to fill out regular application blanks for classroom jobs, and soon the need for a banker became evident. A manager had to be "hired" for the supply store. Prices of supplies varied with changes in demand and supply, and an efficient bookkeeper had to be employed. As the microeconomy developed, more and more specialized workers were needed—a nurse, a newsboard editor and a librarian, for example. A democratic political system was also emerging, and it was the children's decision to have an elected policeman to enforce rules and keep order. A court system had to be established as well, and a field trip to the county courthouse provided valuable information. Thus, such positions as judge, bailiff and tax collector were created. (These activities were related to studies of government's role in the economy.) Goods were exchanged in the classroom, and corporations were formed. To help to conserve resources, the class went into the business of manufacturing chalkboards out of floor tile and contact paper. A profit of over $40.00 was made from this venture. (The money was used to buy food for school pets, to purchase additional animals and an aquarium, and to make a contribution to a fund drive for a Las Vegas zoo.) As the school year came to a close, the mayor of Las Vegas visited the class and accepted a "key



Ruth Hanson's pupils at the Summit School in La Crosse, Wisconsin, learn that such production costs as the price of raw materials, wages, and the costs of capital goods must be computed before a business can establish a suitable price for its output.

to the city" from the mayor of "Gaylersville," as the class community had been named.*

RUTH HANSON of the *Summit School* in *La Crosse, Wisconsin,* finds that pupil interest in such holidays as Halloween, Thanksgiving and Christmas can be used to help to teach many basic economic concepts. For example, classroom factories are set up to produce goods (such as favors and cookies).

* For additional ideas on establishing a classroom "mini-society," see Marilyn Kourilsky's *Beyond Simulation* (Los Angeles: Educational Resource Associates, Inc., 1974).

for Halloween. The children raise capital, apply for jobs, set up assembly lines, compute production costs and establish prices for their output. Around Thanksgiving, the class learns how the Pilgrims tried to cope with the basic economic problem of unlimited wants vs. limited resources, practiced division of labor, and engaged in trade.

LOU ETHEL NAUDEN and ELLEN KANE of the *Center for Early Development and Education* in *Little Rock, Arkansas,* developed a team approach in which the regular classroom teacher and the librarian worked together in providing economic education for first graders. For example, the concept of scarcity was illustrated by the problem faced by the librarian trying to operate within a limited budget and making daily choices on the best use of library resources. The factors of production utilized in the library were examined, and the library was seen as an example of a jointly owned enterprise within a basically market-oriented economy. The librarian also served to exemplify specialization, as her special training and the way in which she relies upon other specialists were noted. The children made economics booklets and transparencies on the services performed by the librarian. Field trips to a printing company and a book bindery also provided good examples of division of labor and economic interdependence. These are but a few of the activities developed by the team of classroom teacher and librarian, a team which successfully coordinated the training of two educational specialists in providing economics instruction for children.

CHAPTER TWO

# The Golden Leaf: Dollars and Sense of Smoking*

Ernestine W. Hunter

Beard Elementary School, Fort Smith, Arkansas

## Introduction

Our fifth-grade study of the cigarette industry was an outgrowth of a health education project completed during the previous semester. The harmful effects of cigarette smoking had been stressed, and the children wanted to know why the government did not ban the manufacture of cigarettes. I decided that a study of the free enterprise system was necessary if we were to find an adequate answer to their question.

I started to do research on the tobacco industry and became fascinated with the tale of the "leaves of gold." Ideas obtained at an economics workshop at the University of Arkansas helped me to see how I could tie together the disciplines of history, geography, economics, health and ecology in a unit that would be interesting and meaningful for my 28 fifth graders. The children represented a wide range of backgrounds and abilities, but they had had no previous instruction in economics. Indeed, only six were aware of the fact that they were consumers, none would admit to knowing any producers, and they were completely ignorant of the meaning of economics.

A five-phase project was planned in order to achieve such general and specific goals as the following:

- To learn to use the discovery approach
- To learn to apply the techniques of problem-solving
- To understand the economic importance of good health
- To see that scarcity is the major economic problem
- To understand the consumer's role in our market economy
- To acquire a knowledge of the private enterprise system
- To learn to apply economic analysis to personal problems

* This is a brief summary of Ernestine Hunter's original report, which is over 50 pages long and is supported by many photographs and other illustrative materials. The complete project may be obtained from the Vernon R. Alden Library (Awards Program Collection), Ohio University, Athens, OH 45701.

## Development

From one to one-and-one-half hours each day for the entire semester was devoted to this project. There was provision for individual, group and all-class work, and a wide variety of activities was planned. Several "stations" were set up, where groups of four or five children would work together with the help of an elected leader. A system of rotating the use of the stations was established, enabling the pupils to work at two stations per day and giving everyone the opportunity to be a leader. Initiatory, developmental and culminating activities were planned for each of the five phases, and each phase included an evaluation. Let us briefly examine each of the phases.

### *Phase One*

Entitled "Cigarettes in Our Society," Phase One began with an overview and history of the use of tobacco by humans. Such economic terms and concepts as trade, demand, supply, money, exchange, production, taxes and marketing were introduced in this phase. The children were very much interested in such events as the way in which Rolfe's development of a tobacco industry led to prosperity for Jamestown. The idea of tobacco being grown in the streets was a fascinating one.

The specific objectives of Phase One were to teach the children the concept of scarcity, to see the need for rational decision-making, to show how scarcity helped to lead to the discovery, exploration and settlement of the New World, and to learn the role of the tobacco industry in Virginia's economic development. The whole class worked together before going off into small groups. They collected cigarette advertisements; constructed a large "cigarette country collage"; viewed films on smoking, on trade and exchange, on farming, on specialization and on division of labor; discussed the demand for cigarettes; identified the productive resources used in the industry; and considered the opportunity cost of smoking (money and resources used for cigarettes cannot at the same time be used for other goods). After having had the common experiences just described, the pupils worked in six different stations to find out how the early settlers answered the basic economic questions (what, how, and for whom to produce?), and how the laws of supply and demand work in the cigarette industry. Suitable materials (such as filmstrips, books and worksheets) had been placed at each station. The organization was as follows:

*Station 1: Trade.* The group working here learned how trade developed in Jamestown and how tobacco was used as a medium of exchange.

*Station 2: Supply and Demand.* Here the pupils prepared charts and graphs to show how the demand and supply situation for cigarettes has changed over the years, and how demand and supply affect price.

*Station 3: Productive Resources.* In this area the children found out how colonial farmers used their productive resources, particularly in the production of tobacco. Efficient use of resources was related to the standard of living, for the pupils learned that the colonists enjoyed a higher level of living than the Indians because they made better use of resources.

*Station 4: Health.* At this station the students considered the impact of health warnings on the demand for cigarettes. They discovered that it is

possible for the rate of new smokers to decline even though total consumption is rising. Value questions were raised, for they wondered if antismoking laws were consistent with democracy and free enterprise.

*Station 5: Interdependence.* By viewing the filmstrip "Jamestown and the Indians," the pupils saw how people can work together (interdependence) for mutual benefit and more efficient use of resources. They identified the way in which the colonists had depended upon the Indians in setting up an economic system and prepared illustrations for a poem about Indian children.

*Station 6: Private Ownership.* John Rolfe had convinced the Virginia Company that colonists should be allowed to own their own land, a factor which induced them to work harder, use their resources more wisely, and strive for profits. This is what the pupils learned at Station 6, along with other facts about the colony and about our system of private ownership.

After the group work at the stations had been completed we made an outline of how the colonists answered each of the basic economics questions—what to produce, how to produce, and for whom? For review, we saw a filmstrip on the history of tobacco, and for the application of what had been learned we discussed what might happen to the economy if everyone stopped smoking. We read articles reporting on the changing demand for cigarettes, noting the techniques used by the Public Health Service in gathering data of this sort. We also wrote to the Tobacco Institute and to the leading tobacco companies for further information. An official of the Chamber of Commerce visited the classroom to tell us how industries get started in our town, what resources we had to offer, how industries are interdependent, and how we try to solve community problems.

As a *culminating activity* for Phase One, the children wrote a short play entitled "Jamestown Develops Trade." Among the economic concepts included were specialization, barter, prices, profits and demand. The *evaluation* for Phase One included objective tests which I prepared, having the children write original stories using economic terms, observations of changes in pupil attitudes and behaviors (for example, one boy with a below-average IQ score willingly devoted two days to preparing a chart on consumer goods), the application of the economic concepts in the phase to current news items, and having the pupils write answers to questions on how they now felt about economics and whether or not they wanted to continue to study it.

*Phase Two*

This phase was called "Manufacturing and Marketing," and some of the objectives were to show how supply and demand affect economic growth, see how specialization and technology help to "extend" scarce resources, understand trade and interdependence, and examine such basic characteristics of the market economy as private ownership, profit, consumer power, competition, and the minimal role of government. An overview giving the historical background of the tobacco industry was prepared, and the pupils showed considerable interest in how the entrepreneurs started and developed their businesses. This unit began with a study of the scarce resources of Jamestown, and the class arranged a bulletin board display on how the Jamestown settlers used their resources. There was also a display on

inventors and how they contributed to the more efficient use of resources. We used a filmstrip on specialization and mass production, a film on the need for conservation, and a filmstrip on economic systems.

Seven stations were set up for the group work that would be done in this phase. They were arranged in the following manner:

*Station 1: Human Resources.* At this post the pupils learned about workers, unions, productivity, collective bargaining and working conditions in the tobacco industry. Two filmstrips (on labor and unions), materials from the Tobacco Institute, and worksheets were utilized. The pupils made charts showing employment in the industry.

*Station 2: Advertising to Meet Competition.* Books, a filmstrip on cigarette advertising, and our own collection of advertisements were used at this station. There were lively discussions on government regulation of advertising, with much concern for what is "fair."

*Station 3: Interdependence.* Groups working here examined the ways in which the tobacco industry depends upon other industries for goods and services, upon government, and upon the savings of individuals for capital. The filmstrip "Private Capital" was very helpful.

*Station 4: World Trade.* Import and export figures for the cigarette industry were examined here, and the pupils learned how specialization and interdependence relate to world trade. The law of comparative advantage was studied in relation to the tobacco industry.

*Station 5: Technology and Specialization.* The role of technology in American industry was stressed at this point, as the students used filmstrips and printed material to learn about mass production, assembly lines, geographic specialization, worker training in the industry, and the investment of private capital.

*Station 6: Competition.* In this station the pupils discovered (through audiovisual aids and books) that the profit motive provides an incentive to work, invest and find more efficient ways of turning out goods wanted by consumers. The way in which monopoly works was noted, along with such laws as the Sherman Anti-Trust Act. For a case study, the pupils gathered information on the use of the Sherman Act to dissolve the tobacco trust.

*Station 7: Marketing.* Booklets provided by the Tobacco Institute provided basic facts on cigarette marketing, but the pupils went beyond these to see the importance of transportation to the industry, to learn about time, place and form utilities, and to find out how manufacturers, wholesalers and retailers are interdependent. The law of supply and demand was also studied.

To review the main ideas dealt with in the stations, we held a class discussion on how our economic and political systems depend upon each other. Further group work was done also. A group of boys made a model of Jamestown, listing and categorizing the productive resources they used and making large story charts on how the colonists used the factors of production. The class divided into groups to search for economic concepts in booklets on tobacco in various states. One student read a biography of Samuel Gompers and gave a report to the class on how he helped to improve working conditions in the tobacco industry. We visited a local manufacturing plant, saw how it is operated, learned about its history, obtained financial data on the firm, and evaluated it in terms of its contributions to the economy of the area.

Our *culminating activity* consisted of writing economics words for familiar tunes and then putting on a performance for another class. To evaluate this phase, I administered tests on the economic terms and concepts, had the pupils draw pictures to illustrate key terms and write letters to friends telling them about our economics project, held a class discussion of filmstrips and current articles on economic issues, and observed the children on a field trip to a manufacturing company. The questions raised by the youngsters during the trip showed how well they understood the basic concepts covered thus far. For example, one slow student asked for an explanation of the economic reasons why the plant had located in Fort Smith.

*Phase Three*

Phase Three dealt with "Cigarettes and the Economy." Money, banking and the circular flow were major economic concepts covered. A local banker visited the classroom and told us about the different services banks perform, and how the Federal Reserve functions. The various forms of business were examined, as we viewed the filmstrip "Business Organization." Another helpful filmstrip was "Our Money System." Three students arranged a bulletin board display on the circular flow. Six stations were set up, concentrating upon such topics as the nature of money, the functions of money, banks, buying on credit, money problems, and the Federal Reserve. The concepts were related to pupil experiences. For example, the children were asked to write stories of how they would operate a newspaper route if we had a barter system, and how they would then "spend" whatever they received in payment. The problems of inflation and recession were dealt with too. The circular flow was illustrated by a bulletin board display on the cigarette industry, and how it relates to farmers, manufacturers, wholesalers, retailers and the like. Several pupils brought in their coin collections which proved valuable during our discussions of money. Every child worked on a mural entitled "Money at Work in the Cigarette Industry." This showed how money is used by the farmer, the tobacco auction market, the manufacturer of cigarettes, the wholesaler, and the retailer. The way in which all of these pay taxes was also shown.

As a *culminating activity* the pupils engaged in role-playing which dramatized the scenes on the mural. For the *evaluation*, I again prepared an objective test, led a discussion of news articles pertaining to money and money problems, had the students write comments on articles, observed pupil changes in attitude and behavior throughout the unit, and asked each child to construct a circular flow chart for the tobacco industry. One of the "fun" ways of evaluating learning was having the children solve such riddles as the following:

> "You might use me when you don't have the money to buy goods and services. I am a good thing if you use me wisely. Who am I?" (Credit.)

Some children wrote additional riddles for their classmates to solve.

*Phase Four*

"Cigarettes and the Government" was the theme of Phase Four, which dealt with government's role as a producer, consumer, regulator, protector

and promoter of national goals. After viewing the filmstrip "Places We All Own," we walked around the immediate area and identified goods and services paid for by government. Among the items listed were the school, city-owned construction equipment, the fire station, a mailbox, a storm drain, traffic signs, and even a National Guard plane flying overhead. This led to a study of taxation, and the children made drawings showing "Taxes at Work in Our Neighborhood." A local businessman visited us and explained the way in which government relates to his firm. The six stations we established were used to study in depth such topics as: Government as Producer and Consumer; Government as Regulator and Protector; Government as Promoter of National Goals; Taxation; Government and the Cigarette Industry; and Government and Health. The children made charts illustrating government's role in the circular flow; drew pictures to show how government regulates such things as child labor and how it protects the consumer from false advertising, unsafe products, and excessive utility rates; prepared tables and charts on the kinds of taxes in existence and the services they pay for; and constructed posters on health. They brought in labels showing government's regulatory activities (such as the warning labels on cigarette packages), and photographed signs (such as "No Smoking" and "No Trespassing") which indicate that government controls certain economic behaviors. A study was made of the taxes paid on cigarettes.

In addition to the objective test on this phase, the pupils wrote papers on why we pay taxes, and essays on their conception of freedom. Their changing attitudes and classroom behaviors were noted during group work and all-class activities. A choral reading was used to culminate the phase.

*Phase Five*

"The Costs of Smoking" became the theme for Phase Five. We departed from our regular format in order to stress economic analysis and economic decision-making in an all-class situation. The usual problem-solving approach was employed, calling for a definition of the problem, identification of goals, consideration of alternatives, analysis of the probable consequences of each proposed solution, and selection of the best solution. We then examined the opportunity costs of smoking (which included health hazards) and each child was asked to make a decision on smoking. The pupils were to pretend that they smoked a pack or two of cigarettes a day at a money cost of 50 cents per pack and then to answer the question: "If you stopped smoking and saved your money for a month, what would you buy with the money saved?" They checked prices and used pictures to show what they would buy. It became very clear that money, time or resources used for one thing cannot be used for something else. Thus, the opportunity cost (or "real" cost) principle was clearly illustrated. The class arranged a bulletin board display entitled "Does Smoking Pay?" This showed the contributions of the cigarette industry to the economy (such as jobs created and taxes paid) as well as the costs of smoking (illness, work days lost by smokers, fires caused by smokers, and other goods and services given up to buy cigarettes).

The cost of health care in general was also studied, and we saw that the law of supply and demand does not work in the health care field as it does in some

other areas. The class was then divided into discussion groups to consider such questions as:

- "How does the fact that millions of teenagers start smoking each year affect the U.S. economy?"
- "If you were a lawmaker would you vote to stop the sale of cigarettes? Explain your decision."
- "Is the ban on cigarette advertising on TV fair to the industry?"
- "Does smoking help us to reach our national goals?"
- "Are cigarette taxes fair?"
- "What would be the effect on the economy if everyone stopped smoking?"

Close observation of the children in their discussion groups was used to evaluate this phase.

### Culmination of the Project

Phase Five was, in effect, part of the culmination of the project because the children used the knowledge and skills they had acquired to analyze questions on the economics of smoking. To share our work with others, we planned an Economics Fair to which the school superintendent, parents and other classes in the school were invited. The Fair opened with a stage show consisting of role-playing, songs and readings, combined into a play entitled "The Golden Leaf." After the play the guests viewed exhibits on Scarcity and Decision-Making, Productive Resources, Interdependence and Trade, the Market Economy, Financial Institutions and the Circular Flow, and Economic Goals. The best work was displayed in each section, while students served as guides and answered questions.

For a final evaluation, each child took the *Test of Elementary Economics* published by the Joint Council on Economic Education. They had taken it in January at the start of the project as well. The raw score mean rose from 11.58 to 20.47, a gain of 8.49 points. The mean percentile score rose from 22 to 61. For purposes of comparison, two other fifth-grade classes took the same test on the same days. These classes had followed the regular social studies curriculum and had used the same textbook, but they did not do special work in economics. Although both groups achieved higher pretest mean scores than my class (13.28 and 12.84) their posttest means were only 14.40 and 11.44, respectively. Thus one made a very small gain of 1.12 points, while the other actually regressed. My pupils were very excited over the gain in their scores. Of course, evaluation had been a continuing process. Observation of attitudes and behavior helped to determine success or failure, teacher-made tests and activity sheets were used at the end of each phase, and the principal had served as an outside evaluator by observing our progress and suggesting improvements. The test results showed that we had achieved our objectives, and the activities kept the pupils actively involved, interested and happy. The children took pride in their work, and they showed that they were able to use the analytical tools of economics to make rational analyses of current issues, such as the conflict between the economic contributions of the cigarette industry and the health hazards caused by smoking. When asked if they would like to do economic projects in the future, every child answered "Yes!"

# Our Growing Dimes

## A Sixth-Grade Economics Project

**Helen K. Hagan**

Charles E. Boyle School, Uniontown, Pa.

### Background

Through years of observing and working with sixth-grade students I have found an unlimited supply of ideas flowing from them—ideas that can be used as springboards for academic activities. It excited me when one of the springboard ideas evolved from an economist's being described as "a person who manages money, earned and spent." Although some professional economists may not accept that definition, it was enough to lead my students to want to "become economists." With my limited knowledge of business I was a bit frightened, but at the same time eager to take the plunge and explore the tremendous possibilities.

Children like economics because it can provide real-life experiences in dealing with familiar situations. In spite of diverse socioeconomic backgrounds, my pupils were all citizen-consumers and all had had some experience in dealing with needs and wants. My desire was that through the appropriate learning experiences they would form generalizations related to their own values and goals, develop the ability to earn and manage money, become more intelligent consumers, and understand principles related to saving and investing. The long-range goal was to help them to become self-supporting and productive members of society.

### Activities

First, I had to explore the attitudes, values and goals of my 23 "mini business executives." I started by using some ideas from our "Me Tree." This is a tree branch holding envelopes filled with topics for creative composition—topics dealing with personal feelings and designed to encourage inquiry. The first composition was an autobiography which would give me insight into each child's family situation. The second was called "The Halloween Witch"—a witch who granted each pupil three wishes. They were to explain what their wishes were, and why they wanted these particular items. Values and goals, of course, affect spending habits and influence one's career choice.

As I had found in the past, value was placed upon money and goals including the acquisition of wealth in the future. I played the role of the witch and gave each pupil a dime. With this as their only "liquid capital," they were to start on a year-long business venture and make the dime grow. We

discussed concepts relating to equal opportunity, free enterprise and capitalism, and related them to our freedom to go into business, hire labor, buy what we can afford and produce what we think consumers will buy.

Although it was sometimes difficult to enforce it, one rule was that only the original dime could be used to get started. The students could not use their personal savings, allowances or loans. Parents often cooperated. For example, when one child asked her mother for the ingredients to bake cookies, the mother wisely refused and made the child buy ten cents worth of ingredients from her. This was the start of a very successful bakery. Another girl rented her father's rake for ten cents and went from house to house raking leaves until she had enough money to start her own popcorn business. Another bought scraps of yarn with the dime and crocheted small items, which she sold for a modest profit. A boy bought paper and pencil and offered to write poems on any subject the customer chose. Of course, some were slower than others in getting started; but it was a thrill to me when, on a snowy day, the last student to take action rented a snow shovel and cleared snow from sidewalks. He used his earnings to open a candy shop.

Fortunately, an empty classroom was available for us to use as our "business district." In discussing the type of district we wanted for our own enterprises we examined the advantages and disadvantages of the city's business areas, engaged in debates and even had our mayor visit us to provide advice and information. The result was the construction of "Boyle's Mini Mall."

Children in the ten to twelve age group make up an important part of the consumer market today. But we were about to reverse the situation and have students become business people and have adults as well as fellow students become consumers of their goods and services. Our "mini mall" would encompass all the types of businesses we could possibly incorporate, given our limited time and space. Our entrepreneurs would have all the privileges and problems of real-life owners and managers. They would have to learn about wholesaling and retailing, merchandising, advertising, the hiring and directing of employees, problems of forming corporations, bookkeeping, paying rent and other costs, and so on. A Board of Directors was elected to govern the mall itself, to establish rules, set rental fees, and to hire custodians, a secretary and a treasurer. A "Better Business Bureau" was formed to protect both the consumer and the business people. (The filmstrip series "Let the Buyer Beware," produced by Eye Gate House of Jamaica, New York, provided good background at this point.)

We discussed goods and services, the consumer's role, and various business possibilities. In a role-playing situation, students responded to such questions as: Is price a reliable guide to quality? How are "fair" prices determined? How is the process of buying services different from that of buying goods? What is the role of advertising? When it was clear that the class was ready for the "real thing," we held a contest for the best architectural design for the area. This required working with scale drawings. Once a plan was selected, we began the construction of booths. Each "firm" kept its own accounts and books, and each launched an exciting advertising campaign. December 10 was the "grand opening," and our school superintendent, Dr. Larry Sayre, cut the ribbon for this event. The aroma of baked goods, popcorn and scented candles filled the air. (Dr. Sayre also fired challenging questions

at the entrepreneurs, such as: Do you think you are charging a fair price? Do you think it is fair if a classmate sells the same things you do and makes more money? What are some of your problems and how are you going to solve them?)

The closing of our first day found our business people tired but enjoying the sound of money jingling in their cash boxes, as satisfied customers rushed home with their newly bought "treasures." The Board of Directors decided to open the mall twice a month for pupils, and to have special times when parents could visit and shop. Student teachers from a state college came both to observe our activities and to shop. In March we had a Spring Sale and a Clearance Sale.

The Better Business Bureau had been set up with the help and advice of resource people from the Chamber of Commerce and the nearest Better Business Bureau office. Our Bureau was not simply a "paper organization." At one point it was instrumental in closing down businesses which had failed to balance their books and had exceeded the ten-cent limit on the initial investment. (The firms were closed for a month, but were then allowed to reopen with only a dime to start.) We also needed a bank.

