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ABSTRACT

During the 1969-1970 school year, the Pontiac School District conducted a demonstration program in which 15 junior high school classes received instruction utilizing the "World of Construction," a curriculum developed by the Industrial Arts Curriculum Project of The Ohio State University. Program evaluation was accomplished at the end of the school year by administering achievement tests and a comprehensive examination to students in an experimental group and a control group. In addition to the tests, students completed a questionnaire at the end of the first and second semesters, and parents responded to the questionnaire near the end of the school year. Comparisons of experimental and control group test results revealed that experimental students achieved significantly higher scores on the post-test achievement tests than similar controls at the seventh and eighth grade levels, but there was no difference at the ninth grade level. An item analysis also revealed that experimental students tended to score higher, but there were many important concepts not mastered by the experimental group. Results from the questionnaire plus a supervisor's report and budget information are included in this publication. (SB)

Final Report

A Junior High School Industrial Technology Demonstration Program

The World of Construction
1969-70

School District of the City of Pontiac

Donald W. Kaiser
Teacher Consultant
Industrial Education

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WORLD OF CONSTRUCTION

Final Report by

Project Supervisor

In May of 1969 the director of vocational education of the Pontiac schools was contacted by Eastern Michigan University and asked if Pontiac would be interested in participating as a demonstration center to demonstrate a new approach to Industrial Arts. Since we had been thinking about changes in our program for sometime, we were very interested in such a proposal.

We were to work with Eastern Michigan University, The State Department of Education and the Ohio State University and University of Illinois the two originators of the Industrial Arts Curriculum Project. This necessitated the submission of a proposal to the State Department for funding of the project.

We met with representatives of the IACP headquarters in the early part of June at Eastern Michigan University. At this meeting, people were present from the State Department, the Intermediate School District and our own school district. We were given a complete picture of the IACP program including it's history. We were informed of what our role would be as a demonstration center.

The next day a presentation was given to prospective teachers along with their principals to see if they were interested in having the program in their schools. We had tentatively selected those schools that would give us a different racial background from which to demonstrate the program. The principals made the final decision for the adoption of the program.

The first proposal was submitted prior to July first and tentative approval was given so that the teachers involved could attend a four week workshop at the Ohio State University. Final approval was received from the State Department on the fifth of August, 1969.

The task of purchasing the necessary tools and materials for the entirely different Industrial Arts approach began. Many of the things were hard to find and substitutes had to be made at the last moment. The problem of scheduling the pupils into the classes was solved when the principals decided that they would let the present schedule stand with the woodshop students taking the "World of Construction". This did present some problems because the students did not get the class they signed up for and as a result there was a problem of motivation. It did work out fairly well.

During the school year it was planned that there would be weekly meetings involving all the teachers, Dr. Jennings from E.M.U. and myself to go over the previous weeks' lesson and discuss the coming week assignment. These meetings proved more than fruitful. Not only did we prevent mistakes from happening but we had a running evaluation of the program. The new program was more work for the teachers than had been anticipated and these weekly meetings helped to alleviate some problems and bolster their morale.

Over 300 people visited the demonstration program during the school. Most of these people were teachers and administrators from other school districts.

An advisory committee was formed for the "World of Construction" and met on a monthly basis. The committee consisted of 28 members from business, industry, education and parents of students in the program. Many good things came from the committee and the community was informed of the new concept in industrial arts. We were quite disappointed with the low number of parents participating on the committee and tried various methods of improving the attendance but were unsuccessful. Members from the State Department, Eastern Michigan University and the Detroit chapter of The Associated General Contractors of America were unfailing in their attendance.

The Associated General Contractors furnished all the expendable supplies that were used by the three schools participating in the program. They also sponsored tours for all classes to construction sites in the area. Here they made sure that journeymen were on the site to answer questions, provided them with their lunch and provided a program after lunch to make all students aware of what goes on in the construction industry. We are much indebted to this group for the support they have given us in making the program a success.

In spite of the many difficulties, such as pupil unrest, we finished the program on time and felt that we did a good job of demonstrating the program. It is a tremendous program and we feel it incorporates what industrial arts should have been for years but hasn't.

This report contains a budget report and an evaluation report.

