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## ABSTRACT

The primary objectives of the study were to determine the effectiveness of sixteen selected career education instructional units in five school districts in Coconino County, Ariz., to determine their implementation costs, and to provide for them cost/effectiveness analysis while they are still in the pilot stage. Each unit encompassed goals, performance objectives, learning activities, materials, and evaluation. A formula for measuring efficiency level of proficiency gain through pretesting and posttesting was worked out. Cost data for each unit in each class was broken down to include personnel, trips, and materials. Unit implementation costs varied widely. Cost per unit of proficiency gain was then calculated to measure effectiveness. The use of mean proficiency levels obscures individual differences and an analysis of each student's proficiency level for each unit provides more meaningful information. Teacher evaluation of the units indicates some dissatisfaction with availability of materials, the tests, and the goal and objective components in relation to activities. Eight recommendations for refinement of the units are made. Appendixes include data collection forms. (MS)

COCONINO COUNTY CAREER EDUCATION PROGRAM

PILOT TEST OF CAREER EDUCATION  
INSTRUCTIONAL UNITS

FINAL REPORT

U.S. DEPARTMENT OF HEALTH,  
EDUCATION & WELFARE  
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COCONINO COUNTY CAREER EDUCATION PROGRAM  
PILOT TEST FOR INSTRUCTIONAL UNITS

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## FOREWARD

One of the most rapidly growing and widespread movements in education today is Career Education. This movement in part has been fostered by the universal demand for educational accountability and a desire to materially improve the training of students for entry into the American economy and social environments. Arizona has been and continues to be in the forefront of the Career Education movement. Career Education learning opportunities are being introduced into Arizona's school districts at all grade levels, kindergarten through twelve.

This movement has spawned a pressing need for adequate and timely information about student achievement and costs related to the introduction of Career Education programs in Arizona. The purpose of this study was to obtain information about student achievement, costs of implementing, and the quality of selected Career Education Instructional Units in school districts of Coconino County.

Many educators involved in the promoting of Career Education in Coconino County have contributed to the conduct of this study. Grateful appreciation is given to these administrators and teachers who materially assisted and gave freely of their time.

A special note of thanks is extended to Mr. Virgil Langley, Director of the Coconino County Career Education Program and his staff for the planning and operation of the research activity. Also, commendations are due to the Coconino County Career Education Board, the five school superintendents and their career education staff, and to each of the teachers who taught the units and collected the data required in the study.

Hopefully, the end result of the information provided by this study will serve to assist in the furthering of Career Education in this county and in the state of Arizona.

Dr. Sam W. Bliss  
Mr. Scott Foster

# TABLE OF CONTENTS

<u>Section</u>	<u>Page</u>
I. INTRODUCTION	1
A. Background	1
B. Objective Statement	2
II. PILOT TEST PROCEDURES	2
A. Selection of Career Education Instructional Units	3
B. Field Test Sites	4
III. RESULTS OF STUDY	9
A. Achievement	9
B. Cost	12
C. Unit Cost-Effectiveness	35
D. Teacher Evaluation of Unit	37
IV. SUMMARY, CONCLUSIONS, RECOMMENDATIONS	43
A. Summary	43
B. Conclusions	43
C. Recommendations	45
APPENDICES	47

LIST OF TABLES

<u>Table Number and Title</u>	<u>Page</u>
Table 1 - Unit Achievement For All Students	11
Table 2 - Cost of Implementing Career Education Instructional Units - Number S-99 into the Classroom	13
Table 3 - Cost of Implementing Career Education Instructional Units - Number S-108 into the Classroom	14
Table 4 - Cost of Implementing Career Education Instructional Units - Number S-109 into the Classroom	15
Table 5 - Cost of Implementing Career Education Instructional Units - Number S-110 into the Classroom	16
Table 6 - Cost of Implementing Career Education Instructional Units - Number S-111 into the Classroom	17
Table 7 - Cost of Implementing Career Education Instructional Units - Number S-210 into the Classroom	18
Table 8 - Cost of Implementing Career Education Instructional Units - Number S-211 into the Classroom	19
Table 9 - Cost of Implementing Career Education Instructional Units - Number S-408 into the Classroom	20
Table 10 - Cost of Implementing Career Education Instructional Units - Number S-505 into the Classroom	21
Table 11 - Cost of Implementing Career Education Instructional Units - Number S-505 into the Classroom	22
Table 12 - Cost of Implementing Career Education Instructional Units - Number S-508 into the Classroom	23
Table 13 - Cost of Implementing Career Education Instructional Units - Number S-509 into the Classroom	24
Table 14 - Cost of Implementing Career Education Instructional Units - Number S-510 into the Classroom	25
Table 15 - Cost of Implementing Career Education Instructional Units - Number S-511 into the Classroom	26
Table 16 - Cost of Implementing Career Education Instructional Units - Number S-608 into the Classroom	27
Table 17 - Cost of Implementing Career Education Instructional Units - Number S-609 into the Classroom	28

LIST OF TABLES (continued)

<u>Table Number and Title</u>	<u>Page</u>
Table 18 - Cost of Implementing Career Education Instructional Units - Number S-710 into the Classroom	29
Table 19 - Cost of Implementing All Instructional Units Into the Elementary District of the Target Public Schools	31
Table 20 - Unit Cost Effectiveness For All Students	36
Table 21 - Teacher Evaluation of Instructional Units	41

## I. INTRODUCTION

### A. Background

Arizona's Career Education program is a means of encouraging the introduction of career education into the mainstream of the educational process. The record of adopting new practices in schools has not been exceptional. Perhaps the number of new programs that are replicated depends, in part, on the quality of the data about the program and their availability to educational program planners. At the present time little information is available to planners relating to student learning and the cost of implementing career education in local school districts.

The purpose of this research study was to provide the data and analytical procedures essential for presenting educational decision-makers with information relating to career education which may be useful in determining future replication in school districts. When information about program achievement is coupled with comparable cost, a more adequate basis for decisions is created.