The vice president of a local bank spoke to us about "Banking and Its History," and we took a trip to a bank to see at first hand how banks operate. After learning about the various services banks perform, we concentrated upon interest rates and how they are computed. We also saw how bank loans affect the economy by promoting economic growth. The banking crisis of the Great Depression was studied, along with the various means now available to avoid a repetition of it. With all this excellent and exciting background information, we established a committee to set up a center in our mall where our bank would be located. A Board of Directors was elected, and it was the Board's task to hire tellers, a cashier and a secretary, and to see to it that the bank opened on schedule. The Board would also determine interest rates and enforce rules for the protection of depositors. Committees were set up to investigate and report on various kinds of checks (certified checks, travelers' checks, etc.), the Federal Reserve System, and commercial banking, among other things. We discussed problems that might arise, such as accounts being overdrawn. Role-playing was used to see how we might cope with emergencies, such as the rumors that might affect our bank if a nearby bank found itself in financial trouble. The pupils had to show what they would do to prevent a "run" on our bank. It was also through role-playing that they learned how to serve as tellers, depositors, borrowers and the like.

Bank ledgers were set up, but tellers were permitted to experiment with various ways of balancing their books. Thus, mistakes were made but these resulted in valuable learning. The cashier would check the books at the close of each business day. All students were expected to know how to compute interest, and any interest computed by the cashier was checked by the student involved.

The students had to consider the form of business organization best suited for their firms. This led to a study of the corporate form and the securities market. A stockbroker served as a valuable resource person even though he could not visit us personally. He instructed his daughter (one of the pupils), and she explained stocks and bonds to the class. She used charts to show how a stock exchange works, and discussed the reasons for adopting the

corporate form of business organization. After the mall had accumulated money through collecting rent, the Board of Directors decided to buy stock in the bank. This enabled the bank to expand its own operations and to pay good dividends.

Taxes are an inevitable part of economic living, and many people resent having to pay them. Justice Oliver Wendell Holmes said, however, "I like to pay taxes. They buy civilization." We asked our class officers to explore the school's needs and to suggest a tax on business profits to help to meet those needs. Three "Collectors of Internal Revenue" were selected from among the winners of a math contest. Students gave reports on federal, state and local taxes, and what benefits we derive from each. We practiced filling out the well-known form 1040. A 15 percent tax was set for our firms, to be paid about the same time the federal income tax comes due (April 16, in this case). Collections went smoothly, and penalties for late filing had to be imposed in only two instances. It was rewarding to me to find that our tax collectors, two of whom had often been careless and inaccurate in their math work, became models of accuracy and neatness. One student commented, "If I'm working with something real, it means more to me."

As is already obvious, several different disciplines were included in our study of economics. In addition to social studies and math, drawing became important in the planning of the mall and the various booths. Bookeeping was essential for everyone. The language arts were used for creative writing related to the economic activities. Stories were written, poems were composed, comic strips were produced, and letters of invitation and appreciation were written. We dramatized the old Spanish folk tale "Dame Fortune and Don Money." Articles on current economic events were brought in, discussed and used for bulletin board displays. Formal debates were held on such questions as: "Will surrounding malls hinder the progress of Uniontown's downtown area?" All arguments had to be based upon carefully researched facts and principles.

No activity that could be related to the project was ignored. Student hobbies, such as coin collecting, contributed to our knowledge of some basic economic facts and principles. (The coin collectors set up displays of their collections and the class discussed them.) We simulated the popular TV show "What's My Line?" to learn about various jobs. Commercially produced games, such as "Monopoly," "Bank," and "Stocks and Bonds" were also used.

## Conclusion

Have you ever had students *ask* to be tested? My pupils actually wanted to take a formal examination to see if they had learned as much from these "fun activities" as they would have learned by using a tradtional textbook. Test questions included in one of the widely used social studies series were used, and no student scored below 85 percent. But this is not the major indicator of success. How do you assign a score or grade to evidences of good citizenship, to sincerity, to facial expressions? Is there a grade for generosity, as in the case of the child who wanted to use his profits to buy a Christmas gift for mother? Or for honesty, as when children would say, "Here, you gave me too much money."? In short, I find it difficult to evaluate an open-ended

experience. New ideas sprang from young minds almost daily. Satisfaction was derived not only from the praise coming from the principal, the superintendent, other teachers and parents, but from the feeling that a contribution had been made. The children had earned money for themselves—an immediate source of satisfaction—but probably the happiest moment came when they used their "tax revenues" to purchase 15 new books for the school library so that their efforts could be shared with everyone.

# I Look at Me and How I Fit into the Economy

Violet Miller

Washington Intermediate School, Little Rock, Arkansas

## Introduction

Last summer, as I began to think about the coming school year, I conceived of an idea for initiating a study of economics in my fourth-grade class by relating economic concepts very directly to my pupils. Since the smile buttons were so popular, a smile face with each child's name written on it was drawn and placed on a bulletin board. Photographs were taken of each student, and each individual's photo was then placed above the appropriate smile face. The bulletin board was entitled "Look at Me." On another bulletin board there was a large tree containing all the economic terms I hoped to teach during the academic year.

We began to take a close look at ourselves and to think about the fact that each of us is important. To relate this to economics, I asked the children such questions as: "When you were born, approximately how much did it cost for doctor and hospital bills?" "How much did your family's monthly bills go up after you were born?" "What effect did your birth have on your parents' taxes?" "Do you cost your family more now than you did when you were a baby?"

## Development

The pupils were made aware of the fact that they are important parts of our economy. This led to a study of the market economy, and we set up a simulated business to learn about the factors of production. This was such an

enjoyable learning experience that the class expressed a desire to go into a real business. Thus, the idea for our Christmas Card firm was born! We discussed such factors as location, competition, risk, materials needed and financing. I served as the banker, providing the small loan that would suffice to launch the firm.

After spending one afternoon producing cards individually, we decided that there had to be a better way. We then examined the concept of specialization and the possibility of setting up an assembly line. The class took a trip to a bicycle plant to see how a production line is established and operated in a real company. Once the class had decided on the various jobs that would be needed in our firm, the children had to apply for the available positions. Wages, salaries and other costs were estimated so that we could decide on the retail price of the product. Work stations were set up and our Sales Department began to take orders. On the very first day we received orders for over 25 dozen cards.

Quality was a matter of concern to everyone, for some cards were imperfect and could not be sold at the regular price. We discussed the cost involved in careless work, and the fact that profits would be lower as a result. Needless to say, this caused all workers to become more efficient. With a high quality product, and with little competition near the school, orders increased. After 80 dozen had been ordered we decided to close down our Sales Department because we would not be able to supply any more cards. The cards were priced at five cents each or 50 cents a dozen. A net profit of $20.00 was earned, and this was used to buy games for the classroom.

Another way of helping children to see that they are part of our economy is to encourage them to take action on current economic problems. The pupils were well aware of the energy crisis and its impact on the average consumer. I discussed this with our principal, Mr. Jackson, and he agreed that we ought to invite a resource person to help us to establish goals and procedures for implementation by the entire school. A representative of the Arkansas Light and Power Company visited the class and talked about ways of conserving energy both at home and at school. Among the suggestions were lowering the thermostat settings, keeping windows closed while heat is on, keeping lights off except when absolutely necessary, and checking all windows and doors for weather stripping and caulking. We set up a committee which, accompanied by the janitor, checked the windows and doors. We also prepared a bulletin for other classes, asking them to follow our guidelines. A list of 23 suggestions was prepared for home use also.

Through resource people and field trips, children obtain important contacts with the community. A speaker from the Internal Revenue Service explained the different kinds of taxes and how they affect both individuals and businesses. Before we visited a bank, a representative of that institution came to our classroom and explained many of the functions of banking, including loans and checks. A trip to the Territorial Capitol and the Old State Capitol was related to our study of government's role in the economy.

### Culmination

To summarize our work and share our learnings with others, the class wrote and performed a play. One of the best ways of showing that one has learned something is to have to explain it to someone else. This was the

essence of the play, for the pupils explained America and the American economy to some Martians. The pupils stressed the fact that although there are great differences among individuals in terms of such things as race, religion, physical appearance and wealth, they can work together in harmony. Then the Martians say—

> Let's take another look,
> Maybe we can see—
> What *they* think will happen
> to their economy!

The first to respond are "Inflation" and "Depression." Inflation says:

> I have really been on the rise;
> It looks as if I may hit the skies.
> If I get too big, I may pop—
> Then our economy will almost stop.

Depression then chimes in:

> That's when I will step in;
> And then the hardships will really *begin*!

Pupils representing famous Americans, past and present, appear and describe their work and contributions. These include not only inventors and statesmen, such as Alexander Graham Bell and Franklin Roosevelt, but athletes and entertainers, such as Hank Aaron and Pearl Bailey. The students then point out that although we "sometimes argue and fuss over who is the most important one of us," we each make a contribution in our own way, and our country provides opportunities for all.

The problems of our society were not ignored, for the children carried placards on such things as the oil embargo, inflation, Watergate, the impeachment of Nixon, and rising beef prices. They sant their "Crisis Song," a portion of which is as follows:

> My eating habits differ; my driving is tame;
> Nothing around me is staying the same—
> I've changed my way of living,
> Because money's getting tight,
> I've even changed the way I sleep at night—
> 'Cause everyone's hollering about the gas bill they pay,
> We hope the crisis will soon go away.

The Martians enter and strike up a conversation with a gas pump, which tells them about the high demand and low supply of gasoline. After learning about the law of demand and supply from the gas pump, they get a lesson on the difference between needs and wants when they listen to two people arguing over the "need" for a necklace. From other characters they gain an understanding of technology, specialization, consumers, producers, unemployment, opportunity cost, transportation, foreign trade, interdependence, taxes, the factors of production, and government's role in a free enterprise economy. Finally, the class sings a song (to the tune of "He's Got

the Whole World in His Hands") in which some of the basic principles of the American economy are summarized with such verses as—

We've got producers and consumers in our land,
Supply and demand on every hand . . .
Whether an entrepreneur or working man,
We're all affected by supply and demand.

It can be concluded that economics can be an enjoyable subject for children, as well as being instructive, through the simple expedient of planning a variety of activities revolving around individual needs and interests.

# Career Awareness Is Economics, Too


## Tressie Marchbanks

Sutton Elementary School, Fort Smith, Arkansas


### Introduction and Objectives

At the beginning of the 1973-74 school year I promised my sixth-grade class that we would try to make this the most exciting year they had ever had in school. My 28 students had individual needs and wants. Some had experienced little but failure and were yearning for approval and for the opportunity to participate on an equal basis with other children. Some were poor, while others came from upper income households. They ranged in ability from very dull to very bright. As the school year progressed, I kept looking for the missing link that would enable me to keep my promise. It was when I was sent to Russellville with my principal to view the career awareness program there that I hit upon the idea for a project that would provide the necessary common denominator.

We believed that youngsters would make more intelligent career choices if they acquired an understanding of some of the economic principles underlying the world of work. The unit was initiated through a series of "rap sessions" with the students. They were asked to tell what they expected to get from a job, and their responses were surprisingly mature. Some typical answers were

that they wanted to help other people, to work with people, to have a position where no prejudice exists, and to meet interesting people. With this sort of input from the students I was able to establish the objectives for the unit. A sample of the aims is as follows:

- Acquainting the class with a broad range of occupations.
- Developing an appreciation for the dignity of all productive employment.
- Learning how scarcity affects the job market.
- Showing how consumer preferences help to determine the kinds of jobs available.
- Obtaining information on the training required, working conditions, and economic benefits to be derived from the children's chosen careers.
- Learning to use economic analysis in choosing a career.

### Developmental Activities

The class discussed and agreed upon the kinds of questions to be asked in studying careers, such as: "What does the worker do? What are the working conditions? How much training or education is required? What are the economic benefits, such as job security? What role do unions play?" Then we visited the library to select books and pamphlets on occupations, and wrote letters to government agencies, individuals and other sources to obtain information about the occupations of interest to the pupils. Filmstrips on various jobs were viewed, and the class was organized into interest groups. Each pupil invited his or her parents to visit the class and discuss the nature of their work. This resulted in greater admiration for their parents and respect for the work they were doing. Each parental visit was followed by a "wrap up" session in which basic economic concepts were related to the parent's presentation. For instance, following the visit of the owner of a dry-cleaning establishment we noted how the factors of production are used in this business, how the firm exemplifies private ownership and competition, how the service is directed by consumer demand, and so on.

Working in groups, the students visited a shopping center to interview managers and workers. Some conducted interviews by telephone. We quickly collected a wealth of information about the four major occupational groups—white-collar, blue-collar, service and farm. Charts and bulletin board displays were prepared to illustrate such things as the various categories of white-collar work, the advantages and disadvantages of such work, job prospects for the future, jobs available in Fort Smith, the impact of technology on blue-collar jobs, types of service workers, and factors affecting farm employment. After studying the data, the students clearly favored service employment and were especially interested in government jobs. We then invited speakers from each level of government—federal, state and local. The youngsters made charts comparing the benefits of jobs at the various levels and learned about the rate of growth in government employment through 1980.

Now it was time to broaden our understanding of the world of work by taking an in-depth look at the economic principles involved. The basic question was: How does society use productive resources to provide

employment? A chart was prepared to illustrate the productive resources the children had seen in the visit to the shopping mall. This showed capital items, workers and natural resources. Each pupil was then asked to write a report on how the productive resources are used in his or her chosen field. They were to consider what would happen if one of these resources should suddenly be cut off. Children whose parents owned businesses were asked to explain the factor of risk in starting and operating an enterprise, and to show how profit is computed. The relationship between profits and employment was to be stressed. The importance of technology was noted by comparing the technology of the western world with that of the underdeveloped areas.

The next big question was: How does the problem of scarcity affect the job market? The energy crisis and the wheat shortage were studied for their impact on employment. The bulletin board was soon covered with newspaper clippings on this topic. The children visited service stations to find out how many workers had been discharged because of the gasoline shortage, and how employee income had been affected by the reduction in business hours. Airport employees were asked how the fuel crisis affected jobs in aviation. Similar questions were put to owners of automobile agencies and tourist offices.

This led to the broader question: How is employment determined in a market economy? We learned how the consumer's "dollar vote" determines what goods and services will be produced, and how this in turn affects employment. We discussed the ways in which changes in consumer demand might affect the kinds of jobs available, and how advertising influences the consumer. Each pupil wrote a paper on how the consumer's dollar vote might help to decide the kind of job he or she would have. Next we probed the impact of technology and specialization, noting how inventors and scientists changed our way of live and increased our productivity. A large mural was made, contrasting the spinning wheel with the power loom, the horse-drawn plow with the tractor, the broom with the vacuum cleaner, and so on. Specialization was related to interdependence, and we used role-playing to show how jobs have changed over the years. Throughout, each student continued to make critical analyses of his or her career choice. (For example, will changes in technology make a difference in working conditions in my field?)

Emphasis was placed upon the worker as a producer making a contribution to public well-being and to the economic system as a whole. Indeed, the class concluded that the worker is the key to the proper utilization of the other productive resources. (The most complex machine would be useless, for example, if not properly used by a skilled worker.) Another mural was made, showing the value of the worker as producer.

The next major topic was that of local industry and how it affects the worker. When a representative of one of our furniture companies visited the class, we were prepared to raise questions on why the firm had located in Fort Smith, how it has grown, how wages and fringe benefits are determined, what capital equipment is needed, how technology has affected the industry, where the furniture is sold and how prices are set, how much competition exists, what taxes are paid, how the firm uses bank services, whether or not the employees belong to unions, and the like. After learning how the industry affects the worker and the local community, we discussed the way in which it illustrates the capitalistic system. (How is profit a motivating force? How

does consumer demand help to direct production? In what way is competition a regulating force?) The rights and benefits of workers in our system as compared with those in other systems were also studied.

The relationship between production and income was an important topic, and this was illustrated by a flow chart showing how the local furniture industry affects local households and vice versa. (The industry acquires productive resources—raw materials, labor, capital and entrepreneurial ability—from local households and pays them rent, wages, interest and profits. In turn, the recipients of these payments buy the output of the industry.) We also demonstrated the circular flow through role-playing, and the class concluded that when production (and productivity) is at a high level there are more people working and spending, more money flows through the community, more jobs are created, and so forth.

The role of banks was learned, when the children discovered that furniture companies use checks and borrow to pay some of their costs. Committees were appointed to learn more about money and its functions, the use of checks, how savings are put to work, various bank services, and similar topics. The students made scrapbooks on their findings, and one group set up a simulated bank. The greatest emphasis was upon savings—how and why people save, and how savings can affect the growth of the Fort Smith economy. The relationship between savings and investment was learned, and we examined the causes of recessions and inflation.

Some of the children were surprised to learn that furniture manufacturers pay taxes (they already knew about income, property, gasoline and sales taxes), so this led to a study of why we pay taxes. One group studied the history of taxation from ancient Greek and Roman times. We discussed the things we want that private enterprise cannot or will not produce, such as education, streets and police protection. Reports were made on services and facilities provided by each level of government. Pie charts were constructed to show how the revenue dollar is spent in Arkansas, the sources of such revenue, and how the federal tax dollar is spent. The differences between direct and indirect taxes were noted, as well as those between progressive and regressive rates.

Finally we came to the topic of the worker as consumer. Each child was asked to prepare a monthly family budget. Actual family incomes were used, but kept confidential. The class learned to distinguish between fixed and variable expenses (such as rent as opposed to recreational spending). Budgeting is related to career education, in that the students must consider whether or not their chosen occupations will pay enough to provide for the necessities of life, and how they will spend their incomes. As a culminating activity, we used the five-step problem-solving approach in career planning. The problem was defined, goals were established, alternative methods of achieving those goals were considered, probable consequences were analyzed, and final solutions selected.

### Evaluation

Evaluation was a continuous process, mainly subjective because no objective tests were administered. We continually checked our learning experiences against the unit objectives. The culminating problem-solving

exercise served as an evaluation device by helping me to see how much the children had matured. They had more realistic ideas of why they must work for a living and what kinds of occupations afford the best opportunities. They showed more independence, for they were less inclined to choose their parents' occupations than they had been at the beginning. They knew that there are various ways of achieving their goals, and they were able to analyze the consequences in terms of the probable influence of their choices on their preferred way of life. Whether or not each child settled on a career was not important. The fact that they now knew what opportunities exist, how one must plan ahead, and how to think analytically about their choices *was* important.

The children gained confidence in themselves and developed better self-images. Many resource people commented on their poise, courtesy and ability to ask intelligent questions. As the study progressed, I could see the pupils setting higher goals for themselves. At the same time, they developed a wholesome respect for all productive labor, because their interviews with cooks, custodians and service station attendants helped them to realize the worth of these jobs. They learned that productivity is the key to a rising standard of living, and that the way in which we use our scarce resources will in part determine the kind of employment available when they enter the job market. They showed an appreciation for our market economy and our democratic political system. In short, I believe we attained our overall objective of proving that "Career Awareness Is Economics, Too."

## APPENDIX TO CHAPTER 2

### Good Ideas in Brief: Intermediate Level

MARY ANN BEDE of *Lost Creek School* in *Columbus, Nebraska*, has provided a fascinating new dimension to the popular classroom company project. Her fourth graders established the "All Star Manufacturing Company" with money borrowed from the PTA. Assembly lines were established and quality control inspectors saw to it that high standards were maintained. Initial sales were so good that additional products were added to the firm's line, and a checking account was opened at a local bank. The unique feature of the project was that the class systematically compared All Star's costs and other factors with those of an actual manufacturer in the area. Studies were made of the local economy, including the job market, transportation facilities and agribusinesses. Pupils took pictures of economic activities in the community and made reports on their findings. After learning about the

philanthropic activities of local firms, the class decided to use some of their own profits to buy Christmas gifts for children on an Indian reservation. Eventually they produced so many different items that a catalog of their products had to be prepared. The amount originally borrowed was $15.00, but by the time the project was drawing to a close there was nearly $150.00 in the firm's bank account. As a culminating activity the class designed a school flag and had it made as their contribution to the school. The rest of the profits were distributed to the pupils, with each getting a check for $3.50.

JEAN NOLTE, formerly of the *Newbold School*, Rhinelander, Wisconsin*, has developed a simulation game for fourth graders, which includes economic concepts in a study of Wisconsin's history and geography. The game is divided into four historical periods: 1875-1900; 1901-1925; 1926-1950; and 1951-1975. The pupils read brief accounts of historical, geographic and economic facts about each period, then select roles to play--farmers, land agents, masons, lumberjacks, mill workers, factory owners, road builders, bankers, conservation workers, and the like. (Roles are changed after each time period.) As the game progresses, the class is developing a large map of the area. Business people decide where to locate their offices, railroad owners decide where to lay their tracks, and so on. Consideration must be given to such factors as availability of transportation facilities, water and markets. The pupils also decide where to locate their houses. The students receive "plus points" for such things as holding a job, building a factory and building a house. "Minus points" are recorded for such unforeseen events (about 32 of which occur during each time period) as the destruction of crops by an early frost. (Some of the unforeseen events can result in "plus points," such as an improvement in technology which increases cheese production. The pupils decide who is affected by the unforeseen event, why they are affected, and whether they receive plus or minus points. A single event may be a plus for one pupil and a minus for another.) Plus and minus points are recorded on score sheets throughout the game. Many questions are decided by small groups, such as where to locate the school, town hall, courthouse and fire station. The business people may meet as a group to decide where the central business district will be located. Each period brings new and more complex situations, such as government control of railroad rates, the development of cooperatives, depressions, water pollution, new taxes, war, price fluctuations, the need for a jet airport—all reflecting actual historical events. All require some sort of adjustment and decision on the part of the pupils, even to the point of moving houses from one part of the map to another. Upon completion, the class has a map of a modern city as it might have developed during the time periods included in the activity.

GENEVA PARRISH of the *Cavanaugh Elementary School* in *Fort Smith, Arkansas*, used a wide variety of activities to teach economics to her third and fourth-grade pupils, but one of the most interesting last year was a play entitled "On Trial." The class learned many basic concepts in studying a farm

* Mrs. Nolte is now at Pelican Elementary School, Rhinelander, WI 54501

cooperative, and the play was written to dramatize these principles and facts. "Laverne Monopoly" is on trial. "Utility" is the judge and "Scarcity" the prosecuting attorney. Other characters represent capital, investment, human resources, interest, income, costs, the consumer, the producer, the middleman, and competition. The characters explain their economic roles, as in the case of "Pamela Investment" who tells how she provides capital for "building many things." Various aspects of cooperatives are brough out during the dramatization, and their role in a free enterprise economy is described.

SUSAN SEMCHUK of the *Fox Run School* in *Norwalk, Connecticut*, had her fourth graders set up a corporation to raise money to pay for field trips. A loan was obtained from a local bank to purchase materials needed in the production of five products. Five divi as were set up (one for each product) with pupils assigned various jobs and r ibilities. Forms were prepared and duplicated to be used in listing each erson's job, clearly showing the steps in the assembly line process for each item produced. Other forms showed assets and liabilities. The class also practiced good conservation by using discarded materials. For example, eye glass lenses were used to make

Pupils at the Fox Run School in Norwalk, Connecticut, show intense concentration as they take orders for the goods produced by the fourth-grade corporation, "Fox Run Products, Inc."

Photo by George A. Lang

pins, as attractive pictures were pasted to the glass and pins were attached. Gift tags were made by pasting pictures from old greeting cards (Christmas cards, in particular) to 3x5" index cards folded in half. The corporation made enough money to pay off the loan, finance a field trip, and have a cook-out.

JESSIE SMITH of *Bragg Elementary School* in *West Memphis, Arkansas*, has developed a four-week unit in which economic concepts are related to the study of nutrition. The pupils did such things as analyze the cost of lunch in the school and compare it with the cost of a similar meal obtainable elsewhere, determine the effect of supply and demand changes on food prices, and do research on how the various factors of production are used in the production of food. They learned that the opportunity cost of eating snack foods which have little nutritional value is the sacrifice of high-nutrition foods that could be obtained for the same price. To share their findings with others, the class produced a puppet show entitled "Economics in Nutrition" in which the characters discuss wants and needs, the scarcity of productive resources, the impact of the law of supply and demand, the distribution of income among the factors of production, the determination of profits, and the various costs involved in producing a meal. In discussing the topic of food and its costs, the actors explain the various kinds of food and what they contribute to human health, consider labor time as well as dollars and cents in giving total costs, and show how a good meal can be obtained for less output in money and the equivalent of money in labor time.