Respectfully submitted

Donald Kaiser

BUDGET REPORT

When we were working on the proposal for the "World of Construction" we had several meetings with people from Eastern Michigan University, the State Department of Education, the Ohio State University and the School District of the City of Pontiac. The only guidelines we had to go by were those furnished by Ohio State University in their sample proposal. As a consequence, many of the items on our budget were too high and some were too low. Below are some statements concerning these paragraphs in our budget:

Paragraph 1.1

The expenses incurred by the Eastern Michigan Field services were $1155.82 more than anticipated. Since we had no formal agreement with them and only went by the model proposal we had no means of foreseeing this expense. The proposal for the "World of Manufacturing" contains a contract with E.M.U.

Paragraph 1.2

The amount budgeted for this was exceeded by $188.76. It could not be foreseen accurately as to how many in-service meetings would be held nor the duration of each nor how many advisory meetings would be held.

Paragraph 1.3

$519.52 over the budget. This was due to an increase in the number of meetings, more meetings and and increase in the hourly rate.

Paragraph 2.1.1

Only one trip was required rather than the two budgeted in the proposal.

Paragraph 2.1.2

The budget was exceeded by$115.08 to pay for theconsultant travel and expenses for dissemination activities not provided for otherwise in the budget. The costs of advisory committee members was non-existent.

Paragraph 2.2.1

This item was less than expected because of the cut of the assistant supervisor from the original proposal.

Paragraph 2.2.2

This item was less than proposed due to the cut of one assistant supervisor so was paid to three people rather than four.

Paragraph 2.2.3

Same as proposed

Paragraph 2.2.6

An estimate was used on the proposed budget and it was $51.44 too high.

Paragraph 2.2.7

The proposed budget was for four persons and only three attended.

Paragraph 2.3

The estimate on the proposed budget was for more people than attended the mid-year conference and the expenses were not as great as estimated.

Paragraph 2.4

Since the budget was based on an estimate of travel and expenses the actual amount was $376.94 less than expected.

Paragraph 2.5
Expenses for the advisory committee meetings were almost non-existent.

Paragraph 2.6
Evaluation expenses were $507.07 less than anticipated.

Paragraph 3.1
This was a fixed cost so came out as proposed.

Paragraph 3.2
The budgeted amount was exceeded by $3549.85 in spite of the fact that the Associated General Contractors providedus with $5000.00 worth of expendable supplies. The conclusion is that the estimated figures provided by Ohio State University in the sample proposal were far off.

Paragraph 3.3
This was a fixed cost so came out as proposed.

Paragraph 3.4
The shipping costs were $881.66 less than proposed.

The following Accounts summary is taken from the print-out as computed by the bookeeping department of the School District of the City of Pontiac.

Total Amount Paid Out.	$29,411.63
Total Amount Received.	$28,939.64
	-471.99

VII BUDGET

		Research Monies
1.	Personnel	
1.1	Demonstration Center consultant (teacher educator from Eastern Michigan University), $250 per school -	750.00
1.2	Local supervisor, $250 per school For in-service training with teachers and guidance counselors, evaluation meetings, and advisory committee meetings.	750.00
1.3	Teachers, based on $500/year - For in-service training, evaluation meetings, and advisory committee meetings.	$ 1,500.00
1.4	Assistant Supervisor For in-service training, evaluation meetings, advisory committee meetings and sixth period assignment.	~~1,600.00~~
	Sub-total Personnel	3000.00 $ ~~4,600.00~~
2.	Travel and Associated Costs	
2.1	General orientation session, spring, 1969	
NOTE:	Items under 2.1 are not included in the total budget since these expenditures must must be made by the sponsoring agency prior to the beginning date of this project.	
2.1.1	IACP staff travel and expenses for two members for two days. Based on average cost of $150 -	300.00