No doubt, there are many other factors involved in the process of deciding to replicate the concepts and practices of new career education programs into school districts of this state. Some are socio-political and others are economic in nature. Most factors however, seem to reside in the basic quest to increase the effectiveness of education per se. The prime intention of this research was not to address the many problems underlying the adoption of career education, but to provide an analysis of career education that may well increase the effectiveness of the career education as a change agent

in the educational process. At this time, there is insufficient evidence that improved information about career education will, in fact, lead to widespread replication. However, a reasonable assumption, in the absence of this evidence, is that improved information should provide additional insights for the decision makers. At a minimum, decisions about replication should be based on (1) recognition of the career education program as a realistic alternative, and (2) knowledge of the outcomes and costs of the career education program.

### B. Objective Statement

There were three primary objectives of this research study.

They were:

1. To determine the effectiveness of selected career education instructional units. How well did the instructional unit accomplish its stated purpose?
2. To determine the cost of implementing selected career education instructional units in selected school districts.
3. To provide a cost/effectiveness analysis of selected career education instructional units.

The above stated objectives logically set forth the necessary methods for this research.

## II. PILOT TEST PROCEDURES

The following procedures were specifically designed to provide information which would allow for the achievement of the stated objectives of this study.

#### A. Selection of Career Education Instructional Units:

Meetings were held with staff of the following organizations for the purpose of selecting the career education instructional units (here-in-after referred to as units) to be pilot tested. Conferences were held with staff of:

1. Coconino County Career Education Program
2. Arizona's Department of Education Career Education Program and the RCU.

These discussions and a critical examination of Units available lead to the selection of sixteen Units for the pilot test. The title and code numbers of the Units are listed below along with the organization that developed the Unit.

<u>Title</u>	<u>Code Number</u>	<u>Grade Level</u>	<u>Developer</u>
Airport Awareness	S-108	Third grade	Williams School District
Ecology	S-109	Third grade	Page School District
Career Awareness	S-111	Sixth grade	Flagstaff School District
Self-Awareness	S-211	Sixth grade	Flagstaff School District
Career Clusters and Life Styles	S-110	Fifth grade	Tuba City School District
What, When, and Why	S-505	Kindergarten	Mesa School District
Dealing With Decisions	S-408	Third grade	Mesa School District
Money Matters	S-508	Third grade	Mesa School District
Eye and Ear Tools	S-608	Third grade	Mesa School District
Yearnings and Earnings	S-509	Fourth grade	Mesa School District
Growing With Responsibilities	S-210	Fifth grade	Mesa School District
Tooling Around	S-609	Fourth grade	Mesa School District

<u>Title</u>	<u>Code Number</u>	<u>Grade Level</u>	<u>Developer</u>
What's My Line	S-511	Fifth grade	Mesa School District
Sailing With Sales	S-510	Fifth grade	Mesa School District
Reading, Writing, and Relevance	S-710	Fifth grade	Mesa School District
Career Awareness	S-99	Eighth grade	Coconino County Career Education Program

#### B. Field Test Sites

Five school districts were selected by the Coconino County Administrative Achievement Council to cooperate in the pilot test. Selection of the school districts was made after discussions with Mr. Virgil Langley, Director, Coconino County Career Education Program and the Coconino County Board for Career Education. The five school districts selected for the study, superintendents, and other career education staff are:

#### School District

#### Superintendent and Staff

Flagstaff District No. 1

Mr. David Williams, Superintendent  
 Mr. Sturgeon Cromer, Director of Career Education  
 Mr. Mike Miller, Co-ordinator  
 Mrs. Jenny Erwin, Co-ordinator

Fredonia District No. 6

Dr. Bill McLaughlin, Superintendent

Page District No. 8

Mr. Ray Bradshaw, Superintendent  
 Mr. George O'Reilly, Co-ordinator

Tuba City District No. 15

Mr. Frank Glotfelty, Superintendent  
 Mr. Jerry O'Brien, Co-ordinator

Williams District No. 2

Dr. John Watson, Superintendent

Also, assisting with school site selection were members from the Coconino County Career Education Program. They are:

Mr. Jim Sanders, Co-ordinator Consultant  
 Mrs. Bea Langley, Co-ordinator Consultant

Each cooperating school district arranged for the appropriate number of classrooms and teachers to become involved in the pilot test activity. The teachers involved in the pilot test are provided below:

Flagstaff District No. 6

Teachers

Grade Level

Connie Haines

Kindergarten

Lila Siedel

Third grade

Pamela Pedrow

Third grade

Helen Sitterly

Third grade

Robert Hayes

Fourth grade

Mary Dalegowski

Fourth grade

Joe Vega

Fourth grade

Evelyn McCray

Fifth grade

Alfred Sharde

Fifth grade

Maybelle Copeland

Fifth grade

Eddie Piper

Fifth grade

Lee Treece

Sixth grade

Jean Chance

Sixth grade

Jerry Ulrey

Sixth grade

Fredonia District No. 6

Teachers

Paul Heaton

Velden Black

Dan Haycock

Grade Level

Third grade

Fifth grade

Sixth grade

Page District No. 8

Teachers

Thelma LaFever

Lucille O'Reilly

Alice Koetje

June Wakefield

Beverly Huntley

Allyn Watson

Virginia Mee

Grade Level

Kindergarten

Third grade

Third grade

Fourth grade

Fifth grade

Fifth grade

Sixth grade

Tuba City District No. 15

Teachers

Ida Feibus

Betrice Richmond

Elizabeth Lockett

Evelyn Parker

Peggy Britenbach

Patricia Baca

Alma Thomas

Grade Level

Kindergarten

Third grade

Third grade

Fourth grade

Fifth grade

Fifth grade

Sixth grade

Williams District No. 2

<u>Teachers</u>	<u>Grade Level</u>
Marilyn Duffy	Third grade
Charlene Myers	Third grade
Ruddy Sanchez	Fourth grade
Dale Winchester	Fifth grade
John Fain	Sixth grade
Richard Hoyt	Eighth grade

Each Unit was introduced and taught in a single classroom under the direction of the teacher. Prior to the teaching of the Units two training workshops were held for the purpose of introducing the teacher to the Unit to be taught and informing the teachers about the data collection forms. The workshops held were:

Page District No. 8

April 17, 1973 4:30p.m. - 7:30p.m.