FLORENCE LEVENTHAL of the *Davis Street School* in *New Haven, Connecticut*, seized upon the closing of a movie theater in the neighborhood to develop many interesting ways of teaching economics to her students. The theater was to be replaced by a bank, and the pupils were concerned over the loss of the movie house. They studied the economic factors which forced the closing of the theater, such as increasing operating costs and taxes, and parental resistance to rising admission prices. Then they examined the factors that would give rise to the need for a bank, and considered whether the change was good or bad. Of course, they had to learn much about money and banking. Pleased with the children's interest, people from the bank proved to be cooperative resource persons. The study was entitled "Movies to Monies," and it involved an exploration of economic change in the community, and the role the bank would play in terms of increasing business and employment and in providing services to the residents. The pupils prepared oral and written reports, engaged in role-playing, did word puzzles using economics terms, prepared family budgets, made collages, worked in teams to do research, and wrote poems on economic themes. Some typical verses are as follows:

Something was happening in Westville town,
Our favorite theater was being torn down.
Economics, they told us, was the reason—
Our wants must wait, for another season.
We learned of inflation, of families upset;
That wants must wait until needs are met.

This report is an excellent example of the way in which a local incident of interest to children can be used as a motivational and educational medium. (The complete report can be obtained from the Vernon R. Alden Library (Awards Program Collection), Ohio University, Athens, OH 45701.)

CHAPTER THREE

# Ecology and Economics: A Science Teacher's Approach

Nancy Nowak

Nathan Bishop Middle School, Providence, Rhode Island

## Introduction

While participating in an economics course for teachers, I became aware of the close relationship between ecology and economics. I had always felt that such language arts skills as writing, debating, role-playing, and analyzing songs should be part of every class, and now I welcomed the opportunity to integrate economic concepts as well into the science curriculum. Since few of my students will study economics in a formal way, the importance of including relevant economic concepts in my science lessons was evident.

My major goal was to enable students to analyze a complex situation in an objective and scholarly way. for middle school pupils tend to see things from only one angle—right or wrong. In order to vote and act in a responsible and intelligent manner, they need to see that there are chains of causes and consequences. I hoped to expose them to such economic principles as scarcity and external costs, and also to consider political factors as well as humanistic and scientific points of view. Skills in recording data would also be developed, as the making of charts and the plotting of line graphs are needed in both science and economics.

Science classes are grouped heterogeneously at Nathan Bishop and various ethnic groups are represented. Students who are highly verbal and students who speak little or no English can be found in the same classroom. There is a wide range of socioeconomic backgrounds and one must deal with divergent value systems, attendance records and levels of aspiration. Because the traditional lecture-discussion approach and standard textbook would be ineffective with such a group, laboratory activities and simulations were the primary vehicles of instruction. These techniques can interest and involve all students and usually result in better comprehension and longer retention than does traditional classroom work. Furthermore, the students have an opportunity to work together so that those academically less able do not feel

defeated, and the brighter pupils do not become bored or condescending. In short, everyone can participate and make a contribution.

### Procedures

Economists and scientists approach problems in the same general manner. They usually define the problem, identify the goals or objectives, look for alternative ways of attaining the goals, and analyze the consequences of choosing each possible line of action. Many of the basic economic problems are easily related to topics in science. For example, scarcity can be understood in a study of waste disposal and recycling.

The problem we tackled was deciding whether an open or a landfill dump would be better for Providence. We would make miniature dumps and observe them over a period of several weeks in order to reach a conclusion. Both of the "mini-dumps" would contain the same waste materials (such as items of plastic, paper, leaves, bread, sticks, apples, aluminum foil, and waxed paper) positioned in exactly the same way. The pupils would record their observations in chart form on data sheets to see which waste material decayed and which did not.*

They would note differing rates of decay, resulting odors, the growth of molds, the disappearance of some materials, and the like. They were guided by a question sheet which contained such items as—

- "Which would be the least expensive dump to operate?"
- "Which dump makes the best use of the land?"
- "Which dump recycles the materials best? Explain."

In discussions following this activity we considered the other factors that would influence decisions, such as the interests of real estate developers, the availability of space, recreational uses, etc. Other alternatives, such as burning, using a shredder, and recycling were also discussed. When we viewed a filmstrip provided by the Aluminum Association on recycling, the class discussed the economic motives for producing and distributing a "free" filmstrip.

In a study of the natural recycling of oxygen, carbon dioxide, water and nutrients the students traced the path of these items through the ecosystem and conducted an experiment which used bacteria to cause decomposition of bread. This was followed by a film showing the economic importance of molds. The students saw that mold can have beneficial as well as harmful effects.

Since the energy crisis was of great interest at the time of this course, the subject of scarcity was a daily concern. The path of energy through the ecosystem was outlined and the sources of loss were noted. We studied President Nixon's address on the energy problem and listed his proposals on the chalkboard. The class was divided into groups, and each group analyzed one of the proposals from both an ecological and economic viewpoint. Each

* Educators interested in more detailed accounts of how the "mini-dumps" were set up, how the data were recorded, and how other activities were carried out may obtain the original report from the Vernon R. Alden Library (Awards Program Collection), Ohio University, Athens, OH 45701.

group then shared its conclusion with the class, again illustrating the fact that few proposals are either all good or all bad.

The game "Pollution Solutions," produced by Continental Can Company, was used for two class periods to introduce the concept of *external costs** and to illustrate the fact that increased profits from production may be linked to increased pollution. The setting is the fictional city of Ecopolis, where people want more TV sets, cars, etc., and where factories are trying to meet these demands. Both the factories and the people help to create pollution, and the "four-year" period covered by the game is designed to find out if the people are willing to pay the price of having a pollution-free environment. The pupils play the roles of city officials, corporate executives and others. The "mayor" has a budget for the city, and each executive has a certain amount of money. The more money an executive makes, however, the more "pollution chips" he or she receives. Executives may get rid of the "pollution chips" by putting them in the dump, paying $100 for treatment of each chip, or some combination of these actions. The dump is checked by the players to see how much pollution is being imposed on the community, how serious it is, and what it will cost them in taxes. For example, at one level of pollution the streets are dirty and everyone must pay $100 in taxes for cleaning them up. At a higher level the beaches must be closed and the bill rises to $600 per person. At the highest level people are getting sick and everyone must pay $1000. (The community must build more clinics and hospitals.) The "mayor" proposes laws, such as fines for those who use the dump instead of treating their wastes. or limiting the output that can be produced and sold. A proposal becomes a law if the majority of the players approves of it.

The students use the problem-solving approach in playing the game. They define the problem and identify their goals. They see that some goals can conflict—such as reducing pollution and increasing profits. At first, they tend to dump their waste rather than incur the money costs of treating it. Then those "executives" who do treat their waste loudly complain (there are shouts of "Not fair!") about those who dump their waste. Not only do they receive lower profits but they also pay for the pollution through higher taxes and medical bills. Some even go into debt and have to borrow from the executive who continues to pollute! In considering the "mayor's" proposed laws they employ economic analysis and look for the consequences of various alternatives. Heavy fines on polluters is a popular decision, but one group found that recycling could be profitable and was thus a reasonable alternative. They built several recycling plants in the course of the game.

As the students recorded their profits at the end of the "year" they analyzed the consequences of each possible line of action, guided by questions like the following:

- What happens to your expenses as garbage in the dump increases?
- What kinds of human behavior cause problems in controlling solid waste?

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* *External costs* are real costs of the production process which are not borne by the producer and/or the consumer of that producer's output. If a chemical plant pollutes the air and water it passes some of the real costs of production on to the public at large. People who are not producing or consuming the product are paying part of the cost when they suffer from pollution damage or pay taxes to help to clean up the environment.

- Describe some of the solutions you tried and tell how they worked.
- What are some aspects of pollution that cause manufacturers to lose money?
- How is pollution related to the economy as a whole?

In the discussion that followed the game the pupils showed that they understood how pollution reduces real income (such as by raising taxes and creating medical bills), that one firm can profit by imposing the costs of pollution on others, that the energy crisis might lead to a relaxation of pollution standards, and that everyone must cooperate in pollution abatement.

We also used two board games which can be played by smaller groups of students. In "Dirty Water" each pupil tries to stock a pond, and bids for funds to protect the pond from various kinds of pollution. The players must also deal with the effects of overpopulation and the spread of pollution from another (unprotected) pond. In "Pollution" each player owns a combination of properties which cause pollution or are affected by it. Increased profits from one property may cause pollution which decreases the value of other property. The players must work together to keep pollution low while still making profits. For example, when players pass the Speedy Auto Company they must pay for tune-ups for their cars. The cheaper the tune-up, the more the car pollutes the air. Thus students find that personal economic decisions may affect everyone and may affect them in unanticipated ways, such as by increased medical bills.*

When these students reach voting age they may very well participate in conflicts involving both economic and ecological issues. The problem of nuclear power plants is already a controversial issue. After discussing the advantages and disadvantages of nuclear power plants the pupils conducted an experiment to show the effects of thermal pollution on the breathing rate of fish. Sewage treatment is another problem with both economic and ecological aspects. We read about different kinds of treatment plants, tried filtering water in the manner of such plants, and listened to the song "My Dirty Stream" by Pete Seeger. The song mentions various sources of pollution and the economic rationalizations given by polluters.

### Conclusion

As a culminating activity the students played a simulation game requiring more sophistication than most of the previous activities. In "The Redwood Controversy" (published by Houghton Mifflin Co.) the pupils become U.S. Senators and leading citizens. The Senate is considering the establishment of a Redwood National Park. (Thanks to Watergate, the students were familiar with the procedures for calling and questioning witnesses!) Each student receives a card describing his or her role. Senators receive letters from their constituents, newspaper articles, cartoons, photographs, indications of who can be influenced by various individuals, and the like. The card also tells the Senators how much of a chance they will have to be reelected depending upon their Redwood National Park decisions. Witnesses include conservationists,

* "Dirty Water" is available in many toy stores, and "Pollution" can be obtained from Houghton Mifflin Co., 110 Tremont St., Boston, MA 02107.

lumbermen, the mayor of a lumber town, and so on. Conflicts of interest emerge immediately. As the game progresses, the students learn what happens to the ecology and the economy when a resource becomes scarcer, and what can happen to a town when its economy is based upon a single industry. A decision initially considered "good" because it saves a rare species of tree may destroy jobs and affect an entire community. Again, they find that there is no single "right" or "wrong" answer, and they learn how compromises take place in a political setting. Witnesses define problems and identify goals in different ways, forcing the Senators to look for alternative means of attaining the objectives and to analyze the economic, ecological and political consequences of each possible course of action. This exercise reinforced the previous experience in employing economic analysis and the problem-solving approach.

Both formal and informal evaluation techniques were used. The students were questionned as they conducted experiments and played the games. Oral questions were asked of the class after each series of related activities. Each student kept a folder in which data and answers to questions were placed. These were evaluated daily. Short essay questions were used to see if the pupils could tie together the concepts introduced in the activities. It was found that the students retained their understanding of concepts at least a month after games were played, for this period of time elapsed between the termination of the game and the administration of the test. Although the poorer students could not write as easily and as smoothly as the more able youngsters, they did show that they had grasped the ideas and concepts. There was also a positive impact on student attitudes and behavior. In the past I had been called "cheap" because I asked pupils to use scrap paper and to clean up with sponges rather than paper towels, but this year the students did not question these requests. Indeed, they made many suggestions for other ways of conserving materials and energy in the school. They went beyond the classroom activities and could be heard discussing the merits of various heating practices in their homes, the use of public transportation, rationing, and the like. Having been "conditioned" to accept the academic tradition of separating knowledge into "subjects," students often protest when language arts and other disciplines are integrated with science. ("This isn't science!") There were no complaints about this study, however, in which the language arts, science and economics were integrated in a rational analysis of an important problem in our dynamic society.

# The Job Shoppe: Production by Corporations

A Teaching Unit for 8th-Grade Economics

Margaret G. Thompson

Kimmens Junior High School
Fort Smith, Arkansas

## Introduction

Many of us, as teachers, are too concerned with our subject matter and tend to forget that we are teaching young people—not history or economics. It is important that all instruction be related to student needs, but this is especially the case in our state because the dropout rate rises significantly between the 8th and 9th grades. I teach a semester course in U.S. history, alternated with a course in economics for 8th graders. The latter offering may be seen as introductory for college-bound students, but for the dropout it provides the last chance to get formal instruction that will affect work skills, concepts and attitudes. This unit represents an attempt to give students a practical experience that will serve them now and in the future, as they perform their roles as citizens, consumers and workers.

For most of the students in my five economics classes the ideas and concepts were totally new. In a sense, they would be bombarded with new information, and I wanted this to become a realistic and meaningful experience. Through the technique of establishing and operating corporations, I hoped to achieve such goals as the following:

- Provide students with a realistic work experience
- Help students to gain a better understanding of their own capabilities
- Develop human relations skills and attitudes necessary for functioning efficiently in a work setting
- Help pupils to understand the market economy, various forms of business enterprise, labor-management relations, and government's role in our economy
- Involve the entire school community in our class activities

## Development

Junior high school pupils are usually giving serious thought to their career plans. I gave them an assignment requiring research on their chosen occupations. They were to find out about pay scales, entrance limitations, educational and training requirements, the work environment, and the advantages and disadvantages of the job in question. They were guided by a three-page "Occupational Exploration Report" form which I had prepared. In addition to the factors already listed, they were to learn about the types of

tools and machines used on the job, hours of work, occupation hazards, typical benefits available, personality qualifications, union status, health requirements, cost of training, opportunities for advancement, and many others. The laws of demand and supply were to be applied, in that the students were asked to determine whether there is an oversupply or undersupply of people in the field and what the trends appear to be. A variety of sources were to be used, ranging from interviews with people in the field to the textbook *Manpower and Economic Education* by Robert Darcy and Phillip Powell (Denver, Colorado: Love Publishing Company, 1973).

The career projects were due as we approached the six-week unit on business, and much of what they had learned from those projects could be applied in the new unit. We studied the various forms of business organization, but stressed the corporation. The textbook exposition of corporate enterprise would be translated into an actual business experience in the school. We developed a money system for our internal use. Each denomination of our currency had a unique color and shape, and each had to bear my own illegible forgery-proof signature. Next, each student applied for a Social Security card. Job application forms were obtained and the pupils were given experience in filling them out. We also discussed the reasons for each question on the forms.

Each prospective corporation had to apply for a charter. I obtained legal application forms, and then acted as the "Secretary of State" in reviewing the applications and issuing the charters. The situation differed somewhat in each of the five classes, but there were common elements. Each class elected a board of directors which would hold regular meetings. Each board had to work out pay scales, hire managers, establish prices for their products, prepare profit and loss statements, and decide upon dividend payments. Workers were hired and paid regularly in accordance with their responsibilities and time worked. A variety of goods and services was produced, and numerous situations developed which had great educational value.

"Bulletin Boards, Unlimited" was to prepare bulletin boards for exhibits. They refused the price I offered for a bulletin board in my room, and I in turn rejected their price. We finally reached a compromise. There were some problems over control of the corporate officials, and stockholders jealously guarded their prerogatives and exercised their voting rights. Labor problems emerged when one group of workers tried to hold out for higher wages. It is interesting to note that the board of directors and a small group of workers divided the work to be done and kept up production while a settlement was being worked out. The President of the Corporation showed a willingness to see both views, but learned that it is not easy to be in a managerial position.

"Ceiling Exchange, Inc." was charged with the responsibility of decorating the ceiling. They used assembly-line techniques to construct mobiles, symbols and other items to be hung from the ceiling. Their workers received high wages, but they failed to set a price for their products that covered their costs. Thus, at the end of the project it was clear that this corporation was operating at a loss.

The output of "American Poster Corp." could be seen throughout the building. They designed name plaques for each department in the school, made posters expressing various economic concepts, and so on. My biggest "goof-ofs" were in this class, and it was heartening to see the change in

attitude that occurred. The pupils quickly saw that when one member failed to do his or her share of the work, everyone suffered.

"Floor Facilities Associates" was well managed and efficiently organized. Since our floors are concrete with a sealer finish, I agreed to the idea of having the names of occupations painted on the floor. During a single class period of "brainstorming," a list of over 200 occupations was produced. Many students had not realized the wide variety of jobs offered by our complex economy. This company discovered the law of diminishing returns, for they quickly realized that they could not do their job efficiently with 30 people in the room at the same time. The manager then assigned work "days" (of 20 minutes each) in which six workers would be on the job at any one time. Six different tasks had to be performed, and the workers were carefully prepared in their roles. Tempera paint in a variety of colors was provided, along with brushes and other necessary implements. Each worker was given a different section of the floor. Although this was my largest class, the efficient division of labor and careful planning resulted in a work situation which created less confusion and indecision than that found in any other class. Not a single drop of paint was spilled where it did not belong.

"Careers, Inc." was our public relations firm, charged with the responsibility of arranging displays and publicizing our project. One of the stockholders had a newspaper route, so he placed a "flyer" in each paper he delivered. An invitation to visit the Job Shoppe was put in the mail box of every faculty member. Newspaper publicity was arranged by a student who had a relative on the staff of a local paper. Letters were written to TV and radio stations, and posters were placed throughout the building.

Some individual and small-group initiative also appeared. Two students established a loan company, which accepted stock as collateral. This was organized as a corporation. Although they did not pay a dividend, the value of their stock rose and they enjoyed a capital gain.

The students learned that their products would not be automatically accepted. The quality had to be high and the price had to be reasonable. I served in the roles of government, banker, legal counsel and consultant. More mature students might undertake these functions, but my classes were not quite ready for the complexities of these elements in our society. Student interest remained high throughout the unit. It is important to note that other subjects were included, for mathematics skills had to be used in computing labor costs, determining profits and losses, and the like. Arts and crafts were essential in some of the production processes.

### Culmination

As the unit drew to a close and as the time came to liquidate our corporations, we summarized our learnings by setting up an exhibit. Other students, parents and faculty members visited the Job Shoppe, and some of the teachers adopted similar ideas for their own classes. Interest in the project was high throughout the school, not just in my own classes. Although the corporation managers supervised the work of setting up the exhibits, everyone had a voice in important decisions and all shared in the task.

The most difficult part of the project for me was evaluation of the work done by each student. I knew they were learning, and that they were all

enthusiastically involved. The quality of class discussions was high, and the questions pupils raised were sophisticated. Yet, administrators, parents and the students themselves expect some sort of objective and formal grading system to be used. After discussing the matter with the principal, I accepted his suggestion that the problem be turned over to the students. We considered three ideas: (1) Students would grade each other; (2) students would grade themselves; and (3) the teacher would assign grades.

The first idea was challenged on the ground that students might grade one another on the basis of popularity and that it was not possible for each student to know how much every other student had accomplished. In regard to the second, it was feared that students would be overly generous with themselves in some cases, or might be overly modest in others. The third proposal was criticized also, for I might be influenced by a pupil's past performance and it was not possible for me to assess the work of 120 students who had engaged in independent projects.

After much discussion, we worked out a system in which the three approaches would be used and the scores averaged out. Students were provided with a form with which to evaluate each class member. I had constructed an objective test to measure knowledge and understanding of such things as the corporation, the factor market, labor unions, government's role in the economy, basic economic goals and problems, the circular flow, free enterprise, and the like. Assignments had been given from time to time, and these were checked by me. It is interesting to note that most of the final scores came very close to the scores each student had assigned himself or herself. Finally, I gave the students the opportunity to evaluate the project, by asking them to indicate what they liked and disliked, and what they would want to change. Although there were some criticisms ("Some people didn't work and just goofed off."), most felt that the project had great value because it provided "real life" experience, gave them freedom to make decisions, afforded opportunities for them to think for themselves, and was interesting.

I believe that the project did relate economics to student needs and interests, that it taught them much about the business world, and that it provided them with skills and concepts they will find useful in preparing for the world of work.

# Environmental Economics: A Case Study Approach

Robert W. Reinke

Hosterman Junior High School, Minneapolis, Minnesota

## Introduction

The "new revolution" in the social studies is characterized by the incorporation of many disciplines into a single classroom unit of study. The unit described in this report shows the relationship between ecology and economics, and indicates ways in which students can use these disciplines to understand real-world problems.* Educators recognize the importance of informing the public about the environmental problem in all its dimensions—air, water and soil pollution; overpopulation; the conservation of natural resources; and the like. The problem, however, is one of how an educational institution can best impart the relevant concepts, skills and attitudes to students.

A study of the environment requires more than a concentrated exposure to catastrophic predictions. It needs a structure from which to describe the problem, analyze its effects, and set the stage for actions that are logical and feasible. Instruction must be tied to many facets of the student's education. English classes can be used for reading current literature describing the environment, and for writing reports or letters to officials who are in a position to help to solve community environmental problems. In science courses the students can examine such things as the nature of chemicals which affect the eco-system and learn about sewage treatment or water purification processes. Mathematics is needed in analyzing the costs of pollution control. Indeed, most—if not all—disciplines have something to offer the student in this field. It is economics, however, which offers a framework in which to place the various bits and pieces into a proper perspective. As a problem-solving social science, economics can deal with costs, efficient allocation of scarce resources, social legislation, and value-related issues. Some of the economic concepts which are useful tools in dealing with the environmental problem are: scarcity, demand, supply, utility, diminishing returns, specialization, profit, internal costs, external costs, elasticity, the market, resource allocation, opportunity cost, price, investment, economic development, technology, and cost-benefit analysis.

A curriculum must be more than a series of concepts and a rationale for teaching them, however. There has to be a "delivery system" which has been

* This is an abbreviation of the full report, which is 130 pages long.—*The Editor.*

well thought out and will be efficiently executed. A great variety of activities can be used in teaching environmental economics, but the case study method was stressed in this unit.

## Procedures

There are both advantages and disadvantages to the case study approach. On the positive side, a case study—real or fictional—has a real-life dimension which appeals to students. Students are called upon to interpret data, and not simply to memorize. They discover that there are few simple "right" and "wrong" aspects, but rather many gray areas. The method allows for flexibility, and it can be used not only to teach content but to incorporate skills and attitudes into one's lessons. Finally, case studies involve little in the way of money costs. The disadvantages are that written cases are sometimes above the comprehension level of many students, that teachers using them must be skilled in leading open-ended discussions, and that cases might give a microscopic picture of a situation and ignore general conditions. Nevertheless, cases are extremely useful if teachers are aware of their strengths and weaknesses.

The young people of today are very much interested in the environmental problem, and one case which proved fruitful was that of mercury and its impact on the environment. Brief quotations taken from several publications served as dramatic introductions to the problem. For example, note the following quotations from the magazine *Environment*, from a report of the U.S. Dept. of Health, Education and Welfare, and from the Ontario Dept. of Lands and Forests.

> "Between 1953-1960, 110 people were killed or disabled after eating fish caught from Minamata Bay, Japan."
> "Death from mercury and its compounds in the United States was from 3 to 11 each year since 1957."
> "For the protection of your health, fish from these waters should not be eaten because of mercury contamination."

Of course, mercury is a very useful element, and our study focused on its benefits as related to its costs. In examining costs we considered both the *internal cost* of producing it (the cost borne directly by the producer and indirectly by the consumer of the producer's output) and the *external cost*, or social cost (the cost to society as a whole, taking such forms as pollution of waterways and contamination of fish). It was in this part of the unit that science was used intensively, for it was necessary to analyze both the uses and dangers of mercury. Economic analysis quickly came into play, for the demand for mercury is a *derived demand*. That is, consumers do not demand mercury, but demand products of which mercury is a small part. Profit-maximizing producers then take into account such things as the availability of mercury, its cost to them, the availability of substitutes, the costs of other inputs, and the compatibility of mercury with other components of a product and with production techniques. Thus, it becomes clear that if mercury is the least expensive factor that can do the necessary job, to replace it with a safer substitute would be to increase the cost to the consumer who ultimately pays for the product.

