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ABSTRACT

The evaluation report is one of seven produced for the Occupational Exploration Program (OEP), a series of simulated occupational experiences designed for junior high school students. Describing the pilot testing of the simulation dealing with product services, the report contains sections describing the simulation context, evaluation procedures, results, and a Reviser's Information Summary (RIS). In the simulation dealing with bench electrical repair, students had the opportunity to repair defective transistor radios, provide supplies to product service personnel, or direct other product service workers. Occupational roles included foreman, repairman, and supplyman. The experimental design involved two Colorado schools, with a total of four experimental and four control groups involving 87 eighth and ninth graders. Instrumentation included knowledge and affective testing, student and teacher questionnaires, and a panel review. Analysis of variance and other descriptive statistics were employed, and reliability estimates were calculated. Analysis of variance results revealed that the simulation had a positive impact on both the student's occupational knowledge and occupational preferences. The RIS records and extrapolates trends related to the strengths, weaknesses, and recommendations from all data sources. Appended materials include the evaluation instrument used and the observer form. (MW)

PRODUCT SERVICES MODULE

AN EVALUATION REPORT FOR THE OCCUPATIONAL EXPLORATION PROGRAM

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ABSTRACT

PRODUCT SERVICES

EVALUATION REPORT FOR THE OCCUPATIONAL EXPLORATION PROGRAM

By: James W. Altschuld; Janice Lave; Roger Brown; Sandra Pritz

This report is one of seven evaluation reports produced for the Occupational Exploration Program. The Occupational Exploration Program (O.E.P.) is funded by the National Institute of Education and is a joint development effort of The Center for Vocational Education (The Ohio State University) and the Jefferson County, Colorado public schools. O.E.P. is a series of experiences designed to provide junior high school students with the opportunity to explore occupations. One of the major vehicles for exploration is the simulation technique. In 'FY' 1974,12 simulations were developed and seven of those twelve were pilot tested. This report describes the pilot testing of the simulation dealing with Product Services. The report contains sections describing simulation context, evaluation procedures, results and a Revisor's Information Summary (RIS). The RIS is useful for a variety of purposes and includes the strengths of the simulation as well as its weaknesses. Below is a synopsis of the specific content of the report.

SIMULATION CONTEXT: The situation in this simulation deals with bench electrical repair. Students have the opportunity to repair defective transistor radios, to provide supplies to product services personnel, or to direct other product services workers. The occupational roles included are: foreman, repairman, and supplyman. EXPERIMENTAL DESIGN: For evaluating this simulation, 4 schools, two from Jefferson County, Colorado and two from Denver, Colorado were used, each school having one experimental and one control group. A teacher facilitated the implementation of the simulation with each experimental group. The experimental and control groups consisted of 8th and 9th graders; 39 students in the four experimental groups and 48 students in the four control groups. A modified laboratory or quasi-experimental setting was utilized for product tryout. INSTRUMENTATION: A 33 item multiple choice knowledge test, "What Do You Know?", and a 6 item affective test, "What Do You Like?" were administered as pre- and posttests measuring student knowledge gain and attitudinal change. The student post module questionnaire, "What Do You Think?", administered to the experimental group after completion of the simulation, measured student perceptions of the module. Two teacher questionnaires and one panel review were designed to obtain teacher perceptions of the simulation. Observers were utilized to collect additional information about module implementation. ANALYSIS: The knowledge test and affective test results were derived through analyses of variance. Other descriptive statistics were employed where appropriate (i.e., frequency, percentage, percent change). Reliability estimates were calculated to obtain the internal consistency estimates of the knowledge tests and to determine inter-coder and intra-coder for the attitude scale. RESULTS: The ANOVA results reveal that the simulation had a positive impact on 1) student knowledge in the product

services field ($p \leq .05$) and 2) student occupational preference ($p \leq .01$). This is also corroborated by student and teacher comments collected from questionnaire data. REVISOR'S INFORMATION SUMMARY: The RIS was designed to not only assist revisors to assimilate information collected during the pilot-test, but also as a unique way of summarizing the data. The summary is a record of the strengths, weaknesses and recommendations for revisors from all data sources (i.e., student tests, student questionnaires, observer forms, teacher questionnaires, etc.). Trends have been extrapolated which list the most apparent strengths and weaknesses as well as recommendations to be considered in the revision of the simulation.

Acknowledgements

An evaluation report is usually a product of the endeavors of many individuals. The authors of this report therefore wish to thank:

1. Patricia Shively for helping in the development of all of the instrumentation used in the evaluation of this module;

2. The teachers, administrators, and students in Jefferson County, Colorado and Denver, Colorado who, by participating in the use of educational materials and in the testing of those materials, made this evaluation report possible;

3. Jon Schaffarzick, Michael Hock, and David Hampson of the National Institute of Education for their support of this effort; and

4. The twelve project staff members identified on the cover, who, by their support, expertise and/or direction contributed to the production of this report.

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PRODUCT SERVICES MODULE

I. Brief Description of the Module

The purpose of this simulation is to introduce students to some of the occupations in the product services field. Product services has been defined as an extension of the manufacturing process which provides for the installation, maintenance, alternation, and repair of man-made items. Specifically, this module deals with the phase of product services known as bench electrical repair. There are nine parts in this simulation: an introduction to the simulation, a preview, a preparation, five tasks and a summary.

In the Preview,* students read the Preview Handbook and are introduced to the product services' industry. They learn that product services is an extension of the manufacturing and marketing process, and that installing, maintaining, repairing, and altering are the four types of work within product services. The students are told that in this simulation they will have the opportunity to either repair transistor radios, provide supplies to product services personnel, or direct workers.

All students who elect to participate in this simulation then proceed to the Preparation Phase. Students first read the Preparation Handbook and learn about the three jobs within the module: repairman, supplyman, and foreman. They then fill out job applications using the information on the job qualification cards included with the activity and personal information from their own lives.

*Prior to the preview, the students have seen a slide-tape and/or read a booklet entitled Introduction to Simulation.

Next, the students view the videotape "Interviewing". Students then proceed by giving their applications to the personnel manager of the Product Services Company who is played by their teacher, and actively interview for the position. After interviewing each applicant, the personnel manager decides who will fill each role. (The teacher is advised to choose foremen with leadership abilities since the flow of the simulation is dependent upon their competence. In addition, it is suggested that the teacher combine both good readers and non-readers in the repair teams.)

After students are selected into the roles, they begin the major tasks of the simulation. The first task is Role Preparation. The students prepare to assume their roles by reading the "Job Description" section of the Product Service Company Manual. The students become aware of their duties in the simulation, the procedures to be employed, and their actual job assignment.

After reading the "Job Description" section of the handbook, the students proceed to the next task, Parts Identification. Before they can effectively assume their roles, the students need to learn the names and uses of the various tools and electrical parts which are included in the simulation. The students are teamed in pairs and read the "Parts Identification" section of their manual. Working in pairs with flash cards, they learn to recognize parts and tools by name.

After students have learned to identify the parts and tools, they proceed to the next task, Testing the Multimeter. The students commence the task by reading the section "Using the Meter" in the Company Manual. In this section, the students learn about the function and operation of a multimeter. They are given both voltage test panels from which they learn to take voltage measurements and resistor test panels from which

they learn to take resistance measurements.

After the students have learned to operate the multimeter and take accurate measurements, they proceed to the next task, Soldering. The students begin this task by reading the "Soldering" section in their company manual. In order to repair electrical devices, the student must learn how to make good connections using solder. In a step-wise fashion, the students are given directions on how to solder correctly. After completing the soldering exercise, students check their work by taking multimeter measurements. Depending upon the meter reading, the students either correct faulty soldering or proceed to the next task.

When the correct readings on the resistors are obtained, the students proceed to the next task, Troubleshooting. In this task, the students simulate the operation of a product services company and actually repair defective transistor radios that have been supplied. In this task, the foreman is responsible for: 1) correctly tagging the radios, 2) checking the work flow of the repair team, 3) answering business letters, 4) checking repaired radios, 5) computing the cost of each radio repaired using the manual's "Repair Cost Policy" section, 6) completing the warranty for the radio, 7) providing assistance to the repairmen and supply personnel and, 8) returning repaired radios to supply for shipping.

The supply person is responsible for: 1) providing the parts and tools needed by the foreman and repairmen, 2) the inventorying of all tools and parts, 3) ordering needed parts, 4) delivering mail to the foreman, and 5) completing the shipping lists and bills for orders.

The repair person is responsible for: 1) troubleshooting and repairing defective transistor radios, 2) completing a repair record for the radio

repair task, and 3) completing parts request forms. When all radios are repaired, the foreman computes job costs and the supplyman completes the final inventory of tools and parts. When this task of the module is completed, the student may go on to the summary activity.

In the Summary, the students first share their experiences and personal feelings about the simulation in a formal meeting which is chaired by one of the module's participants. The students and/or teacher has the option of inviting another class or group of students to the meeting. The purpose of the second part of the summary is to acquaint students with the D.O.T. (Dictionary of Occupational Titles) since it is perceived as a valuable source of career information for students to become acquainted with.

The following table presents the estimated time requirements needed for each activity in the module.

TABLE 1 - Estimated Time Required for Simulation Components

ACTIVITY/TASK	ESTIMATED TIME IN CLASS PERIODS*
Introduction to Simulation	1
Preview	1
Preparation	1 - 2
Role Preparation	1/2 - 1
Parts Identification	1/2 - 1
Using the Meter	1 1/2 - 2
Soldering	1
Troubleshooting	3
Summary	3
Total	12 1/2 - 14 1/2

*A class period is assumed to contain approximately 45 minutes.

II. Description of Evaluation Procedures Employed

A. Specific Sample Used

1. Schools - For this module two Jefferson County and two Denver schools were used. In each school there was one experimental and one control group. The schools and the teachers were selected via discussion with administrators and teachers in each of the districts. A brief description* of the schools follows.

Alameda Junior High School (Grades 7-9), Jefferson County.

Alameda Junior High School is a small school with approximately 700 students in grades seven through nine. It seems to have a fairly stable school population in that school records indicate that over seventy percent (72%) of the ninth grade population have been in this particular school for three consecutive years. Additionally, very few of the ninth graders have attended more than two elementary schools. Lorge-Thorndike tests administered at the school indicate a fairly normal distribution of student ability. The distribution of parental occupations shows that 48 percent of the mothers are working and that almost 54 percent of the fathers are in managerial, professional, or skilled positions. The school population is primarily caucasian (93 percent) with the remaining seven percent coming from other minority groups.

*Descriptions were obtained by John Radloff of the Jefferson County project staff.

Wheat Ridge Junior High School (Grades 7-9), Jefferson County.

Wheat Ridge Junior High School is a small school with approximately 725 students in grades 7-9. Twenty students are classified as mentally retarded. Generally, the school draws its student body from a middle class, blue collar area. About 30 students come from families receiving Aid to Dependent Children (ADC) and many students are from divorced homes. The area of Jeff Co. represented by this school has many older single family houses. There is a sizeable retired subgroup within the area population. The students are primarily white (93%) with the rest (7%) having Spanish surnames. The school reports that standardized tests results indicate that school scores are improving and that it is either at or above district norms in most cases.

Hamilton Junior High School (Grades 7-9), Denver.

Hamilton Junior High School is a large school with approximately 1,600 students enrolled in grades seven through nine. The area served by the school is quite large and over sixty percent of the students at Hamilton are bussed in each day. The students generally come from the middle income range but there are some students from upper income areas. Student achievement seems to be relatively high. (According to the assistant principal, over half of the seventh grade students maintain a B or higher academic average.) The racial make-up of the school is estimated to be 80 percent caucasian and about 20 percent in minority groups. Further specification of the population was not available for this school.

Lake Junior High School (Grades 7-9), Denver

Lake is a large Denver junior high school with well over a thousand students. Although demographic data was not available at the time of this writing several factors about the school are known. First, it has a sizeable percentage of students with Spanish surnames. Secondly, in general Lake has a high rate of absenteeism. (As soon as additional data becomes available, it will be appended to this report.)

2. Teachers

In each of the four schools, one teacher implemented the module with the experimental group of students. The following table contains a brief description of the experimental group teachers, the number of years of teaching experience, and the method by which they participated in the study.

Table 2 - Description of Experimental Teachers

	Alameda	Wheat Ridge	Hamilton	Lake
Sex	Male	Female	Male	Male
Subject Area Specialty	Counselor	Media Specialist	Social Studies	Audio-Visual
Had prior experience with simulation techniques	Yes, as teacher	Yes, as a participant	Yes, as teacher and participant (OEP Education Module)	No
Number of years teaching experience	13	16	6	23
Participation selected/or volunteered	Volunteered	Volunteered	Volunteered	Selected

3. Students

In the following table the number of students participating in the experimental and control groups by school and by sex are presented. The results show that males were in somewhat greater proportion in the experimental group, whereas the female ratio was greater in the control group.

Table 3 - Frequency* of Experimental and Control Participants by School and Sex

School	Alameda		Wheat Ridge		Hamilton		Lake		Total	
	Experi-mental	Control	Experi-mental	Control	Experi-mental	Control	Experi-mental	Control	Experi-mental	Control
Males	6	8	5	7	6	1	5	3	22	19
Females	2	5	5	5	2	17	3	2	12	29
Total	8	13	10	12	8	18	8	5	34	48

*Frequency is based on participants with complete pre- posttest data.

The experimental group participants were selected or volunteered from the following classes: Alameda - eighth grade students chosen randomly from Language Arts Class; Wheat Ridge - eighth grade students volunteered from art, science, and language arts classes; Hamilton - nine grade students volunteered from study hall; and Lake - ninth grade students volunteered from a drama class.

At Alameda, the teacher felt the students were of average ability. At Wheat Ridge, the students appeared to be a heterogeneous group with student reading ability ranging from high to low. The students were highly motivated and had better than average interest. The teacher

commented that there was one student who was a behavioral problem in the group. At Hamilton, the teacher described the class as being one of good readers but non-vocal. The teacher from Lake Junior High felt the students there were generally above average scholastically and able to handle the vocabulary in the module.