2.1.2	Local staff and consultant travel and expenses to include potential advisory committee members, etc. Based on average transportation cost $15 and $6 for meals for 10 members for two meetings -	$ 420.00
2.2	Summer Teacher Orientation Session	
2.2.1	Personnel travel, 6 trips based on transportation cost of $45 -	270.00
2.2.2	Teacher and Assistant Supervisor stipend, based on 20 working days at $50/day -	4,000.00
2.2.3	Supervisor, Consultant stipend, based on 10 working days at $50/day -	1,000.00
2.2.4	Instructional materials needed for teacher orientation sessions	IACP supplied. No charge.
2.2.5	IACP regular staff for orientation sessions -	IACP supplied. No charge.
2.2.6	Pro-rated cost for experienced teachers for teacher education sessions, based on 20 working days at $60/day and transportation cost of $150 - (Proportion of Pontiac teachers attending to all teachers enrolled)	771.44
2.2.7	Tuition, fees, for 6 quarter hour non-resident summer session enrollment at $245/ participant -	980.00
2.3	Mid-year evaluation conference, 6 persons, lodging, meals and transportation (2 cars) 3 days -	600.00
2.4	IACP staff consultation visit, 4 trips, each based on average cost of $150 and $100/ day -	1,000.00
2.5	State advisory committee meetings, two meetings per year for 5 members, each trip based on costs of $50 per member meeting -	500.00
2.6	Research, evaluation, and dissemination -	1,000.00
	Sub-total Travel and Associated Costs	$10,841.44

3. Supplies and Materials

3.1 Written instructional materials, based on $10 per student per year for a total of 375 students -	3,750.00
3.2 Laboratory supplies, tools, and equipment, based on a laboratory enrollment of 125 pupils/day (one teacher load), $2, 100 per laboratory (paid to participating schools) -	6,300.00
3.3 Teacher and student instructional hardware, $1000 per laboratory -	3,000.00
3.4 Shipping costs -	1,000.00
Sub-total, Supplies and Materials	$14,050.00
TOTAL BUDGET	27,892.00 ~~$29,491.11~~

VI SCHOOL DISTRICT OF THE CITY OF PONTIAC CONTRIBUTIONS

1. Salary of three teachers -	$21,217.00
One-half salary of teacher supervisor in Industrial Education -	7,929.00
Ten per cent of Vocational Director's salary -	2,112.00
Five per cent of three principals' salaries for increased administration of program -	3,000.00
Total Salary Contribution	$34,258.00

2. A laboratory in each of four junior high schools, presently equipped with the normal woodworking machines and tools, will be furnished by the School District.

WORLD OF CONSTRUCTION - ACCOUNTS SUMMARY

Proposal Paragraph	Account Number		Totals
1.1	1731.045.790	1640.00	
	1761.045.790	110.00	
	"	155.82	1905.82
1.2	6770.087.251	143.00	
	1703.045.790	795.76	938.76
1.3	1703.045.790	632.58	
	6770.087.251	18.50	
	1703.045.790	691.93	
	"	621.01	
	6770.087.251	18.50	
	"	18.50	
	"	18.50	2019.52
2.1.1	6770.087.253	109.71	
	1761.045.790	26.99	136.70
2.1.2	1761.045.790		535.08
2.2.1	6770.087.253	53.50	
	"	180.00	233.50
2.2.2	6770.087.251	777.00	
	"	777.00	
	"	777.00	
	6770.087.253	223.00	
	"	223.00	
	"	223.00	3000.00
2.2.3	6770.087.251	379.00	
	6770.087.253	121.00	
	6770.087.251	500.00	1000.00
2.2.6	1731.045.790		720.00
2.2.7	6770.087.253		735.00
2.3	1761.045.790	156.17	
	"	120.00	
	"	63.30	
	"	5.00	344.47
2.4	1731.045.790		623.06
2.5	1761.045.790		8.60
2.6	1769.045.790		492.93
3.1	1742.045.790		3750.00
3.2	"		9849.85
3.3	"		3000.00
3.4	"		118.34
			29,411.63

Evaluation Report

A Junior High School Industrial
Technology Demonstration Program
The World of Construction
1969-70
Pontiac Schools

Merle Smith, Ph.D.
Office of Evaluation
Community Action Programs

Evaluation Report
A Junior High School
Industrial Technology Demonstration Program

The Pontiac School District applied for and received funds to carry out a demonstration program in the area of industrial arts. Traditional industrial arts courses have focused on limited skill areas and have done little to expose the student to the industrial aspect of society.

It is generally acknowledged that a view of industry limited to things such as woodworking, metalcraft, and so forth is no longer appropriate for an industrial, technological society. The need for a program stressing the manner in which industrial production and management practices yield material goods was the basis of the development of the Industrial Arts Curriculum at Ohio State and the University of Illinois. The developed curriculum was instituted in the Pontiac School District beginning in September of 1969 and terminated in June of 1970.