We studied the process by which mercury is mined and then refined, and delved into its history. For example, the most concentrated lode is at Almadén in Spain, where the mine dates back to Roman times, and where the economy of the town is dependent upon mercury. One of the real costs of mining the mercury there is that workers become ill from inhaling the vapors, and thus the company provides rooms lined with hot lamps and ultraviolet lights designed to "sweat out" the mercury. Because the world community did not become alarmed over mercury's potential to harm humans as long as it was seen as an occupational disease only, we considered the question of how well the market system can cope with the pollution problem. The poisoning of 202 fishermen and their families in a Japanese village of the Minamata Bay region served as a dramatic example of the real costs of mercury. (A chemical corporation had been discharging its wastes into the bay, expending little or nothing on waste disposal.) Closer to home, an American family in New Mexico fed seeds coated with mercury to their hogs. Four children suffered severe nerve damage after eating the pork and they can no longer see, walk or think rationally.

In examining possible solutions, the pertinent question was one of how to help the price mechanism to reflect the total private and social costs of production. Some recommend that government agencies regulate the amount of pollutants discharged by industries, fining those which fail to adhere to the specified guidelines and hopefully forcing them to install pollution control devices. Those objecting to this proposal point out that it would increase government interference in the economy and add to the tax burden since regulatory agencies and courts can be expensive.

Another proposed solution is to give subsidies or tax credits for the installation of control devices. But this fails to place the cost on the consumers who use the product. Instead, the public in general bears the burden and the people who derive utility from the product pay a lower price.

The idea that producers purchase the "right to pollute" appears to condone pollution, but this is not the case. The firm could buy all the land and water it is polluting and pay the costs that its pollutants impose on others, or it could compensate a government agency for the cost of cleaning up pollution. This would probably result in the installation of control devices, although some pollution would continue to exist. It must be noted, too, that it is extremely difficult to measure the social costs of pollution. (How do you determine the cost to society of a child who is retarded or born blind?) The economist who looks at humans as productive resources can however, estimate the dollar value of the goods and services they are capable of producing, calculate the value of output lost when workers are ill, and compute the cost of providing health personnel specially trained in treating people suffering from such things as mercury poisoning.

Of course, the material above is only a sample of that which appeared in the actual case study, but it illustrates ways in which economic theory was used to promote understanding of environmental problems. The specific objectives of the unit were listed and were categorized as being suitable for average students, for slow learners or for both. A pretest was administered to determine how much the students already knew and how they felt about various issues. One part of the pretest was a brief case study of a town whose major industry (the production of taconite) supplied 75 percent of the jobs in

the community, but created water pollution. After reading the details of the case, the students were asked to identify the problem, indicate the choices available to the people, list the kinds of information needed in order to make an informed decision, tell how the information might be obtained, and finally say how they would solve the problem and why. The students were then asked to meet with others whose solutions differed and to discuss the case with them. After the discussions they were to tell what arguments were presented, whether or not they became angry, and whether or not they reached agreement and why or why not. One important goal was to give the students practice in the following types of skills:

- Defining the basic issues involved in a case
- Identifying basic assumptions
- Establishing hypotheses
- Locating information
- Distinguishing between relevant and irrelevant information
- Detecting bias in various sources of information
- Distinguishing between facts, inferences, estimates and value judgments
- Reading and listening for main ideas
- Identifying economic resources on maps and globes
- Clarifying purposes and creating a structure for discussions

There were value and attitude objectives as well, for it is impossible to avoid dealing with values and attitudes in any social studies classroom. This does not imply that teachers should indoctrinate students, but that they should help them to identify and clarify their values. Students should also be exposed to values they may not be familiar with, recognize that one's values may sometimes conflict, and rank their own values in order of relative importance. Of course, the students may continually add new values to their list and may completely reorder their priorities. A study of environmental economics involved values relating to human dignity, social and economic justice, security, health, happiness, responsibility, and self-respect. The pretest included some items dealing with values and attitudes. For instance, 13 occupations were listed and the students were to rank them in terms of their economic value, and to rate them in terms of their social worth. They were asked to indicate agreement or disagreement with such statements as: "Business often fails to take necessary actions on important social matters, even when most people favor such actions."

Some of the specific activities that can be undertaken with a project of this nature are as follows:*

- Select a nearby industry, and take pictures of the plant, the employees, and the surrounding area. Use an opaque projector to show these to the class, and have the students write down what they see. List their perceptions on the board and ask for explanations. During this discussion, provide information on the firm's products, managerial structure, production techniques, types of jobs, resources used, and

* To save space, we have consolidated and abbreviated Mr. Reinke's descriptions of the activities.—*The Editor.*

profit situation. Then divide the class into groups and have them play the roles of company president, workers, residents living nearby, users of the product who do not live nearby, and stockholders. Provide each participant with a role description sheet. Supply each group with a list of things businesses are expected to do, and have each group (according to group consensus) rank them in order of importance. The list can be as follows:

( ) Business should supply jobs.
( ) Business should make a profit.
( ) Business should donate time, money and resources to worthy projects.
( ) Business should satisfy stockholders.
( ) Businesses should not harm the environment.
( ) Businesses should satisfy the consumer.
( ) Businesses should produce the best possible goods and services.
( ) Businesses should make products at the lowest possible price.
( ) Businesses should respect their workers.
( ) Businesses should control the community.

After the students have ranked the items in accordance with how they feel the person described in their role description sheets would rank them, list each group's rankings on the board and hold a class discussion. Ask such questions as—

1. Are there any areas of universal agreement? Why? Why not?
2. Is it possible for any person to consider all these equally important?
3. Is it possible to achieve all the goals at one time?

Finally, for homework the students can select a role and write a short paper on why they would be most comfortable in that position, what values now held are consistent with that role, what personal values conflict with the role, and what the community might be like if everyone accepted the same values.

- Have the students do library research and list ten products which use mercury. Include products which are for personal use, family use, national defense, health, and recreation. Hold a class discussion on how mercury is used, what use is the most important, what life would be like if mercury were not used, and whether or not it would be feasible to ban its use. Invite a business executive and a researcher to the classroom to explain how mercury is used in production and the research being done on its harmful effects. Divide the class into groups of six and play the *Executive Decision* game (Instructional Simulations, Inc., 2147 University Avenue, St. Paul, MN 55114), advising them that the goal is to make the most money possible. After playing the game discuss such questions as: How did you decide which productive resources to use? What determined the price of your product? Could you have used different resources and produced the same product at the same cost? Would there have been a different impact on the environment? Did you consider pollution when you made your decisions?

- Students should realize that humans can manipulate the environment to meet their needs, but that negative consequences may develop. Have the pupils draw or label in the center of a large sheet of paper one activity they engaged in during the day, such as eating lunch. Then they should indicate by drawings or labels how this activity was based upon previous events, such as the farming of crops, transportation of produce to processing plants, processing the food, shipping it to the school, preparation of the meal, etc. Consequences are also noted, such as discarding left-over food, disposal of the garbage, and the like. These chains of events should be as complex as possible, showing interrelationships and interdependence, the role of technology, the impact on the environment, and so on. Next, have the students bring to class pictures of things they own which harm the environment and ask them to explain why they continue to use these items. Focus the discussion on the conflict of values and how the conflict might be resolved. Let the students select familiar products and compute the costs of producing those products—natural resources, labor and capital used. These are private or internal costs, but then have them identify external or social costs, such as damage to the environment resulting from the production process. Further research can be done on specific companies, with the students guided by such questions as: What does the firm produce? Who owns the company? What pollutants are discharged? What might happen to sales if the cost of pollution were included in the price of the product? Who should initiate control of pollution?
- After the students have read the available material on the Japanese firm which caused mercury pollution at Minamata Bay, divide the class into two groups—one to oppose and one to defend the company. Hold a trial in which students play the roles of prosecuting attorneys, defendants and jury. Attempts should be made to compute the costs of the company's actions and the benefits derived from the firm's output. Note the fact that the firm is trying to satisfy consumer demands and that it is providing jobs. Each group should identify value positions and develop strategies to influence the jury. (Students from other classes could be chosen to serve as jurors as well.) Consider the amount of money the victims are claiming in damages, the probable cost of cleaning up the bay and restoring the fish population by a given time, and the installation of pollution control equipment. Upon completion of the trial discuss the results and how they would affect the economy of that area in Japan.

## Conclusion

One possible culminating activity for a unit of this type is to have groups of students go out into the community and personally identify one or more sources of pollution, gather evidence that the pollution exists, and try to suggest solutions. Although this activity might result in controversy and conflict, students can meet with executives of firms* causing pollution and

* Note that private businesses are not the only polluters. Government-operated incinerators, home heating systems, private automobiles, and the actions of individual consumers also contribute toward pollution.

tactfully discuss the problem. They might also meet with city council members or other government officials who are in a position to take firm action.

Evaluation can occur throughout the unit. In visits to business firms, for example, the teacher should carefully observe the students to see if their comments and questions reflect a knowledge and understanding of the relevant economic facts and principles. For the more formal types of evaluation, one can grade written work and oral presentations and administer tests. For this unit, a posttest was given which covered the same material as the pretest, but in a different form. (Some of the test items were identical.) This made it possible not only to measure changes in knowledge and understanding, but development of skills and shifts in values and attitudes as well. For example, one item consisted of a drawing of a city street, heavy with traffic, and the students were asked to comment on the picture. Responses on the pretest tended to be very brief, and sometimes only remotely related to the economic, environmental and social concepts that were relevant. Posttest responses were longer, and revealed understanding of ecological and economic facts and principles. A different case study was given in the posttest, and again the students were better able to identify the basic problems, set forth the alternatives, note the type of information they would need, tell where and how to obtain data, and explain why they would choose a particular solution. The pupils were asked not only to define such terms as marginal cost, utility, resource allocation, and long-run cost, but to explain how the concept is related to environmental problems. The items relating to values also showed that change had occurred. For instance, in terms of their relative economic value to society, college teachers generally received higher rankings on the posttest.

In summary, my experience with this unit convinced me of the feasibility of drawing upon several disciplines in approaching important current problems, and of teaching junior high school students how to use the analytical tools of economics to understand vital issues.

# Economics and Career Orientation

Roxy Pace Smarzik

Bowman Junior High School, Plano, Texas

## Background and Objectives

The idea for a Career Orientation course originated in 1973 in the Curriculum Department of the Plano Independent School District. It was felt that the eighth grade is one of the pivotal points in basic career planning. I worked with the Department in developing the course objectives, which covered knowledge, skills and attitudes. A sample of the objectives follows:

- The student should be able to identify his or her capabilities and understand how they are related to the chosen career.*
- The student should be able to identify the work habits and attitudes necessary for success in the chosen occupation.
- The student should understand how technology can result in greater production.
- The student should understand the concepts of specialization, division of labor and interdependence.
- The student should understand the relationship between supply, demand and prices.
- The student should be able to describe worker qualifications for specific jobs related to his or her career choices.
- The student should want to work for personal satisfaction and independence.
- The student should understand the need to work well with others in order to reach the firm's common goals.
- The student should acquire the ability to meet people, make appropriate introductions, and talk with others in a courteous and tactful manner.

## Procedures

For a six-week period, the students were taken from the reading class for the career orientation project. There were approximately 25 students per class and I had five such classes a day. The students were given work contracts wherein each would interview five people, complete 10 career information assignments, and make an information file on 25 jobs in which he or she was interested. Each pupil also completed a "Self Concept Packet" defining personal interests, capabilities, emotions and feelings about one's self, and relating these to a suitable career direction. Each student was given a "job"

* We have abbreviated and consolidated some of the statements in order to save space. Over 60 objectives are listed in the original report.—*The Editor.*

within the classroom. They had to make formal applications for the positions and be interviewed. Job performance was rated and counted as one-fourth of the student's grade. The students made "Life Style Scrapbooks" in which they presented their current life styles and considered the type of life styles they hoped to have in the future. Finally, they were asked to determine the major job considerations important to them and to identify the occupations which might meet those considerations.

The classroom was set up like a business firm, with management policies regarding time cards, lateness, deportment, care of tools and equipment, and the like. The "workers" received an hourly wage of $2.00 to start, but thereafter, pay would be based upon the quality and quantity of output. An "Employee of the Week Award" was established, and winners would receive at least $2.25 per hour. Double pay was given for overtime, there was a daily "coffee break," each employee could take three paid sick days (provided that they called in to report their absence), several paid holidays were provided for, and the workers could deposit their money in a company "credit union." The room was divided into work areas, and a contest was held each week between these areas. The winners received extra pay and additional time to do their work contracts.

The students worked on their contracts two or three days each week, and devoted one day per week to field trips to local business firms. Two all-day field trips were also planned during the six-week period. Part of the time was spent in class discussions of such topics as the importance of work, the circular flow of economic activity (demonstrated also through role-playing), scarcity, capital goods, labor, technology and job interviewing. We also viewed filmstrips on preparing for the world of work.

Basic assignments and activities were outlined on mimeographed sheets which gave the title of the lesson in question, set forth the desired outcome of the activity, listed various specific objectives, described the activity designed to achieve each specific objective, indicated the resources that could be used, and included several questions useful for pre- and posttesting. The various classroom jobs included attendance supervisor, bookkeeper, secretary, file clerk, time card manufacturer, area manager, materials manager, audiovisual technician, pollution control officer, maintenance engineer, public relations officer, credit union clerk and others. The duties of each were listed on a mimeographed sheet. For example, the audiovisual technician had the responsibility of obtaining films and filmstrips, setting up and operating the projectors, and returning the material to the library. The special qualifications needed by each worker were indicated as well. For instance, an area manager had to be someone who was ambitious, possessed leadership abilities, and would use tact in dealing with the workers under his or her supervision.

The students were carefully prepared for the field experiences. Before actually interviewing people to obtain information on careers, we had class discussions on effective methods of interviewing and held role-playing sessions in which interviews were simulated in the classroom. There was also follow-up work, in which the students met in groups and discussed their field interviews and listed the factors which had influenced the career options of the persons interviewed. The students also traced the careers of members of their own families through three generations and explained why those careers had been chosen. Finally, each student would select three careers in which he

or she was interested and explain how the factors discussed might affect their choices. An "Interview Format" sheet had been prepared and mimeographed to serve as a guide to the pupils. This contained such questions as:

- What is the nature of your work?
- What tools and equipment do you use?
- What training did you have to have for this type of work?
- What are the advantages and disadvantages of the job?
- Why did you choose this type of work?
- How did your family affect your career choice?
- What are some other jobs you can do with your skill and experience?
- What are some of the pressures you encounter in your job?

The job file cards that each student prepared contained concise information on many occupations—from bartender to soil conservationist—in a manner that would make it possible for anyone to get a quick overview of the characteristics and requirements for those jobs. The scrapbooks contained data on the individual's preference for housing, climate, location, car, clothing, foods, entertainment and other factors that go to make up one's personal life style. The brief explanations were illustrated with pictures cut from magazines or the pupil's own drawings. Much thought would have to be given to whether or not the chosen life style was commensurate with the career plan.

We identified 15 "Occupational Clusters" such as Public Service Careers, Fine Arts and Humanities Careers, Personal Service Careers, and the like. Specific jobs were then subsumed under each cluster. For example, Public Service Careers might include sanitation workers, police officers, teachers, members of the armed forces, and elected officials, among many others. It was stressed that every honest job contributes toward the general social wellbeing, and that nearly all jobs are somehow interrelated. Consideration was given to supply and demand conditions in relation to each occupation listed, and the importance of productivity was noted as it relates to efficiency and to wage rates.

Numerous forms were prepared to serve as guides to the student. To help them to identify their own capabilities and interests, I prepared and mimeographed a list of such questions as the following:

- What are some of the things you really enjoy doing?
- What changes have you noticed about yourself in the past year or so?
- What are you best at doing right now? What would you like to be better at doing?

I also prepared a list of incomplete sentences designed to help the students express their true feelings. It contained 40 items, a sample of which follows:

- I really like to . . .
- I am very good at . . .
- I have failed to . . .
- I wish I could be better at . . .
- I don't like people who . . .
- My greatest worry is . . .
- What I like most about myself is . . .
- I can't stand . . .

A sheet containing seven stick-figure drawings was given to the students and they were asked to select the one most like their own personalities and write a paragraph about the one chosen. Figure 1 represented a scowling person; figure 3 was a relaxed individual with a benign smile; figure 5 was a hyperactive person with a happy smile; figure 6 had a worried look, and so on. Another form listed various needs and satisfactions, and asked the pupil to indicate which of these were considered important. They were also to identify the items which should go together. Among the factors listed were: feeling important, working with words, working with numbers, having responsibility, helping others, feeling secure in one's job, being liked by co-workers, competing with others, doing work of value to society, exercising leadership, being creative, influencing people, dealing with people, doing a variety of things, having authority over others, and many more. The student was then asked to identify at least 15 jobs that might fulfill these needs and at least 15 others that would fail to do so and thus cause frustration.

There were many other activities of a practical nature, designed to help the student to make intelligent career choices. Visits were planned with high school counselors, the testing and placement officer in a community college, and the junior high school counselor. Throughout, basic economic concepts that can help one to decide on a career and to prepare for it were applied.

## Conclusion

Students knew in advance exactly what was expected of them and how they would be evaluated. A two-page mimeographed sheet explained the organization and development of notebooks, the interviews, the point system for grading contracts, the preparation of job file cards, the field trips, daily work assignments, the expected work habits and attitudes, and the way in which each would be weighted to establish a final grade. This was read and signed by every student and by his or her parents. As noted earlier, the activity sheets also listed the expected outcomes of each activity and often contained test questions. The results of the formal pre- and posttests are as follows:

| Class | Pretest Average | Posttest Average | Gain |
|---|---|---|---|
| 1 | 56 | 81 | 25 |
| 2 | 43 | 72 | 29 |
| 3 | 53 | 93 | 40 |
| 4 | 52 | 88 | 33 |
| 5 | 54 | 91 | 37 |

Of course, evaluation had been an on-going as well as a summative process, and it was concluded by objective observers that the course was a success. The course will become a permanent part of the junior high school curriculum and a similar course is being added to the new middle school curriculum.

# APPENDIX TO CHAPTER 3

## Good Ideas in Brief: Junior High School Level

BARBARA BOYD of the *John C. Myers Intermediate School* in *Broadway, Virginia,* uses a variety of activities and materials in her one-semester economics course for eighth graders. One of her most interesting projects is a simulation in which the students learn about money, banking and consumer education. Each pupil selects a role as a producer of goods or services (banking, retail merchandising, insurance, utilities, etc.) and, of course, each is a consumer as well. The class has about two weeks to prepare, a period during which they will do research on their roles, advertise their goods or services, set up displays of their products, and make such necessary forms as bank checks, deposit slips and loan applications. On the day the simulation begins, each student receives an activity sheet describing his or her family situation, net income, size of house or apartment, and the like. Each pupil then prepares a budget (which may be revised from time to time) and decides whether or not to buy a car, to obtain additional furniture, to take a vacation, and so on. The teacher gives the student one month's income, using play money. Money may be deposited in the bank (in a savings account, checking account or both), and used to buy goods and services from the various "business people." Loans may be obtained from the bank as well. After several days, each student "takes stock" of his or her situation to see how much money he or she has, how deeply the family has gone into debt, and to what extent the purchases have been wise ones.

BAIBA BLAKIS KAHN of the *Philo Carpenter School, Chicago, Illinois,* has developed lessons for teaching consumer credit, demand, supply, competition and opportunity cost to minority group eighth graders. Among the techniques four d effective in capturing the interest of underachievers is an "Economics Football Game." The class is divided into two teams. A coin is tossed to see which team "kicks off" and which "receives." An economics question (such as "What do we mean by opportunity cost?") is asked. If the receiving team gives a correct response they "keep the ball and advance ten yards." They "keep the ball" until a "fumble" (error) is made. When one team "fumbles," the other gets the ball or the "yard line" where the error occurred. When a team scores a "touchdown" it earns six points, and can then try for an extra point by trying to answer a question from a more difficult set of items.

CHAPTER FOUR

# Teaching Economics to Students for Whom English Is a Second Language

David W. Fuchs*

DeWitt Clinton High School, Bronx, New York

## Introduction

DeWitt Clinton, with over 4,000 students (all males) is one of the largest high schools in New York City, and over 100 of the pupils speak something other than English as their primary language. It has long been apparent that the usual classroom approaches and methods cannot adequately help these young people. Thus, in a joint undertaking with other departments, in 1972 the Social Studies Department applied for an NDEA Title III grant to develop an individualized program for the ESL (English as a Second Language) students. The resulting allocation of nearly $9,000 enabled us to purchase materials and to convert the classroom into a laboratory for the ESL pupils. A long-run goal was to demonstrate that "new paths" to teaching might be effective and to encourage the other 34 social studies teachers to experiment with innovative techniques.

The immediate goal was to help the 17 young men in my class to adjust to a new societal environment through a combination of English and consumer economics. To prevent them from becoming high school dropouts we would have to provide them with the motivation to want to learn and create an educational environment that would enable them to experience success. The boys came from ten different countries, representing five languages (Spanish, Greek, Italian, Chinese and Korean). Time spent in the United States ranged from two months to six years, and only five of the students had studied English in their native lands. In most cases the parents were unable to speak, read or write English. Faced with this great diversity of backgrounds and

* Dr. Fuchs is Chairman of the Social Studies Department at De Witt Clinton High School. This is a brief summary of his original 100-page report accompanied by a great deal of supporting material, such as tapes. The complete project is available from the Vernon R. Alden Library (Awards Program Collection), Ohio University, Athens, OH 45701.

abilities, I decided that only through individualized instruction, with ample provision for tutorial assistance, reinforcement, and opportunities to proceed at different rates, could we meet the needs of these young men.

### Initiating the Project

In the classroom which we converted to an ESL laboratory we installed 20 "teaching modules" equipped with filmstrip projectors, cassette tape players and headphones. Each student was assigned to a module. The room was used daily for the twelve weeks of the unit. My classes were 40 minutes long, so the room was also used for biology, world history, geography, etc. Dictionaries and copies of a high school textbook (Bertram Linder's *Economics for Young Adults*, published by William H. Sadlier, Inc.) were available in quantity. Of course, the students were given instruction in the use of the equipment and were responsible for keeping it in good order.

Consumer economics was the focal point of the course because it would have immediate practical value to the students. Wherever possible, the analytical tools of economics (such as the law of supply and demand) were included. Important current issues such as inflation and the energy crisis were discussed as well. Mathematics and English (vocabulary development in particular) were integrated with the economics lessons. The school's ESL Coordinator, Mr. William Palace, and an English teacher, Mrs. Florence Treistman, assisted me in working with individuals, often using their spare time to review and reinforce my lessons in English. I also received a great deal of help from a student, Lazaro Marin, whose fluent Spanish, poise, patience and leadership ability made him an excellent resource person in working with the less able boys.

Several pretests were administered so that I could get a clear picture of the existing knowledge, abilities and problems the students had. These enabled me to learn about their personal and family situations, writing skills, aspirations and understanding of economic concepts. It is important to realize that words which Americans use almost daily (such as jobs, shopping and taxes) may have no meaning to ESL students. Thus, tests were constructed to ascertain the extent to which they knew and understood key terms and concepts. Of course, records were kept of each person's test results and a brief summary of these results, plus information obtained during individual conferences with me, was prepared for each student. The type of assistance needed by the boy was also included in the summary statement.

### Developmental Procedures

During the pretest period, each student received a notebook to be used for recording test results, listing and defining terms, and storing graphs and other information. These were collected and evaluated by me on a regular basis, and returned to the students with suggestions for further work. Three or four times a week the students would work individually in their carrels. They could choose the lessons they wanted to work on and were not required to follow a prescribed sequence. The necessary materials, such as books, tapes, filmstrips and written exercises, would be obtained from me. My assistant (the student Lazaro Marin) and I would move from carrel to carrel, providing whatever individual assistance might be necessary. Each packaged lesson

took about 30 minutes to complete. Upon completion, the student would bring his work to me for an evaluation and conference. This included a review of the written work. correction of errors, and a discussion of the concepts in the lesson. Brief reinforcement quizzes were also used after the lessons. Note that they were not required to complete lessons in 30 minutes. Indeed, some might spend three or four days on a given lesson while others would do two lessons in one period. Group lessons were held about twice each week to deal with common problems. First, let us examine the self-teaching lessons.