The Page and Fredonia teachers attended this workshop (see Appendix for the workshop agenda).

Flagstaff District No. 1

April 25, 1973 6:00p.m. - 9:30p.m.

The Flagstaff, Tuba City, and Williams teachers attended the second workshop (see Appendix for the agenda).

Also, in attendance at both workshops were staff from the Coconino County Career Education Program.

Data Collection Forms

Each cooperating teacher in the five districts was given the data collection forms, the Unit, and the pre- and post-tests at these two workshops. Four data collection forms were prepared for obtaining information needed in the pilot test project. They were:

1. Administrative Cost Data Instrument
2. Unit Cost Data Instrument
3. Student Achievement Form
4. Teacher Evaluation Form

Copies of these forms are located in the Appendix.

The Administrative Cost Data Instruments were completed in interviews with appropriate central office staff of each cooperating district. The three other data collection forms were completed by the teacher who taught the Unit. The four data collection forms were sent to Project staff immediately upon completion of teaching the Unit on or before May 18, 1973.

Results of the study appear in the following section.

### III. RESULTS OF STUDY

#### A. Achievement

Each Unit included in the Pilot Test Project was specifically developed to provide students with the opportunity to learn specific concepts related to career education. All Units included in the test were structured in the recommended format as set forth in the Arizona Career Education Program. The general structure encompassed the basic components of:

1. Goals
2. Performance Objectives
3. Learning Activities
4. Materials and Supplies
5. Equipment
6. Evaluation Plan (Pre-test and Post-test)

Although each Unit was planned to consume approximately 10 hours of instructional time, teachers were encouraged to modify the Unit in order to meet the specific learning needs of the students in the classroom.

Student achievement for each Unit was determined by calculating the learning gain which was identified as the difference between the pre-test score (beginning knowledge) and the post-test (total knowledge).

An individual student Unit proficiency level was computed by the following method.

COMPUTATION OF PROFICIENCY LEVEL

Steps

1. Total maximum score (40 possible correct)	<u>100.0%</u>
2. Pre-test score (pre-test score $10 \div 40$ )	— <u>25 %</u>
3. To be learned (new knowledge: No. 1 -- No. 2) -----	<u>75 %</u>
4. Post-test score (total knowledge): post-test score $36 \div 40$ )	<u>90 %</u>
5. Pre-test score (entry knowledge: No. 2)	— <u>25</u>
6. Achieved knowledge (gain: No. 4 - No. 5) -----	<u>65 %</u>
7. Achieved knowledge (knowledge gain: No. 6)	<u>65 %</u>
8. To be learned (No. 3)	<u>75 %</u>
9. Program efficiency level (No. 7 $\div$ No. 8: student's percent gain of new knowledge)	<u>86.6%</u>

Summary achievement information was prepared for each Unit in order to protect the individual student. Table 1 displays Unit achievement information for each Unit included in the study. Data not included in Table 1, such as I.Q. was not available at the classroom level.

Generally, the student learning gain or loss (difference between the pre-test and post-test) was not as large as expected. Therefore the Units at a group did not yield as high as a proficiency level as one might have desired to obtain. It also should be noted that proficiency level varied between Units that were replicated in different classrooms. This was due largely to the differences existing in the students of the classrooms. Where the mean I.Q. was higher the proficiency level tended to be greater.

TABLE 1 UNIT ACHIEVEMENT FOR ALL STUDENTS

Year	District	Grade	No. of Students	Mean Age	Mean I.Q.	Max. Score	Mean Pre-Test	Mean Post-test	Mean Gain	Mean Proficiency Gain %
1939	Williams		13	14	101	65	47	59	11	62.9
1938	Williams		25	8	109	25	9	20	10	66.6
1937	Williams		18		99	25	12	17	6	43.0
1936	Page		17	9		23	12	15	2	17.8
1935	Page		24	8		100	67	81	13	37.6
1934	Page		24	12		29	15	23	8	65.9
1933	Page		28	11		109	34	52	18	24.2
1932	Page		12	10		41	59	70	10	21.2
1931	Page		30	12		23	20	25	5	20.5
1930	Page		32	11		119	19	23	4	35.4
1929	Page		19	10		23	17	19	2	11.2
1928	Page		27	11		33	19	27	5	20.4
1927	Page		21	11		33	8	13	2	61.0
1926	Page		15	9		35	12	14	5	20.8
1925	Page		19	8		27	17	13	5	7.8
1924	Page		27	5		43	10	13	5	25.0
1923	Page		20	5		20	9	13	5	28.5
1922	Page		32	5		29	31	39	8	68.8
1921	Page		21	8		18	21	22	1	59.0
1920	Page		18	9		23	11	15	0	18.7
1919	Page		28	9		34	14	14	7	38.2
1918	Page		31	9		23	6	12	3	34.2
1917	Page		28	9		34	11	19	9	25.5
1916	Page		26	11		48	13	25	9	54.8
1915	Page		26	11		34	15	27	10	55.7
1914	Page		37	12		48	15	37	13	36.7
1913	Page		55	12		48	24	33	9	29.0
1912	Page		22	9		34	29	17	8	3.0
1911	Page		22	8		34	16	21	3	61.4
1910	Page		22	10		27	18	21	1	33.6
1909	Page		24	10		27	9	10	3	18.4
1908	Page		27	10		27	8	11	5	35.3
1907	Page		32	10		32	21	26	3	31.5
1906	Page		21	11		32	8	11	3	10.7
1905	Page		26	11		32	19	22	3	26.0

## B. Cost

This section of the study contains the findings of the data collection activity relating to the cost of implementing career education instructional units into the classrooms of the five target districts. Comments will introduce the table and data displayed. Where deemed essential other statements may be made to clarify the data included in the table.