Program Procedures

Following the funding of the program three teachers and a project director were hired. This staff participated in a four week workshop held at Ohio State during the summer of 1969. In September of 1969 the curriculum was implemented in fifteen junior high classes. Approximately 375 students participated in the program.

In addition to direct instruction with students, the program staff also met with a parent advisory board on a monthly basis. Parents were informed of the project and the advisory board participants followed the program from its inception.

The project director also gave many presentations of the program to interested groups. Presentations were given to PTA's, University classes, service clubs, construction trades groups, and other interested groups. Approximately 300 individuals made on-site visits to the programs. The individuals visiting the program represented local industrial organizations, plus all the major Michigan universities and included industrial arts teachers, students and school administrators.

Research Design

Ohio State University supplied the project with achievement tests to be used in the evaluation of the program. A comprehensive examination given at the end of the year was administered to the students involved in the class (experimental group) and to a group of students not involved in the course (control group). Thus the basic design is a post-post comparison of a treatment group and control group. The achievement tests were given by the classroom teacher in June of 1970.

In addition to the achievement tests, a questionnaire for students and parents was devised by the project staff. Students were asked to fill out the questionnaire at the end of the first and second semesters while the parents responded to a questionnaire given near the end of the 1969-70 school year.

Research Results

The results of this evaluation are presented in two sections. The first section deals with the findings based on the post-post comparisons between the experimental and control groups. Analysis of variance was carried out to explore differences between the two groups. The test was then examined through use of a pacer analysis. This type of analysis provides information regarding the percentage of students passing a particular item. Pacer analysis is

particularly helpful with criterion referenced tests. It allows a program director or instructor to determine what aspects of the curriculum were mastered by the students. The analysis of variance and pacer analysis were performed and interpreted by Rodney Roth Ph.D., Consultant from Educational Systems Technology Inc.

Section One

Comparison of experimental
and control groups
Pacer Analysis

This evaluation consists of two parts. One section deals with comparing the mean post achievement between experimental and control classes. The other section examines the achievement test results, item by item for the experimental students. This will be done primarily to indicate areas within the program that students have not mastered.

The experimental students were instructed in "The World of Construction" Curriculum which was developed by the Industrial Arts Curriculum Project conducted by Ohio State in cooperation with the University of Illinois. The control students did not study this curriculum.

The test used to evaluate the project was The World of Construction Comprehensive Examination, Form 3. This test, which was prepared by the Industrial Arts Curriculum Project, is a criterion related test. In other words, the test was constructed to specifically measure the major objectives of the curriculum. The reliability of the test was very good. The median reliability for the seven different groups tested was .88.

Table I presents the mean achievement for the two experimental schools. In the seventh grade a control school was not available; thus the seventh grade experimental students at Jefferson were also compared to eighth grade control students at Jefferson.

Table I

Mean Achievement Scores for Grade 7

	N	$\bar{X}$	s.d.
Jefferson	37	18.3	8.3
Madison	19	25.6	9.8

The analysis of variance indicated that these two experiment schools were significantly different on post test achievement ($F=8.4$, $df=1/54$, $p<.01$). The Jefferson school, which was lowest, was compared to an eighth grade control group in the same school. The analysis of variance indicated that the experimental students achieved significantly higher than these control students ($F=5.1$, $df=1/54$, p .05).

Table II presents the achievement results for the two experimental and one control school.

Table II

Mean Achievement Scores for Grade 8

	N	$\bar{X}$	s.d.
Eastern (Ex)	39	23.3	8.9
Madison (Ex)	51	25.7	11.5
Jefferson (Con)	19	13.5	5.6

The analysis of variance indicated that the two experimental groups did significantly better than the control group ($F=10.8$, $df=2/106$, $p<.01$).

Table III presents the results for ninth grade experiment and control groups.

Table III

Mean Achievement Scores for Grade 9

	N	$\bar{X}$	s.d.
Eastern (Ex)	26	24.8	7.6
Madison (Con)	23	23.6	11.5

The analysis of variance indicated that the experiment and control groups did not differ significantly in mean post achievement ($F<1.0$, $df=1/49$).

The results from comparing experimental and control students indicated that the experimental students achieved higher scores on the post test than similar control students at the seventh and eighth grade. The exception was in the ninth grade where there was no difference between experimental and control students.