I prepared 13 self-teaching lessons, organized as follows:

(A) Economic theme
(B) Materials to be used
(C) Motivation
(D) Questions and exercises
(E) Summaries

A typical lesson is the one dealing with the business cycle. It is structured as follows:

(A) The theme is expressed as a problem—"How can we control the business cycle?"

(B) The materials are listed. In this case a filmstrip entitled "Controlling the Business Cycle" and a tape on the business cycle are the basic materials.

(C) The motivation (called "Getting Started") consists of exciting newspaper headlines representing both good and bad times in our economy, such as "Family Can't Pay Rent—They Live in a Tent" and "Five Million Unemployed." The key terms—prosperity, recession, depression, business cycle, etc.—are then defined and explained.

(D) The student is then instructed to start the filmstrip projector and the tape. The written lesson form tells him what to look for and asks questions. Some of the questions refer to simple facts, such as: "During what ten-year period did Americans have the Great Depression?" Others require thought and application, as in this item: "Are we in good or bad times now? Explain your opinion." The various phases of the cycle and its possible causes are set forth by the filmstrip, and questions in the lesson are addressed to nearly every frame. This particular lesson contains an exercise in developing a table, not simply in a mechanical way but in a fashion that calls for explanations of the content. Such factors as unemployment, bank savings, farm prices, problems of old people, and credit buying are listed in a left-hand column. In the center, to the right of each factor listed, the pupil indicates how this factor signified "bad times" during the 1930's. In the third (right-hand) column, he tells what the government has done to deal with the problem.

(E) The final summary also demands careful thought and analysis, for it asks the student to tell what he thinks can be done to keep the United States prosperous. This summary statement, of course, shows how well the student mastered the concepts.

Topics represented in the various lessons included: The Meaning of Economics; The Roles of Consumers and Producers; How Stores Serve the Consumer; How the Consumer is Affected by Advertising; Interpreting Labels; Comparison Shopping; Advantages and Disadvantages of Buying on

Credit; Insurance; Who Helps the Consumer; How Prices are Determined; The Business Cycle; and The American Economic System. To show how the analytical principles of economics were incorporated into the lessons, let us note some of the content of the lesson on how prices are determined.

It would be a mistake to start off with supply and demand curves. First, the lesson contains a pictorial chart illustrating supply and demand. There are four human figures representing demand, and four TV sets representing supply. A price of $150 is given for each TV set. Next, the number of human figures increases while the number of TV sets remains the same, and the student is asked to tell what should happen to the price. He is then presented with a decrease in the number of consumers and an increase in sets. He listens to a tape on supply and demand, answers several questions on supply, demand, price and profit, and then begins to develop demand and supply schedules. A graph with price and quantity figures on the vertical and horizontal axes appears in the lesson sheet, and the student places dots at the appropriate points while listening to the information on the tape. This is done separately for demand and supply, and then on a third chart he combines the information to find the equilibrium price. After having done this, he turns to the last page of the lesson where he is presented with different curves for another product. He is asked to explain the diagrams and then, in his own words, tell how the law of supply and demand determines prices.

A reinforcement quiz was prepared for each lesson. The quiz would be taken after the postlesson conference, or later (after further study) if the student preferred to do more work before taking the test. The quizzes were not very important in assigning grades, but were primarily designed to encourage self-evaluation. Did the student do as well as he felt he *should* have? Those who did not measure up to expectations could review the lesson or meet with me or my assistant for further help. The quizzes contain multiple-choice items, fill-in items and short essay questions. Thus, they were used not only to test mastery of content but to evaluate skills in writing as well.

At least once a week we had group lessons for the entire class in order to review basic concepts contained in the self-study lessons, provide opportunities for class discussion and oral expression, correct common misconceptions, motivate the students to want to undertake new lessons, or introduce new themes. Such lessons might include such activities as the viewing of a film on inflation, followed by a written exercise in which the students would explain the meaning of inflation, discuss the causes, give their opinions on the seriousness of the problem, tell what government actions might be taken, and summarize their own learnings. Such current events as the Middle East crises, American-Soviet relations, and urban problems were discussed in group lessons. Practical homework assignments, such as visits to supermarkets to make price comparisons, were given to complement the classroom work. To a certain extent, government and geography were included in the unit. We studied the various agencies and laws (at all levels) which provide some protection for consumers and used maps to identify Congressional districts. The students drew graphs and charts showing trends in the prices of various products. Nearly all of these activities were also related to the development of communications skills, both oral and written.

## Evaluation

Our evaluation scheme was designed to measure the effectiveness of the program as well as the progress of the individual students. As indicated earlier, student work was evaluated at the completion of each lesson both by me and by the student himself. Of course, the specific objectives listed for each lesson were used in this process. In addition, the students were tested as a group. After the third week of the project a test was administered to measure group progress and to pinpoint areas of weakness that might affect most (if not all) of the boys. In addition to the economics already covered, the test included English and some simple mathematics items. An example of an economics question is: "What happens to prices when demand goes up? (1) Prices stay the same. (2) Prices go down. (3) Prices go up. (4) There is no connection between prices and demand." The English items contained economic facts, concepts or terms. For instance, the students were asked to correct the errors in this paragraph: "My father have Social Security. Yesterday, he go to the store with his Social Security money and he will buy food for his family. Today, he also buy more food. Tomorrow, he buy more food." The arithmetic items involved price computations. Thus, even in the tests an effort was made to combine the three subjects.

Charts were designed which showed the progress made by each individual, and at the end of an evaluation period I would meet with each student privately to discuss his progress. As the end of the unit approached, I prepared a battery of post-tests. This included a spelling test; dictionary and vocabulary tests; measurements of the ability to interpret charts, graphs and pictures; essay items; and an objective economic concepts test. Assessments were also made of each student's skill at oral presentation. Other skills evaluated were ability to classify data, to generalize, to make comparisons, to identify the important issues in a publication, to discover the major alternatives in a problem situation, to organize and present data, to draw logical conclusions, and to review previous work.

An important facet of the unit is that attitudes and values are not ignored. Willingness to participate in discussions, to share information with others, to take a stand on issues, and to be aware of the values of other people was stressed throughout. Too often we measure only the cognitive knowledge of the students and fail to ascertain their views on controversial issues. My pupils were presented with such questions as: "Since coming to the United States, have you and your parents been happy with our economic system?" They were also asked to tell how they would reply to a Soviet student who criticized the American economic system.

Other educators were asked to evaluate the project. Over a dozen educators, including principals, officials from the New York Board of Education, psychologists, classroom teachers, college instructors and librarians, personally observed and evaluated the project. The President of the Parents' Association also came. Finally, the students themselves were asked to give their reactions. Discussing lessons with the teacher proved to be the most popular activity, but the comments on the project as a whole were highly positive. The tests and anecdotal records showed that each boy had made significant progress, and this was recognized and appreciated. A typical

comment was: "I think some other schools should use this program because it works."

Of course, there were a few "bugs" in the program and we should make some improvements in future units. Some of the tapes could have been clearer in terms of the explanations of terms and concepts. More interpretive-type questions will be included, and some of the lessons will have to be made simpler. Guest speakers (representing business, labor, the securities exchanges, and the like) can be invited, and more field trips can be taken. Future lessons will draw upon the students' experiences in their native countries to a much greater extent.

The ESL project was not the sole answer to the problems of the student for whom English is a second language, but I do believe that it helped. It showed that individualized instruction is both feasible and effective, and I am sure that the basic approach can be used elsewhere. For me, it was the most gratifying experience in nearly twenty years as an educator.

# The Teaching of Environmental Economics

**Joel Fischer, David Norflus and William Sigelakis**

John Dewey High School, Brooklyn, New York

## Background

At a conference on environmental studies held at Southhampton College in March of 1974, Congressman Otis Pike charged that economists seem to be unconcerned about the environment. He asserted that in all the testimony he has heard in the Congress, no economics group has come forth in support of environmentalism. Although many economists are indeed concerned about environmental problems, it was Congressman Pike's statement that inspired us to build a bridge between ecology and economics at the high school level. We sought to dig beneath the platitudes, slogans, stereotypes and misinformation so common in this problem area and use hard statistical evidence, case studies and economic analysis in showing that economics and ecology are not incompatible.

Of course, we are faced with problems and limitations. John Dewey High School is organized on the basis of seven-week minicourses, and our program

would have to fit. We obtained a huge amount of material but were faced with the task of selecting that which would be most useful. Much of the commercially produced material was propagandistic, did not include economic analysis, and was not suitable for high school students. Unlike in many traditional schools, our pupils are heterogeneously grouped, so that materials would have to appeal to students of different age groups, levels of ability and ethnic backgrounds. Our school has 76 popular electives in the social studies, so we would be in competition with many other courses. We had no model to use, and we had to be sure not to duplicate (but to complement) courses in environmental chemistry, oceanography, marine biology and environmental sociology.

The first step was to establish educationally credible goals—goals which would have measurable outcomes or at least clearly discernible activities. The following is a sample of our objectives.*

- Students should be able to see and describe the economic impact of environmental changes.
- Students should be able to draw inferences from data on graphs and charts.
- Students should be able to interpret cartoons relating to environmental or economic problems.
- Students should be able to recognize propaganda and be able to counter it with economic facts and concepts.
- Students should become involved in environmental activities in the community, such as joining recycling drives.

### The Course of Study

We included 23 topics (in the form of questions) in our course outline. The complete list with subquestions and lists of objectives can be found in the original report.* Question 1 asked: "Is pollution mainly an economic problem?" To answer this the students would have to learn about cost analysis, especially about *social costs*. (Costs borne by society as a whole rather than by the producers and consumers of a given product causing pollution.)

The second question asked if pollution is a product of our political-economic system, and required a study of capitalism and economic growth. The third introduced the concept of "trade-offs," for the students were asked if we could have a cleaner environment and economic growth at the same time. The Alaskan pipeline issue and the energy crisis served as good case studies at this point. Question 4 dealt with both positive and negative incentives that might induce industry to clean up the environment, such as the use of emission fees, tax incentives, monitoring systems, and the banning of contracts with polluters. Question 5 was worded: "Does ecology cost jobs?" This was the trade-off again, but with jobs rather than economic growth (GNP) as the focal point. We examined the impact of pollution controls on jobs in a small town, and used numerous charts, graphs and statistical data.

Students were challenged to examine their own goals and priorities in

* For more complete listings and further details, see the original report on file at the Vernon R. Alden Library (Awards Program Collection), University of Ohio, Athens, OH 45701.

responding to question 6—"Are we willing to make personal sacrifices for a cleaner environment?" Would they be willing to accept rationing, use smaller cars and recycle paper? Question 7 dealt with the feasibility of pollution-control laws, and item 8 asked if we would be willing to give up economic advantages for large groups in order to preserve the environment for small groups. A good case was that of the proposed Oyster Bay Bridge on Long Island, a facility that would aid the economy of the New York metropolitan area but damage the environment for people living in the immediate site of the bridge. This led to further consideration of American values, as question 9 was addressed to the problem of getting people to give up their "love affair with the car," to overcome fears of nuclear fuel, and to adopt an "environmental ethic."

The relationship of population to pollution was taken up in item 10, and we studied the classical theories of population as well as current projections. The eleventh topic involved economic planning to improve the "quality of life," and, of course, we had to discuss just what we mean by "quality of life." Consideration was given in question 12 to the issue of individual freedom versus pollution controls, and whether the free enterprise system and a decent environment are mutually exclusive. Planned communities as a possible solution were examined in item 13, and the basic question of the scarcity of world resources in item 14.

International economics was studied in relation to questions 15 and 16. Fifteen asked: "Is there a conflict between our foreign policy goals and the environment?" The oil embargo was stressed here, and then question 16 called for an analysis of the impact of environmental policy on our balance of payments. The economic growth vs. a clean environment trade-off as it applies to underdeveloped areas was emphasized in relation to item 17. This required an intense study of the economic status and problems of the poorer nations. In question 18 we brought the problem "home" again with a study of pollution in New York City. New sources of energy and their possible impact on the environment were the major concerns of topic 19. Item 20 involved an attempt to find out if different groups (stratified by economic status, age, sex, race and the like) were equally concerned about pollution, while 21 analyzed different points of view and the use of propaganda. In question 22 we asked: "Is concern with the environment a passing fad?" We looked into the activities of various environmentalist groups and agencies and examined ecological concerns in literature and history, and in the Judeo-Christian traditions. The final question was a broad one: "Can humankind restore the balance of nature?"

### Activities

A wide variety of activities were planned for this course, and we can describe only a sample in this abbreviated report. *Case studies* were used often, and the students were asked to read the cases and "decide who is right and why." The following are brief examples:

- The state wants to build a sewage disposal plant on vacant land in a community. The purpose is to help to reduce water pollution. The area

is underpopulated, but the residents do not want the plant there even though they recognize the need for such a facility.

- Oyster Bay is an upper class community on the north shore of Nassau County, Long Island. The area is very attractive, with a variety of sports facilities and outdoor recreational sites. The state wants to build a bridge across Long Island Sound to Westchester and points North. Residents object, fearing the bridge may alter the suburban character and tranquility of the area.

Many *role-playing* situations can be used in a program of this type. We had students play the role of state officials, environmentalists, businessmen, labor union representatives, and members of a taxpayers' association to discuss a proposed bond issue to build Olympic facilities in Colorado. Each would prepare his or her case and make a ten or fifteen-minute presentation. Then there would be a hearing before the "governor and the legislators." The legislature and the governor would vote on the issue, giving reasons for their positions. The simulation would then be summarized with a discussion of the decision and what conditions might have served to modify that decision (such as a recession or a shortage of state revenues).

*Analyzing charts* can be a challenge to students. One of the charts we used (adapted from a chart in *The New York Times*) gave projections to the year 2100 of productive resources, population, pollution, industrial output per capita, and food per capita. It projected a sharp decline in resources, a rise in population and in pollution, and drops in per capita industrial output and food. The students were asked to relate the data on the chart to articles on growth, to determine whether or not criticisms of the chart were valid (Does it fail to show other relevant variables?), and to suggest possible ways of coping with the problems suggested by the chart.

*Interpretation of statistical data* is an important activity in an economics course or unit. We prepared and duplicated tables containing figures on such things as population growth, birth rates and death rates for 14 nations. The students were asked to examine the table and tell whether or not it supported the Malthusian theory of population in general, if the industrial nations were exempt from the dire predictions of Malthus, and if the data in the graph supported or refuted articles, cartoons and other material on population they had been studying. They were asked to explain why the ruler of an underdeveloped nation stated, in response to a question on why he did not try to industrialize his country, "I love my people too much to place such a curse on them."

*Current events* often provided good motivation for discussions and student group work. Oregon's advertisement "Come to visit, not to stay" served to launch a study of governmental policies on population and pollution control. Committees were formed to probe into proposals for using the taxing power, family allowances, birth control laws, education, advertising and others to deal with the problem. The students were required to consider the economic consequences of their proposals, along with constitutionality, practicality and prospects for public acceptance.

*Games*, such as Con Edison's *The Waiting Game*, were enjoyable and instructive. The question of whether a nuclear or fossil-fueled plant should be built is the topic of this game. Players may become involved in court suits to

delay a permit to build, public hearings on permission to operate the plant, problems of failure to meet environmental limitations, extra costs because of delays, power shortages, getting faulty equipment, requirements to adopt new pollution control devices, opposition from environmentalists, site selection problems, and many others. After playing the game the students were asked whether or not they now thought Con Edison should be allowed to charge higher rates, and what the game might be like if developed by a group opposing Con Edison.

*Cost-benefit analysis* was employed in tackling such questions as: "Is recycling worth the price?" Here the students were to pretend to be state governors considering legislation to start massive recycling programs. They would have to try to estimate the possible "payoffs" from the recycled materials. Would the recycled materials increase supplies and reduce prices of certain items? Would the area become more independent as a result? Would new jobs be created? Would recycling provide new sources for investment? Would the area become more attractive as a result? Then, on the other hand, would the costs outweigh these benefits? What would it cost to retrieve materials? Would existing plants have to be converted and reorganized? If so, at what price? Would there be some job losses? Would the public be inconvenienced (as in the case of residents being required to have their newspapers collected separately from other trash)?

*Analysis of cartoons, advertisements and other expressions of opinion* afforded opportunities to deal with values and to learn to recognize bias, propaganda and the like. For example, a cartoon showing a steam-roller labelled "The Energy Crisis" crushing a figure labelled "The Environment" would be duplicated, and the class would give interpretations. Advertisements were studied for evidence of propaganda techniques. A fictional letter to a member of Congress was shown to the class by an overhead projector, and the students were asked to identify the strong and weak arguments, and evaluate the writer's proposals and his objectivity. For example, is his demand that oil depletion allowances be ended desirable?

### Evaluation

Evaluation was not simply a terminal or culminating activity, but a continuous process throughout the course. Because many of the objectives had been stated in behavioral or performance terms, evidence of student learning was obtained daily. The students were expected not simply to parrot economic terms and concepts, but to show how well they could apply the principles of economics to the problems with which we were dealing. Role-playing situations, class discussions and group reports helped to show how effectively the class had learned to use economic analysis. There was written evidence as well. For example, the students were advised to watch a TV program entitled "The Vanishing Land," and to answer such questions as:

- What physical and economic factors explain the fact that less and less land is being devoted to agriculture in Connecticut?
- What is the impact of development on a community?
- Why do the residents of the town shown in the program accept the need for land-use planning?

Television programs on the energy crisis and on transportation were also viewed, and similar questions were raised.

The students could choose special assignments from a long list of suggested projects. Among these were the writing of original songs and poems related to the course, preparing photographic essays, writing biographical sketches of persons involved in environmental economics, constructing a crossword puzzle made up of terms used in the course, preparing a lesson and teaching the class, writing a play, making a collage, creating an educational game, writing an annotated bibliography on five or more books, doing a traditional research paper, or developing an instructional comic book. Of course, the students were encouraged also to think up projects other than those listed.

Finally, we were as concerned with the impact of the course on student attitudes and opinions as with its effects on cognitive learnings. Thus, we prepared a 40-item "Attitudinal Poll" made up of such statements as the following:

- Business should pay for the pollution they cause.
- Antipollution laws should be relaxed to deal with the energy crisis.
- Our need for resources should determine our foreign policy.
- We should start massive recycling programs now.
- Oil companies should be taxed to pay for research into alternative sources of energy.

The pupils were to check "yes," "no," or "no opinion" after reading each item. We also asked them to evaluate the course and suggest possible changes.

The enormous amount of work and time that went into the planning and teaching of this course did pay off—the results were highly positive. Not only did the students learn many basic economic principles and how to apply them to real-life problems, but they formed positive attitudes and developed good scholarly work and thought habits. A number of "outside" authorities in social studies education and economic education learned about this course, and we received many letters of encouragement and praise from these individuals.

# A Project in Economic Education

**Patricia E. Marmaduke**

North High School, Akron, Ohio

## Introduction

In the fall of 1972 the Superintendent of the Akron Public Schools met with the president of a large corporation to discuss a cooperative plan to strengthen the teaching of economics in the high schools. The purpose was to break down classroom barriers and extend learning beyond the textbook to a living laboratory in the community. In the spring of 1973, a retired corporate executive was teamed with an economics teacher at Central-Hower High School to teach a four-week unit on the corporation and the free enterprise system. Evaluations of this unit led to the development and implementation of a pilot project entitled "The Corporation as a Learning Laboratory in Economics," which was conducted with an economics class at North High School in the spring of 1974. The basic learning objectives were as follows:

- To gain an understanding of the basic principles upon which the American economic system operates.
- To gain insight into the ways in which the local economy is part of the economic system as a whole.
- To become conversant with the basic terminology and methods of the economist.
- To gain an awareness of, and to learn to use, the various resource materials available in economics.

## Activities

At the beginning of the project in early February 1974, we administered a pretest designed to determine the students' current level of economic understanding and to serve as a basis for comparison with the posttest to be given in June. The test was also taken by a control group made up of students at North High School who were not participating in the project. Letters were sent to parents to explain the project and to get their approval of the field experiences which would require the students to be away from the campus.

Two recent textbooks in problems of democracy were selected, and a classroom resource center was established. The center contained readings in economics, basic reference works (such as the *World Almanac*), news magazines which stress economic events (such as *Fortune*), reports from the Cost of Living Council and the Federal Reserve Bank of Cleveland, annual reports of corporations, material on the economy of Akron, and the like. We also developed a bibliography of material available from our own library, the

Akron Public Library, the Joint Council on Economic Education, and other organizations.

The first unit dealt with the basic goals of an economic system, and the second with the operation of a market economy. A basic high school economics textbook had been used to deal with such questions as: How does economics concern the individual? In what sense is economics a science? How should economic information be evaluated? The textbook study also covered the way in which human wants lead to production. Guest speakers and field trips were planned to augment the classroom activities. I met with students in small groups during study hall periods for seminar discussions to get them thinking about questions, areas of interest, the direction the course should take, and how we might evaluate our daily experiences.

By late February we were dealing with supply, demand, and prices in a market economy, supplementing the textbook material by visiting various business firms and the Federal Reserve Bank of Cleveland. We interviewed one company executive to find out how pricing policy is made in an era of inflation and how teenagers' demands affect merchandising policies. We asked a food company executive abut food prices, and a chain store manager why his firm is expanding when discount stores in general are facing hard times. A member of the New York Stock Exchange gave us an overview of the American economy and discussed economic trends for 1974. We viewed the film "How to Avoid Flying Blind" to see how a business can change from a proprietorship to a partnership to a corporation.

By mid-March we were studying the factors of production and their rewards, and we went into depth on the subject of labor and unions. We interviewed both management negotiators and union leaders to learn about the steps in the contract negotiation process and the attitudes of management and labor. Career opportunities, training, criteria for hiring, why some fail while others are promoted, and employee services as a cost of production were other subjects examined during interviews with resource people. Corporate executives explained how revenues are distributed among the factors of production and what happens to profits. We viewed a slide presentation on "Akron's Economic Growth" and heard talks on how the corporation functions and how corporations are structured. An essay test covering the first six weeks of work was administered upon completion of the unit on the market economy. I followed this with a week-long "mini-unit" on "The Role of Savings and Profit," and another on "Inflation." The units which I developed took the following form:

- Synopsis of economic content
- Economic understandings
- Economic terms
- Suggested emphasis point (Example: Relevant chapter in textbook)
- Behavioral objectives
- Suggested student activities (initiatory, developmental, culminating)
- Glossary
- Bibliography
- Test
- Charts (Example: Flow of economic activity between savers and investors)

By this time, the students had begun to work in depth, and each was expected to read at least five separate resources, submit written reports, and lead class discussions on their content. Two students attended a workshop on "The 1970 Occupational and Safety Health Act" (sponsored by the Chamber of Commerce) and reported to the class on their experience. At the midpoint of the semester we devoted a class period to a critique of the project to date. The students felt that the basic idea of the project was good, that the guest speakers and field trips helped to enrich class work and readings, and that resource persons who used actual experiences and specific examples were most effective. They were critical of guest experts who tended to generalize or who tried to simplify their presentations to the point that they spoke below the students' level of understanding.

In early April we examined the way in which business is organized, and this led to a study of such questions as: How does competition work? What are the effects of limited competition and monopoly? How is business regulated by government? What is the extent of legalized monopoly? How does government sometimes compete with business? Government services and taxes were also the subjects of study. Corporate executives explained how tax laws and government regulations affect company operations, and we interviewed public officials and an Internal Revenue Service representative to find out how taxes help to pay for various local services. We considered such problems as the conflict engendered by the energy crisis, the use of coal as fuel, and antipollution standards. A small student group visited the offices of a union, met union research personnel, and learned about the educational and social services provided by unions. A representative of the Akron Labor Council discussed the overall labor picture in Akron, and another union official agreed to a "press conference" type of session in which the students asked about unions and their role in the economy. When this unit on Labor in the Economic System was concluded, the class began a unit on Investment. There were visits to a bank, a railroad and a stock broker.