### 1. Cost of Implementing Career Education Instructional Units

Cost data for each unit is reported in dollars and cents. Cost information collected is limited to the following three cost areas and their respective cost elements:

#### a. Instructional personnel

- 1) Orientation time
- 2) In-service travel time
- 3) Teacher planning time
- 4) Teacher teaching time
- 5) Para-professional time

#### b. Field trips

- 1) Vehicle operation and maintenance
- 2) Vehicle operator

#### c. Instructional materials

- 1) Normal classroom instructional materials
- 2) Resource materials
- 3) Additional cost items

For each cost area and cost element, a mean cost is computed as well as a per pupil cost. ADM is reported for each classroom and a mean ADM is computed for each unit. Total unit implementation cost is reported at the bottom of each table.

Table 2

Cost of Implementing Career Education Instructional Units  
Number S-99 into the Classroom

IU Name        A Job For You In Construction

Grade         8th

ADM, Cost Areas and Cost Elements	Williams	Mean	Per Pupil Cost
ADM	15	15	
Orientation Time	14.52	14.52	.97
In-Service Travel	5.03	5.03	.34
Teacher Planning Time	14.52	14.52	.97
Teaching Time	22.34	22.34	1.49
Para-Professional			
Instructional Personnel	56.41	56.41	3.76
Vehicle Operation Maintenance			
Vehicle Operators Cost			
Total Field Trip Cost			
Normal Instructional Materials	2.68	2.68	.18
Resource Materials			
AV Equipment			
Additional Cost Items	2.39	2.39	.16
Total Instructional Materials	5.07	5.07	.34
Total Package Implementation	61.49		4.10

Table 3

Cost of Implementing Career Education Instructional Units  
Number S-108 into the Classroom

IU Name      Airport Awareness

Grade        3rd

ADM, Cost Areas and Cost Elements	Flag.	Wlms.	Mean	Per Pupil Cost
ADM	27	19	23	
Orientation Time	18.91	10.82	14.87	.65
In-Service Travel		3.75	1.87	.08
Teacher Planning Time	45.71	8.74	27.22	1.18
Teaching Time	44.92	38.71	41.82	1.82
Para-Professional				
Instructional Personnel	109.54	62.02	85.78	3.73
Vehicle Operation Maintenance	9.24	29.40	19.32	.84
Vehicle Operators Cost				
Total Field Trip Cost	9.24	29.40	19.32	.84
Normal Instructional Materials	3.00	6.07	4.54	.20
Resource Materials				
AV Equipment				
Additional Cost Items	5.23		2.62	.11
Total Instructional Materials	8.23	6.07	7.15	.31
Total Package Implementation	127.01	97.49	112.25	4.88

Table 4

Cost of Implementing Career Education Instructional Units  
Number S-109 into the Classroom

IU Name Ecology

Grade 3rd

ADM, Cost Areas and Cost Elements	Page	Fred.	Mean	Per Pupil Cost
ADM	27	22	24.50	
Orientation Time	23	25.81	24.41	.100
In-Service Travel	.64	25.81	13.23	.54
Teacher Planning Time	15.97	25.81	20.89	.85
Teaching Time	77.94	89.62	83.78	3.42
Para-Professional	1.13	27.29	14.21	.58
Instructional Personnel	118.69	194.34	156.51	6.39
Vehicle Operation Maintenance		80.00	40.00	1.63
Vehicle Operators Cost				
Total Field Trip Cost		80.00	40.00	1.63
Normal Instructional Materials	5.83	2.08	3.96	.16
Resource Materials		24.00	12.00	.49
AV Equipment				
Additional Cost Items		8.76	4.38	.18
Total Instructional Materials	5.83	34.84	20.34	.83
Total Package Implementation	124.51	309.19	216.85	8.85

Table 5

Cost of Implementing Career Education Instructional Units  
Number S-110 into the Classroom

IU Name Career Clusters

Grade 5th

ADH, Cost Areas and Cost Elements	Flag.	Tuba	Fred.	Mean	Per Pupil Cost
ADH	24	32	13	23	
Orientation Time	16.60	25.89	24.50	22.33	.97
In-Service Travel		17.26	21.19	12.81	.56
Teacher Planning Time	15.2	33.08	41.72	30.00	1.30
Teaching Time	38.27	140.21	70.85	83.11	3.61
Para-Professional					
Instructional Personnel	70.08	216.43	158.26	148.26	6.45
Vehicle Operation Maintenance		85.00		28.33	1.23
Vehicle Operators Cost		24.48		8.16	.36
Total Field Trip Cost		109.48		36.49	1.59
Normal Instructional Materials	2.13	7.29	1.48	3.63	.16
Resource Materials		11.00	25.00	12.00	.52
AV Equipment					
Additional Cost Items					
Total Instructional Materials	2.13	18.29	26.48	15.63	.68
Total Package Implementation	72.22	344.19	184.73	200.38	8.71

Table 6

Cost of Implementing Career Education Instructional Units  
Number S-111 into the Classroom

IU Name Career Awareness

Grade 6th

ADM, Cost Areas and Cost Elements	Tuba	Mean	Per Pupil Cost
ADM	30	30	
Orientation Time	28.89	28.89	.96
In-Service Travel	19.26	19.26	.64
Teacher Planning Time	139.63	139.63	4.65
Teaching Time	120.37	120.37	4.01
Para-Professional			
Instructional Personnel	308.14	308.14	10.27
Vehicle Operation Maintenance			
Vehicle Operators Cost			
Total Field Trip Cost			
Normal Instructional Materials	5.69	5.69	.19
Resource Materials			
AV Equipment			
Additional Cost Items			
Total Instructional Materials	5.69	5.69	.19
Total Package Implementation	313.84	313.84	10.46

Table 7

Cost of Implementing Career Education Instructional Units  
Number S-210 into the Classroom