The method by which the control groups were obtained is not totally clear.* In the testing of 4 modules in the Spring of 1974 it was not feasible for one individual to administer the tests. Therefore in each school either the experimental group teacher or another educator selected and administered the tests to a control group. It was suggested that testers try to select or sample students similar to those in the experimental group, i.e., if the experimental group was an English class then the tester was instructed to obtain a second English class for the control group. It is assumed that, to the extent possible, these directions were carried out. (Referring to Table 3, this may not have been possible at Hamilton since a significantly larger proportion of females were selected.)

In summary, the sampling was far from ideal. It was impossible to conduct more systematic sampling due to program and organizational constraint within buildings. It should be noted that experimental results are based only on students who completed both the pre- and posttest. There was sample loss in the testing of the module as described in the following table.

*The time and monetary allocations for the pilot test precluded the use of extensive checks on the sampling procedures in the field.

Table 4 - Frequency and Percent of Sample Loss by Group

	Original Total	Sample Loss	Percent of Total
Experimental	35	1	2.9%
Control	69	21	30.4%
Total	104	22	21.1%

Sample loss is always difficult to account for in an experimental situation. Some students may have been sick or otherwise out of the classroom during the pre- or posttesting time. Some students may simply have avoided taking the test.

The sample loss in the experimental group is relatively small. However, the sample loss within the control group is considerably higher and far from ideal. When comparing the n's of both groups, the high sample loss within the control group loses some significance since the number of subjects in the control group is greater than those in the experimental group (see Table 4). After considering all factors, it is suggested that the sample loss will not affect the validity of the results. Therefore, efforts will not be made to study it in detail.

II. B. Types of Classes or Groupings

Knowledge of the type of class or group setting in which the module has been tried is important information in regard to interpreting the module results. For the 4 modules tested in the Spring of 1974 a modified laboratory setting was utilized. Either a classroom or a space within a library was set aside for use by students participating in the module. When necessary, special equipment (e.g., video tape machines, sound on slide projectors, etc.,) was provided and if possible, stored in the space designated for the project. It was felt that this specialized area would tend to:

- reduce the number of competing or distracting factors for the simulating group;
- be representative of one way in which a school could implement the OEP program;
- reduce the necessity to move equipment around from period to period; and
- provide a place for students to store materials from one simulation day to the next.

All experimental groups were conducted in this specialized or quasi-experimental type of setting. Testing was also generally carried on within this setting.

II. C. Experimental Design as Implemented.

There were two constraints surrounding the implementation of the design as specified in the proposal for this module. Given the relatively small sample size a decision was made not to include sex as a variable. This eliminates the possibility of studying the test scores of males and females, but inclusion of this variable would so reduce the cell size as to make meaningful interpretations difficult at best. The second constraint concerns the way in which the field test design was implemented. Four schools were tested, two classrooms or groups per school. Within each school one group served as the experimental treatment and the other as the control treatment. It is apparent that no estimates of between class variability can be computed and that any unique classroom effects are confounded with treatment effects. However, the test of treatments and associated interactions is assumed to valid.* The design is depicted schematically in Figure 1 on the following page.

*This statement is based on the presumption that there were no unique classroom effects, one that is supported in earlier field trials. The reader should note that this design was implemented only after consideration was given to the practical aspects of implementing the design. It was the most feasible one given the field situation.

Figure 1 - Schematic of the Experimental Design for the Product Services Module

		Pretest	Posttest
Alameda (Jefferson County)	Experimental	S_1 ⋮ S_n	S_1 ⋮ S_n
	Control	S_1 ⋮ S_n	S_1 ⋮ S_n
Wheat Ridge (Jefferson County)	Experimental		
	Control		
Hamilton (Denver)	Experimental		
	Control		
Lake (Denver)	Experimental		
	Control		

*In order for a student's scores to be included in the analysis, he would have had to participate in both the pre and posttest.

The analysis will be the same as designated in the project proposal for the Occupational Exploration Program (FY'74) with the exception that the sex variable has been deleted and two schools were added. Of key interest will be the interaction between the experimental-control variable (B) and the pre- and posttest variable (C). If the module has had an impact upon students, a significant interaction would be expected with the source of the interaction being a sizeable experimental group gain on the posttest. Separate analyses will be run for the total cognitive test scores as well as for one dimension of the attitudinal scale. The analyses will be in accordance with the abbreviated summary table shown on the following page.

Table 5 - Partial Anova Summary Table
for the Product Services Module

Source		df	Potential F Test
Between Students		abn-1	
Term No.			
1	A	a-1	1/4
2	B	b-1	2/4
3	AB	(a-1)(b-1)	3/4
4	D/AB	ab(n-1)	
Within Students		abn(c-1)	
5	C	c-1	5/9
6	AC	(a-1)(c-1)	6/9
7	BC	(b-1)(c-1)	7/9
8	ABC	(a-1)(b-1)(c-1)	8/9
9	CD/AB	ab(c-1)(n-1)	
	TOTAL	abcn-1	

The independent variables for this module are as follows:

Variable	Description	Type
A	Schools (Alameda, Wheat Ridge, Hamilton and Lake)	Fixed; between S's
B	Treatment (experimental vs. control)	Fixed; between S's
C	Testing (pre. vs. post)	Fixed; within S's (repeated measure)
D	Students	Random; nested within AB combinations

II. D. Instrumentation - Instrument Specifics

1. Knowledge Test - What Do You Know? (The test is appended to this report)

The knowledge test for the Product Services Simulation consists of 33 multiple choice questions. Most of the questions contain 4 response options each. All questions receive equal weighting - 1 towards the total if an item was answered correctly and 0 if answered incorrectly or if no response was given - setting the range of test scores from 0 to 33.

Generally, the questions are at a low comprehension level with respect to the Bloom Taxonomy. Three basic dimensions are emphasized in the test-skills/requirements, responsibility, and process. An example of a skills/requirements question is as follows:

Test Question #31

Otto Sight is an outgoing person who has spent three years in the service doing repair work. What type of product service work would best suit him in civilian life?

a. Working in a product services company repairing products.
*b. Installing and maintaining products in customer's homes.
c. Keeping track of supplies for a product services company.
d. Making diagrams of products for use in repair work.

Skills/Requirements questions generally deal with the basic abilities or attributes required to function properly in various roles or jobs within a product service company.

Responsibility questions, on the other hand, generally deal with which individual or group has the responsibility for getting a certain job done or who has responsibility for making decisions at a certain point in time, etc.

*Indicates correct answer

An example of a responsibility question is given below.

Test Question #27

Which of the following duties is the responsibility of supply personnel in a product services company?

a. Determining parts needed for repairing a product
*b. Completing shipping lists for parts
c. Determining costs for repairing a product based on parts used
d. Keeping track of what parts were used to repair a product

The third type of questions on the Knowledge Test regards the process dimension. Process questions concern understanding the nature of steps involved in doing work such as operating a product services company, understanding what information might be necessary to perform a certain function, etc. The following is an example of a process question.

Test Question #16

The first step in servicing a product is

a. Locating the problem(s) in the product
*b. Labeling the product with the owner's name
c. Cleaning the product
d. Repairing the product (including parts replacement)

The following table shows the breakdown of test items by test content and by the process, responsibility and skills/requirement dimensions. The content has been subdivided into two areas: general considerations and specific occupations. The test was designed to cover most of the major aspects of the content present in the module.

*Indicates correct answer

Table 6 - Analysis of Test Content

Content Area	Process	Responsibility	Skills, Requirements	Total
General Considerations	15			15
Specific Occupations				
Foreman		4		4
Repairman	3	1	5	9
Supplyman		2	3	5
Total	18	7	8	33

2) Affective Test - What Do You Like? (The test is appended to this report).

The affective test was designed to measure student attitudinal change. The first six questions asked the student if he/she would like to try doing an activity. The student could respond in one of four ways to the item:

1) Yes, I would like to try this
2) No, I would not like to try this
3) I'm uncertain about trying this
4) I don't have enough information to know if I would like to try this.

The scale is scored so that the stronger the preference for trying to do an activity, the higher the score. Thus, yes and no responses receive the same scale value of 3, uncertain responses receive a 2, and not enough information types of responses receive a value of 1. These values are then summed and used in the analysis of variance described earlier. Summed scores can vary from zero (no response whatsoever) to 18. Note the scale is scored so that strength of preference, rather than direction of preference is the important factor (i.e., yes and no responses, while being in opposite directions, represent the same strength of preference and therefore receive the same score).

In addition to the scaled responses, students were encouraged to state reasons for their preferences. These reasons were classified and, in conjunction with the scaled responses, were coded and transferred to machine scorable forms. Inter-rater and intra-rater agreement checks were made on the scoring process (See results section). The last question of the "What Do You Like?" test asked the student to imagine himself/herself as

a Product Services Employee and to give advice to another person by indicating what kind of experiences or activities might help him/her prepare for a job in the Product Services Industry (This question was used on a preliminary trial basis. The open-ended responses were classified and coded, but will not be reported in this document.)

3) Student Post Module Questionnaire - What Do You Think? (The Questionnaire is appended to this report).

This questionnaire was administered to students in the experimental group after their completion of the module and its posttest. The questionnaire was designed to measure student perceptions of the module.

The first twenty questions on this questionnaire were forced choice in nature -- the student could either agree or disagree with the statement posed in the stem. The twenty questions covered the following 4 areas:

- perceptions of specific module parts (questions 1-7);
- general understanding and ability to follow directions (questions 8-13);
- implementation or pacing of the module (questions 14-16); and
- perceptions about learning (questions 17-20).

Besides the first twenty questions there were twelve additional questions. Three of these were "check" questions designed to provide some probable indication of scale reliability. The rest of the questions were open-ended and asked the student to supply short answers or recommendations for improving the simulation. Examples of areas covered by these questions include: role(s) played; things liked most about the simulation; things liked least about the simulation; new interests discovered through the simulation, etc. These questions will be summarized and included on the Reviser's Information Summary (RIS).

4) Teacher Questionnaires (The questionnaires are appended to this report).

Basically, two questionnaires were used for testing this module. The first, the Midway Questionnaire, was completed by teachers approximately half-way through the module. This questionnaire was filled out just prior to a mid-module panel review of the first half of the module. The questionnaire was designed to cover the initial elements of the simulation, i.e., the Introduction to Simulation materials, the Preview, the Preparation Phase, the first initial tasks, and the teacher's overall perceptions up to the midway point. The questions deal with concerns about technical quality, fit or integration with other sections of the module, appropriateness of recommended time allotments, problems encountered, recommendations for change, etc. The questions were primarily on a five point scale with space for open-ended comments frequently provided.

At the end of the module and prior to the post module panel review, teachers completed the General Module Evaluation. This questionnaire was similar to the Midway Questionnaire, except that its content pertained to the last tasks and summary phase of the module and to the teacher's perceptions across the entire module. It also contained questions dealing with student and teacher background. Generally, it was administered at the post module panel review session. The questionnaire would require about 25-30 minutes to complete.

In conjunction with the two questionnaires just described, two optional forms were provided to teachers. These were the Media Checklist and the Daily Inventory of Percpetions (DIP). The Checklist was simply a form that teachers could use if they so desired to record their feelings about media used in the simulation. The DIP was an open-ended diary form available for those teachers who were willing (or wanted) to keep daily notes about the simulation.

Data from the two questionnaires and the optional forms, if completed, will be summarized and reported in the Reviser's Information Summary.

5) Teacher Module Panel Review

As suggested above, teachers who participated in the pilot test and taught the module were convened for one post-module panel review. For each section of the module, the reviewers were asked to denote the strengths and weaknesses, the classroom solutions applied to overcome weaknesses, and recommendations for revision. The main reasons for the panel were as follows:

- the panels were a means of obtaining fresher or more recent teacher observations;
- two shorter panels rather than a longer, more tedious panel would tend to reduce teacher fatigue;
- the panels decreased the need for longer questionnaires.

As in the case of the first three modules tested in the Fall of 1973, panel reviews were conducted in accordance with the panel review guidelines generated for the nationwide CCEM project. A member of the panel kept detailed notes and after the panel prepared written panel review reports. These are included in this document and will be summarized on the RIS.

6) Observer Form (The form is appended to this report.)

For this pilot test observers were utilized to collect additional information about module implementation. Observer data was collected for all schools with the exception of Lake Junior High School. At Alameda and Hamilton Junior High Schools only one observer for the entire module was needed. At Wheat Ridge Junior High School it was necessary to employ two observers. The four observers were women, two of whom had college degrees and two of whom had high school diplomas. The background and ages of the

observers varied considerably. The forms the observers used were a mixture of checklist and open-ended formats. Three basic areas were covered: media; general comments; and interaction and activities. The observations that were made were reviewed, collated, and summarized for the RIS.

A. 1. Knowledge Test: Internal Consistency

Internal Consistency (K.R. #21)
By Total Groups and Testing Time
For Total 33 Item Test

Group \ Testing Time	Pretest	N	Posttest	N
Total Experimental Group	.49	34	.55	34
Total Control Group	.53	48	.75	48
Total (Exp. and Cont.) Group	.53	82	.71	82

Interpretations/Comments

In Table A., the internal consistency estimates of the pretest and posttest results are described by experimental, control, and total group breakdowns. The experimental and control groups showed approximately the same pretest reliability. The reliability coefficient (.55) for the posttest experimental group is slightly higher than its corresponding pretest reliability (.49). One possible interpretation for the slight change is that the test reliability increased due to the effects of prior testing. The posttest reliability was moderate (.55) perhaps due to one or a combinations of the following factors: 1) the sample size (n=34) was too small in proportion to the number of items on the test (n=33); 2) to begin with, the student grouping was homogeneous in that students had similar understandings of the occupational content of the module; and/or 3) the knowledge imparted by the module about product services occupations may have decreased the range of variability within the group.

In contrast, the reliability coefficient (.75) of the control group was considerably higher than its corresponding pretest reliability and the experimental group's test results. Although this is difficult to interpret, one source of the gain may be that the reliability increased due to the effects of prior testing.