In May the students read the "International Trade and Finance" portions of the textbook to learn about international trade and payments, and the impact of tariffs. We toured a Goodyear exhibit on plants around the world, heard a corporate executive explain the effects of overseas plant production on local job opportunities, and obtained the views of a union official on that same subject. A school official visited the class to discuss the sources of school revenues and the role of the public school in the free enterprise system. The Akron City Finance Director explained city government and finance in a classroom visit, and a group of students went to a hospital where they studied hospital finances and learned the reasons for the rising costs of health care. To the resource center we added materials on consumer problems, money and banking, nuclear power and the environmen and life insurance. The students completed their oral and written reports and took an exam that covered the work of the course.

## Conclusion

In June the students held an open forum discussion and critique of the class work. They took a posttest which showed highly significant improvement. The pretest results indicated that only eight percent of those involved in the

project had achieved scores higher than 70 percent, while on the post test 83 percent exceeded that score. The posttest was also administered to the two control groups. In Group A 60 percent achieved scores above 70, while in Group B only 44 percent did so. In percentage terms, the improvement made by the project group was 24 percent, as compared with 14 and 18 for the two control groups, respectively. These figures refer to an objective short-answer test. There were also essay-type questions calling for understanding and the ability to apply concepts as well as simple recall of facts. Some of these questions were related to current events, such as the item: What is the present fiscal policy and the present monetary policy of the United States?

In turn, the students were given the opportunity to evaluate the project in writing as well as in the open forum. They were asked to respond to such questions as the following:

- Would you recommend that an economics course using these kinds of experiences be added to the curriculum of Akron's high schools? Why?
- What recommendations would you make for improving the experiences scheduled during this project? Why?
- From which of the guest experts did you learn the most? Why?
- From which of the guest experts did you learn least? Why?
- Were the pamphlets, newspapers and magazines helpful in increasing your understanding of current economic issues? Why?

Over 90 percent would recommend a similar course for Akron's high schools, 75 percent said that no change or improvement was needed in the course, and 77 percent favored the field trips and small group tours as the most popular activity.

Forms were prepared for student evaluations of most of the activities as well. The following is a sample of one such form:

*Evaluation of Guest Speaker**

On February 15, 1974, you listened to a classroom presentation by a guest speaker. Based on your personal opinion, please complete the following questionnaire regarding this presentation.

1. Was the purpose for this presentation clear? (If "no," please describe what was unclear.) YES____ NO____
2. Did you understand the meaning of the economic terms used during the presentation? (If "no," please list the terms you did not understand.) YES____ NO____
3. Did this presentation accomplish any of the following?
   A. Give you new insights into our present economic problems? YES____ NO____

* We have changed the form somewhat to remove the name of the individual who made the presentation and to save space.—*The Editor.*

B. Give you additional facts about the present state of our economy? YES—— NO——
C. Increase your economic vocabulary? YES—— NO——
D. Cause you to wish to learn more about an economic issue? YES—— NO——
(If "yes," where would you look for additional information?)
Have you looked? YES—— NO——

4. Was this presentation educationally effective? Please explain your answer. YES—— NO——
5. Do you believe other students could benefit from a presentation of this type? Why? YES—— NO——
6. Did you agree with all the ideas presented by this guest-expert? YES—— NO——
(If "no," please list the points you disagreed with and explain *why* you disagreed.)

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It should be noted that students had also been given a voice in planning the activities, for they had been asked in February to list the economic questions they wanted answered, the types of guest experts they wanted to hear, the field trips that should be taken, the materials to use in the classroom, and so on. The results of the project suggest that a school system can work with a corporation in sponsoring learning projects, that having teachers work in teams (one to direct classroom instruction and one to coordinate field experiences) is feasible, that student involvement in planning and evaluation has positive effects, that minitours by small groups avoids disruption of school scheduling and permits greater interaction between students and tour guides or hosts, that students are capable of doing in-depth work and of leading class discussions, and that the use of corporate and other community resources can provide an excellent laboratory for learning that one cannot find in a traditional textbook or classroom setting.

# Applying Economic Theory in Multiple Project Assignments

Earlene L. Herman

Northwest Classen High School, Oklahoma City, Oklahoma

## Introduction

Galileo once said: "You cannot teach a man anything. You can only help him to discover it within himself." This expresses my own philosophy of education. Real learning takes place in an atmosphere of freedom in which the student discovers knowledge by himself (or herself). In the role of facilitator it is the teacher's responsibility to set the stage by providing multiple opportunities for this discovery process to occur.

My business economics classes are made up of heterogeneously grouped students, most of whom are bored with the usual school assignments. My course is an elective for 11th and 12th graders, and I have tried to develop innovative techniques to renew their enthusiasm for learning by allowing for differentiated experiences. Thus, as a culminating activity during the last nine weeks of this semester course, I gave the students a choice from among three assignments. They could (1) do an in-depth study of a local business firm, (2) write a term paper on an economic topic and take a comprehensive final examination, or (3) do an original research project and enter it in the Youth Career Awards contest sponsored by the Kiwanis Club of Oklahoma City. The objective of the in-depth studies was to give students a first-hand insight into the entrepreneur's problems and promote a more realistic understanding of business in American society. The purpose of the original research projects was to give practice in using critical thinking skills and economic analysis in searching for solutions to economic problems. The $500 award would serve as an added incentive, of course, but one must not discount the fact that the opportunity to be of service to the community was also a factor.

The students had learned many economic facts, concepts and principles throughout the semester, but now they would be expected to apply those learnings in their in-depth studies or research projects. Another objective was to expose the students to various career possibilities and to the world of work. They would be expected to interview many resource people representing a variety of careers. Through written and oral reports, they would demonstrate how the economic concepts previously learned in the classroom apply to real-world situations.

## Procedures

At the beginning of the second nine weeks of the semester, the students were given an assignment sheet entitled "Instructions for In-Depth Study of a Local Business Firm." They would be allowed to work in groups of three in order to benefit from specialization and division of labor. Each group could select a firm from a list attached to the instruction sheet or choose another local firm not on my list. The firms ranged from small proprietorships to huge conglomerate corporations. Among the businesses listed were construction firms, wholesalers, retailers, manufacturers, lawyers, hospitals, banks, car dealers, funeral directors, architects, advertising agencies, accounting firms, and utilities. The students were encouraged to select firms which provided career opportunities in which they were personally interested. The instruction sheet advised that the following kinds of data be obtained:

- History of the firm and its type of organization.*
- Structure of the organization, including its "chain of command."
- How the firm illustrates the profit motive, competition and other elements of the free enterprise system. The firm's profit position.
- Nature of the product or service, and the market for its output.
- How the firm uses the factors of production. Its production costs.
- How the circular flow applies to the firm. How it is dependent upon other businesses and the consumer.
- How the firm relates to government. Government regulations, effect of tariffs, impact of monetary policy, etc.
- Competitive position of the firm. Can it be classed as being in pure competition, monopolistic competition, oligopoly, or monopoly?
- Pricing policy of the firm. How does it determine the prices of its output?
- Elasticity of demand and supply.
- Characteristics of the labor force, and the firm's labor policies.
- How is the firm affected by the business cycle?
- How is the firm affected by the energy problem?

Other items included the firm's advertising policies and costs, productivity and automation in the business, and how opportunity cost applies. The students were urged to use charts and graphs to illustrate many of their findings (such as a pie chart showing the percentage of total cost accounted for by each of the factors of production), to use a variety of source materials, and to plan their interviews carefully. They were to be aware of conflicts arising in industries, as employers try to increase profits while workers ask for higher wages, and as consumers demand that prices be held down. They were to pay particular attention to the way in which the profit motive induces the entrepreneur to seek more efficient methods of resource use and to create new products to satisfy human wants.

The projects to be submitted to the Kiwanis Youth Career Awards contest would provide valuable experience in applying the scientific method, and thus I strongly encouraged students to choose this option. The array of topics chosen for the contest entries was astonishing in originality and diversity.

* Because of space limitations, we have abbreviated these instructions. A copy of the original instruction sheet is appended to the original report which can be obtained from the Vernon R. Alden Library (Awards Program Collection), Ohio University, Athens, OH 45701.

Among the feasibility and "needs analysis" studies were such topics as the use of modular ambulances, the establishment of a children's center, rat control in the stockyards, the use of computer time-sharing in a small firm, new concepts in the construction of family dwellings, a mass transit system, the stock market and youth, planning city parks, disposing of solid waste through recycling, establishing bikeways, setting up a nuclear park for future energy needs, and forecasting thermal inversions (pockets of polluted air) through the use of NASA satellite systems.

Many of the students had never written a formal term paper, let alone an original research document. The guidelines provided by the Kiwanis Club gave procedures for organizing and writing the report, but I provided the class with the steps for using the scientific method of inquiry. These included the definition of the problem, collection of data, development of the hypothesis, testing the hypothesis, and stating the conclusion. Articles on how to write research reports were recommended.

It is important to note that the projects were *not* substitutes for class work, but were designed to promote application of classroom learning. Thus, the students did most of the project work on their own time. Only two class periods were allowed for interviews, information gathering, and group work. Some time was allotted during three class periods for discussing common problems encountered by the students. I spent one class period conferring individually with each group to ascertain the status of their appointments, interviews and reports, and used my planning periods and some time before and after school to meet with individual students. The presentation of oral reports took about six days. The students arranged their own appointments with resource persons, and each pupil conducted from one to twelve interviews. They ranged from 40 minutes to 2½ hours. Second interviews were usually more fruitful than the first, because both the student and the resource person would be more at ease and could build upon the earlier session. There were few problems in gathering information. The biggest difficulty was in sorting the voluminous data, organizing it in a logical sequence, and writing the reports.

The reports were presented in a variety of ways. Several groups shared portions of their taped interviews with the entire class; others stressed the use of charts, graphs and literature. One team gave a pictorial demonstration of modern road-building capital equipment and showed how the increasing demand for better roads created a demand for more efficient road construction machinery. Their dramatic presentation illustrated the way in which entrepreneurs take risks in starting a company, how losses as well as profits can be experienced in the free enterprise system, why production inefficiencies reduce net income, the way in which labor problems may reduce productivity, and how the costs of developing products are determined. Another team used clever art work to show the flow of economic activity between business and the consumer, explained the effects of government policies on a firm's pricing practices, described labor force characteristics and wage policy, showed how automation can have an impact on productivity, and outlined the various uses of the factors of production. One team investigating a wholesale food brokerage firm received large samples of its products, so that they could serve cookies and cocoa to the class while giving their report. Needless to say, this was one of the most popular reports given.

The students used such sophisticated concepts as cost-benefit analysis and considered the economic "trade-offs" inherent in many situations. For example, those working on environmental pollution found that only by giving up something else can we improve the quality of our air and water. Several students tried to find ways by which the firms they studied could improve efficiency, increase productivity and realize savings. For instance, two boys developed a more efficient method for performing one of the production processes in the manufacture of tires. In making a study of the firm, they isolated one area in the production line after having toured all the facilities, and showed how productivity could be increased. In one of the most scholarly reports a student concluded that the higher price being charged by the manufacturer was justified by the fact that the product was more durable than that of its competitors. The most common recurring theme in the reports was the role of profits in our economic system.

Seventeen entries were submitted by 22 of my students. One team designed a massive bus system for Oklahoma City, including an underground tunnel to connect with an urban renewal project, and proposed that it be financed by bonds. Another team won an award for establishing the feasibility of setting up a children's center in Oklahoma City, after they had examined population trends in the city, identified areas of greatest need for child care, estimated initial investment costs, and given evidence that the center could be operated at a profit. One student studying an advertising agency devised a better billing system which would result in lower costs for the firm. Another presented a brokerage firm with strong arguments for the feasibility of having a Youth Investment Division to enable young people to buy and sell securities. Two girls won an award for a scheme to dispose of solid wastes through recycling. They took account of existing costs of waste disposal, the possible use of wastes as sources of more energy, the cost of equipment needed for recycling, and the social benefits to be derived. Two others showed how bikeways could help to mitigate the energy shortage and the pollution problem. They compared the costs of operating automobiles with those of using bikes, did a survey to determine the demand for bikeways in the city, studied bikeways in other cities, and drew up plans for bike trails in Oklahoma City. A boy presented a very lengthy award-winning study of hidden unemployment in Oklahoma City, documenting every statement with reliable evidence. Another showed that modular ambulances were less costly than the conventional type, actually having visited another city during the spring vacation to gather cost-benefit data on the use of these vehicles.*

The students gave oral reports to the class, and the class members were asked to identify the economic ideas each individual or group had used. These concepts were then discussed, and the class soon realized that many of the same basic economic themes were common to all the reports. Class members were also permitted to criticize the reports in a constructive way, so that future research projects might be improved. It was agreed that the winning projects were those following the scientific method closely. Presenting the material in a logical sequence, using good organizational techniques, and giving strong supporting evidence of the validity of the hypothesis were

* Further details, and copies of some of the complete reports, can be found in Mrs. Herman's original entry.

factors that separated the winners from the nonwinners. After sharing their findings and analyzing the entries, the class had a better understanding of the problems that had been researched. It was clear that there are no easy solutions to complex economic issues.

## Conclusion

The Kiwanis Club invited all participants, not just the winners, to a luncheon for the presentation of the cash awards. All the students had gained a great deal from their association with business people, and the titles of all projects were announced. Two television stations covered the event, and the entries were displayed for everyone to see. Thus, each participant received recognition. Northwest Classen students received six of the nine awards.

The projects supplanted the final examination for the course and counted as one-third of the student's grade, with quizzes and unit tests making up the remainder. The projects were evaluated in three ways: (1) The teacher evaluated the written and oral reports, using a form to assign ratings of 1 (excellent) to 5 (poor) for such things as organization of material and contributions to group efforts; (2) the class members evaluated one another after the group presentations; and (3) the students evaluated themselves individually. I had a conference with each group before assigning the final grade, so that grades were arrived at through consensus and were thus cheerfully accepted by the students.

There were other results that cannot be easily quantified. Parents reported that their children had become so involved in their projects that they "came alive" for the first time in regard to school work. Students who had never done better than average work often sparked the enthusiasm of the entire class, as they became sincerely and deeply involved in current economic problems. The recognition that came with the projects became infectious, and average students improved their grades in other areas as well. In choosing team mates for the projects, some students formed unlikely combinations and learned to work together harmoniously and pool their various talents and interests. One boy who had never participated in class discussions took the entire class period in giving his oral report. A student noted for cutting classes and getting "D's" turned in a paper equal in quality to an advanced college research report.

One of the objectives was to expose students to various careers and to the world of work. While doing their interviews and "on-site" research the pupils learned much about career possibilities, and many were influenced in their career choices. The school's valedictorian decided to major in economics in college. Another boy has been accepted as one of 25 students in the nation for advanced study in economics at the National Science Foundation Institute at St. Olaf's College in Minnesota. The student who made a study of the securities market decided to become a stock broker. As a result of his project "The Feasibility of Using Electronic Data Processing in a Small Business Firm," another student was offered summer employment by a large corporation. The girl who did a project on park planning may pursue urban planning as a career.

The activities described in this report could easily be adopted by other teachers. Even if funds cannot be obtained for an awards program, the

research projects can be related to some sort of incentive system. For instance, the contract method can be used whereby student and teacher agree on the type of work that must be satisfactorily completed to achieve a particular grade. The research could be an all-class project instead of individual or group efforts. In any event, students can be provided with challenges to use critical thinking and economic analysis by engaging in in-depth studies of local firms or by doing original research projects.

Only six out of 150 students elected to take a final examination and write a term paper instead of doing an in-depth study or research project. The high level of interest and enthusiasm that was maintained throughout is evidence of the wisdom of the majority's choice. The contagious enthusiasm of the students extended to the resource persons and parents as well, and many expressed appreciation for the opportunity to become involved with the youngsters. Economic theory was learned in the best way possible—by being applied to real-life situations and problems. All students were given the opportunity to use their creative talents. The accelerated youngsters were not held back, and the average or below-average could work to the limit of their abilities without feeling inferior. They were forced to develop skills of critical thinking and economic analysis, to apply those skills to the real world, and to use the scientific method in approaching problems. It has been said that "You understand better that which you do yourself." I believe that this project established the proof of that adage.

## APPENDIX TO CHAPTER 4

### Good Ideas in Brief: High School Level

BRUCE MACNAUGHTON of *University High School* in *Irvine, California*, has drawn upon his own experiences as a business executive to develop realistic simulations for the students in his 12th-grade economics course. Organizational dynamics are stressed as the learner goes through the stages of a business from planning to production and distribution. The students learn about markets and market shares, production, inventory, sales, profits, return on investment, resources, human relations and risk. They also learn the importance of loyalty, self-reliance, organization, responsibility and commitment. Projects are undertaken by students working alone or in groups, and involve the preparation of marketing plans for presentation of saleable items. The student must examine the potential market, determine the investment that would be required, and estimate the expected return. The finished sales

package is evaluated by someone actually working in the industry in question. Mr. Macnaughton treats the students as partners in a business enterprise, the "Unisearch Company." There is also a "Mental Stimulation Society" which meets to discuss objectives, set performance standards and develop fund-raising schemes. "Labor Mediation Hearings" are held to deal with employee problems, as in the case of two boys "fired" from their group for failure to cooperate. "Law suits" can occur when someone fails to meet his or her obligations, as in the case of a group chairman who failed to provide the promised leadership. These experiences are later discussed and analyzed by the class. The result of the course is that students no longer see a position in business as a dead end, but as an opportunity to be a creative individual and to help humanize society through leadership in a business enterprise.

LAWRENCE R. DALE of *Sheridan High School, Sheridan, Arkansas*, incorporated economics into his advanced Mechanical Drawing course through a four-week unit on city planning. Examples of good city planning were studied, such as that of California City, California, Baldwin Hills, California, and Avion Village in Dallas, Texas. Students then designed cities of their own, considering such factors as the separation of pedestrian from vehicular traffic, the need for green areas, the provision of energy for the town, the efficient placement of factories, the location of tourist attractions, pollution control, and many others. Each student then took one section of the town of Sheridan and designed improvements for that section, proposing such things as recreational facilities, a hospital, the rerouting of a highway, an industrial park and an airport. Among the economic factors taken into account were the problem of scarce productive resources, opportunity cost, the allocation of resources through the price-market mechanism, and how businesses might invest in such a way that city planning is promoted while profits are increased. (For example, businesses might cooperate in building an attractive mall in a downtown area, thus bringing more shoppers and eventually earning higher profits.) Government's role in the economics of urban planning was also studied.

GAIL BYRD of *Westwood High School* in *Atlanta, Georgia*, has developed several interesting ideas for including economics in her business courses. Students learn their own importance to the national economy by writing papers on such topics as "How My Personal Economics Affects the Nation." They study important current issues, analyze them, and write commentaries and letters about them. Some of the letters have been published in the *Congressional Record* Students are asked to write definitions for economic terms from three perspectives—consumer, business and government. In typing classes they are presented with economic concepts and instructed to compose at the typewriter their own thoughts about those principles. One of the most exciting activities last year was a visit by Senator Herman Talmadge, who spoke to the students on various important economic issues.

MARGARET SEAY of the *Atlanta Christian Academy* in *Decatur, Georgia*, has developed a unit on consumer education in her Business Mathematics course. Several case studies have been developed, with students playing the roles of the consumers involved in each case. For example, in one case there are two girls sharing an apartment. They have to make decisions on sharing expenses relating to rent, food and utilities, and on individual expenditures for transportation, clothing, life insurance, vacations and the like. Many problems arise, such as the question of sharing a telephone or having separate telephones. Not all expenses can be shared on a "50-50" basis. For instance, Ann owns the furniture and therefore feels she should pay less rent than Mary. They must make individual budgets as well as a joint budget, and they must explain each decision made. Other cases involve a newly married couple, a couple with three children, a middle-aged couple, a retired couple, and a widow. The students playing these roles must do intensive research on such things as the economics of automobile ownership, savings plans, paying for a college education, which jobs have the best fringe benefits, buying as opposed to renting a home, and borrowing money. They write papers on their research, and share their findings with the class in the role-playing situations.

CHAPTER FIVE

# Teaching Students to Apply Microeconomic Theory

Thomas R. Swartz

University of Notre Dame, Notre Dame, Indiana

## Introduction

Economists have recognized that the introductory courses should emphasize the application of economic theory rather than detailing the abstract nuances of our theoretical tools. Although few would dispute this position, many have great difficulty in implementing it in the introductory micro principles course.

Unlike macroeconomics, the micro segment of the course lends itself to an abstract, purely theoretical presentation. As a result, many key concepts are force-fed to students, denying them the pleasure of involvement through applications. This separation of the pure theory from its natural applications may indeed be self-defeating. Preliminary research data suggest that applications—that is, applied economics as measured in the "complex applications" portion of the TUCE—have the most lasting effect on our students.[1]

In recent years publishers of textbooks and supplementary reading books have attempted to fill this void. However, a survey of this material reveals that there remain numerous areas at the introductory level of microeconomics where little or no application of the theoretical constructs is made. Even where we find applications, they are typically separated from the development of the theory.

In light of this deficiency, it was hoped that we could generate supplementary materials to integrate the application of micro theory with the presentation typically found in a one-semester introductory micro course. In addition,

[1] Preliminary research in this area has been conducted by Prof. Phillip Saunders of Indiana University. His tentative research results were reported at the 1974 Mid-West Economic Association Meetings held in Chicago, Illinois. Although Prof. Saunders noted several limitations concerning his data, there appears to be better retention of applied economic concepts than there is in the area of "recognition and understanding."

it was hoped that these materials would engage the student's interest, involve the student in a process of reasoning which would allow him to accept our abstractions without being intimidated, and to discover the internal logic of microeconomics through the natural linkages found in the theory. In essence, the goal of the project was to integrate traditional economic "content" with a "method" that is more appealing to the student.

This goal is compatible with the objectives of the traditional introductory course. In addition to providing students with an understanding of economic concepts and their interrelationships, we must demonstrate that economics is more than the economist's forum for mental gymnastics. We must show that these concepts and interrelations exist in the "real world." If we can do this, more students will be self-starting. More will learn for themselves that one economic concept leads to another.

### Description of Procedures

During the academic year 1973-74, several members of our staff received a grant from the Alfred P. Sloan Foundation to test the educational and cost effectiveness of computer-assisted instruction. This provided an opportunity to generate and incorporate supplementary materials for the principles courses. The most ambitious undertaking was the development of review questions which were keyed to the lectures and the individual chapters of the textbook, Samuelson's 9th edition of *Economics*.

These review exercises were optionally available to all members of the class. Those randomly selected as "experimental students" received the supplementary materials by employing the use of computer terminals, the remaining students (the "controls") received them in mimeographed form. The computer materials were designed with "prompts." That is, when a student selected an incorrect answer, he or she was informed why that answer was incorrect; if the student selected a correct answer this was reinforced with the reasons why it was correct. The mimeographed material did not contain these "prompts." In this case the student had to depend upon his or her recitation instructor.

The review materials generated for the theory core of the micro course (that is, the product markets, factor markets and the international trade sections) were uniquely designed. Typically, these portions of the principles course are presented in a sterile theoretical framework. Each concept is defined, explained and employed in an abstract form. For example, when the concept of the demand for a factor of production is introduced, we are likely to define it as $VMP_V = MPP_V \times P_X$, explain what we mean by $MPP_V$ and $P_X$ and why the product of these two terms is indeed the value of a unit of a resource, and then we offer a table that has two lists of numbers labeled $MPP_V$ and $P_X$ and ask the student to generate the $VMP_V$. We might even jazz that table up a bit, by providing only the production function information so that the student must generate his or her own determination of the $MPP_V$ or by asking the student to generate the marginal cost and marginal revenues to insure that the student sees that the profit maximizing output is the same whether you look at it from the product side or the factor market side. We are asking our students to massage sterile numbers. It is only after the student masters the concept,

that we begin to apply it in policy fields. Indeed, the actual application is generally separated from the theory in the textbook and in our lectures.

Thus we attempted to make applications where applications are rarely made. We all apply the theory in the "policy" areas, but we haven't applied the theory in the "theory" areas. On paper, this seems obvious. However, in practice, no one seems to do it.