IU Name      Growing With Responsibilities

Grade        5th

ADM, Cost Areas and Cost Elements	Flag.	Flag.	Mean	Per Pupil Cost
ADM	32	24	28	
Orientation Time	15.14	21.59	18.37	.66
In-Service Travel				
Teacher Planning Time	27.18	27.89	27.53	.98
Teaching Time	74.98	86.37	80.67	2.88
Para-Professional	6.95		3.48	.12
Instructional Personnel	124.25	135.85	130.05	4.65
Vehicle Operation Maintenance				
Vehicle Operators Cost				
Total Field Trip Cost				
Normal Instructional Materials	2.84	2.13	2.49	.09
Resource Materials		37.63	18.82	.67
AV Equipment				
Additional Cost Items				
Total Instructional Materials	2.84	39.76	21.30	.76
Total Package Implementation	127.09	175.61	151.35	5.41

Table 8

Cost of Implementing Career Education Instructional Units  
Number S-211 into the Classroom

IU Name      Self Awareness

Grade        6th

ADM, Cost Areas and Cost Elements	Flag.	Flag.	Mean	Per Pupil Cost
ADM	28	27	27.5	
Orientation Time	29.96	20.24	25.1	.91
In-Service Travel				
Teacher Planning Time	31.62	14.62	23.12	.84
Teaching Time	81.55	55.10	68.33	2.49
Para-Professional		20.86	10.43	.38
Instructional Personnel	143.13	110.82	126.98	4.62
Vehicle Operation Maintenance	6.25	8.4	7.33	.27
Vehicle Operators Cost				
Total Field Trip Cost	6.25	8.40	7.33	.27
Normal Instructional Materials	2.49	2.40	2.44	.09
Resource Materials		2.00	1.00	.04
AV Equipment				
Additional Cost Items				
Total Instructional Materials	2.49	4.40	3.44	.13
Total Package Implementation	151.87	123.62	137.75	5.01

Table 9

Cost of Implementing Career Education Instructional Units  
Number S-408 into the Classroom

IU Name Dealing With Decisions  
Grade 3rd

ADM, Cost Areas and Cost Elements	Tuba	Flag.	Mean	Per Pupil Cost
ADM	22	22	22	
Orientation Time	24.71	15.18	19.95	.91
In-Service Travel	21.96		10.98	.50
Teacher Planning Time	91.51	19.83	55.67	2.53
Teaching Time	51.61	37.72	44.67	2.03
Para-Professional	1.84	4.64	3.24	.15
Instructional Personnel	191.63	77.36	134.50	6.11
Vehicle Operation Maintenance				
Vehicle Operators Cost				
Total Field Trip Cost				
Normal Instructional Materials	4.18	2.44	3.31	.15
Resource Materials	30.41		15.21	.69
AV Equipment				
Additional Cost Items				
Total Instructional Materials	34.59	2.44	18.52	.84
Total Package Implementation	226.22	79.81	153.01	6.96

Table 10

Cost of Implementing Career Education Instructional Units  
Number S-505 into the Classroom

IU Name      What, When, Why  
Grade        Kindergarten a.m.

ADM, Cost Areas and Cost Elements	Tuba	Flag.	Page	Mean	Per Pupil Cost
ADM	22	26	30	26	
Orientation Time	16.34	20.95	24.54	20.61	.79
In-Service Travel	13.07		.91	4.66	.18
Teacher Planning Time	31.38	136.57	139.08	102.34	3.94
Teaching Time	61.45	98.55	118.18	92.72	3.57
Para-Professional	11.01	2.90	63.66	25.86	.99
Instructional Personnel	133.25	258.96	346.37	246.19	9.47
Vehicle Operation Maintenance		3.10	.50	1.20	.05
Vehicle Operators Cost			4.13	1.38	.05
Total Field Trip Cost		3.1	4.63	2.58	.10
Normal Instructional Materials	12.53	5.78	14.13	10.81	.42
Resource Materials			106.43	35.48	1.36
AV Equipment					
Additional Cost Items			4.15	1.38	.05
Total Instructional Materials	12.53	5.78	124.71	47.67	1.83
Total Package Implementation	145.78	267.84	475.70	296.44	11.40

Table 11

Cost of Implementing Career Education Instructional Units  
Number S-505 into the Classroom

IU Name      What, When, Why

Grade        Kindergarten p.m.

ADM, Cost Areas and Cost Elements	Page	Mean	Per Pupil Cost
ADM	33	33	
Orientation Time	28.64	28.64	.87
In-Service Travel			
Teacher Planning Time	163.33	163.33	4.95
Teaching Time	156.96	156.96	4.76
Para-Professional	30.51	30.51	.93
Instructional Personnel	379.43	379.43	11.50
Vehicle Operation Maintenance	2.5	2.5	.08
Vehicle Operators Cost	3.83	3.83	.12
Total Field Trip Cost	6.33	6.33	.19
Normal Instructional Materials	15.54	15.54	.47
Resource Materials	190.03	190.03	5.76
AV Equipment			
Additional Cost Items	4.44	4.44	.14
Total Instructional Materials	210.01	210.01	6.36
Total Package Implementation	595.77	595.77	18.05

Table 12

Cost of Implementing Career Education Instructional Units  
Number 3-508 into the Classroom

IU Name Money Matters

Grade 3rd

ADM, Cost Areas and Cost Elements	Flag.	Wlms.	Mean	Per Pupil Cost
ADM	22	19	20.5	
Orientation Time	18.01	12.92	15.47	.75
In-Service Travel		4.47	2.24	.11
Teacher Planning Time	40.18	23.86	32.02	1.56
Teaching Time	64.42	39.56	51.99	2.54
Para-Professional	4.25		2.12	.10
Instructional Personnel	126.86	80.81	103.84	5.07
Vehicle Operation Maintenance				
Vehicle Operators Cost				
Total Field Trip Cost				
Normal Instructional Materials	2.44	6.07	4.26	.21
Resource Materials				
AV Equipment				
Additional Cost Items		3.52	1.76	.09
Total Instructional Materials	2.44	9.59	6.02	.29
Total Package Implementation	129.31	90.40	109.85	5.36