When looking at the total group posttest reliability, it is apparent that when administered to a heterogeneous population, the knowledge test is moderately reliable and that the test results can be interpreted with a reasonable degree of confidence.

A. 2. Knowledge Test: Validity

See Reliability Table for upward bounds or estimates of potential validity coefficients. (These would be equivalent to the square root of the reliability coefficients.)

Interpretation/Comments

Although no direct attempt was made to develop strategies or methods for determining validity, certain factors which would contribute to test validity should be kept in mind. First, in test development, care was taken to eliminate items which were not occupationally oriented. Items dealing with trivial detail were omitted. Secondly, several individuals reviewed the drafts and final version of the test. The test was considered to have reasonable face validity.

Other types of validity such as predictive, concurrent, construct, etc., were beyond the scope of this pilot test. For example, if a factor analytic study was attempted in order to determine construct validity, the values derived would be questionable with the sample size used in the pilot test.

A. 3. Knowledge Test: Total Score Results

Group Means and Standard Errors
By Total Groups and Testing Time
for Total 33 Item Test

Group \ Testing Time	Pretest			Posttest			
	Mean	S.E.	N	Mean	S.E.	N	Gain
Total Experimental Group	15.1	2.8	34	17.1	2.8	34	2.0
Total Control Group	13.6	2.8	48	14.2	2.7	48	0.6
Total (Exp. and Contr. Group	14.2	2.8	82	15.4	2.8	82	1.2

Interpretation/Comments

The standard error test statistics reported in Table A. 3 reveal that the knowledge test was operating similarily in all groups despite any mean score differences. The test results show that there were differences in mean scores obtained by the experimental and control groups. First, there are moderate pretest differences between the two groups. Secondly, posttest gains were obtained by both groups; however, the experimental group showed a sizeable pre- posttest gain of 2.0 points while the control group's gain was 0.6 points. Although the experimental group showed a larger gain, the reader should take into account the initial pretest differences when interpreting the test results. (The ANOVA results will be reported in Table F. 1.)

Other test statistics, not found in this table, reveals that generally the test items were good discriminators with the mean item difficulty being .53 and the mean item discrimination being .39. However, there were 8 (24.2%) of the 33 items which did not discriminate as well as expected of "good" test items. The gain observed for the 33 item test may have been larger if these items had worked better.

A. 4. Knowledge Test: Subtest Results

Subtest Means and Standard Deviations
By Total Groups and Testing Time

Testing Time		Pretest			Posttest			
Group	Sub* Test	Mean	S.D.	N	Mean	S.D.	N	Gain
Total Experimental Group	A	2.9	1.1	34	3.5	1.1	34	0.6
	B	3.5	1.4	34	3.9	1.6	34	0.4
	C	8.7	2.7	34	9.7	2.6	34	1.0
Total Control Group	A	2.8	1.3	48	3.2	1.5	48	0.4
	B	3.0	1.7	48	3.1	1.7	48	0.1
	C	7.8	2.9	48	7.9	3.7	48	0.1
Total (Experimental and Control Group)	A	2.8	1.2	82	3.3	1.3	82	0.5
	B	3.2	1.6	82	3.4	1.7	82	0.2
	C	8.2	2.9	82	8.7	3.5	82	0.5

*SubTest A = 8 Skills/Requirements Items
SubTest B = 7 Responsibility Items
Subtest C = 18 Process Items

Interpretation/Comments

In Table A.3, the overall gain in Knowledge Test scores was depicted. In this table, (A.4) the scores are partitioned in accordance with the subtests included in the total test. As indicated in the table, there is little pretest difference between the experimental and control groups' results for subtest A, the skills and responsibility items. There are pretest differences, however, for the remaining two subsets of items with the experimental group having larger mean scores.

Most of the pre- posttesting gain is found within the experimental group. This gain is somewhat larger in the subtest dealing with skills and responsibility (9% increase) and evenly distributed (6% increase) for subtests B and C although the number of items varied considerably (i.e., from 7 items on subtest B to 18 items on subtest C). If the subtests had been evenly balanced with respect the number of questions, the results might have been stronger or more pronounced than the observations made in this pilot test. At any rate, the module did deliver cognitive content to students who participated in the module.

Based upon the information provided by the subtests and other module data, the revisor (and evaluator) should clarify the major focus or intent of the simulation. Namely, whether or not the module should be more or less heavily directed toward the operational process involved in a product services company, the skills and/or requirements needed by workers for divergent jobs, and/or the responsibilities of individuals, or groups of workers within the field of product services.

B. 1. Attitude Scale: Reliability

Inter- and Intra-Coder Percentage Agreement for Randomly Selected* Tests (Questions 1-7)

Type of Agreement	Percent Agreement
Inter-Coder	95%
Intra-Coder	96%

*n = 12 test booklets randomly selected from groups tested.

Interpretaion/Comments

The figures in the table were devised by a) dividing the total number of disagreements in coding between two coders by the maximum number of responses coded (inter-coder reliability), and b) dividing the total number of disagreements in two sets of codings given by the same coder by the maximum number of responses coded (intra-coder reliability). Very few differences between coders or codings were observed. For questions 1-7 on the education attitude scale, as can readily be seen from the table, there is a high degree of agreement between two independent coders (inter-coder reliability).

Thus, reliability of the scoring for the attitude scale was achieved. (Reliability of the scale itself has not been measured in that the scale consisted of only 7 items. Reliability estimates of such a brief scale with a relatively small sample would not be too meaningful).

B. 2. Attitude Scale: Validity

DATA

NOT

AVAILABLE

Interpretation/Comments

Data regarding the validity of the scale was not collected in the pilot test. The scale, however, was reviewed by staff members who were familiar with the content and goals of the module. Changes were made in accordance with comments they made about the scale. Thus a measure of face validity was achieved. (Also see the discussion of the ANOVA results for the attitude scale, Table G-1).

B. 3. Attitude Scale: Preferences

Means (Strength of Preference)* by Group and Testing Time (For Questions 1-6)

	Pretest	Posttest
Experimental	15.1	16.9
Control	15.5	15.6

*These were 6 questions each with scale value of from zero (no response) to a strong preference value of 3 (yes or no). Hence the scale range is zero to 18.

Interpretation/Comments

From pretest to posttest, the experimental group increased their strength of preference from 15.1 to 16.9 (+1.8) while the control group's strength of preference remained relatively the same. Given the magnitude of the experimental group's change, it can be implied that participation in the module did have some effect on the students attitudes. The ANOVA results for the attutude scale are discussed later in Table G. 1.

4. Attitude Scale: Type of Reason

Combined Frequency and Percent of Job preference Reasons* by Group and Testing Time For the First Six Questions.

		Pretest		Posttest	
	Reason	f	%	f	%
Experimental Group	1	49	37%	51	50%
	2	28	21	28	27
	3	1	1	0	0
	4	8	6	4	4
	5	8	6	1	1
	6	2	2	1	1
	7	3	2	3	3
	8	19	15	5	5
	9	9	7	9	9
	10	4	3	0	0
Control Group	1	100	60%	58	38%
	2	2	1	30	20
	3	1	1	3	2
	4	22	13	10	6
	5	2	1	1	1
	6	5	3	5	3
	7	1	1	4	3
	8	12	7	21	14
	9	20	12	18	12
	10	1	1	1	1

*Reasons were classified into ten categories:

1. Enjoyment (liking, fun, interest)
2. Past Experience
3. Financial Reasons
4. Desire to learn new things, new experiences
5. Ability to do or not to
6. Desire for responsibility
7. Altruistic (desire to help)
8. Repetitious answer
9. Other reasons
10. Misunderstood Question

Interpretation/Comments

Several trends are revealed in this table. First, there was a decrease in the overall frequency of student responses from pre- to posttesting. The total number of the experimental group's responses decreased from 131 to 102 (22%) while the control group's responses decreased from 166 to 151 (9%). The decrease in students' responses perhaps can be attributed to a decline in student interest in responding to the test items due to prior testing. Secondly, within response categories, there was some shifting in types of reasons given by students. The proportion of experimental group's responses to reason #1, enjoyment, and reason #2, past experience, increased from pre to posttesting. In contrast, the control group's responses decreased for reason #1., enjoyment, but increased for reason #2, past experience. It is difficult to speculate why the change in the control group's reasons occurred. It is possible to imply that participation in the module could have increased the experimental group's responses for reason #2, (although the decrease in response frequency makes this interpretation tenuous at best), but no explanation is apparent for the control group's shift in response pattern. The reader should be made aware that the changes in the percentage of student responses for each reason could be attributed to the decrease in the overall frequency of student responses from pre- to posttesting.

1. Student Questionnaire: Reliability and Validity

Frequency Check of Student Responses Concerning Amount of Information Learned About Jobs From The Simulation by Comparison of Question #17 with Question #21

Question #21: How much did you learn about jobs in this field of work from the simulation?

Question #17: I learned quite a lot about jobs in this field of work.

	Very Little	Little	Average	Much	Very Much
Agree	0	0	11	6	7
Disagree	0	2	6	0	0

Interpretation/Comments

The Student Questionnaire was administered to experimental group students after they had completed the module. Since there was only one test administration, the use of a test-retest coefficient was not possible. Furthermore, the questionnaire consists of many different types of questions (including open-ended questions) regarding various aspects of the simulation experience. The meaning of internal consistency coefficients calculated for this type of instrument would be extremely questionable and hence they were not utilized.

To the end of assessing reliability several "check" questions were included in the questionnaire. One set of "check" questions was question #17 and #21. These questions measured the amount of information students felt they learned about occupations in the product services field as a result of participating in the simulation. When questions #17 and 21 are compared, the results show a high degree of consistency in response pattern. All of the students were consistent in their response pattern. The table to the left depicts these findings.

*In reviewing the table it should be noted that question #17 is a dichotomous variable and question #21 is a multichotomous variable, thus, making exact comparisons difficult.

C. 1. (Continued)

Validity was basically ascertained by having the writers of the simulation review the instruments and by incorporating their comments and suggestions into the final form. In terms of face validity the instrument was judged to be a reasonable means of assessing the student's perspectives of the module. Secondly, comparisons between subsets of questionnaire items and achievement data do tend to support the conclusion that the instrument is at least partially valid. As a group, students did well on the achievement tests and reported that the module did answer questions they had about jobs and did provide much information about jobs.

The reviser and evaluator should also keep in mind one other important fact about the student questionnaire. The questionnaire was not designed to evaluate students, but as a means for students to provide the project staff with their opinions of the module as well as their suggestions for revision. Students were informed about the use of the questionnaire. It was hoped that their responses would be open and honest.

C. 2. Student Questionnaire: Results from Questions Dealing with Specific Module Parts (Sample Size = 32)

Question \ Response Category	Agree	Disagree	No Response
1. The preview and the other activities at the beginning helped to prepare me for the simulation.	22*(69%)	10(31%)	0(0%)
2. The role description gave me little information helpful in choosing a role.	26(81%)	6*(19%)	0(0%)
3. I selected a role by myself.	23*(72%)	9(28%)	0(0%)
4. The teacher helped the class to select roles.	14(44%)	17*(53%)	1(3%)

*Positive responses

Interpretation/Comments

After comparing the results of the entire set of 7 questions dealing with specific module parts, it was found that approximately 57% of all the responses were positive, 42% were negative and 1% were no responses. Summarizing the positive findings, the students generally felt: 1) the tasks were not too complicated or hard for the students to do (81%), 2) the students selected the role they wanted to play in the simulation (72%), and 3) the preview and other activities at the beginning helped to prepare them for the simulation (69%). Student opinion was divided on the following areas: 1) the role of the teacher with student selection of roles, 2) the effectiveness of the summary as a culminating activity and 3) the flow of activity between the preview, activities, and summary sections. The students were almost unanimous in agreement that the role descriptions gave them little information that was helpful in choosing a role (81%). From this data, the revisors should consider the following recommendations:

1) Develop a more effective summary or culminating activity
2) Improve the role descriptions
3) Clarify the role of the teacher during student role selection
4) Improve the cohesiveness between the separate activities within the simulation.

C. 2. (continued)

Question / Response Category	Agree	Disagree	No Response
5. Some of the tasks were too complicated or hard for me to do.	6(19%)	26*(81%)	0(0%)
6. The summary helped me to "pull things together".	15*(47%)	17(53%)	0(0%)
7. The simulation preview, activities and summary fit well together.	18*(56%)	13(41%)	1(3%)

*Positive responses

C. 3. Student Questionnaire: Results from Questions Dealing With Student Understanding of Module Materials and Directions (Sample Size = 32)

Question (Response Category)	Agree	Disagree	No Response
8. There were too many forms to fill out with this simulation.	9(28%)	23*(72%)	0(0%)
9. The directions in the materials were clear to me.	16*(50%)	16(50%)	0(0%)
10. The teacher explained a lot of words.	10(31%)	22*(69%)	0(0%)
11. The pretest and posttest were difficult for me.	7(22%)	24*(75%)	1(3%)
12. The booklets and resource materials were easy to read.	26*(81%)	6(19%)	0(0%)
13. The teacher explained a lot of ideas.	23(72%)	8*(25%)	1(3%)

*Positive response

Interpretation/Comments

Of the student responses dealing with their understanding of module materials and directions, approximately 62% were positive; 37% were negative and 1% was without response. Generally the students felt the booklets and resource materials were easy to read (81%). Since most of the students indicated that the teacher did not explain "a lot of words" (69%), it can be implied that the vocabulary was adequately defined by the module's materials and/or the students were already familiar with the terminology. On the other hand, it seems as if some of the concepts introduced in the module were new to the students since 72% of the students indicated that the teacher explained "a lot of ideas".

The revisors should be aware of the divided opinion among the students concerning the clarity of the module's directions. One half of the students felt the directions in the materials were clear while 50% felt they were unclear. Students generally agreed that there were not too many forms to complete with this simulation (72%) and that the pretest and posttest were not difficult for them (75%).

4. Student Questionnaire: Results From Questions Dealing With Implementation of Module (n=32)

	Question	Agree	Disagree	No Response
14.	The simulation was too short.	16 (50%)	15*(47%)	1(3%)
15.	Sometimes I had nothing to do.	18(56%)	13*(41%)	1(3%)
16.	Sometimes I had too many things to do in this role.	11(34%)	21*(66%)	0(0%)

*Positive response.