The next section looks at the post test results, item by item, in order to diagnose possible weaknesses of instruction and/or student understanding.

The mastery level or percent correct on each item should be quite high since the test was criterion related. There is, however, a small problem with this test in that it was prepared for experimental use in conjunction with the Industrial Arts Curriculum. Since it is a new test, there is not enough past data on the test to provide any indication of item difficulty. With this problem in mind, this evaluator has arbitrarily designated an item score less than 60% correct as a weakness in instruction or item content validity which should be further investigated. This 60% figure is somewhat lower than is typically used for mastery on a criterion related test.

Table IV

Percent Correct by Item for Jefferson 7th Grade

Item	%	Item	%	Item	%	Item	%	Item	%
1	51	11	40	21	56	31	40	41	21
2	27	12	45	22	29	32	40	42	27
3	64	13	64	23	43	33	29	43	21
4	54	14	45	24	43	34	27	44	24
5	62	15	29	25	27	35	21	45	21
6	48	16	29	26	48	36	40	46	18
7	37	17	37	27	35	37	51	47	43
8	18	18	35	28	29	38	37	48	13
9	40	19	29	29	21	39	35	49	35
10	29	20	40	30	27	40	48	50	32

The item analysis results presented in Table IV indicate that only 3 out of 50 items were passed by more than 60% of the students. The results for this school might indicate any one or a combination of the following factors: 1) The test does not have content validity, 2) The test items were not understood by the students, 3) The students did not learn much about the World of Construction.

Table V

Percent Correct by Item for Madison 7th Grade

Item	%	Item	%	Item	%	Item	%	Item	%
1	26	11	47	21	47	31	36	41	47
2	63	12	63	22	47	32	57	42	42
3	63	13	73	23	63	33	68	43	68
4	26	14	47	24	57	34	63	44	47
5	57	15	42	25	31	35	68	45	52
6	63	16	36	26	73	36	42	46	42
7	31	17	42	27	68	37	63	47	52
8	57	18	73	28	36	38	63	48	31
9	42	19	57	29	47	39	31	49	31
10	47	20	73	30	31	40	68	50	42

The item analysis results for this school indicated that 17 of the items were passed by more than 60% of the students. Some major topics in which the students did not achieve well are:

1. What is involved in construction technology?
2. What is involved in personnel technology?
3. What are various management functions?
4. What is involved in buying land and/or products, i.e., legal descriptions and purchase offers?
5. What topographic maps show?
6. What are two major parts of any structure?
7. What are parts of concrete frames?
8. What are purposes of feasibility studies?
9. What is function of interior decorators?
10. What are various bridge and dam types?
11. How is steel connected?
12. What are parts of stairs?
13. What are the servicing practices?
14. What are new developments in construction?
15. The whole area of labor-management relations?

Table VI

Percent Correct by Item for Eastern 8th Grade

Item	%	Item	%	Item	%	Item	%	Item	%
1	15	11	58	21	64	31	48	41	41
2	25	12	48	22	58	32	56	42	20
3	71	13	61	23	69	33	41	43	5
4	41	14	46	24	48	34	46	44	2
5	92	15	33	25	41	35	46	45	10
6	58	16	25	26	71	36	43	46	56
7	48	17	46	27	64	37	71	47	46
8	46	18	30	28	61	38	64	48	48
9	61	19	43	29	48	39	35	49	2
10	56	20	61	30	61	40	74	50	7

The item analysis results for this school indicated that 14 of the items were passed by more than 60% of the students. Some major topics in which these students did not achieve well are:

1. What is involved in construction technology?
2. What is involved in personnel technology?
3. Who are production workers?
4. What are the purposes of apprenticeship programs?
5. What is involved in production technology?
6. What is involved in buying land and/or products?
7. What is the role of the construction contractor?
8. What do topographic maps show?
9. What are the elements of a concrete frame?
10. What are the purposes of a feasibility study?
11. What are the major types of dams?
12. What is used to fasten steel framework?
13. What is used to fasten copper tubing?
14. What are utilities?
15. What are the parts of stairs?
16. What are servicing practices?
17. What are new developments in construction?
18. The area of water control and purification?
19. The whole area of labor-management relations?