Table 13

Cost of Implementing Career Education Instructional Units  
Number S-509 into the Classroom

IU Name Money Matters

Grade 4th

ADM, Cost Areas and Cost Elements	Flag	Flag	Wlms:	Mean	Per Pupil Cost
ADM	31	29	28	29.33	
Orientation Time	23.74	14.76	15.66	18.06	.62
In-Service Travel			5.42	1.81	.06
Teacher Planning Time	31.66	47.69	20.85	33.40	1.14
Teaching Time	66.28	71.54	66.87	68.23	2.33
Para-Professional	.39			.13	
Instructional Personnel	122.07	133.99	108.80	121.62	4.15
Vehicle Operation Maintenance	5.22	5.18		3.47	.12
Vehicle Operators Cost					
Total Field Trip Cost	5.22	5.18		3.47	.12
Normal Instructional Materials	2.76	2.58	7.16	4.16	.14
Resource Materials	32.00	48.00		26.67	.91
AV Equipment					
Additional Cost Items			2.52	.84	.03
Total Instructional Materials	34.76	50.58	9.68	31.67	1.08
Total Package Implementation	162.04	189.75	118.48	156.76	5.34

Table 14

Cost of Implementing Career Education Instructional Units  
Number S-510 into the Classroom

IU Name      Sailing With Sales

Grade        5th

ADM, Cost Areas and Cost Elements	Wlms.	Flag	Page	Mean	Per Pupil Cost
ADM	26	21	34	27	
Orientation Time	16.33	23.44	34.88	24.89	.92
In-Service Travel	5.65	1.85		2.50	.09
Teacher Planning Time	27.01	59.07	49.00	45.03	1.67
Teaching Time	76.64	130.14	101.33	102.70	3.80
Para-Professional			4.71	1.57	.06
Instructional Personnel	125.64	214.50	189.92	176.69	6.54
Vehicle Operation Maintenance					
Vehicle Operators Cost					
Total Field Trip Cost					
Normal Instructional Materials	6.64	1.87	7.34	5.28	.20
Resource Materials					
AV Equipment					
Additional Cost Items		.39	3.36	1.25	.05
Total Instructional Materials	6.64	2.26	10.70	6.53	.24
Total Package Implementation	132.29	216.76	200.62	183.22	6.79

Table 15

Cost of Implementing Career Education Instructional Units  
Number S-511 into the Classroom

IU Name What's My Line

Grade 6th

ADM, Cost Areas and Cost Elements	Wlms.	Page	Fred.	Mean	Per Pupil Cost
ADM	37	64	22	41	
Orientation Time	29.95	26.86	23.18	26.66	.65
In-Service Travel			20.05	6.83	.16
Teacher Planning Time	39.21	13.07	23.18	25.15	.61
Teaching Time	81.28	74.76	75.18	77.07	1.88
Para-Professional			6.25	2.08	.05
Instructional Personnel	150.44	114.68	147.84	137.65	3.36
Vehicle Operation Maintenance					
Vehicle Operators Cost					
Total Field Trip Cost					
Normal Instructional Materials	9.46	13.81	2.08	8.45	.21
Resource Materials	20.35		10.84	10.40	.25
AV Equipment					
Additional Cost Items					
Total Instructional Materials	29.81	13.81	12.92	18.85	.46
Total Package Implementation	180.24	128.50	160.76	156.50	3.82

Table 16

Cost of Implementing Career Education Instructional Units  
Number S-608 into the Classroom

IU Name Eye And Ear Tools

Grade 3rd

ADM, Cost Areas and Cost Elements	Tuba	Page	Mean	Per Pupil Cost
ADM	29	28	28.5	
Orientation Time	24.78	38.18	31.48	1.10
In-Service Travel	29.73		14.87	.52
Teacher Planning Time	94.15	103.93	99.04	3.48
Teaching Time	59.46	77.42	68.44	2.40
Para-Professional	5.51	18.65	12.08	.42
Instructional Personnel	213.62	238.13	225.90	7.93
Vehicle Operation Maintenance				
Vehicle Operators Cost				
Total Field Trip Cost				
Normal Instructional Materials	8.26	8.53	8.39	.30
Resource Materials	17.32		8.66	.30
AV Equipment				
Additional Cost Items				
Total Instructional Materials	25.58	8.53	17.05	.60
Total Package Implementation	239.20	246.71	242.96	8.53

Table 17

Cost of Implementing Career Education Instructional Units  
Number S-609 into the Classroom

IU Name Tooling Around

Grade 4th

ADM, Cost Areas and Cost Elements	Tuba	Page	Flag	Mean	Per Pupil Cost
ADM	24	30	34	29.33	
Orientation Time	21.05	42.93	11.34	25.11	.86
In-Service Travel	36.08	1.02		12.37	.42
Teacher Planning Time	33.83	54.18	37.31	41.77	1.42
Teaching Time	45.86	122.67	46.29	71.60	2.44
Para-Professional		8.29	8.11	5.47	.19
Instructional Personnel	136.81	229.09	103.05	156.32	5.33
Vehicle Operation Maintenance					
Vehicle Operators Cost					
Total Field Trip Cost					
Normal Instructional Materials	5.47	6.48	3.02	4.99	.17
Resource Materials	33.00			11.00	.38
AV Equipment					
Additional Cost Items					
Total Instructional Materials	38.47	6.48	3.02	15.99	.55
Total Package Implementation	175.28	235.56	106.07	172.30	5.87

Table 18

Cost of Implementing Career Education Instructional Units  
Number S-710 into the Classroom