Response to Questions 15 and 16 By Specific Role Played in Simulation

Role	15. Had nothing to do at times.		16. Had too much to do at times.	
	Agree	Disagree	Agree	Disagree
Repairman	14	10	7	17
Supplyman	2	1	1	2
Foreman	3	1	3	1

Interpretation/Comments

In this section of questions, there appears to be some inconsistency in student opinions concerning the appropriateness of the module's length and the extent of involvement of each student in the various roles played in the simulation. After cross-tabulating the results of questions 15 and 16 by each specific role, it becomes apparent that students in the repairman's and supplyman's position at times generally had too little or nothing to do, rather than too much to do. In contrast, however, the foreman's role seems at times to either have too much to do or nothing to do.

It is suggested that the revisers study the length of time it should take students to complete the various activities by the specific roles played in the simulation. An attempt should be made to add and/or eliminate activities for each role so that all students are equally involved in the simulation at all times.

5. Student Questionnaire: Results from Questions Dealing With Perception of Learning (n=32)

Question \ Response Category	Agree	Disagree	No Response
17. I learned quite a bit about jobs in this field of work.	24*(75%)	8(25%)	0(0%)
18. I learned very little about how to work with other people.	5(16%)	27*(84%)	0(0%)
19. The simulation did not help to answer some of the questions I have about jobs.	18(56%)	13*(41%)	1(3%)
20. I enjoyed working with other students during the simulation.	26*(81%)	5(16%)	1(3%)

*Positive responses

Interpretation/Comments

When looking at the responses to the four questions dealing with student perceptions of learning, approximately 70% of the responses were positive, 28% were negative and 2% were without response. Apparently students felt that the module provided them with much information about jobs (75%) and/or how to work with other people (84%). Most students (81%) indicated they enjoyed working with other students in the module.

The results from question #19 are not nearly as strong as those from the other questions. Students were considerably more divided in their opinion regarding this item stem. Perhaps this can be attributed to the fact that the students may not have had many questions concerning advertising jobs at the commencement of the simulation. This information may have utility for module revision, but it is difficult to relate it to specific points in the module.

C. 6. Student Questionnaire: Results From Other Important Questions (n=32)

Question \ Response	Very Little	Little	An Average Amount	Much	Very Much
21. How much did you learn about product services' from the simulation?	0(0%)	2(6%)	17(53%)	6(19%)	7(22%)
22. How much trouble did you have knowing what to do next in the simulation?	6(19%)	15(47%)	7(22%)	3(9%)	1(3%)

Question \ Response	More Interested	Less Interested	No ever Interested	No change in interest	No Response
29. Compared to former feelings how do you feel about product services' jobs?	12(40%)	6(20%)	5(17%)	7(23%)	0(0%)

Interpretation/Comments

The results show that most of the students (92%) perceived themselves learning at least an average amount about product services jobs from the simulation. This supports the findings of the knowledge test (see Table A.3.) that the module did increase student knowledge in this occupational field. Student responses to item #22 reveal that 66% of the students had little or very little trouble knowing what to do next in the simulation, while 12% felt they had much or very much trouble.

As a result of participation in the simulation, 40% of the students were more interested in product services jobs and 20% were less interested. Given the fact that 60% of the students were changing interests, it seems apparent that the module was achieving a major intent of the exploration program, i.e., that students are beginning to examine or look at occupations in relation to their own interests.

C. 7. Student Questionnaire : Collated Open-Ended Responses to Questions from the "What Do You Think?" questionnaire

Question #25
Name some of the things you liked most and least about the role(s).

Liked Most	Liked Least
Repairing the radios.	-Reading too many booklets
Working with other people.	-Directions were too complicated, flow chart too difficult to understand
Working with radios	-Not long enough to learn enough, too short
Soldering	-Waiting for the resistor
Learning something new	-The radio's didn't work
Answering letters	-Writing the letters
Everything	-The radios were too simple to fix.
Learning radio parts	-Didn't have enough parts
Working with meters	-Filling out forms, tests
Freedom	-Not enough to do
The experience, work responsibility	-Not getting paid
Taking inventory	
Doing things	

Question #28
Name some of the materials you liked most and least.

Liked Most	Liked Least
Video tape "Interviewing"	-Booklets, reading
Films	-Filling out forms
Slide/tapes	-Slides
Radios	-Not enough parts
Resource materials	
Soldering Iron	
Meter	

Question #31
Name some of the things you liked most and least about the simulation.

Liked Most	Liked Least
Repairing radios	-Reading booklets
Soldering	-Filling out forms, tests
Working with tools	-Lack of all parts needed to fix radios
Having good equipment	-Too short, not enough time
Having the work experience	-The directions & organization of simulation was poorly put together
Working with people in class	
Interesting and exciting	

Question #32
Student recommendations to improve simulation:

1. Improve the directions and simplify the flow chart to repair the radios.
2. Improve sequencing of materials, number pages of booklets.
3. Improve directions on how to use equipment.
4. Allow more time to complete the simulation.
5. Eliminate some of the reading.
6. Get better parts, radios and equipment to work with. Get different wire than copper. Some of the equipment didn't work. Need better aerial.
7. First, send radios to school in working condition. Have teacher check to see if it worked, then break it down. Have students first repair simple radio problems then more complicated radios.
8. Include more background in basic electronics.

D. 1. Midway Questionnaire and General Module Evaluation: Reliability and Validity

DATA

NOT

AVAILABLE

Interpretation/Comments

For these questionnaires, the variable nature of the question format and the question content make it most difficult to determine the reliability of the questionnaires. Further, even if a reliability coefficient could be calculated, the small sample size (n=4 experimental teachers) would render the coefficients meaningless.

Validity was determined by having product developers review the questionnaires. The developers considered the instruments to be a viable means of collecting teacher observations especially with regard to problems incurred in implementing the module. Face validity seemed high. The developers also felt that questionnaires were short enough to promote teacher response.

Additional evidence of validity will be seen in the degree to which various sources of data, including the teacher questionnaires, tend to corroborate each other.

D. II. Midway Questionnaires and General Module Evaluation: Composite Results

COMPOSITE RESULTS AVAILABLE UPON REQUEST FROM THE OCCUPATIONAL EXPLORATION PROJECT EVALUATION STAFF

Interpretation/Comments

Due to the small sample size and the moderately large number of open-ended questions, tables will not be included in this report. A composite set of teacher responses on the questionnaires will be maintained by OEP evaluation staff. These composite responses will be available upon request.

Several factors should be kept in mind when reviewing the composite results. First, there were only 4 teachers who were facilitating or managing experimental group experiences. In many cases only two or three teachers responded to a question. Second, it would seem that a fair amount of faith can be placed on the truthfulness of teacher response. The questionnaires were designed to evaluate the program not to evaluate teachers. Teachers were informed on several occasions of the intent of the instruments.

Lastly, the responses on the instruments were summarized and only the main thoughts or ideas were stated on the Reviser's Information Summary. These summarizations should be studied with other sources of data in view.

E. 1. Midway and Post Module Panel Reviews: Reliability and Validity

DATA

NOT

AVAILABLE

Interpretation/Comments

The panel review procedure and reporting format was generated from similar efforts undertaken for the School Based Component of the Comprehensive Career Education Model (CCEM) in 1973. CCEM Project Staff felt that panel reviews provided an important source of data for revising curriculum materials. The process is purposely designed as an open-ended one to insure that teachers have the opportunity to freely discuss any concerns or comments they have about the module. Reliability in this instance is difficult to assess. It should be noted, however, that, teachers were frequently asked during the review about the extent to which they agreed upon particular points. Thus, the panel reports, in many cases, represent a convergence of teacher perspectives or opinions.

Validity is judged by the degree to which the revisers and evaluators will find the data collected from the panel useful for illuminating strengths and weaknesses within the module and helpful in determining revisions to be made in the module. Validity judgments will have to come sometime after the generation of this report.

Due to the open-ended nature of the panel review procedure, Tables E-II and E-III are simply copies of the actual panel reviews. The reports, which are summaries of the panel discussions, were written by OEP staff. (No interpretation is felt to be necessary for the panel review.) For the Reviser's Information Summary (RIS) the main ideas of the panel reviews have been abstracted and placed in the appropriate cells of the RIS.

III. RESULTS

E. 2. Post Module Panel Review

Title of Module: Product Services

L.E.A.: Jefferson County and Denver County, Colorado

Panel Leader: John Radloff

Panelists: Jerry Forkner, Hamilton Jr.
Dorothy Lyons, Wheat Ridge Jr.
Dee Dickson, Alameda Jr.
Tony Petrun, Lake Jr.

Observer Participants: None

Date(s) Panel Met: 4/25/74

Number of Hours: 2

LE	STRENGTHS	WEAKNESSES	CLASSROOM SOLUTIONS	SUGGESTED REVISION	TEACHERS CONCURRIN
Inter-viewing	High point of simulation smoothest part of module				- 2
Soldering		Explanation on sanding prior to soldering should explain that wire coating should be removed.	Trial & error	Resister banks should be placed in radios as they are completed	- 4
Radio Repair	Pupils came in each day & set up shop & went right to work				- 2
	Supply clerk role very valuable				- 2
		Radios would not work & trouble defied diagnosis		Send at least one radio in working order	- 4
		Too many faulty parts in supply kits.		Check parts before shipping & provide additional spare parts	- 4
		Insufficient information on connecting antenna			- 4
		Flaws in diagram & instructions (see notes & teachers's handbook)			

	STRENGTHS	WEAKNESSES	CLASSROOM SOLUTIONS	SUGGESTED REVISION	TEACHERS CONCURRIN
Radio Repair (Con't)					
		Pages in manual not numbered			- 4
	High initial interest				- 4
	Teamwork very strong point				- 4
	Very representative of real life situations				- 4
	Letter writing a good experience				- 4
	All roles maintained themselves well up to the very end with exception of repair teams who failed to get radio to work				- 4
Summary		Pupils worked so closely together that the sharing activity fell so completely flat that it was abandoned	Pupils did not participate	Completely revise summary approach	- 4
		D.O.T. use ineffective in summary phase		Move D.O.T. activity to preview section	- 2

1. Knowledge Test: Analysis of Variance Table For Total Test Scores

SUMMARY TABLE

Source	df	SS	MS	F
Between Subjects	81			
A	3	98.5	32.8	1.0
B	1	211.1	211.1	6.4 *
AB	3	108.9	36.3	1.1
D/AB	74	2447.4	33.1	
Within Subjects	82			
C	1	42.7	42.7	5.4 *
AC	3	52.3	17.4	2.2
BC	1	34.0	34.0	4.3 *
ABC	3	12.5	4.2	0.5
CD/AB	74	584.9	7.9	
TOTAL	163	359.3		

* p. $\leq$ .05

Where A = School
B = Treatment
C = Pre- Posttesting
D = Subjects

Interpretation/Comments

As described in the experimental design section of the report, the key term to be observed is the BC interaction between the treatment variable and the time variable. If the experimental group shows high post-test gains and a BC interation occurs, then most likely the module had an impact on student career knowledge and in the health and welfare field.

The reader should take into account the initial pretest differences between the experimental and control group which were described in Table A. 4. when interpreting these findings. The significant BC interactions could be the result of the treatment effect, student participation in the module, and/or the initial pretest differences between the two groups. Table F reveals that the BC interaction is significant at the .05 level.

G. 1. Attitude Scale: Analysis of Variance for Strength of Preference Scores (Questions 1-6)

Source	df	SS	MS	F
Between Subjects	79			
A	3	16.1	5.4	0.6
B	1	12.6	12.6	1.3
AB	3	72.1	24.0	2.5
D/AB	72	690.4	9.6	
Within Subjects	80			
C	1	23.5	23.5	3.5
AC	3	78.1	26.0	3.9 *
BC	1	38.4	38.4	5.8 *
ABC	3	5.8	1.9	13
CD/AB	72	478.0	6.6	
TOTAL	159	1415.0		

*p. ≤ .01

Where A = School
B = Treatment
C = Pre- Posttesting
D = Subjects

Interpretation/Comments

In Table B-5, it was noted that some changes in student preferences did occur; this table supports that fact in that the changes were large enough to produce statistically significant differences. An examination of Table G. 1. reveals a significant difference with respect to the BC interaction. This could be viewed as an indication that the program does affect student preference judgments to a sizable degree, e.g., students have a given degree of preference for the related jobs which are conducive to change by the program. In addition, the program probably equipped students with an expanded data base through which these preferences were expressed.

IV. Reviser's Information Summary (RIS)

A. Description of the Summary

The Reviser's Information Summary was developed for the purpose of assisting revisers to assimilate information collected during the pilot test of a module. To accomplish this, information from each source available was first reviewed and then only major thrusts or ideas from the source were summarized. (These key thrusts or ideas were determined by the judgment of the authors of this evaluation report.) The summary was then transferred to the appropriate location on the large sheets which constitute the RIS. Lastly, each column was studied and trends were drawn and so recorded at the bottom of the sheet. In ascertaining the trends the authors used their familiarity with data, the module, and the data collected.

In general there will be one Revisor's Information Summary sheet per part of the module and one-two sheets covering the overall nature of the module. On sheets which pertain to module parts, only some of the data sources provided information pertinent to that part. Hence, the sheets do have some blanks or missing data cells. The revisers should exercise extreme care in interpreting the information on the sheets and should always keep in mind that comments on the sheets represent only a summary of key points. In addition, it sometimes was most difficult to determine a trend in the information obtained.

B. Use of the RIS

One way the reviser might use the RIS is as follows:

1. Read the module -- become thoroughly familiar with it;
2. Read the first part of this report (Section I and II) thoroughtly. Skim the results compiled in tables (Section III, parts A,B,C,D, and E.) Read section E-2 and the teacher panel review report closely;

3. Read and study the Reviser's Information Summary. (Consult original data sources, if necessary.); and

4. Generate a set of revision specifications based upon knowledge of the module, the Reviser's Information Summary, project developmental criteria and other information, if appropriate.