The process used to apply the theory was the development of a series of miniproblems, introduced in a multiple-choice format. The stem established the basic setting for the problem and provided the student with relevant and irrelevant data. The stem was followed by a series of multiple-choice questions, examining first the obvious implications and then the more difficult applications. Care was taken first to capture the student's attention; second, to focus attention on a narrowly defined problem; third, to force the student to isolate the appropriate data; fourth, to apply the data to solve the problem; and fifth, to appreciate the linkage between one application and the next.

Students were not required to complete these review materials. At the beginning of the semester they were informed that their course grade would depend solely upon their performance on the two one-hour midterm examinations and the two-hour final examination. Thus there was no credit granted for use of the computer materials or for attendance at recitation sessions where these were discussed. The students were advised, however, that the review materials were keyed to the lectures and to the textbook assignment.

For illustrative purposes, I have chosen to discuss only the materials designed to complement the presentation of the "factor markets." This provides an excellent opportunity to demonstrate that theoretical material can be couched in application form that both intrigues and instructs students.[2] An examination of the factor markets builds upon concepts normally covered earlier in the course. Some of the more obvious linkages are the use of supply and demand, the similarity between the notion that a portion of a firm's marginal cost curve is its supply curve in the product market and that the firm's demand curve for a resource is its marginal revenue product curve in the factor market, and the whole use of "marginal" analysis. A thorough understanding of the factor markets is important to the analysis of major policy issues such as poverty and welfare programs, unionization, income redistribution, comparative advantage and the economics of developing nations.

The review exercises for the theory of the factor markets are divided into two problem sets. The first set eases the student into the material by presenting four simple recognition and understanding questions. The first addresses the concept of derived demand, the second the determinants of a

[2] The most difficult—from the point of view of student performance—question on Part II, Form A of the TUCE, is question number 23. This question states: "A firm's present output position is: marginal—physical—product of factor A = 2; marginal—physical—product of factor B = 5; price of A = $1; price of B = $4; marginal revenue = $3. To reach a "best-profit" output the firm should employ. "After a bit of calculation it is determined that the firm should employ" more of both A and B." We have all used questions that are quite similar to this question. But I find it difficult to believe that many of my students get very excited about this type of question. Thus if we can't excite an interest in our students, is it likely that the concept that the question attempts to convey will "stick" with the student much beyond the final examination?

demand for a factor of production, the third the meaning of VMP, and the forth the use of marginalism. The fifth question initiates the application of these concepts. This question states:

> In an attempt partially to offset the University's financial plight, several administrators have suggested that a number of tenured professors be relieved from teaching and research responsibilities—where it is contended our efficiency is quite low—and used to staff a small manufacturing firm. This firm is to be housed in the soon-to-be-vacant Engineering Building and it would produce ping-pong balls. Assume that the Notre Dame output would be so small that it would not affect the current wholesale price of $5.00 per gross of ping-pong balls. The following are the estimated production data. What would be the VMP of the third faculty member?

| Faculty members | Total output in gross/week |
|---|---|
| 0 | 0 |
| 1 | 80 |
| 2 | 140 |
| 3 | 180 |
| 4 | 200 |
| 5 | 200 |
| 6 | 180 |

The student is then confronted with three additional questions which systematically change the assumptions found in the stem to question 5. For example, the 6th question assumes that the faculty members can be withdrawn from their traditional duties without any loss in educational effectiveness. The student must calculate how many should be diverted to the new factory. The 7th question changes that assumption by hypothesizing that "trained apes" hired for $100.00 a week would be necessary to replace the faculty members. Lastly the student must work through the calculation of marginal cost, when the apes are employed.

The second exercise also begins with a simple traditional recognition and understanding question: "The difference between the VMP and the MRP is what?" The second question sets the stage for a series of questions. It states:

> The high price of meat has convinced many to forsake or to supplement their chosen field and turn their energies to more lucrative undertakings. Professor Skurski is planning to open a kielbasa plant. Two things are working in his favor. First, he will be the only purveyor of this fine Polish delicacy on Notre Dame's campus. Thus, he will be a monopolist, at least for the 300 students in his principles class. Second, since no one really knows what goes into kielbasa, he intends to use whatever happens to be readily at hand. Thus, his only costs will be labor costs. If the following data represent his estimated weekly output and the price he thinks he can charge for various quantities of labor employed, what will be his MRP for the fourth worker employed?

| Number of workers | Total weekly output in lbs. | Estimated price per lb. | Total revenues |
|---|---|---|---|
| 0 | 0 | $4.25 | 0 |
| 1 | 60 | 4.00 | $240.00. |
| 2 | 110 | 3.75 | 412.50 |
| 3 | 150 | 3.50 | 525.00 |
| 4 | 180 | 3.25 | 585.00 |
| 5 | 200 | 3.00 | 600.00 |
| 6 | 210 | 2.75 | 577.50 |

This question is followed by a series of four that complicate Professor Skurski's life. In questions number 3 and 4, the student is asked to calculate marginal cost—in question 3 the student does not have the appropriate data, whereas in question 4 these are supplied. In question 5, Skurski loses the advantages of a perfectly elastic labor supply and the student is asked to calculate how many workers he should hire. In the sixth question, the kielbasa plant is organized by the "Royal Order of Polish Sausage Stuffers," and the student must determine what effect this will have on the number of workers employed. The final question again seeks to convey some recognition and understanding by quizzing the student on the concept of "least-cost."

The fifteen questions found in these two exercises fully review the basic theory of the factor market. Indeed, some might question the legitimacy of taking a student this far in the development and the use of this theory. Although this might appear to be a valid criticism, relatively little lecture time was devoted to the development of the theoretical constructs. Indeed, the lecture time devoted to this equaled 75 minutes (that is, one and one-half 50-minute period). This represents a substantial reduction in time spent in this area compared to other years. This, in turn, provided an opportunity to spend more time in addressing policy questions. Casual empiricism reveals that student comprehension of the theoretical material was not lowered. The high level of performance on the first midterm examination forced the instructor to ask more probing and sophisticated questions on later examinations. Even with these more difficult test questions, the students handled the material with relative ease.

### Evidence of Learning Experience and Achievement

The materials were introduced to our microeconomics principles students during the spring semester of 1974. The class (289 students) represented each of the undergraduate colleges at the University of Notre Dame. One major bias, however, should be noted. Approximately 80 percent (232 of the 289) enrolled as a requirement for their B.A. program in the College of Business Administration. The remaining 57 were drawn from the College of Arts and Letters, the College of Science and the College of Engineering.

Although many of the students were from the College of Business Administration, they are a fair representation of the student body at the

University. We are a predominantly male institution (95 percent male) with a Roman Catholic tradition (94 percent of the students are Catholic) which is predominantly white—only 2.6 percent of the class was nonwhite. The students reflected a broad cross-section of academic accomplishment. The relatively high admissions standards are reflected in the mean verbal SAT of 537.618 and a mean math SAT of 603.465.

The basic format of the course parallels a "traditional" micro principles course. It is taught in large lecture sessions which meet twice a week for 50-minute sessions. Because of the experimental nature of this course during the 1973-74 year, one-half of the students attended a "traditional" recitation session of approximately 20 students, conducted by graduate teaching assistants, while the remaining students were given the supplementary materials via the computer. All were exposed to essentially the same bundle of materials keyed to the textbook and the lecture content.

Perhaps the weakest evidence offered is the intuitive evaluation of the instructor. Needless to say, the instructor was most pleased with the innovation. Students seemed more involved and interested. More content material was covered in the course. Performance on what appeared to be more difficult examinations was excellent.

But, since casual empiricism is frowned upon in my profession, I will offer some preliminary evidence as to the success of the materials in the cognitive and the affective domains.

The first bit of evidence is based upon the Test of Understanding in College Economics (TUCE). Unfortunately there are no norming data for the pretest of Part II form A of the TUCE. However, there are norming data for the posttest. Compared to the national norm, this group did significantly better. On the basis of the 33-item TUCE posttest, which was buried in the final examination of the course, this group scored 23.128 with a standard deviation of 3.524, compared to the national norm of 19.08 with a standard deviation of 4.79.

The TUCE is segmented into three categories: Recognition and Understanding, Simple Application, and Complex Application. There are twelve questions in Part I, eleven in Part II, and ten in Part III. The percentage gain in

**Table 1**

**Means and Standard Deviations (in Parentheses) of Part II, Form A, TUCE Pretest and Posttest by Total and Parts**

| | Total | Part I Recognition & Understanding | Part II Simple Application | Part III Complex Application |
|---|---|---|---|---|
| Notre Dame pretest | 15.423 (3.672) | 5.056 (1.766) | 6.091 (1.798) | 4.276 (1.643) |
| Notre Dame posttest | 23.128 (3.524) | 8.377 (1.869) | 8.107 (1.445) | 6.644 (1.663) |
| National norm | 19.08 (4.79) | | | |

Part III—complex applications—is markedly better than that of Parts I and II. (See Table 2.) In Part I, the Notre Dame students answered 69.9 percent correct compared to 58.7 percent for the national norm. In Part II, Notre Dame scored 73.6 percent compared to 63.5 percent. However, in Part III, the national norm was only 50.5 percent compared to Notre Dame's 66.5 percent. Thus it would appear that the course significantly affected the ability to handle complex application questions.

Additional evidence can be found in the results of locally generated questions on the factor market. Only one question on the TUCE in the area of factor market theory is a complex application. Thus, four additional questions in this area were placed on the final examination. These were designed to test the ability to extend the pure theory of the factor markets and to apply this theory in a purely abstract form. The questions were introduced with a graph depicting the MRP, the supply curve, and the MRC of labor. Then the student was asked to identify the structure of the product and factor market, estimate the quantity of labor and the wage rate that would be employed, analyze the effect of minimum wage legislation on employment, and finally determine the effect of an increase in labor efficiency on the MRP curve. The concepts necessary to answer these questions were briefly developed in the class lectures, but they were not covered in the textbook. However, the concepts were explicitly developed in application form in the review materials. Given the limited exposure to these concepts, students performed exceptionally well. The average percentage correct was 56.8. (These questions, the five questions dealing with the factor market on the TUCE examination and the appropriate item analysis can be obtained by sending a stamped (20¢) self-addressed envelope to the author.) Thus, the review materials served as a means to reinforce and extend an abridged lecture presentation

Although these data lend support to the hypothesis that the review materials increased the student's ability to apply microeconomic theory, the conclusion is tentative. The students demonstrated an excellent ability to manipulate micro theory in the TUCE format. But the TUCE questions themselves are traditional in nature.

**Table 2**

**Percentage of Students Correctly Answering TUCE Questions by Total and Part Scores**

| | Total | Part I* Recognition & Understanding | Part II* Simple Application | Part III* Complex Application |
|---|---|---|---|---|
| Notre Dame | 70.1% | 69.9% | 73.6% | 66.5% |
| National norm | 57.8% | 58.7% | 63.5% | 50.5% |

* These percentages were determined by identifying each TUCE question in Part II, Form A (Table 2, "Distribution of Questions by Objectives and Content Categories," *Manual, Test of Understanding in College Economics*). These questions were then grouped by parts and an average answering correctly was determined (Table 4, "Percent of Norm Group Answering Each Question Correctly," *Manual, Test of Understanding in College Economics*).

A more important issue is whether or not students can move beyond the traditional questions concerning factor market theory. This was determined in the second midterm examination. Eight of the 25 questions dealt with the application of factor market theory.

The stem for these questions was: I have recently learned that Professor Dennis Dugan has considered a midcareer change. He has decided that his "calling" is really in the production of caramel candied popcorn balls (henceforth referred to as CCPB's). He has found that by employing himself and his four children (ages 10, 8, 6 and 4)—note their ability to produce CCPB's are identical—they can produce the following total output (TPP) of CCPB's.

| Quantity of the variable input (1 day's labor) | Quantity of the fixed factor (his wife's kitchen) | TPP CCPB's per day |
|---|---|---|
| no labor | 1 kitchen | 0 |
| Molly | 1 kitchen | 100 |
| Tim | 1 kitchen | 180 |
| Tom | 1 kitchen | 240 |
| Erin | 1 kitchen | 280 |
| Dennis | 1 kitchen | 300 |

This stem was then followed by questions dealing with: (1) why Professor Dugan's marginal output was less than his six-year-old daughter's; (2) what the value of Tom's marginal product was; (3) what quantity of CCPB's should be produced; (4) the calculation of MRC and MC; (5) profit maximization or loss minimization in the factor market; (6) output decisions when the firm faces an increasing MRC; (7) the determination of equilibrium wage rates; and (8) the effects of minimum wage laws.

Students performed exceptionally well on these questions. The average correct response was 74.7 per cent, indicating that students can isolate the appropriate theoretical concept and immediately apply it to a simulated real-world example.

Student attitudes toward the course are perhaps best reflected in the University Course Evaluation administered during the last two weeks of the course. This asks the student to rate the instructor and the course from one to four (four is the highest and one the lowest). There are two ways that the results can be employed in determining the effectiveness of the new material. First the evaluation of this course can be compared to evaluations of all courses within the College of Arts and Letters. Second, the evaluation given during the spring semester of 1974 can be compared with those given the same instructor teaching the same course during the spring of 1973. These two comparisons are made in Table 3.

In many ways, a comparison of Economics 224 with the other courses is unfair because the averages depicted in Table 3 represent evaluations of many small courses and seminars offered at both the graduate and undergraduate level and a few courses taught in the large lecture format. Typical student reaction to the large lecture format is negative; thus one would expect the course evaluations for a large course to be lower than the average evaluation.

## Table 3

Results of University-Wide Course Evaluation:
The College of Arts and Letters in the Spring of 1974, Economics 224 in the Spring of 1974, and Economics 224 in the Spring of 1973

| | Arts and Letters College Average | Economics 224 Spring 1974 | Economics 224 Spring 1973 |
|---|---|---|---|
| knowledge of subject matter | 3.8 | 3.81 | 3.90 |
| enthusiasm for subject | 3.7 | 3.84 | 3.76 |
| effectiveness of class teaching or direction | 3.2 | 3.34 | 3.14 |
| ability to stimulate interest in subject | 3.1 | 3.11 | 2.91 |
| interest in students | 3.4 | 3.30 | 3.22 |
| fairness in dealing with students | 3.5 | 3.42 | 3.09 |
| respect for student's viewpoint | 3.4 | 3.43 | 3.22 |
| organization and management of course | 3.3 | 3.48 | 3.45 |
| what overall rating would you give this teacher as compared with other teachers you have had at Notre Dame | 3.3 | 3.59 | 3.20 |
| teacher's ability to lecture in a clear, interesting manner | 3.3 | 3.62 | 3.43 |
| teacher's ability to encourage independent thinking | 3.2 | 2.93 | 2.93 |
| teacher's carefulness of preparation for class | 3.5 | 3.54 | 3.57 |
| teacher's promptness in returning student's work | 3.3 | 3.88 | 3.77 |
| intellectual level of lectures | 3.4 | 3.55 | 3.43 |
| quality of text | 3.2 | 3.45 | 2.98 |
| personal value of the course to you | 3.1 | 3.09 | 2.93 |
| standards for students' performance required for this course | — | 3.34 | 3.26 |
| compared with other courses you have taken or are taking at Notre Dame, the work load for this course was: (4 = heavier, 1 = much lighter) | — | 2.814 | 3.16 |

Fortunately, this was not the case during the spring of 1974. With a few explainable exceptions, the students evaluated the course as high or higher than the College of Arts and Letters average. This is most obvious in the "key" question concerning the comparison of the instructor with other teachers. In this case Economics 224 was given a grade of 3.6 compared to a College average of 3.3.

The more significant comparison is between the spring course in 1974 and the spring course in 1973. We are holding the instructor, the number of students, and the course content constant. Granted, because of the experimental nature of the course, the recitation portion of the course was altered for one-half of the student. But all students were given the same package of materials. Only the delivery mechanism was altered.

Student perceptions concerning the course were substantially changed in certain areas. For example, students were asked to evaluate the instructor's "ability to stimulate student interest in the subject" (by no means an easy task for a group of 300). In 1973, the instructor was given a grade of 2.91, while in 1974 this increased to 3.11. Another critical question concerns the "Personal value of the course to you." This grade increased from 2.93 in 1973 to 3.09 in 1974. Although many of the grades substantially changed from 1973 to 1974, most intriguing is the result of the final question: "Compared with other courses you have taken or are taking at Notre Dame, the work load for this course was:" (4 = heavier, 3 = heavy, 2 = somewhat lighter, 1 = much lighter). Students perceived the work load to be lighter! In 1973, they graded the course as 3.16, but in 1974 the grade was only 2.81. Thus in the face of more demanding tests, the coverage of more textual material, and the assignment of 23 review routines, the students thought they had to work less.

## Concluding Comment

I have attempted to relate the procedures used to apply microeconomic theory within the micro portion of our introductory course. The theory of the factor markets was used for illustrative purposes. Similar materials were developed for the theory of the product markets and for the theory of international trade. The evidence presented in this report reflects the totality of these materials.

In addition to these materials, we have generated numerous traditional review programs for introductory micro- and macroeconomics, calculation routines and simulation exercises. All of these materials can be obtained from the University of Notre Dame at a nominal cost.

# An Economics Laboratory

Michael C. Lovell

Wesleyan University, Middletown, Connecticut

## Goals for the Teaching Experience

A dual set of goals guided the establishment of an Economics Laboratory at Wesleyan University. I wanted to harness the computer as a pedagogical aid in teaching basic economic concepts in a way that would contribute to increased understanding of how markets work and how fiscal and monetary policy influence the level of unemployment and the pace of inflation. I also wanted an economics laboratory that would provide our students with a learning environment similar to that available to students in the physical sciences.

## Steps and Procedures

Economics is not traditionally regarded as an experimental science, but we have been establishing a fledgling "economics laboratory" at Wesleyan University. Students are told that the laboratory is located somewhere inside Wesleyan's new time-sharing DEC (Digital Electronic Corporation) 10 computer, halfway between the elementary models of the textbook and the real world. Although the computer is located across the campus, students can communicate with it from the building where the Economics Department is housed. The student "talks" to the computer by typing on the keyboard of either a teletype or a Cathoid Ray Tube (CRT) Device; the friendly computer immediately prints its response. And the computer can converse with several students simultaneously.

Three different laboratory situations have been developed in order to harness this time-sharing computer technology for instructional purposes.*

A. *OLIGOPOLY* is the exercise introducing students in the introductory course to the computer. The project takes one class period. Usually about six or seven student teams constitute a market, although as many as twenty firms may compete against each other. In advance of the computer sessions students are given a handout, "Let's Play Oligopoly." The handout advises them to skip ahead in their elementary text to the material on oligopoly and explains the basic rules of the game. At the laboratory session the computer is asked to print out a brief paragraph of instructions; then it asks for information on the number of firms and their brand names.

* Photocopies of sample pages of computer output and class handouts can be obtained by sending a stamped (20¢), self-addressed envelope to the author at Wesleyan University, Middletown, CT 06457.

Each student-firm records its initial pricing decision on a 3 × 5 index card, the prices are entered into the computer, and the computer reports the market results on a table. On the basis of initial performance, each firm submits a second round of pricing decisions to the computer. At this point the students recognize that in contrast to the situation of perfect competition, there is a need to develop a pricing strategy that will take into account the reactions of competitors. And with a surprising degree of consistency prices tend on the average to fall during subsequent rounds of play, and profits decline as well. Inevitably a student will point out that this must be the pressure of Adam Smith's "invisible hand." And someone will recognize that while producers are suffering from deteriorating profits, the consumer is benefiting.

After a few rounds, students may obtain a "market research report" showing that if all firms charged a high price—$4.28—collective profits would be maximized. But even when students are informed that they are free to collude, the pressure of the "invisible hand" usually proves irresistable. Those firms that try to preserve "orderly markets" by charging the price maximizing collective profits find that they are penalized by "price chiselers" who reap high profits by undercutting. The system tends to converge on the "Nash equilibrium" price of $3.03.

The classroom experience appears to be more effective when a team of two or three students rather than a single player constitutes a firm. With single-player teams students make their decisions more promptly; but heated discussions of pricing strategy develop when there are several members, particularly if the number is even so it is not easy to break ties. In the team situation each participant is forced to think through the implications of alternative pricing strategies.

The classroom experience appears quite robust with regard to variations in the type of students participating. In addition to being run with regularly enrolled students in the introductory course, the experiment has also been run with highly aggressive first-year graduate business school students, with incoming minority students during a special pre-Freshman orientation program, with Hartford alumni, and with parents visiting the campus. Even the close-knit group of Wesleyan graduates pursuing careers in the same city did not successfully collude against the pressures of the "invisible hand."

Oligopoly has a number of options enriching the exercises for more advanced students. In the price theory course students may be asked to analyze the market's structure; hopefully they find that it is a generalization of standard textbook analysis of differentiated duopoly. A student can investigate how market conditions change when additional firms enter the industry. And it is possible to change the characteristics of the products each firm markets by introducing a new commodity from a library of potential products developed by the research department; the new product may be more economical to produce or it may have distinguishing characteristics designed to enhance market appeal. It is also possible to change the parameters defining the game's cost functions and demand schedules. And if a student wishes to experiment at a time when classroom competitors are not available he can ask the computer to generate prices for some of the firms in the market.

Students participating in the oligopoly exercise report that it is enjoyable. But customer satisfaction is not the only index by which the success of an innovation should be measured. Before we had the program, oligopoly was regarded as a topic of such complexity that it was left out of our one-semester introductory course; indeed, the pressure of time compelled us to focus primarily upon competitive markets. Development of this laboratory experiment has enabled us to improve the curriculum by providing a technique for conveying to elementary students in a single class period the essential features of this type of imperfect market without resort to Stackelberg reaction functions and similar complexities.

B. *ECONOLAND* provides a laboratory in which students conduct macroeconomic experiments by prescribing appropriate fiscal and monetary policy for an artificial economy. Introductory students, working in two- or three-member "Council of Economic Adviser" teams, prescribe policy on the basis of historical evidence summarized on a *Survey of Current Business* computer printout. The consequences of the team's prescription are reported back on an updated *Survey of Current Business*. In addition, the computer produces an *International Financial Statistics* printout contrasting the performance of all the class teams. Students working through a two- or three-year sequence of moves learn as they go along by studying the experience of their own economy and by observing the way in which economic affairs have been handled in other countries.

A typical scenario involves an initial situation of substantial unemployment. After about a year of trying to get their stagnant economy back on its feet, an unexpected deterioration in the international situation precipitates a dramatic rise in government spending for defense purposes. And after about four quarters of hectic economic mobilization the students are greeted with the exciting news that a disarmament pact has been negotiated which requires a dramatic reduction in defense spending. This experimental environment allows the student to see the multiplier in action. Some students adopt a "fly-by-the-seat-of-the-pants" strategy; others attempt to estimate multipliers from historical data graphically; and a few more sophisticated students use regression analysis in trying to fit models to the data. Usually one or two teams repeat the lessons of the 1930's. Because of an excessive concern about the national debt, sufficient stimulation is not applied until the demands of the Pentagon lead to a dramatic upswing in defense spending and the achievement of overfull employment. But the advisors of other countries not only demonstrate greater skill in combating stagnation; they manage to finance the fast expansion without excessive inflation. And some Councils manage to demobilize without widespread unemployment. The cross-country comparisons provided by the *International Financial Statistics* printout demonstrate to the class that it is not necessary to have a defense establishment in order to maintain full employment. Another lesson is learned by examining the experience of "Mr. Friedman Rule," an extra team that pursues a neutral policy by always having the money supply expand at a 3.5 percent annual rate. While several teams usually do better than "Mr. Friedman Rule," those that do worse feel especially chagrined

once they realize the effects of the simple "neutral" strategy that this artificial economy has pursued.