IU Name      Readin', Writin', Relevance

Grade      5th

ADM, Cost Areas and Cost Elements	Tuba	Flag.	Page	Mean	Per Pupil Cost
ADM	13	15	21	16.33	
Orientation Time	15.95	12.87	23	17.27	1.06
In-Service Travel	31.90			10.63	.65
Teacher Planning Time	26.58	38.00	30.03	31.54	1.93
Teaching Time	63.80	63.24	60.69	62.58	3.83
Para-Professional			5.65	1.88	.12
Instructional Personnel	138.23	114.10	119.37	123.90	7.59
Vehicle Operation Maintenance		4.15		1.38	.09
Vehicle Operators Cost					
Total Field Trip Cost		4.15		1.38	.09
Normal Instructional Materials	2.96	1.33	4.53	2.94	.18
Resource Materials					
AV Equipment					
Additional Cost Items					
Total Instructional Materials	2.96	1.33	4.53	2.94	.18
Total Package Implementation	141.19	119.59	123.91	128.23	7.85

A compilation of all instructional units implemented is presented in Table 19. The average, or mean, cost for each identified cost area and the cost elements constituting that area are presented by instructional unit. A total cost of implementing all the career education instructional units is also reported for the cost areas and their cost elements as well as a total mean cost. A total mean per pupil cost is also reported by cost area and cost element. At the bottom of the table a total implementation cost for all districts is shown along with an average or mean, cost per unit and a total for all districts, per pupil cost for total implementation. Unit implementation costs vary widely. Several factors caused the wide variation. Teacher costs vary because of a wide range of salaries being paid by the districts. Instructional time for each Unit was different thus affecting instructional cost. Use of teaching materials varied considerably and field trips further caused cost variances. A general over-all interpretation would be meaningless. A detailed study of individual Unit cost factors yields more useful information. Comparisons of each Unit costs are enhanced through the data presented in Table 19.

TABLE 19  
 COST OF IMPLEMENTING ALL INSTRUCTIONAL UNITS  
 INTO THE ELEMENTARY DISTRICT OF THE  
 TARGET PUBLIC SCHOOLS

ADM, Cost Areas and Cost Elements	S-99	S-108	S-109	S-110	S-111
ADM	15	23	24.5	23	30
Orientation Time	14.52	14.87	24.41	22.33	28.89
In-Service Travel	5.03	1.87	13.22	12.82	19.26
Teacher Planning Time	14.52	27.22	20.89	30.00	139.63
Teaching Time	22.24	41.82	83.78	83.11	120.37
Para-Professional			14.21		
Instructional Personnel	56.41	85.78	156.51	148.26	308.14
Vehicle Operation Maintenance		19.32	40.00	28.33	
Vehicle Operators Cost				8.16	
Total Field Trip Cost		19.32	40.00	36.49	
Normal Instructional Materials	2.68	4.53	3.96	3.63	5.69
Resource Materials			12.00	12.00	
AV Equipment					
Additional Cost Items	2.39	2.62	4.38		
Total Instructional Materials	5.07	7.15	20.34	15.63	5.69
Total Package Implementation	61.49	112.25	216.85	200.38	313.84

TABLE 19 (continued)

COST OF IMPLEMENTING ALL INSTRUCTIONAL UNITS  
INTO THE ELEMENTARY DISTRICT OF THE  
TARGET PUBLIC SCHOOLS

ADM, Cost Areas and Cost Elements	S-210	S-211	S-408	S-505	S-505
ADM	28	27	22	26	33
Orientation Time	18.37	25.10	19.95	20.61	28.64
In-Service Travel			10.98	4.66	
Teacher Planning Time	27.53	23.12	55.67	102.34	163.33
Teaching Time	80.67	68.33	44.67	92.92	156.36
Para-Professional	3.38	10.43	3.24	25.85	30.51
Instructional Personnel	130.05	126.98	134.50	246.19	379.43
Vehicle Operation Maintenance		7.33		1.20	2.50
Vehicle Operators Cost				1.38	3.83
Total Field Trip Cost		7.33		2.58	6.33
Normal Instructional Materials	2.49	2.44	3.31	10.81	15.54
Resource Materials	18.51	1.00	15.21	35.48	190.03
AV Equipment					
Additional Cost Items				1.38	4.44
Total Instructional Materials	21.30	13.44	18.52	47.67	210.01
Total Package Implementation	151.35	137.75	153.01	296.44	595.77

TABLE 19 (continued)

COST OF IMPLEMENTING ALL INSTRUCTIONAL UNITS  
INTO THE ELEMENTARY DISTRICT OF THE  
TARGET PUBLIC SCHOOLS

ADM, Cost Areas and Cost Elements	S-609	S-710	TOTAL	MEAN COST	MEAN PER-PUPIL COST
ADM	29.33	16.33	443.10	26.12	
Orientation Time	25.11	17.27	376.59	22.15	.85
In-Service Travel	12.37	10.63	118.93	6.10	.27
Teacher Planning Time	41.77	31.54	912.20	53.66	2.05
Teaching Time	71.60	62.58	1297.39	76.32	2.92
Para-Professional	5.47	1.88	113.05	6.65	.25
Instructional Personnel	156.32	123.90	2818.17	165.77	6.35
Vehicle Operation Maintenance		1.38	103.53	6.09	.23
Vehicle Operators Cost			13.37	.79	.03
Total Field Trip Cost		1.38	116.89	6.88	.26
Normal Instructional Materials	4.99	2.94	93.57	5.50	.21
Resource Materials	11.00		341.25	20.07	.77
AV Equipment					
Additional Cost Items			19.06	1.12	.04
Total Instructional Materials	15.99	2.94	453.88	26.70	1.02
Total Package Implementation	172.30	238.23	3388.94	199.35	7.63

TABLE 19 (continued)  
 COST OF IMPLEMENTING ALL INSTRUCTIONAL UNITS  
 INTO THE ELEMENTARY DISTRICT OF THE  
 TARGET PUBLIC SCHOOLS