C. REVISER'S INFORMATION

SUMMARY

DATA SOURCE	STRENGTHS	Product Serv Overall Co WEAKNE
STUDENT TESTS	The experimental group of students gained 2 points on the knowledge test from pre- to posttesting. However, due to initial pretest mean differences between the control and experimental groups the results should be interpreted with caution. (See Tables A.3. and F.1.) The ANOVA results from the attitude scale reveal that the experimental group's strength of preference toward related jobs/skills did change significantly (see Table G.1.)	
STUDENT QUESTION-NAIRES	Students commented that the following things were what they liked most about the simulation: - repairing radios - soldering - working with tools - having good equipment - having the work experience - working with people in class. Generally, students had positive feelings toward the following statements: - The booklets and resource materials were easy to read (81%). - I learned about how to work with people (84%). - I enjoyed working with other students during the simulation (81%). - I learned quite a bit about jobs in this field of work (75%). - There were not too many forms to fill out with this simulation (72%). - The pretest and posttest were not to difficult for me (75%). - The preview, activities and summary fit well together (56%).	Students commented that what they liked least ab - reading booklets - filling out forms - lack of all parts - too short, not en - the directions & was poorly put to Generally, students had following statements: - The directions i me (yes 50%, no - The simulation w - Sometimes, I had no 41%). - Sometimes, I had no 66%). - The simulation d the questions I no 41%).
TEACHER QUESTION-NAIRES	The teachers were inconsistent in evaluating the overall quality of the module. Their ratings ranged from "very good" to "very poor". All teachers indicated they would use this module again; however, two would use it with minor modifications and two would use it after major modifications were made. Three of the four teachers said they would recommend the simulation to other teachers. However, one specifically felt only to teachers with electronics background and another felt only after major changes were made in the module. The teachers were in greater agreement concerning that the main ideas and themes were presented with logical consistency within the content of the module. The teachers were inconsistent in indicating which materials in the module they felt were best. One teacher stated each of the following: letter writing, cost policy, tools; the interview, radio repair; written materials; and all "hands on" materials. All teachers felt the directions in the module were clear enough for the students to understand. They felt that at least some of the vocabulary was consistent with the maturation level of the students. Three teachers felt that most of the time the students were able to understand the concepts presented in the materials and their interests were stimulated by the materials. The teachers	The teachers stated the worst: radios (n=2) sinc slide presentation on ca als without illustratio there were errors in the of the booklets were not A teacher using this sum experience in electricit teacher felt the worst preview booklet. Three breaks in flow of the ac culty in implementing th to repair many of the ra changed during the simul repair the radios, it de

(Continued on the following page)

ervices Module: Considerations (1) RESULTS	RECOMMENDATIONS FOR REVISION
t the following things were about the simulation: s ms, tests ts needed to fix radios enough time & organization of simulation together d mixed feelings toward the in the materials were clear to 50%). was too short (yes 50%, no 47%). d nothing to do (yes 56%, d too much to do (yes 34%, did not help to answer some of have about jobs (yes 56%,	Student recommendations to improve simulation: 1. Improve the directions and simplify the flow chart to repair the radios. 2. Improve sequencing of materials, number pages of booklets. 3. Improve directions on how to use equipment. 4. Allow more time to complete the simulation. 5. Eliminate some of the reading. 6. Get better parts, radios and equipment to work with. Get different wire than copper. Some of the equipment didn't work. Need better aerial. 7. First, send radios to school in working condition. Have teacher check to see if it worked, then break it down. Have students first repair simple radio problems then more complicated radios. 8. Include more background in basic electronics.
following materials as being ce they were irrepairable, areers, and the reading materi- ons. The teachers indicated repair flow chart. The pages t numbered and out of sequence. mulation needs to have some ty and/or electronics. One material developed was the teachers indicated having ctivity. Students had diffi- he task since they were unable adios. The students' motivation lation. After being unable to ecrease considerably.	1. Revise equipment (radios) sent to school. 2. Change student schedules so they meet as a group to work on the simulation straight through the day as opposed to an hour daily for three weeks. 3. Have module taught by a professional career education staff member as opposed to Language Arts faculty member. 4. Career education should be available to students for greater period of time. 5. One teacher felt the module should be taught by teachers with an electronics background.

DATA SOURCE	STRENGTHS	Product S Overall WE
TEACHER QUESTION-NAIRES (Cont'd)	were inconsistent in evaluating student problems with the module's reading level. Two teachers indicated their students had no problems with the reading levels while two other teachers felt their students had some problems. Three teachers indicated they spent little time reviewing the basic concepts presented in the simulation. One teacher felt the best material developed for the simulation was the video-tape interviewing. The students were receptive to to both the simulation as a way of learning and the content of the module. Two teachers felt the module helped build the students' ability to make career decisions.	
TRENDS	1. Given student test scores and student comments regarding the module, the statement could be made that it was somewhat successful. Student test scores are also indicative of some of the positive impact of the module. 2. Although teachers were divided with regard to the amount of revision necessary, all teachers indicated they would use the module again. 3. In general, the module was considered to be logically consistent, i.e., the parts seemed to fit together. 4. The vocabulary in the module was seen as being approximately appropriate for the age level, however there was some inconsistency of opinion with regard to reading level. 5. Students generally were receptive to both the content of this module and the concept of simulation.	1. A major set of weak in the radios conta 2. There were major fl were problems with These two factors w some breaks in the 3. There was some feel benefitted from hav start of this modul 4. Student motivation simulation, reachin tion phase. It dro had difficulty repa serious lack of mot Summary Phase.

WEAKNESSES	RECOMMENDATIONS FOR REVISION
kmesses relates to technical problems tained in the module. flaws in the flow charts and there n the directions in the module. when combined may have resulted in flow of action. eling that teachers would have ving some experience, prior to the le, with electronics. changed during the course of this ing a high point during the prepara- ropped off for those students who pairing the radios. There was a otivation noted by teachers in the	To a high degree the student and teacher recommendations for changing this module are a direct outgrowth or result of the problems they encountered in the pilot test. This is not only true of the overall considerations but also of the specific parts of the Reviser's Information Summary. Therefore it is simply suggested that the reviser read the recommendations stated above and carefully review the problems (and recommendations) on each specific sheet of this section of the evaluation report.

DATA SOURCE	STRENGTHS	Introduction to Simu WEAKNESSES
STUDENT TESTS	———	———
STUDENT QUESTION-NAIRES	From an incremental test* done in the Fall of 1973 the following results were obtained: 87% (n=15) or more of the students using the materials felt that they understood the materials and that the vocabulary was easy to understand. *Test data was collected from students in Upper Arlington, Ohio.	When students were questioned enjoyment of the introduction, etc., the picture became somewh - Only 53% of the students of enjoying the booklet - Only about 1/3 of the stu in terms of liking the il
TEACHER QUESTION-NAIRE	The slides were generally rated as being "good" by 3 of the 4 teachers. One teacher felt they were "very good". In addition, the booklet was generally rated "good" (n=1) (very good, n=2; average n=1). One teacher felt it was good that the slide showed a woman executive and co-pilot.	The synchronized slide advance booklets were too wordy; need t listings. The teachers were in the order of use of the slides felt the booklets could be elim information. Two other teacher but in any order; however, insu interest.
TEACHER PANELS	———	———
OBSERVER FORMS	———	———
TRENDS	1. Generally speaking, the introduction to simulation materials were well received. This is similar to comments collected from other modules. 2. From the incremental testing in Columbus, there were indications that the students were understanding the concept presented in the materials.	1. As indicated in other modul regarding the student inter 2. Also, there were some quest illustrations, booklets bei

mulation ES	RECOMMENDATIONS FOR REVISION
with regard to their overall , the quality of the materials, what more mixed in nature. s were firm in their statement or the slides. tudents were strongly positive illustrations.	Slightly over one-half of the students recommended that the slides and booklet be used together, with the slides coming first.
was not working properly. The to substitute paragraphs with nconsistent in recommending and booklet. Two teachers minated since they duplicate rs felt you should use both uring sustained student	The teachers were inconsistent in their recommendation of what order to use the slides and booklet in the simulation. Three teachers felt that both should be used while one teacher felt only the slides should be presented.
les, there were some comments rest factor. tions about the quality of ing too wordy, etc.	1. Based upon the incremental test in Columbus, results from other modules, and from this module, the following recommendations are suggested: - revise the introduction with the view of increasing student motivational aspects. - the first suggestion might be accomplished by decreasing some of the wordiness and improving illustrations.

Module Preview

DATA SOURCE	STRENGTHS	WEAKNESSES
STUDENT TESTS	_____	_____
STUDENT QUESTION-NAIRES	Sixty-nine percent of the students felt the preview helped to prepare them for the simulation.	_____
TEACHER QUESTION-NAIRES	The preview consisted of sound slides and student booklet. All teachers rated the technical quality for media and/or illustrations for booklets as being high. Three teachers felt the preview provided students with "rather pertinent" information in making decisions about module participation.	The preview slide/tape plus booklets w students to a "medium" extent. One te that the motivating incentives were: t and parts recognition.
TEACHER PANEL	_____	_____
OBSERVER FORMS	_____	_____
TRENDS	The module preview was received well by both teachers and students. The teachers not only rated the preview high but in additional provided pertinent information for students.	As indicated in the column above, the been as highly motivating as one would

	RECOMMENDATIONS FOR REVISION
____	_____
____	_____
were felt to motivate the teacher, however, commented the tool chest, equipment,	Could mediate, develop transparencies on the divisions of product services and the mechanical and electrical system's parts. The D.O.T. should be included within the preview phase of the module as opposed to the summary.
____	_____
____	_____
e materials may not have ld hope for.	1. As suggested by teachers, one way of presenting the materials could be by developing transparencies of product service's divisions, etc. 2. An important point here, is that the D.O.T. could be included in the Preview. The D.O.T. was originally placed in the Summary, but as will be noted later, the teachers felt it would be more meaningful in the Preview Section.

DATA SOURCE	STRENGTHS	Preparat: WEAKNESS
STUDENT TESTS	———	———
STUDENT QUESTIONNAIRES	The majority of the students (72%) were able to select a role by themselves.	Eighty-one percent of the studen gave them little information hel
TEACHER QUESTIONNAIRES	Three teachers rated the quality of the videotape as being "high". In addition, they felt the preparation section fit well with the preview. They felt the initial role descriptions provided students with adequate and ample information from which to select roles. Generally, the teachers felt the students were able to use the schematic devices for role selection with little help. In 3 out of 4 classes, the students were able to independently select roles with little difficulty. The teacher interview and the flash card method for parts identification was generally considered to be good by the teachers. One teacher sent individual letters to each student notifying him/her about their position.	In some classes, all students wa teachers had to draw lots for th felt the success of the module d the supply man (men). This stat teacher's guide, in which the su depend upon the leadership abili
TEACHER PANEL	Two teachers felt the interviewing for job was a high point of the simulation and the smoothest part of the module.	———
OBSERVER FORMS	The interviews went well. In one class, the teacher sent a letter to each job applicant informing them of the job they were "hired" for and its requirements. This method led to smooth beginning for the pupils to assume role playing.	Students needed a lot of help in Some students felt they could hav [illegible] so much reading. One cla work at their own pace and not ha to other schools using program.
TRENDS	1. There is high agreement across students, observers, and teachers concerning the success of this activity. In fact some teachers considered it to be the high point of the module. 2. Interviewing and the flash card method for parts identification were successful activities in this phase. 3. The preview and preparation section fit well together.	1. While the teachers felt adequ given to students, 81% of the that. 2. In some classes, there were p students wanting to be in cer 3. Students needed much help in There was feelin[illegible] by the stud prepared for the interview wi 4. In one class, there was some was the leadership role.

on E3	[illegible] FOR REVISION
s felt the role descriptions ful in choosing a role.	
ted to be repairman. The other roles. One teacher pended upon the ability of ment conflicts with the cess of the module is said to y of the foreman.	
illing out job applications. prepared for the interview s felt they should be able to e to maintain pace in relation	
te role descriptions were students did not agree with oblems in the too many ain roles. illing out the job applications. nts that they could have hout as much reading. isagreement as to which role	Given student comments more information should be provided on role descriptions. While there may have been too much reading for the interviewing aspects of this phase, students need more directions for completing the applications.