Table VII

Percent Correct by Item for Madison 8th Grade

Item	%	Item	%	Item	%	Item	%	Item	%
1	23	11	50	21	66	31	45	41	41
2	47	12	54	22	45	32	50	42	52
3	78	13	62	23	82	33	50	43	49
4	45	14	49	24	66	34	62	44	45
5	80	15	39	25	62	35	54	45	41
6	41	16	29	26	70	36	50	46	43
7	33	17	45	27	74	37	58	47	56
8	50	18	39	28	45	38	54	48	45
9	45	19	68	29	43	39	47	49	25
10	39	20	66	30	41	40	58	50	43

The item analysis results for this school indicated that 12 of the items were passed by more than 60% of the students. Some major topics in which the students did not achieve well are:

1. What is involved in construction technology?
2. What is involved in personnel technology?
3. Who are production workers?
4. What are the purposes of apprenticeship programs?
5. What is involved in production technology?
6. What is involved in buying land and/or products?
7. What is the role of the construction contractor?
8. What do topographic maps show?
9. What are the major types of dams?
10. What is used to fasten steel framework?
11. What is roof pitch?
12. What is the role of inspectors?
13. What is the role of interior decorators?
14. What are different types of bridges? 15. The whole area of labor-management relation

Table VIII

Percent Correct by Item for Eastern 9th Grade

Item	%	Item	%	Item	%	Item	%	Item	%
1	42	11	39	21	64	31	53	41	46
2	64	12	50	22	64	32	71	42	35
3	53	13	75	23	75	33	53	43	0
4	60	14	42	24	50	34	57	44	0
5	71	15	25	25	50	35	50	45	3
6	42	16	42	26	64	36	46	46	57
7	46	17	60	27	64	37	85	47	50
8	50	18	46	28	50	38	57	48	64
9	50	19	67	29	57	39	46	49	0
10	50	20	57	30	39	40	85	50	0

The item analysis results for this school indicated that 14 of the items were passed by more than 60% of the students. Some major topics in which the students did not achieve well are:

1. What are the major elements of industry?
2. What are the functions of personnel technology?
3. What are the functions of management?
4. What are the purposes of apprentice programs?
5. What are the functions of production technology?
6. What are the responsibilities of the construction contractor?
7. How to read profile charts?
8. What are the elements of concrete frame?
9. What are the purposes of a feasibility study?
10. What are functions of interior decorators?
11. What are types of bridges and dams?
12. How is copper tubing fastened?
13. What are utilities?
14. What are the parts of stairs?
15. What are general servicing practices?
16. What are new developments in construction?
17. The general area of water control and purification?
18. The whole area of labor-management relations?

In conclusion, the students who have taken The World of Construction Curriculum did tend to score higher on post test achievement tests. The item by item analysis for each experiment group, however, indicated many important concepts of the curriculum that were not mastered by the students. This type of analysis will hopefully provide each instructor with valuable information in order to improve the achievement levels of his students.

Section Two

Questionnaire Results

Parent and student reaction to the World of Construction was measured through administration of questionnaires.

The student questionnaires were given at the end of the first and second semester. Copies of the questionnaires are given in the appendix. A scoring system for each semesters questionnaire was established by giving a score of one to the positive response and a score of zero to the negative response. Since there were little differences between grade levels, the scores were accumulated and a mean score was computed.

The mean score for the first semester questionnaire was 4.61. A total of seven points was possible on the first semester questionnaire. The mean score can be considered moderate with student reaction tending to be on the positive side.

The mean score for the second semester questionnaire was 6.00. A total score of ten points was possible on the second semester questionnaire. Again the mean score can be considered a moderate one with student attitude tending to be on the positive side. Both sets of questionnaires indicate a trend toward positive attitudes toward the program. While the mean score indicate that generally students reacted in a positive manner to the program, the trend is not of sufficient size to assert that the reaction was strongly positive. In future research with Industrial Arts Curriculum Projects, it would be desirable to explore student reactions more in depth. This could be accomplished through item analysis of particular items. The present analysis did not allow for focusing on particular areas liked or disliked by the students.

Parent reaction to the program was explored through administration of a questionnaire to a group of 87 parents. The particular questions asked of the parents are given in the appendix.

Percentages of positive and negative answers were computed. The percentage of parents responding in positive, negative, and undecided directions are given on the table below. The reader is advised to relate the percentages to the questions listed in the appendix.

Table Percentage of Parents Responding in Positive, Negative and Undecided Categories.