In more advanced courses with smaller enrollments students enter their own decisions directly onto the computer terminal, playing one or a number of quarters at a sitting, and obtaining on the computer terminal an *Economic Indicator* summarizing their country's experience. Initially, students are not allowed to go back and modify their solutions, except in the case of serious typographical errors. A four-year "benchmark" solution generated in this way becomes the basis for subsequent experimentation. Specifically, after the student has observed the results of his four years of play he can go back and modify earlier decisions and explore their implications. He can estimate impact and long-run multipliers by observing how a step increase in government spending generates a new history deviating from the initial benchmark solution, both in the immediate quarter and over subsequent quarters. Also, a student can replace discretionary monetary policy with the "Friedman Rule" or incorporate more elaborate Phillips-type response functions in order to explore the dynamic implications of alternative stabilization strategies. Because students can perform these exercises at their own convenience (the computer center is open 24 hours a day) there is a problem of monitoring performance. This has been resolved by developing an audit program. In addition to reporting the performance of each student's economy, the instructor can conduct a "Watergate Bug," determining what time of day each student entered decisions and how many times each quarter's decision was revised.

The Econoland laboratory has contributed to a substantial modification of the way in which macroeconomics is taught in both introductory and advanced courses at Wesleyan. Student excitement is enhanced when they can "see" the results of decisions on their own economy. Instead of simply reading about multipliers and Phillips curves in the textbook, they have an opportunity to try to estimate such relations from the historical data. But classroom experience is modified as well. During the macroeconomics portion of our introductory course, discussion is easily sparked by comparing the performance of different economies as revealed on the *International Financial Statistics* handout. Why did country 6 prosper while country 2 experienced stagnation? Why has output expanded by more in country 6 than in country 4 if government spending is less? And when the multiplier proves an inadequate policy guide, students skip ahead in the textbook to pick up such concepts as induced investment and inflation. The instructor's role shifts to that of a consultant in guiding students in the management of their economy.

C. *METZLERLAND* is a very simple macro game based on Lloyd Metzler's inventory cycle model, but complicated in that the desired level of inventories depends on the interest rate. First the computer illustrates the procedure by serving as the Central Banker for 12 quarters. When an initial equilibrium is disturbed by a step increase in government spending, the computer-controlled Central Banker attempts to "lean against the wind" by raising interest rates in prosperity and lowering them in recession. Then

it is the student's turn to try to achieve a better score through discretionary policy, where performance is measured by the average size of the inflationary and deflationary gaps. It may take several attempts, but usually a student learns within about one half hour how to dominate the simple decision rule used by the computer when it serves as Central Banker. Metzlerland does contain some optional complications. A sequence of random shocks may be superimposed on the economy. And the student may test the sensitivity of the cycle it generates to changes in the parameters of the model.

The inventory accelerator model underlying this computer program is quite complicated from an analytical viewpoint in that an understanding of second-order difference equations is required in working out stability conditions. The contribution of the computer is to provide students with a better understanding of the causes of the cycle than is provided by allusions to "rocking horse" analogies, but without resort to complicated mathematical analysis. And it enables the student to understand how the type of business cycle that is generated may be influenced by policy decisions.

### Program Development

Because the three programs constituting the Wesleyan Economics Laboratory evolved quite differently, a brief review of their histories may provide information as to how innovations sometimes develop and diffuse among educational institutions. OLIGOPOLY was initially developed while I taught at another institution; it was programmed by a graduate student familiar with the Henderson and Quandt analysis of oligopoly. At Wesleyan it was not possible for me to use the exercise until we acquired our DEC-10 computer, for the exercise is only workable on a modern computer capable of conversing with users in time-sharing mode. At Wesleyan the program has been substantially refined by an economics major, Leonard Burman. ECONOLAND was initially set up to run in batch mode on our old IBM 1130 computer; the underlying econometric model is that of the Attiyeh, Dolbear and Brainard "Policy Game," a program used at San Diego, Yale and Brandeis. The Wesleyan game incorporates substantial modifications that facilitate its use by elementary as well as advanced students. In particular, the *International Financial Statistics* and *Survey of Current Business* printouts and the Audit Program (including the Watergate Bug) are all Wesleyan developments. The facility for modifying previously executed quarters in order to simulate the effects of alternative stabilization strategies and to estimate multipliers was also developed at Wesleyan. A number of student programmers worked on this project, most notably Chris Terman, Jean Barish and Leonard Burman. I programmed the METZLERLAND game concurrently with writing an article on "Monetary Policy and the Inventory Cycle,"* and found that the development of instructional materials and research can be complementary activities.

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* in *Stability and Macroeconomics: Essays in Honor of Lloyd Metzler*, Horwich and Samuelson. Eds. (New York: Academic Press, 1974). See also Michael C. Lovell, *Macroeconomics: Measurement, Theory, and Policy* (New York: John Wiley & Sons, 1975), Ch. 16.

The entire Wesleyan Economics Laboratory fits on a small and inexpensive magnetic tape. Considerable effort has been devoted to making the programs relatively easy to adapt to other computer installations. While Wesleyan has borrowed programs from Brandeis and Yale, we have also exported our programs to other institutions. Lester Lave of Carnegie-Mellon University recently acquired the OLIGOPOLY program and plans to have it translated from FORTRAN into BASIC. William Nordhaus' price theory class at Yale played OLIGOPOLY in the spring of 1974 on our Wesleyan computer from New Haven by using a WATTS telephone line.

In sum, my experience suggests that the pace of innovation is to some degree influenced by the state of the technology at the particular institution at which one is teaching, and that there is scope for borrowing and adapting innovations from other institutions and modifying them for one's own particular pedogogical purposes.

### Evidence on the Learning Experience and Student Achievements

I have not conducted a controlled experiment to gain a detailed measure of the extent to which the Wesleyan Economics Computer Laboratory contributes to learning (Wesleyan is so small as to make it difficult to conduct controlled experiments). This past year Wesleyan economics enrollments were up 43 percent (80 percent in the elementary course), but this should probably be attributed to national concern about economic policy rather than to changing teaching styles. But remarks of students on anonymous evaluations as well as in conversation confirm that the development of an Economics Laboratory contributes to learning.

There are several reasons, in review, that explain why our economics laboratory works. First, the laboratory provides an environment in which students receive prompt feedback concerning the effects of their decisions. Second, students are provided with a yardstick by which they can judge their own performance, for they can compare their individual results with those of their classmates and/or computer dummy players. Third, the laboratory simplifies certain complicated but exciting topics so that they can be introduced at an elementary level rather than in more advanced courses. Fourth, the outcome of the exercises generates a certain amount of "credibility" in that the student can see the results of the experiments. Fifth, the exercises encourage students to work together on group projects and to engage in group learning activities. Sixth, the instructor's role becomes that of a consultant explaining what happens in the laboratory and providing hints at how to proceed.

# Personalized System of Instruction and Its Use in Principles of Macroeconomics at the State University College at Buffalo

Lee C. Spector

State University College at Buffalo

## Introduction

During the last ten years a growing feeling of discontent has emerged among teachers of Principles of Economics. This can be partially attributed to the scores obtained by Principles students on the Test of Understanding in College Economics (TUCE). Among those taking both the pre- and posttest versions of the TUCE, the average improvement has only been 5.7 questions. Consequently many faculty members have been reassessing their teaching techniques and are beginning to use innovative methods in the classroom. One method that has been increasing in popularity is Personalized System of Instruction (PSI).

Although the development of PSI can be traced back to 1919, the "revolution" at the college level really began in 1968 with Fred Keller's landmark article, "Goodbye Teacher"[6]. Emerging from this article and the other literature on PSI are the following four basic characteristics of the method:

1. The course is divided into several small units. The student must show that he or she can master each unit of material before proceeding to the next unit. The material a student is to master is clearly spelled out in the form of learning objectives.

2. The student demonstrates mastery through both an oral examination or interview with a teaching assistant and a short written examination.

3. Few, if any, lectures are presented. Rather, the course material is presented in written form so that the student has primary responsibility for his or her learning. The regular class time is used instead for interviews and tutoring with the teaching assistants and for unit examinations. Those students waiting to be interviewed are asked to study.

4. A student's grade is chiefly dependent upon the number of units completed, and knowing the rules of the game at the beginning of the semester, the student is allowed to proceed at his or her own pace and discretion.

Variations among users of the PSI technique include (1) the way teaching assistants are chosen, paid and trained; (2) the amount and kind of supplementary material distributed; (3) the amount and type of work students

are required to do; (4) the method of interviewing; (5) the types of examinations used; and (6) whether a final or evaluative exam is given. Because there are many possible variations for any particular PSI approach, it is necessary to describe one's own approach with respect to two facets. The "Learning Facet" includes the requirements for the student, the course procedure and grading. The "Teaching Facet" includes the problems of teaching assistant selection and training, choosing course material, and determining the role of the instructor in charge of the course.

The purpose of this paper is to describe the PSI approach and its use in a Principles of Macroeconomics at SUCB so that teachers of economics can become familiar with this technique. The advantages and disadvantages of this method will be presented as well as an evaluation of the results obtained at SUCB.

### The "Learning Facet"

On the first day of class the students received a syllabus breaking the course into eight units and a study guide containing for each unit a set of learning objectives, a glossary, hints telling the best way to learn the material, a discussion of some of the important topics, a bibliography containing at least three other Principles texts, and a series of thought questions. They were told that their goal was to master as many of the eight units as they could during the semester. And even though no lectures were to be given and the students were on their own, they could get all the tutoring they needed by coming to class. The prescribed steps were as follows:

1. Examine the syllabus to determine the unit's reading assignments.
2. Consult the learning objectives in the study guide to determine what you must learn from the material in the unit.
3. Read the material. Determine if you can fulfill the learning objectives for that unit.
4. If you are having trouble with the material complete the following steps:
   a. consult the hints given in the study guide.
   b. reread the material.
   c. if necessary read some of the articles listed in the bibliography. These present the same material in another way. or are applications of the material.
   d. meet with your teaching assistant during the class period for individual tutoring. Make sure you come with some specific questions.
5. When you think you understand the material and can fulfill the learning objectives complete the following steps:
   a. have an interview with your teaching assistant. If you fail the interview, he will tell you where you are weak. Then review the material and come back for another interview.
   b. if he thinks you understand the material, you will be given a 10-question multiple-choice test. If you receive 90 percent or above you can proceed to the next unit. If you get less than 90 percent you must take another exam on the same material. Only one exam can be taken per class period, but you can arrange with Mr. Spector to take an exam during nonclass days.

6. You proceed at your chosen speed and may complete more than one unit per class period as long as you can pass the interviews and exams.

7. There will be a final exam given which will be a nationally standardized test. It will consist of 33 multiple-choice questions and its purpose is to evaluate the success of this experimental teaching technique. While your grade is based on the number of units you master, a very inconsistant final exam may affect your grade. A student who has earned an A in the course must get at least 18 correct out of 33 questions on the final exam, a student with a B must get at least 16 correct, a student with a C must get 13 correct and a student with a D must get at least 10 correct. If these scores are not achieved your grade will be lowered by one letter grade. This is to insure that students take the exam seriously so that an accurate evaluation is possible.

8. The following grading procedure will apply: To get an A you must master 8 units; to get a B you must master 7 units; to get a C you must master 5 units; and to get a D you must master 3 units. Students who master fewer than 3 units will receive an F.

After receiving these instructions and taking the TUCE pretest, the students were ready to begin the course. An average of 35 students attended each class session. These students could participate in one or more of three activities: (1) interviewing with or receiving help from their teaching assistants, (2) taking unit examinations, or (3) studying in a quiet section of the classroom. Those who took unit examinations received their scores immediately and generally had enough time to discuss their test with their teaching assistant before the class period had ended. Thus the atmosphere of the classroom was one of active student participation.

### The "Teaching Facet"

From examining the "learning facet" of our PSI course, it can be seen that the teaching assistants became the most important part of the teaching process. Consequently, they had to be chosen carefully and given thorough training. At SUCB we accepted volunteers from our intermediate macro- and microeconomics classes. Completion of intermediate macroeconomics by the semester they were to teach was required of the applicants. Each applicant was interviewed. His ability to articulate his thoughts was carefully noted, and he was made aware of the great amount of responsibility he would be undertaking if selected as a teaching assistant. Each applicant also submitted an essay relating why he wanted a position as a teaching assistant and why he thought he could be good at this job. The applicant's grades were checked, and when the list was whittled down to 15 (we needed ten teaching assistants for the projected 90 students) each department faculty member was polled for his recommendations. By this lengthy process we attempted to insure the selection of competent teaching assistants.

The next step was to train them. Since this course was offered during the spring semester, the teaching assistants could spend part of their Christmas vacation examining the text and its teacher's manual. Thus they had already begun to familiarize themselves with the book's orientation and with possible teaching methods before the semester began. Each week during the semester, the instructor met for two hours with his teaching assistants. During this session methods of interviewing were discussed, ways of explaining the

material were suggested, problems and successes were shared, and every exam was carefully analyzed. In other words, the session was used to handle administrative problems and teaching assistant training.

Another important part of the "teaching facet" is the selection of course materials. Harry Hutchinson's *Economics and Social Goals* [4] was chosen as a text because, in the instructor's opinion, it is quite rigorous, yet written in an enjoyable and interesting manner. The previously mentioned study guide was written to emphasize how to learn the material, rather than just to test whether the material was understood. And each teaching assistant was asked to prepare (under close faculty supervision) at least one handout on important material from the text. Thus, not only did the students have competent teaching assistants to call upon when help was needed, but also an abundance of helpful supplementary written material.

The role of the faculty member in charge of the course was that of administrator. After the preparation of the study guide and the determination of the course's organization, the instructor allowed the teaching assistants to carry the load. The instructor's job was to clear up any unusual problems the teaching assistants or students had, to formulate exams and keep them under close security, to supervise and instruct the teaching assistants during the weekly meetings, and to oversee the course to insure its smooth operation. Although a great deal of preparation is involved the first time a PSI course is offered, the work diminishes significantly with each additional offering.

## Advantages and Disadvantages of the PSI Techniques

From our experiences and from those described in the literature, we have found the following advantages and disadvantages of the PSI approach to teaching:

### Advantages

1. *Feedback.* Since the course is divided into small units and since examinations are given after each unit, there is constant feedback to the students and the instructor. This feedback indicates to the students whether they are working hard enough, and helps the instructor to evaluate the success of the course as the semester progresses.

2. *Self-pacing.* Giving students the opportunity to work at their own speed is an aid to everyone who might not want to work at the speed of the average class. Slower students get all the help they need without falling behind, while faster students can finish early and devote their time to other studies.

3. *Student/teacher ratio.* Since teaching assistants are used the student/teacher ratio is lowered. This makes it easier for students to get any individual help they may need, while allowing the instructor to follow the students' progress more closely.

4. *Oral examinations.* Oral examinations have been shown to be a useful supplement to written exams. The PSI technique incorporates oral examinations as a very large part of the course and allows for more give-and-take between the teacher and the student.

5. *Mastery learning.* The breakdown of the course into small units allows the instructor to apply the technique of mastery learning, and because the

rewards are given after each unit rather than after several weeks, student learning should be enhanced.

6. *Future preparation.* Teaching students to learn the material by themselves helps to prepare them for the future when the acquisition of knowledge is generally done on one's own.

### Disadvantages

1. *Irresponsibility.* Students are given a large amount of responsibility which they may or may not be able to handle. Many students wait too long to start studying and thus prodding may be necessary. This is especially true at a noncompetitive school. Teaching assistants, although carefully chosen, may turn out to be irresponsible as well. We gave the teaching assistants credit for senior seminar, and the threat of a bad grade generally kept them in line. However, it is quite possible that despite careful screening, a teaching assistant may prove to be a bad instructor.

2. *No lectures.* Lectures, of course, are valuable especially if the instructor can explain the material better than the text or the teaching assistants. Class discussion of the material is often eliminated when no lectures are given, and valuable intraclass discussion of current events is also curtailed. Next semester we plan on offering approximately four required lectures which will be used to review material and to discuss current events.

3. *Time waste.* Because students sometimes are forced to sit around while waiting to be interviewed or tutored, there can be some waste of time. Ideally they should be studying during this period, but they don't always do so.

## Evaluation

In order to evaluate the PSI experiment we used the TUCE to determine how much economics the students learned, and student evaluations to determine whether they enjoyed learning with this method. Table 1 is a comparison between the TUCE scores of PSI students, non-PSI students, and the national average.

Using the information above the performance of the PSI class can be compared to that of a non-PSI class and to the national average by using a difference between two means test. In each case the null hypothesis that the two means are identical is rejected at the 99 percent level. Thus, in each case, the probability that the difference between the score of the two groups was by chance, rather than due to the difference in instructional technique, is less than 1 percent. The Z statistics for the two tests are 3.63 and 4.18, respectively. Note also that the PSI group showed the largest average improvement in the TUCE scores.

Table 2 shows the results of the student evaluations of the PSI class. It can be seen from this table that not only did students learn more in the PSI class, but they enjoyed the experience, thought the PSI method was effective, and would recommend it to their fellow students.

We will also make a comparative study of these students in intermediate macroeconomics to determine whether there are any long-run differences between those who had Principles of Macroeconomics with PSI and those who didn't.

Table 1

TUCE Results

| | | PSI at SUCB | Non-PSI course at SUCB | National Average* |
|---|---|---|---|---|
| Pretest (form A) | Mean | 12.77 | 12.04 | 13.31 |
| | standard deviation | 4.13 | 4.19 | 5.30 |
| Posttest (form B) | Mean | 21.49 | 18.53 | 18.93 |
| | standard deviation | 4.38 | 4.51 | 4.90 |
| | Improvement | 8.72 | 6.49 | 5.62 |
| | No. of students | 59 | 60 | 485 |

* Derived from Table 8 of the *Manual Test of Understanding in College Economics* (New York: The Psychological Corporation, 1968), p. 18.

## Table 2

Student Evaluation*
(in percentages)

1. What is your reaction to the manner in which this course was taught?
   a. very delighted 38.46
   b. somewhat favorable 40.38
   c. neutral 11.53
   d. somewhat unfavorable 7.69
   e. very disappointed 1.92
2. How effective was the method of instruction used in this course in contributing to your mastery of the course material?
   a. very effective 36.53
   b. somewhat effective 46.15
   c. neutral 13.46
   d. somewhat effective 3.84
   e. very ineffective 0.00
3. How interested are you in having other courses conducted in a manner similar to this one?
   a. very interested 51.92
   b. somewhat interested 17.30
   c. neutral 21.15
   d. somewhat uninterested 7.69
   e. very uninterested 1.92
4. To what extent were you able to proceed in this course at a pace suitable to your background and abilities?
   a. very able 50.00
   b. somewhat able 17.30
   c. neutral 21.15
   d. somewhat unable 5.76
   e. very unable 0.00
5. How interested are you in pursuing further study in Economics?
   a. very interested 23.07
   b. somewhat interested 40.38
   c. neutral 9.61
   d. very uninterested 15.38
   e. somewhat uninterested 9.61
6. Would you recommend this course to other students if it were offered again next term?
   a. definitely yes 42.30
   b. probably 34.61
   c. not sure 15.3
   d. probably not 5.76
   e. definitely not 1.92
7. What is your attituue toward the use of undergraduate students as major aides in the teaching process?
   a. very favorable 53.84
   b. quite favorable 32.69
   c. neutral 11.53
   d. somewhat unfavorable 1.92
   e. very unfavorable 0.00
8. Please rate the overall quality of this course, all things considered.
   a. excellent 28.84
   b. good 42.30
   c. satisfactory 19.23
   d. fair 7.69
   e. poor 1.92

* These questions are part of a questionnaire prepared specifically for PSI by Professor William Sheppared. Department of Psychology. University of Oregon. The questions that are not shown deal with the merits of each student's teaching assistant and are not relevant to this discussion.

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# Advertisement Substantiation Project


**Bruce R. Dalgaard**

University of Illinois, Urbana, Illinois


Introductory courses at the university level traditionally call to mind a brief and basic overview of a particular discipline, primarily theoretical in nature, with little or no application to reality. The one-semester principles course in economics at the University of Illinois, although intended for nonmajors, is no exception. After teaching this course and learning about student interests, wishes and values, it became clear to me that students want to know the practical application of theoretical concepts. Thus, a portion of the course was redesigned to make it a realistic exercise in an area of growing concern.

The Advertisement Substantiation Project is part of the section of the course entitled "The Market System: Theoretical Bases and Imperfections." One part deals with consumer behavior as affected by market forces, but first the students explore (along traditional lines) the model of price determination

in perfect competition, the concept of utility maximization as a basis for consumer behavior, and the functioning of the market. Then they are introduced to market imperfections and their impact on the consumer.

An assignment is given to the students early in the course, even before they have mastered the theoretical tools and concepts. They are instructed to monitor advertisements in any media (newspapers, magazines, radio, television) they choose, and select ads making claims about a product. They must try to obtain substantiation from the producer for these claims. They write a short paper describing the ad and explaining the producer's claims and why substantiation was requested. The advertisement is then discussed and evaluated, along with the company's response to the request for substantiation. The student's views on the purpose of the ad and the firm's responsibility are set forth. It is because of the time it may take to get replies, and because of the large amount of correspondence that may ultimately develop, that the student is urged to start work early in the semester.

The course progresses along traditional lines during the ensuing weeks, as students seek whatever initial or additional information they need. As the due date approaches, the students move into the general area of the market mechanism and specifically into an exploration of consumer behavior and market imperfections. At this point, readings related to the substantiation project appear on the course syllabus. These are designed to provide a framework into which students may place advertising and its effects. There are articles questioning the theory of rational consumer behavior, such as Ralph Nader's "A Citizen's Guide to the American Economy,"[1] and works discussing the demand-creating aspects of advertising, such as Galbraith's "Consumer Behavior and the Dependence Effect,"[2] and Vance Packard's *The Hidden Persuaders*.[3] Of course, dissenting views are also presented through such items as Hayek's "The Non Sequitur of the Dependence Effect."[4] An overall view of advertising and its impact on the public interest is included.[5]

With this background students are prepared to analyze again the advertisements they selected and the company responses they received. Shortly after the papers have been submitted, class time is set aside for a discussion of the results of the student inquiries. The fact that the students are actually applying the theories studied probably helps to improve understanding and retention. Above all, it increases interest and provides an opportunity to put to practical and personal use some of the analytical tools and concepts of economics. Stated in performance terms, the project is designed to teach students to—

- analyze the structure of an economic problem
- integrate learning from the discipline of economics into a plan for solving an immediate economic problem

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[1] In David Mermelstein. Editor. *Economics: Mainstream Readings and Radical Critiques* (New York: Random House. 1973).

[2] In Robert W. Crandall and Richard S. Eckaus. Editors, *Contemporary Issues in Economics* (Boston: Little, Brown, and Company. 1972).

[3] New York: Pocket Books. 1958.

[4] In Crandall and Eckaus. *op. cit.*

[5] John A. Howard and James Hulbert, *Advertising and the Public Interest: A Staff Report to the Federal Trade Commission* (Chicago: Crain Communications. 1974).

- determine whether advertising's role is one of creating demand or of fulfilling consumer demand
- recognize unstated assumptions
- evaluate the relevancy of data in an advertising claim
- distinguish between facts and inferences
- judge the desirability of regulating advertising

The nature of the assignment makes it possible to evaluate the students in terms of how well they achieved the above-mentioned goals. In the process, they demonstrate their degree of understanding of such theoretical concepts as price determination, utility and demand. This is shown both in the written report and in class discussion. Many important microeconomic principles come into play, and the project serves as a synthesis of these concepts.

One of the major concerns is over the response rate. Of the 129 initial substantiation requests sent, however, there were 85 replies. The students who were unable to get any response at all made studies of advertising in general. It is interesting to note that 68 percent of the replies satisfied the students in terms of their credibility. One student who questioned the gas mileage claims made by an automobile manufacturer received letters from the corporation's merchandising representative and from their advertising agency. He also received performance certificates from the United States Auto Club. Nevertheless, he relied upon his own analysis of the advertisement to determine whether or not the claim had been substantiated.

Finally, students were given an opportunity to evaluate the project through a formal Course Evaluation Questionnaire which was completed anonymously after the course was over and the grades had been submitted. The project received a favorable evaluation from 81.8 percent of the students who chose to comment on it. This type of student-oriented project enables students to see the significance of economic concepts, provides valuable practice in economic analysis, enhances student understanding, and serves as an interesting and meaningful experience.

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