DATA SOURCE	STRENGTHS	Partic WE
STUDENT TESTS	———	———
STUDENT QUESTIONNAIRES	Students commented that the following things were what they liked most about their role(s): repairing and working with radios, working with other people, soldering, and learning new things (i.e., radio parts). The students felt that the tasks were not too complicated or hard for them to do (81%).	Students commented that they liked least: readi directions, waiting for filling out forms, and
TEACHER QUESTIONNAIRES	Generally, all teachers felt the recommended time for completing the tasks and level of the tasks to the students' maturation level was appropriate. All teachers felt the flow or integration of one task with another was good. Only one teacher had minor trouble with the breaks in flow in the activities. Three teachers felt the students had a "high" understanding of the task directions and/or task materials. Generally, the students had no difficulties in implementing the tasks. One teacher teamed a slower boy with a more mechanically minded student. The students generally enjoyed role playing and job activities. The students enjoyed meter reading and soldering. In one class, the teacher incorporated writing business letters with the students Language Arts class.	In one class, students tasks due to a high abse blems such as missing pa were annoying. Students which contributed to the tation of the task.
TEACHER PANEL	When repairing the radios, the students came in each day and set up shop and went right to work. The supply clerk role was very valuable. The students had high initial interest. Teamwork in the group was very strong. The experience was representative of real life situation. The letter writing experience was good for the students. All roles maintained themselves well up to the end with the exception of repair teams who failed to get the radio to work.	Explanation prior to so wire coating should be work; their trouble defi many faulty parts in the sufficient information nection of the antenna. chart diagram and instru were not numbered.
OBSERVER FORMS	The observers felt students were generally motivated and interested in repairing the radios. The supply man (men) understood jobs and functioned very well. The class took little time to get started at the beginning of each class period and little time for clean-up. The supply clerks initiated clean-up in some classes.	High absenteeism in som problems. The students handbook which cause co multimeter. At one sch late so at times the cl teams were unable to fi receiving teacher assis know if the radios were completed fixing the ra result, some students r untill all students wer Replacement parts were foreman was so busy wit assumed the role of for
	1. In general, the implementation of the task went smoothly. 2. The teacher panels and the observer forms were in agreement and the supply clerk role was a crucial ingredient of the simulation. 3. The motivation with regard to the participation phase was high especially at the outset of the phase.	1. There were technica errors in manuals, 2. Special problems wi have been with conf insufficient inform 3. Some teams complete others thus causing ment.

ticipation Phase WEAKNESSES	RECOMMENDATIONS FOR REVISION
at the following things were what ding too many booklets, confusing or missing parts, writing letters, d not being able to fix radios.	
s had difficulty implementing the bsentee rate. The technical pro- parts, errors in company manuals nts were unable to repair the radios the breaks in flow in the implemen-	
soldering should explain that e removed. The radios would not efied diagnosis. There were too the supply kits. There was in- n in handbook concerning the con- a. There were flaws in the flow tructions. The pages in the manual	1. Resister banks should be placed in radios as they are completed. 2. At least one radio in good working order should be sent with simulation. 3. Radio parts should be checked for proper working order before shipping. 4. Additional space for radio parts should be included with materials.
some classes presented management nts noted several errors in the confusions when working with the school, supplies for the module came class had nothing to do. Some fix the first radio even after sistance. They felt they should ere repairable. The repair teams radios at different times. As a s returned to their regular class were ready for the Summary Phase. re in low supply. In one class, the with correspondence that the teacher foreman.	
ical problems such as missing parts, s, radios that did not work, etc. with the Participation Phase may onfusing directions in the booklet, rmation in the flow chart, etc. eted repairing the radios ahead of ing problems for classroom manage-	1. Improve the quality of the radios. Insure that the radios can be fixed by students. 2. Carefully reexamine directions in the materials and the flow chart with regard to omissions, confusing aspects, and accuracy. 3. In some instances, make sure enough spare supplies and parts are available for the simulation. 4. Reexamine the Participation Phase with regard to those students who finish their repair jobs early. Activities should be provided for early finishers.

Summary

DATA SOURCE	STRENGTHS	WEAKNESSES
STUDENT TESTS	———	———
STUDENT QUESTIONNAIRES	———	More than half of the students (53%) felt th to "pull" things together at the culmination
TEACHER QUESTIONNAIRES	The students in one class complemented the work of the supply clerks.	Three teachers rated the summary's effective as being "low". They were inconsistent in t integration of the summary with other tasks; "poorly" to "well". Three teachers felt the effective" in helping students learn about o by others in the simulation. They disagreed summary phase in helping students make decis other occupational exploration activities. was not useful, and two teachers felt it was the students couldn't see any point in the s tation of their experiences was unnecessary knew what the others were doing. They thoug grade school "show and tell" experience. Th had some value. One teacher suggested that preview to introduce the jobs.
TEACHER PANEL	———	Pupils worked so closely together during the sharing activity fell so completely flat tha D.O.T. use was ineffective in the summary ph
OBSERVER FORMS	The students indicated liking the video-cassette interviews. The more successful the repair teams were the more positive their attitude toward the module. The repair teams commended the work of the supply clerks in one class's summary activity.	Little student interest in this phase. Teac Students objected about: 1) reading about jo were repairable, 3) not enough freedom to ex foreman did not like job since he received t about module, 5) The students had difficulty actual employment procedures, 6) The student paperwork.
TRENDS	See Weaknesses column	1. The success of the module is depended up teams are. While this may be considered it is more than likely a weakness in thi 2. The students, teachers, and observers we was little student interest in this phas Summary simply were not clear. Nor was culminating activity. 3. Since the students had worked so closely they felt telling each other what they h and too elementary. 4. While the teachers viewed the D.O.T. as in this activity was questionable (see Summary Sheet). 5. As noted by the observers, these were ma students objected to (see above column).

	RECOMMENDATIONS FOR REVISION
the summary. It not help t on of the simulation.	
iveness as a culminating activity n their opinions concerning the ks; their responses ranged from the summary phase was "not t occupational roles performed eed on the usefulness of the cisions about participation in . Two teachers felt the summary was somewhat useful. In general, e summary. They felt a presen- ry since everyone in the module ought it was too much like a The introduction to the D.C.T. at it should be used in the	
the simulation that the that it was abandoned. The phase.	1. Completely revise the summary approach. 2. Move the D.C.T. activity to the preview section.
eacher had to prompt responses. jobs, 2) not knowing if radios explore work on own, 4) the too many student complaints lty relating the experience to ents disliked evaluating and	
upon how successful repair ei to be a strength by some, his simulation. were in agreement that there ase. The objectives of the s it seen as an effective ly together in the simulation, hat done was repetitious a valuable tool, the [illegible] information [illegible].	1. It is clear that this activity was ineffective and must be completely revised. 2. The revisor might consider, for example, field trips to a repair shop, guest speakers, having students interview repair personnel in the community, etc. 3. Most likely the D.C.T. should be retained for use in the simulation, but placed earlier in the module. If used earlier, it might be reinforced in the summary. 4. With regard to any revisions made here, the revisor should note that the culminating activity of this simulation is the successful repair of the radios. Anything beyond that may somewhat seem anticlimatic [illegible].

APPENDICES

APPENDIX A:

Product Services

Knowledge Test - "What Do You Know?"

and

Attitude Scale - "What Do You Like?"

The project presented/reported herein was performed pursuant to a grant from the National Institute of Education, Department of Health, Education, and Welfare. However, the opinions expressed herein do not necessarily reflect the position or policy of the National Institute of Education, and no official endorsement by the National Institute of Education should be inferred.

PRODUCT SERVICES COMPANY

WHAT DO YOU KNOW? and WHAT DO YOU LIKE?

This booklet contains two short tests. The purposes of the tests are to find out what you know about work in the product services field and what kinds of activities you might enjoy doing in product services. These tests will not in any way affect your grade.

Directions: To complete the first test, use the answer sheet and pencil that have been provided. In one corner look for the blanks marked "Course," "Instructor," etc. Then indicate the class you are in, in the space marked "Course," write in your teacher's ("Instructor") name, your name, and your school ("Campus") in the spaces provided. Then right above where you've been writing, darken the spaces which indicate your sex and today's date.

For each question on this test there are several short phrases or statements listed. Pick the one that best describes your answer and then darken the appropriate space opposite the item number on the answer sheet. Note: on the answer sheet the item numbers go across the page instead of up and down.

If you don't know the answer to a question, GUESS.

Thanks for your help.

You may turn the page and start as soon as you have completed reading the above paragraphs.

PRODUCT SERVICES COMPANY

"WHAT DO YOU KNOW?"

FILL IN THE FOLLOWING INFORMATION

Name_____ Age_____ Grade_____

START THE TEST

1. The job of foreman in a product services company is most similar to the job of

   a. Welder
   b. Machinist
   c. School principal
   d. Physician

2. Which of the following functions is not a part of the product services field?

   a. Manufacturing products
   b. Maintaining products
   c. Altering products
   d. Installing products
   e. Repairing products

3. Four members of the insect world wandered into the personnel office of Ace Product Services, Inc. As personnel director, pick the insect most qualified to work in your supply department.

   a. Daisy Dragonfly
   b. Paul Praying Mantis
   c. Terry Tick
   d. Annabelle Ant

4. A product warranty is most like

   a. An I.O.U.
   b. A bill of sale
   c. A promise
   d. A bill of lading

5. "Bench work" refers to

   a. Repairs done at the customer's home
   b. Repairs done in the factory
   c. Repairs done at a service center
   d. Both a and c
   e. Both b and c

6. As a worker in the product services field, you might be expected to perform which of the following services?

   a. Install a product to make it ready for use
   b. Repair defective products
   c. Alter a product to meet the needs of the customer
   d. All of the above

7. What job in the volunteer navy would probably prepare you to work in the supply division of a product services company?

   a. Pharmacist's mate
   b. Shore patrolman
   c. Typing pool specialist
   d. Engine maintenance specialist

8. When products malfunctioned aboard the recent Apollo space-shot, the astronauts used ground contacts in what way?

   a. As a group type of foreman
   b. As problem analyzers
   c. As supply personnel
   d. Only a and b

9. How are costs for servicing products generally determined?

   a. By negotiations between the customer and the product services company
   b. By tables of standard fees for parts and labor
   c. By estimates made at the time the repair job is first brought in
   d. By a and c together

10. Product service people use information in diagrams made by whom at the manufacturing company?

    a. Research and development personnel
    b. Control personnel
    c. Technical service personnel
    d. Administrative personnel

11. To adequately service a product, the manufacturer should supply the product services company with

    a. Diagrams of the detailed product design
    b. All the tools necessary to service the product
    c. Costs for labor services
    d. Instructions for making alterations in the product

12. What kind of work done by repair personnel is similar to the work done in product manufacturing?

    a. Designing products
    b. Fabricating products
    c. Inspecting the quality of products
    d. Distributing products

13. Servicing a television set in the repair shop might be referred to as

    a. Electrical, bench service
    b. Electrical, mobile service
    c. Mechanical, bench service
    d. Mechanical, mobile service

14. Product service is an extension of manufacturing and

    a. Marketing
    b. Maintenance
    c. Construction
    d. All of the above

15. Repair personnel should keep records of

    a. Time spent repairing a product
    b. Parts used in repairing a product
    c. The inspection and testing of a product
    d. All of the above
    e. Only a and b

16. The first step in servicing a product is

    a. Locating the problem(s) in the product
    b. Labelling the product with the owner's name
    c. Cleaning the product
    d. Repairing the product (including parts replacement)

17. Frequently, customers write to product services companies to complain about repair work, to ask about supplies, or to ask general questions about products. Who has responsibility for responding to their letters?

a. Repairmen
b. Foremen
c. Supply personnel
d. Each of the above, depending upon the kind of question the customer asks

18. The comic strip character Dick Tracy would probably do best in which of the following activities in the product services fields?

a. Preparing cost reports
b. Identifying problems
c. Evaluating repair work
d. Supplying parts

19. The duties of a repairman are to

a. Examine, test, and repair products
b. Examine and repair products, and assign costs to the repair job
c. Test and repair products, and assign costs to the repair job
d. Examine and repair products and check the final repairs

20. A well-trained T.V. repairman should be able to

a. Identify T.V. parts on sight
b. Estimate the cost of a repair job while in the customer's home
c. Determine the amount of time necessary to repair the T.V. after a simple inspection of it
d. All of the above
e. Only a and c

21. The cost of repairing a new product under warranty is paid by

a. The product buyer
b. The product services company
c. The product seller
d. The product manufacturer

22. As the product manager of a product services company you must determine the cost of servicing a product. What <u>should</u> you consider to determine the cost?

a. The amount of time necessary to repair the product
b. The price of the part of the product that had to be replaced
c. The amount of cleaning of the product that had to be done
d. All of the above

23. Allen Apple wants to be a product repairman when he finishes high school. Which of the following courses that he is presently taking will be of most benefit to him?

a. English
b. Mechanical drawing
c. Industrial arts
d. All of the above
e. Only b and c

24. It is the job of supply department personnel in product services to

a. Take inventory of tools and parts
b. Assign radios needing repair to repairmen
c. Keep records of how long it takes to repair products
d. Complete warranty cards for repaired products

25. To determine costs for servicing a product the product repairman must keep track of

a. Time required for servicing
b. Replacement parts needed
c. Alterations or changes made in the product
d. All of the above

26. Who, in a product service company, makes the decisions about honoring warranties?

a. Repairmen
b. Foremen
c. Supply personnel
d. Manufacturer

27. Which of the following duties is the responsibility of supply personnel in a product services company?

a. Determining parts needed for repairing a product
b. Completing shipping lists for parts
c. Determining costs for repairing a product based on parts used
d. Keeping track of what parts were used to repair a product

28. A service repair bill is figured by adding

a. The wholesale price of parts to the estimated repair price
b. The wholesale price of parts to the total labor price
c. The retail price of parts to the total labor price
d. The retail price of parts to the estimated repair price

29. "Trouble-shooting" is a process used in servicing damaged or defective products. From the following statements pick the one that best describes trouble-shooting.

a. Trouble-shooting is mainly guesswork, requiring limited knowledge of product design
b. Trouble-shooting is mainly guesswork, requiring a great deal of knowledge of product design
c. Trouble-shooting is logical, step-by-step procedure requiring limited knowledge of product design
d. Trouble-shooting is logical, step-by-step procedure, requiring a great deal of knowledge of product design

30. The activities of a certain member of the Animal Kingdom would perhaps qualify him to work in the repair area of a product services company. Pick the animal.

a. Squirrel
b. Pack rat
c. Beaver
d. Raccoon

31. Otto Sight is an outgoing person who has spent three years in the service doing repair work. What type of product service work would best suit him in civilian life?

a. Working in a product services company repairing products
b. Intalling and maintaining products in customers' homes
c. Keeping track of supplies for a product services company
d. Making diagrams of products for use in repair work

32. As a foreman of a product services company you will be responsible for

a. Assigning jobs to workers
b. Supervising the work of other employees
c. Organizing the work of repairmen
d. Maintaining shop cleanliness
e. All of the above

33. Which of the following processes are most important for supply personnel in the product services field to know?

a. Steps necessary to repair products
b. Product design
c. Methods of record keeping and inventorying
d. Trouble-shooting techniques

PRODUCT SERVICES COMPANY

"WHAT DO YOU LIKE?"

This is the second set of questions for you to answer. The purpose of these questions is to find out what types of activities you might enjoy doing in the product services field. We would also like to know what reasons you have for liking these activities.

There are only seven (7) questions to answer. Directions for answering are found on each page. Write your answers directly on the page.

After you have completed the questions, please return this booklet and you answer sheet from the first test to your teacher. Thanks for your help.

Please turn the page and begin the questions as soon as you have finished reading the above paragraphs.