Question Number	% Responding in Positive Direction	% Responding in Negative Direction	% Responding in Undecided Direction
2	72	10	18
3	48	32	20
4	71	12	17
5	79	7	14
6	64	24	12
7	52	30	18
8	53	31	16
9	54	24	17
10	33	45	22
11	97	3	0
12	75	5	20
13	68	9	23
14	53	26	21

Some items are of particular interest and deserve comment. Question number 5 asked the parent whether or not the course content contained too many new and difficult ideas for the grade level of the child. Seventy-nine percent answered no to that question: the no answer here is considered the positive response in terms of attitude. The parents then judged the content of the course to be within the capability range of their children.

Another interesting question is number eleven. Question eleven asks the parent whether or not taking the World of Construction course would prompt the student to drop out of school in order to obtain "quick" income. The large majority of parents' answers reflect a positive attitude. Parents perceive the course as being relevant and at the same time one which does not prompt students to drop out of school.

Question number 10 is also of interest. The majority of parents did not view the program as being a determining factor in stimulating interest in construction type employment. The data are too meager to explore the implications of the parent's responses. It does appear, however, that the course content does not stimulate the interest of students in terms of making an occupational choice in the area of construction trades.

Generally the parent's response pattern indicates positive attitude toward the World of Construction program. This is especially apparent on question number 13 where 68% of the parents show a preference for their children to be in programs such as the World of Construction rather than the traditional "woodworking" type of industrial arts courses. The parents' comments are included in the appendix. Here again the favorable reactions of the parents are dominant. Some parents, however, continue to express the desire for their children to turn out a product. Some students were also critical of the program in terms of being too much "book work".

Another aspect of the parents' questionnaire should be noted. There were several questions on which the parents responded relatively high on the undecided category. This manner of responding suggests that in the future more active efforts will be made to inform the parents of the objectives of the program. The number of undecided responses suggest parent involvement procedures be stressed in future programs.

Summary and Recommendations

Evaluation of the "World of Construction" Program carried out in the Pontiac School District during the 1969-70 school year indicated that there were significant differences between the treatment group and control group. Students exposed to the curriculum learned significantly more about the construction industry than did students not exposed to the curriculum. However, further analysis of the test data indicated that within the treatment groups, there were several content areas that were not mastered by the students.

In general, parent and student reaction to the program was in the positive direction. The parent responses did suggest that the objectives of the program were not made clear to the parents.

The program has functioned to stimulate both thought and action within the schools and community. For example, a group of students who were involved in the program are now constructing a home in the city and plans are underway to build another home. Numerous visitors have taken back to their respective school districts, some of the ideas incorporated within the program.

The evaluation results point to some factors that should be considered in future programs of this sort.

Pacer analyses of pretest data should be carried out in order to provide teachers with feedback information early in the school year. This gives the instructor some idea of the entry behavior of his students. Curriculum modifications then can be made. Student and parent reactions can probably be ascertained with increased validity through use of an independent agent. There is also need to gain information from visitors to the program.

Without process evaluation data, it is difficult to provide information to the program director of needed changes. Such an evaluation needs to be implemented in future programs.

Considering that the program is a new one which departs significantly from former industrial arts programs, the "World of Construction" has been successful and should be expanded to include other schools within this system. The objective of establishment of a demonstration center was achieved and the evaluation further indicated that the objectives pertaining to attainment of knowledge of the "World of Construction" were met.

Merle Smith, Ph.D.

APPENDICES

QUESTIONS FOR STUDENT EVALUATION OF THE
INDUSTRIAL ARTS CURRICULUM PROJECT

"The World of Construction"
First Semester

1. When you were shown the slides on "The World of Construction" during the first week of school in September, did you feel you would like to study in this program?

   YES NO

2. Do you feel the things you have done and learned during this semester in this class were as interesting and exciting as what you originally thought?

   YES NO

3. Were the things you have done and learned this semester in this class as interesting and exciting as any other things you ever did before in industrial arts?

   YES NO I HAD NEVER TAKEN INDUSTRIAL ARTS BEFORE

4. Would you rather make projects such as gun racks, end tables and book ends instead of working with the tools and materials used in construction?

   YES NO

5. If you really knew at the beginning of the semester what you now know about this program, would you want to--
   (Check one box)

   ( ) A. start over and do a better job of studying?