Directions: For the six questions below, place a check (✓) in the column which best describes whether you would like, dislike, or are uncertain about trying the activity described in the question. List reasons for your choice in the space provided at the right of the page. All the activities described are work done by people who work in the product services field. If you do not know enough about the activity to decide, check only the last column and do not list any reasons.

QUESTIONS	Yes, I would like to try doing this.	No, I would not like to try doing this.	I'm uncertain about trying to do this.	I don't have enough information to make a decision.	MY REASONS FOR MY CHOICE ARE:
1. Would you like to try locating problems in broken electrical or mechanical products?					
2. Would you like to try repairing problems in broken electrical or mechanical products?					
3. Would you like to try doing work in which you must keep detailed records of what you did, of how much time you spent, and of any parts you used to service an electrical or mechanical product?					
4. Would you like to try keeping track of the large amount of supplies and tools people use in the servicing of electrical or mechanical products?					
5. Would you like to try superivising (directing) the work of people who service electrical or mechanical products?					
6. Would you like to try dealing with customers (writing letters, handling phone calls, checking products in homes, etc.) who are having their electrical or mechanical products serviced?					

7. Below is a conversation between two people. Person 2 is looking for a job and is considering work in the product services field. Person 2, a worker in product services, is thinking about giving person 1 some advice. Pretend that you are person 2, giving advice. Simply complete person two's advice at the end of the conversation.

Person 1: Hi pal, how's it going?
Person 2: Well, aside from having my car stall in the morning rush hour, everythings pretty good. How's it with you?

Person 1: Fine, but I've been thinking about going into a different line of work. You know I'm handy with tools and I do enjoy repairing things. Don't you work for a product repair firm?
Person 2: Yes, I've been with Ace Product Services, Inc., for the last two years.

Person 1: Listen, would you help me out? Would you tell me what kind of experiences or activities might help me to prepare for a job in the product services field?
Person 2: Sure, here's what I would do if I were you.

APPENDIX B:

Product Services

Student Questionnaire - "What Do You Think?"

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"WHAT DO YOU THINK?"

Now that you have completed this simulation, the people who developed it would like to find out what you think about your experience. Your ideas will help to make the simulation better. Remember, THIS IS NOT A TEST and your answers will not be graded. So feel free to check and to say what you think about this simulation.

To complete the questionnaire first fill in the information requested below.

FILL IN THE FOLLOWING INFORMATION

Name_____ Date_____

School_____ City_____

Age_____

Grade (circle one) 8th 9th Other (please specify)_____

Sex (circle one) Male Female

Subject taught in this class_____

Teacher's name_____

START THE QUESTIONS

This is a list of statements which describe ideas about the simulation module you have just completed. Answer each statement by checking the category which comes closest to what you think:

Check "AGREE" if you think the statement is true for you.

Check "DISAGREE" if you think the statement is NOT true for you.

	AGREE	DISAGREE
1. The preview and the other activities at the beginning helped to prepare me for the simulation.	_____	_____
2. The role descriptions gave me little information helpful in choosing a role.	_____	_____

		AGREE	DISAGREE
3.	I selected a role by myself.	_____	_____
4.	The teacher helped the class to select roles.	_____	_____
5.	Some of the tasks were too complicated or too hard for me to do.	_____	_____
6.	The summary helped me to "pull things together."	_____	_____
7.	The simulation preview, activities and summary fit well together.	_____	_____
8.	There were too many forms to fill out with this simulation.	_____	_____
9.	The directions in the materials were clear to me.	_____	_____
10.	The teacher explained a lot of words.	_____	_____
11.	The pretest and posttest were difficult for me.	_____	_____
12.	The booklets and resource materials were easy to read.	_____	_____
13.	The teacher explained a lot of ideas.	_____	_____
14.	The simulation was too short.	_____	_____
15.	Sometimes I had nothing to do.	_____	_____
16.	Sometimes I had too many things to do in this role.	_____	_____
17.	I learned quite a bit about jobs in this field of work.	_____	_____
18.	I learned very little about how to work with other people.	_____	_____
19.	The simulation did not help to answer some of the questions I have about jobs.	_____	_____
20.	I enjoyed working with other students during the simulation.	_____	_____

Answer these questions by circling the letter in front of the phrase that best describes your answer.

21. How much do you feel you learned about jobs in this field of work from the simulation?

a. Very much b. Much c. An average amount d. Little e. Very Little

22. How much trouble do you feel you had knowing what to do next in the simulation?

a. Very much b. Much c. An average amount d. Little e. Very little

23. How would you judge the length of time you spent participating in this simulation module?

a. Too long b. Long c. Just right d. Short e. Too short

For the next questions, write in your answers. Space has also been provided for you to write in any comments/suggestions you might have. You are encouraged to do so.

24. What role (or roles) did you play in this simulation?

_____

25. Name some of the things you liked most about the role(s) and some of the things you liked least about the role(s).

Liked Most	Liked Least
_____	_____
_____	_____
_____	_____

26. What other roles in the simulation did you find interesting?

_____

27. Why did you find this role (or roles) interesting? If you did not find any other roles interesting, can you say why?

28. Name some of the materials (Examples: slides, tapes, films, resource materials, booklets, etc.) you liked most and some of the materials you liked least. If you did not use any materials, check this space._____

Liked Most	Liked Least
_____	_____
_____	_____
_____	_____

29. Compared to your former feelings, how do you now feel about jobs in this area of work?

WHY?

_____I am more interested now

_____I am less interested now

_____I was not interested and I feel the same way now

_____I was interested and I feel the same way now

30. Did you discover any new interests by participating in this simulation?

_____Yes, I am now interested in_____

_____No

31. Name some of the things you liked most about the simulation and some of the things you liked least about the simulation.

Liked Most	Liked Least
_____	_____
_____	_____
_____	_____
_____	_____

32. Write down some of your ideas on how the simulation might be made better.

As soon as you have completed these questions, turn in this booklet to your teacher.

Thank you.

APPENDIX C:

Midway Questionnaire

and

General Module Evaluation

MIDWAY QUESTIONNAIRE

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MIDWAY MODULE QUESTIONNAIRE

The questionnaire is divided into several sections. Each section in order corresponds to a part or a phase of the simulation module. The last sections deal with your overall perceptions at this point in time regarding what has happened in the module.

Fill in the information requested at the top of the questions. Then answer each question by circling the letter in front of the phrase that best describes your answer, unless given other specific directions in the question. Space has also been provided for you to write in any comments/suggestions you might have. You are encouraged to do so.

FILL IN THE FOLLOWING INFORMATION

Teacher Name_____School_____

Date_____Part of the Module you are now working on_____

INTRODUCTION TO SIMULATION

1. Overall, how would you rate the technical quality (appearance, ease of use, etc.) of the slides and booklet? (Answer both parts of question if applicable.)

Slides	Booklet	Comments
a. Very Good	a. Very Good	
b. Good	b. Good	
c. Average	c. Average	
d. Poor	d. Poor	
e. Very Poor	e. Very Poor	

2. In what order would you recommend the use of slides and the booklet? (Choose only one).

   a. Use both in any order
   b. Use both with booklet first
   c. Use both with slides first
   d. Use the booklet only
   e. Use the slides only
   f. None of the above

3. Please record any strengths and/or weaknesses that you observed while working with this part of the simulation module_____

_____

_____

MODULE PREVIEW

4. Indicate the form of presentation used (e.g., booklet, sound-slide, game, etc.)_____

5. How would you rate the technical quality (ease of use, appearance, etc.) for media and/or the illustrations for booklets?

a. Very High b. High c. Medium d. Low e. Very Low

6. In your judgment, did this form provide pertinent information that students could use in making decisions about module participation?

a. Very Pertinent b. Rather Pertinent c. Average d. Not very Pertinent e. Not Pertinent at all

7. Overall, how would you rate the ability of the "Preview" form for motivating students to participate in the module?

a. Very High b. High c. Medium d. Low e. Very Low

8. Please record any strengths and/or weaknesses that you observed while working with this part of the simulation module_____

_____

_____

PREPARATION PHASE/ROLE SELECTION

9. Indicate the form of presentation (e.g., slide-tapes, booklets, etc.) used in the Preparation Phase._____

10. How would you rate the technical quality (e.g., ease of use, appearance, etc.) for media and/or illustrations for booklets?

a. Very High b. High c. Medium d. Low e. Very Low

11. How well did the Preparation Phase fit together with the Module Preview? (i.e., did the Preview flow into the Preparation Phase?)

a. Very Well b. Well c. Somewhat d. Poorly e. Very Poorly

12. Did the initial role descriptions provide students with enough information for selecting roles?

a. Yes, the information was very adequate
b. Yes, the information was rather adequate
c. No, the information was rather inadequate
d. No, the information was very inadequate

13. If schematic devices (e.g. schedule cards) were available to help select roles, did students understand how to use them?

a. Yes, with little or no help
b. Yes, with some help
c. Yes, with a great deal of help
d. No
e. Not applicable

14. Were the students able to independently select themselves into roles?

a. Yes, with little difficulty
b. Yes, with some difficulty
c. No, some teacher assistance was necessary
d. No, extensive teacher assistance was necessary

15. If you had to help students select roles, please describe the nature of that assistance (e.g. asked students to draw lots when several wanted the same role; explained use of schematic device, etc.) in the space below:

16. Please record any strengths and/or weaknesses that you observed while working with this part of the simulation module_____

_____

_____

FIRST TASKS

This section includes questions about the implementation of tasks, the flow of one task to another, etc. We would like your reactions to the tasks up to this point. We realize that you have not completed all of the tasks. We will ask you about the later tasks in the short questionnaire administered after the module has been completed.

17. In general, was the recommended time appropriate for completing the tasks?

a. Yes
b. Somewhat
c. No
If "No," please specify the task(s)_____

18. In general, were the tasks appropriate to the maturational level of the students?

a. Yes
b. Somewhat
c. No
If "No," please specify the task(s)_____

19. How would you rate the flow or integration of one task with another?

a. Very Good b. Good c. Average d. Poor e. Very Poor

20. Did you have any special problems or any particular breaks in flow?

a. Yes
b. No
If "Yes," please specify_____

21. How would you rate student understanding of task directions and/or task materials?

a. Very High b. High c. Average d. Low e. Very Low

If "Low," or "Very Low," please specify_____
_____

22. Did the students have any major problems in implementing the tasks?

a. Yes
b. Somewhat
c. No
If "Yes," please specify_____

23. Please record any strengths and/or weaknesses that you observed while working with this part of the simulation module_____
_____
_____

STUDENT INTEREST AND UNDERSTANDING

24. In general, were the directions in the module clear enough for students to understand what was expected of them?

a. Very Clear b. Clear c. Average d. Unclear e. Very Unclear

25. In general, was the vocabulary of the module consistent with the maturational level of the students in the simulation?

a. Yes, most of it b. Yes, some of it c. No, not much of it d. No, none of it

26. In general, were the students able to understand the concepts presented in the materials?

a. Yes, most of the time b. Yes, some of the time c. No, not much of the time d. No, not at all

27. In general, did the materials stimulate student interest?

a. Yes, most of the time b. Yes, some of the time c. No, not much of the time d. No, not at all

28. Did your students experience problems with the reading level of this simulation module?

a. Yes, many problems b. Yes, some problems c. Yes, but few problems d. No problems

29. While working with the students in the simulation module, did you spend extra time in reviewing the basic concepts presented in that phase?

a. Yes, I spent much time
b. Yes, I spent little time
c. No, I didn't spend any time

30. Please record any strengths and/or weaknesses that you observed while working with this part of the simulation module_____

_____

_____

ADEQUACY OF MATERIALS - OVERALL PERCEPTIONS

31. In general, how well did the transitions from phase to phase of the module proceed?

a. Very Well b. Well c. About Average d. Poorly e. Very Poorly

32. Up to this point, are there any additions, deletions, or changes in the module that you feel should be made?

a. Yes, make the following changes_____

_____

b. No changes are necessary

33. Are there any parts of the module that "just didn't work?"

a. Yes, the following parts _____

_____

b. No, all parts worked well

34. All factors considered, which specific set of materials would you rate as the best?

_____

35. All factors considered, which specific set of materials would you rate as the worst?

_____

36. Up to this point, add as many comments and/or suggestions for revision of the module as you might have.

GENERAL MODULE EVALUATION

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GENERAL MODULE EVALUATION

This questionnaire is divided into several sections. The first two sections correspond to the last tasks in the module (i.e., those from the Midway Questionnaire to the end of the module) and to the Summary Phase. The last sections deal with general teacher and student background and your overall perceptions of the quality of the materials, implementational problems, student interest and understanding, etc.

Answer each question by circling the letter in front of the phrase that best describes your answer, unless given other specific directions in the question. Space has also been provided for you to write in any comments/suggestions you might have. You are encouraged to do so.

GENERAL MODULE EVALUATION

FILL IN THE FOLLOWING INFORMATION

Teacher Name_____School_____Sex_____

Years of Teaching Experience_____City_____

LAST TASKS

1. In general, was the recommended time appropriate for completing the tasks?

   a. Yes
   b. Somewhat
   c. No
   If "No," please specify the task(s)_____

2. In general, were the tasks appropriate to the maturational level of the students?

   a. Yes
   b. Somewhat
   c. No
   If "No," please specify the task(s)_____

3. How would you rate the flow or integration of the tasks with each other?

   a. Very Good b. Good c. Average d. Poor e. Very Poor

4. Did you have any particular breaks in flow?

   a. Yes
   b. No
   If "Yes," please specify_____

5. How would you rate student understanding of task directions and/or task materials?

   a. Very High b. High c. Medium d. Low e. Very Low
   If "Low," or "Very Low," please specify_____

6. Did the students have any major problems in implementing the tasks?

   a. Yes
   b. Somewhat
   c. No
   If "Yes," please specify_____

7. Please record any strengths and/or weaknesses you observed while working on this part of the simulation module:

_____

_____

SUMMARY PHASE

8. How would you rate the effectiveness of the Summary Phase in providing a reasonable culmination, i.e., in tying together concepts, roles, etc. presented in the module, to the simulation experience?

a. Very High b. High c. Medium d. Low e. Very Low

9. To what extent was the Summary Phase integrated with the immediately preceding activities or tasks?

a. Very Well b. Well c. Average d. Poorly e. Very Poorly

10. How would you rate the effectiveness of the Summary Phase in helping students learn about occupational roles performed by others in the simulation?

a. Very Effective b. Somewhat Effective c. Not Effective

11. How useful do you feel the Summary Phase would be in helping students to make decisions about participation in other occupational exploration activities, i.e., other simulation modules, etc.?

a. Very Useful b. Somewhat Useful c. Not Useful

12. Please record any strengths and/or weaknesses you observed while working on this part of the module:

_____

_____

OVERALL PERCEPTIONS

TEACHER BACKGROUND

13. In what kind of group setting (e.g., English classroom, math classroom, students from study hall, students from a guidance group, etc.) and at what grade level did you introduce this simulation?

    a. Group Setting (please specify)_____

    b. Grade Level (please specify)_____

14. Have you had any previous experience with simulation as an instructional technique?

    a. Yes, as a teacher
    b. Yes, as an observer
    c. Yes, as a participant
    d. No

15. If you answered yes to question 14, briefly describe the nature and extent of your previous experiences with simulation If your response to question 14 was "No", please proceed to question 16.

    a. My previous experiences with simulation include_____

    _____

    _____

16. Which of the following statements best describes your reasons for participating in the pilot test of this simulation module?

    a. Wanted to try out new ways of organizing instruction for students
    b. Have an interest in Career Education
    c. Thought material was of value for students
    d. Have a general interest or curiosity
    e. I was requested to participate
    f. Other, or some combination of the above (please specify)__

    _____

STUDENT BACKGROUND

17. How were students selected to participate in the simulation?

a. Students volunteered from the class
b. The class, rather than the students, volunteered
c. Student volunteers from a study hall
d. Other, please specify_____

_____

18. If you had volunteer students participating in the simulation, which of the following reasons best describes your perception of why they participated? If you did not have any volunteer students, please proceed to question 19.

a. Interest in trying something new
b. Interest in particular area simulated
c. Interest in careers
d. Interest in just getting out of class or study hall
e. Other, or some combination of the above (please specify)__

_____

_____

f. I can't really guess at the reason(s)

19. Indicate any special characteristics of this class, e.g., many slow readers in class; many students with exceptionally good verbal skills; etc., which may bias the results of the pilot test of this module. Also, describe how you feel the results will be biased by these characteristics.

a. Characteristics	Biases Produced
_____	_____
_____	_____
_____	_____

b. No special characteristics

IMPLEMENTATION OF THE MODULE

20. How well did the in-service training prepare you to work with the module?

a. Very Well b. Well c. Somewhat d. Poorly e. Very Poorly

21. Did the in-service training provide you with a general understanding of your role in the module implementation?

a. Yes
b. Somewhat
c. No
If "No," please specify_____

_____

22. While working with this module, did you have to allot (or spend) more time than you normally would for preparation (exclude the time spent in in-service training)?

a. Yes, specify additional time in hours_____
b. Some extra time was necessary
c. No extra time was necessary

23. How sizable was the job of managing/coordinating (helping students, keeping track of materials) this simulation module for you?

a. Very Sizable b. About Average c. Not Sizable

ADEQUACY OF EVALUATION MATERIALS

24. Do you feel that the knowledge (What do you know?) and the attitude (What do you like?) tests were adequate measures of the material contained in the module? (Answer both parts of the question.)

Knowledge Test	Comments	Attitude Test	Comments
a. Yes		a. Yes	
b. Somewhat		b. Somewhat	
c. No		c. No	

25. To what extent was the knowledge test difficult for students?

a. Very Difficult b. Difficult c. About Average d. Easy e. Very Easy

STUDENT UNDERSTANDING, INTEREST, AND PARTICIPATION

26. In general, were the directions in the module clear enough for students to understand what was expected of them?

a. Very Clear b. Clear c. Average d. Unclear e. Very Unclear

27. In general, was the vocabulary consistent with the maturational level of the students in the simulation?

a. Yes, most of it b. Yes, some of it c. No, not much of it d. No, none of it

28. Did your students experience problems with the reading level of this module?

a. Yes, many problems b. Yes, some problems c. Yes, but few problems d. No problems

29. To what extent do you feel students were receptive (interested in, excited by) to simulation as a way of learning?

a. Very Receptive b. Receptive c. Average d. Non-Receptive e. Very non-Receptive

30. To what extent do you feel that students were receptive (interested in, excited by) to the content of this particular module?

a. Very Receptive b. Receptive c. Average d. Non-Receptive e. Very non-Receptive

31. Was there any change in student interest or motivation as they progressed through the module?

a. Yes
b. Somewhat
c. No
If "Yes," interest changed as follows_____

_____

32. Do you feel that this module reinforced or helped to build the student's ability to make decisions?

a. Yes
b. Somewhat
c. No
d. Don't know
If "Yes," please specify how_____

_____

33. In your judgment, how much did the students learn about the process of simulation (role playing, problem solving, group interaction, etc.)

a. Very Much b. Much c. An average amount d. Little e. Very Little

34. In your judgment, how much did students learn about the content of the module?

a. Very Much b. Much c. An average amount d. Little e. Very Little

35. Are there any students or groups of students (e.g., some students may have difficulty working in small self-directed groups) that you feel would have difficulty in participating in simulated types of experiences?

a. Yes
b. No
If "Yes," please specify_____

_____

36. For what grades would you consider this module to be appropriate?

a. 10th or higher b. 9th c. 8th d. 7th or lower e. Other

37. Ideally, how many students should participate in this module?

Number of students_____

38. In general, did this module change the working relationships (personal interactions) between you and participating students?

a. Yes
b. Somewhat
c. No
If "Yes," or "Somewhat," the relationship changed as follows___

_____

OVERALL PERCEPTIONS AND RECOMMENDATIONS

39. Overall, how would you rate the quality of the module?

a. Very Good b. Good c. Average d. Poor e. Very Poor

40. If possible, would you use this module with students again?

a. Yes, with no modifications
b. Yes, with minor modifications
c. Yes, with major modifications
d. No
Please comment, if you wish_____

_____

41. Would you recommend this module to other teachers?

a. Yes
b. No
Please give your reason(s)_____

_____

42. Were the main ideas and themes presented with logical consistency in the content of the module?

a. Yes
b. Somewhat
c. No
If "No," please specify where the problems occurred_____

_____

43. All factors considered, which specific set of materials would you rate as the best?

_____

_____

44. All factors considered, which specific set of materials would you rate as the worst?

_____

_____

45. Add as many comments and/or suggestions for revision of the module as you might have.

_____

_____

_____

APPENDIX D:

Observer Form

SIMULATION OBSERVERS FORM - A

This instrument is designed to obtain samples of on-going classroom behavior of students using simulation modules. These modules are being pilot tested as a part of the Occupational Exploration Program by the Center for Vocational and Technical Education at The Ohio State University and the Jefferson County Public Schools.

The observation form is made up of a set of three sheets. Each set contains four parts: the heading, media section, general comments and the interaction and activities section. An observation form set is to be used for each period that is observed. The parts of each set are discussed below.

The Heading

The heading simply identifies the time, place, observer and the portion of the module that was observed. For ease of completion, the observer's name, school, and module have been given a number code. Simply circle the appropriate number according to the code below:

Observer:	Numbers will be assigned
School:	1. Alameda Junior High 2. Hamilton Junior High 3. Lake Junior High 4. Wheat Ridge Junior High
Module:	1. Communications 2. Product Services 3. Insurance 4. Health & Welfare
Date:	Indicate the date of the observation
Activity or Activities:	Indicate either the title of the activity i.e. "Preview" "Summary" or the number i.e. "Task 3" etc. Several spaces are provided in the event that more than one task or activity takes place in one period.

1. Media

The media section has two spaces that should be completed each time the pupils use some form of media. In the space following the type of media used, place a check (✓) each time the media is used. For each (✓), the number of students using that form of media should be indicated in the No. of Students Column. (See sample).

2. General Comments

The general comments section is designed to capture comments that do not lend themselves to the other categories. Two categories that are of continuing interest is the amount of time spent by pupils getting ready to start and the amount of time cleaning up and getting ready to leave. You will note that these categories are pre-printed on the observation form. (Examples of general comments of interest appear on the sample form).

3. Interaction & Activities

This section is designed to provide several kinds of information:

a. How frequently do certain categories of events occur?

b. What size group were the students in during the event?

c. What were the circumstances surrounding the event?

and in some instances:

d. How long did the event last?

The procedure for this section is as follows: Each time one of the events in either the student or teacher activity columns occurs record an arabic number in either the total group or sub-group column. (The total group column is appropriate when all of the students are working together). (The small group column is appropriate when the students are working individually or in two or more groups). Begin with number 1 each period; then number the events consecutively throughout the period. The comment section is provided in order that a very brief comment or key word may be used to explain each arabic number. (See example). NOTE: The events for the entire period should be numbered consecutively even though they are scattered between categories a through f. This system will allow the evaluation staff to reconstruct what happened during each period.

If a number of questions about the same thing occur in category a, the numbers may be bracketed as is shown in the sample. Also if a number of questions follow each other, it is of interest how long the questioning took. (Again see the example).

Explanation of Sample Form

Heading. This form was completed by observer number 2 at Alameda Junior High on Task 1 of the Communications Module, March 21, 1974. Eight pupils were present the day of the observation.

Media Section.

During the observation period, the students used two media forms in Tasks 1 & 2. They began with the sound/slide presentation, switched to the booklet, and finally used the booklet as they began Task 2. The media in each instance was used by the total group.

General Comments.

Some of the general comments relate to other parts of the observation form in the sample, others are simply given as examples of the kinds of comments that might be appropriate. Note that it took the students 5 minutes to get started and 3 minutes to get ready to leave.

The comment space is designed to capture your overall impressions of special or noteworthy events occurring during the period.

Interaction and Activities Section.

This section provides a sequential history of what happened during the period. By reading the Arabic numbers and comments in order, the sample allows the following reconstruction of events:

1. The pupils began as intended by viewing the slide tape as a total group.
2. Someone asked for help with the slide tape machine.
3. As the teacher helped with the machine, other students began to "horse around".
4. The teacher, discovering the machine was broken, directed the pupils to use the booklet instead.
5. Teacher stopped the horseplay and redirected the actions of the miscreants.
6. A pupil asked for help in finding a booklet.
7. A pupil did not understand the booklet.

8, 9, 10, 11. A number of questions were asked regarding what should be done following the booklet - 5 minutes were consumed.

12. The pupils broke up into groups at this point. (The observer is now focusing on one of the groups only).

13. The teacher redirected the leader to his proper group.

14. The small group assembled & began to discuss their task as intended.

15. The task was completed, the product (a report in this instance) was completed. The total group moved on to Task 2 as the time came to begin the cleanup/put-away procedure.

Footnotes

Obviously all that transpired during the period was not recorded. No observer should feel they must capture every single event or question. With experience and through use of the flow chart for the module being observed, observers will become increasingly capable of capturing the more significant questions, events, etc.

Should questions arise, do not hesitate to contact John Radloff, Jeffco Career Education Office - 423-7010.

SIMULATION OBSERVERS FORM-A

OBSERVER 1 (2) 3 4 5 6 7 8 9 10 SCHOOL (1) 2 3 4 MODULE (1) 2 3 4 DATE 3/21/74

Activity(ies) (Number or Title) (a) TASK 1 MARKET RES. (b) TASK 2 MEDIA RESEARCH

Number of pupils present 8

1. MEDIA

Media Used	✓	No. of Students
Booklets or Packets	✓ ✓	8 8
Sound/Slide (Slide/Tape)	✓	8
Video Tape		
Film-o-Sound		
Sound-Pages		
Overhead Projector		
Tape Recorder		

2. GENERAL COMMENTS

Time to get started 5 MINUTES

- MESSENGER INTERRUPTED TO READ A NOTICE
- FIRE ALARM SOUNDED - PUPILS OUT 10 MINUTES
- PUPILS DID NOT UNDERSTAND THE SLIDE/TAPE.
- THE SLIDE/TAPE MACHINE BROKE MIDWAY IN THE PRESENTATION
- THE PUPILS BOGGED DOWN SO BADLY THAT THE TEACHER HAD TO GIVE ALL DIRECTIONS.

Time to clean up to leave 3 MINUTES

3. INTERACTION & ACTIVITIES	FREQUENCY Total Group	FREQUENCY Sub Group	COMMENTS
The Students ...	2.		2. ASKED FOR HELP WITH MACHINE
a. Ask teacher for directions, explanation, clarification, word meaning, etc.	6.		6. ASKED HOW TO FIND BOOKLET
	7.		7. DIDN'T UNDERSTAND BOOKLET
	8.		8, 9, 10, 11. - NEEDED HELP IN WHAT TO DO
	9.		AFTER FINISHING BOOKLET (5 MIN.)
	10.		13. GROUP LEADER NEEDED HELP IN
	11.		STARTING SMALL MEETING.
		13.	
b. Participate as intended (No questions, no problems - activity is proceeding smoothly).	1.	12.	1. SLIDE TAPE
			12. PUPILS INTO 2 GROUPS
		14.	14. SMALL GROUP MEETING
c. Encounter a transition point (Complete the product for one activity and prepare to move on to another activity).	15.		15. MOVED TO TASK 2 AS BELL RANG

3. INTERACTION & ACTIVITIES	FREQUENCY Total Group	FREQUENCY Sub Group	COMMENTS
d. Spend time on activities other than those intended, such as horsing around, doing homework, sleeping, getting organized	3.		3. WHILE TEACHER TRIED TO FIX MACHINE.
The teacher:			
e. Prompts activity by giving explanations, directions or clarification	4. 16.		4. INSTRUCTED PUPILS TO USE BOOKLET 16. TEACHER DIRECTED PUPILS TO PUT MATERIALS AWAY.
f. Re-directs activities to make them consistent with module activities	5.	13.	5. STOPPED FOOLISHNESS 13. HELPED GROUP LEADER START