   ( ) B. do it all about the same way again?

   ( ) C. do less studying?

   ( ) D. be placed in a different class?

6. Would you advise your best friend to enroll in the IACP Program?

   YES NO

7. Do you feel that what you studied in this class helped you understand what the construction industry is all about?

   YES NO

8. Do you feel that what you learned in this class helped you understand some of your other classes, such as mathematics, science, social science or English any better?

   YES NO

QUESTIONS FOR STUDENT EVALUATION OF THE

INDUSTRIAL ARTS CURRICULUM PROJECT

"The World of Construction"
Second Semester

1. Do you feel the things you have done and learned during this semester in this class were as interesting and exciting as what our originally thought?

   YES NO

2. Were the things you did and learned this semester in this class as interesting and exciting as any other things you ever did in industrial arts?

   YES NO

3. Are you pleased that you used the tools and materials of the construction industry rather than build projects such as gun racks, end tables and book ends?

   YES NO

4. If you really knew at the beginning of the semester what you now know about this program, would you want to--

   ( ) A. start over and do a better job of studying.

   ( ) B. do it all about the same way again.

   ( ) C. do less studying.

   ( ) D. be placed in a different class.

5. Do you feel that what you studied in this class this semester helped you understand what the construction industry is all about?

   YES NO

6. Has "The World of Construction" class helped you like school more this year than before?

   YES NO

   If you said YES to question #6, would you tell why this class helped you like school more this year.

   _____

   _____

   _____

7. Would you like to study more about some parts of "The World of Construction" in high school?

YES NO

If you said "YES" to question #7, what kinds of things from "The World of Construction" would you like to study more about in high school?

_____

_____

_____

8. Would you tell your best friend to take this class in "The World of Construction" next year if he had a choice to sign up for it?

YES NO

9. Did you have a good chance to find out what the construction workers were doing during the hard hat field trip?

YES NO

10. Did the kind of work and construction you saw during the hard hat field trip make sense to you because of what you studied in "The World of Construction".

YES NO

THE INDUSTRIAL ARTS CURRICULUM PROJECT

"The World of Construction"
Parent Questionnaire

1. Grade level of your child ___7 ___8 ___9 Sex of your child ___M ___F

   School in which your child is enrolled: ___Eastern ___Madison ___Jefferson

2. Do you feel your child has a more positive than negative attitude toward his/her experiences with "The World of Construction"? ___Yes ___No ___Undicided

3. Has your child shown a greater willingness to do homework in conjuction with "The World of Construction" then he would tend to do normally? ___Yes ___NO ___Undicided.

4. Do you feel the homework reading requirements for the "World of Construction" are unreasonable for the grade level of your child? ___Yes ___No ___Undecided

5. Do you feel the class materials for "The World of Construction" involve too many new and difficult ideas for the grade level of your child? ___Yes ___No ___Undecided

6. Would you rather have your child enrolled in the regular industrial arts "woodwork" class where projects like lamps, bookshelves and gun racks are made, than in "The World of Construction"? ___Yes ___No ___Undecided

7. Do you feel your child would rather be enrolled in the regular "woodwork" course than the "World of Construction"? ___Yes ___No ___Undecided

8. Does your child show more concern for the repair and maintenance of his home since his involvement in "The World of Construction"? ___Yes ___No ___Undecided

9. Does your child show more interest in the kind and location of buildings being constructed in Pontiac since his involvement in "The World of Construction"? ___Yes ___No ___Undecided

10. Has your child expressed greater interest in working someday in one of the building trades or related construction fields since his involvement in "The World of Construction"? ___Yes ___No ___Undecided

11. Do you feel the experiences of your child in "The World of Construction" will cause him to drop out of school before graduation to seek a "quick" income? ___Yes ___No ___Undecided

12. Do you feel "The World of Construction" curriculum is a move in the right direction for junior high school industrial arts programs? ___Yes ___No ___Undecided

13. Would you recommend to other parents that their children should be enrolled in "The World of Construction" rather than a "woodwork" class in industrial arts? ___Yes ___No ___Undecided

14. Do you feel all of the Pontiac junior high schools should change their present industrial arts "woodwork" classes over to be "The World of Construction" classes? ___Yes ___No ___Undecided

You are encouraged to write comments concerning "The World of Construction" on the back of this questionnaire.