ADM, Cost Areas and Cost Elements	S-508	S-509	S-510	S-511	S-608
ADM	20.5	29.33	27	41	28.5
Orientation Time	15.47	18.06	24.89	26.66	31.48
In-Service Travel	2.24	1.81	2.50	6.68	14.87
Teacher Planning Time	32.02	33.40	45.03	25.15	99.04
Teaching Time	51.99	68.23	102.70	77.07	68.44
Para-Professional	2.12	.13	1.57	2.08	12.08
Instructional Personnel	103.84	121.62	176.69	137.65	225.90
Vehicle Operation Maintenance		3.47			
Vehicle Operators Cost					
Total Field Trip Cost		3.47			
Normal Instructional Materials	4.26	4.16	5.28	8.45	8.39
Resource Materials		26.67		10.40	8.66
AV Equipment					
Additional Cost Items	1.76	.84	1.25		
Total Instructional Materials	6.02	31.67	6.53	18.85	17.05
Total Package Implementation	109.85	156.76	183.22	156.50	242.95

### C. Unit Cost-Effectiveness

Cost per student and per unit of proficiency were calculated to provide further comparative information. As would be expected cost per student decreases with the larger number of students in the classroom. However, when the cost per unit of proficiency is computed those Units having higher proficiency levels, regardless of the number of students, yielded lower per unit costs. This is perhaps a better standard than cost per student because it provides information about how effective the Unit delivered learning gains as related to the money expended.

The Units that obtained the higher proficiency amounts had the lower cost per unit of proficiency. Thus Units with higher proficiency levels (effectiveness of Unit taught) had a high corresponding efficiency level (a better use of district resources to deliver education to the student).

It should be noted that proficiency levels for individual students varied widely for all Units taught. The use of mean proficiency levels for the Units obscures individual differences. The general result of using the mean proficiency level for each Unit is that it tends to deflat or hide the true value of the Unit for the individual student. A few students with low proficiency levels can markedly effect the over-all Unit proficiency level. A careful analysis of each student's proficiency level in each Unit taught would provide much more meaningful information about the effectiveness of the Unit to deliver its performance objectives. However, this data is not reported because of the desire to protect the confidential nature of this type of information. Individual student data has been submitted to the Director of the Coconino County Career Education Program.

TABLE 20. UNIT COST EFFECTIVENESS FOR ALL STUDENTS

Unit Title	Unit No.	District	Grade	Number of Students	Actual Prof. Level	Cost of Unit	Cost per Student	Cost per Unit of Proficiency
Career Awareness	S-999	Williams		13	62.9%	\$ 61.49	4.73	\$ 7.53
Airport Awareness	S-108	Flagsstaff		25	66.6	127.00	5.08	7.63
Ecology	S-108	Williams		18	43.0	97.49	5.42	12.60
Ecology	S-109	Page		19	17.8	124.51	6.55	36.79
Ecology	S-109	Predonia		18	37.6	309.19	17.18	45.74
Career Clusters	S-110	Flagsstaff		24	65.9	72.23	3.01	4.57
Career Clusters	S-110	Tuba City		28	24.2	344.19	12.30	50.77
Career Awareness	S-111	Predonia		12	21.2	184.73	15.39	72.72
Career Awareness	S-111	Tuba City		30	20.5	313.84	10.46	51.01
Growing with Resp.	S-210	Flagsstaff		32	35.4	127.09	3.97	11.22
Growing with Resp.	S-210	Flagsstaff		19	11.2	175.61	9.24	82.37
Self Awareness	S-211	Flagsstaff		27	61.0	151.87	5.63	9.22
Self Awareness	S-211	Flagsstaff		21	20.4	123.62	5.89	28.88
Dealing with Dec.	S-408	Tuba City		15	7.8	204.56	13.64	175.56
Dealing with Dec.	S-408	Flagsstaff		19	25.0	79.81	4.20	16.78
What, When, Why	S-505	Tuba City		27	28.5	145.78	5.40	21.44
What, When, Why	S-505	Flagsstaff		20	28.8	267.84	13.39	46.94
What, When, Why	S-505	Flagsstaff		27	68.8	475.70	17.62	25.59
Money Matters	S-508	Flagsstaff		21	18.7	129.31	6.16	32.93
Money Matters	S-508	Williams		18	0.0	90.40	5.02	58.96
Earnings, Earnings	S-509	Flagsstaff		28	27.0	189.75	6.77	25.14
Earnings, Earnings	S-509	Flagsstaff		31	38.2	162.04	5.23	13.58
Earnings, Earnings	S-509	Williams		28	34.2	118.48	4.23	12.36
Selling with Salls	S-510	Williams		26	25.5	126.63	4.87	19.10
Selling with Salls	S-510	Flagsstaff		21	55.0	216.76	10.32	18.75
Selling with Salls	S-510	Flagsstaff		28	54.8	200.62	7.17	13.09
What's My Line	S-511	Williams		37	55.7	180.24	4.87	8.75
What's My Line	S-511	Page		55	36.7	128.50	2.33	6.36
What's My Line	S-511	Predonia		22	29.0	160.76	7.31	25.24
Eye Tools	S-608	Page		22	61.4	246.71	11.21	18.26
Tooling Around	S-609	Tuba City		24	33.6	175.28	7.30	21.71
Tooling Around	S-609	Page		27	5.3	235.54	8.72	163.80
Tooling Around	S-609	Flagsstaff		32	18.4	106.07	3.32	18.02
Tooling Around	S-609	Tuba City		26	31.5	141.19	5.43	53.38
Tooling Around	S-609	Flagsstaff		21	10.7	119.57	5.69	19.23
Tooling Around	S-609	Flagsstaff		26	26.0	129.91	5.00	19.23

D. Teacher Evaluation of Unit

Teachers responsible for implementing instructional units into the classroom provided information in the form of written comments. These comments were suggestions for further modifications in the instructional units in addition to those indicated in the table following the teacher comments. The following is a composite of comments and suggestions for modification by instructional unit.

S-109 Ecology

- 1) Provide a better example of a water cycle in the appendix.
- 2) Vocabulary on the pre and post test was too difficult for the majority of the class.
- 3) Resource material centrally located where they would be available for use with the instructional unit.
- 4) Enjoyed this unit and the students enjoyed it too.

S-108 Airport Awareness

- 1) Availability of more films on jets, with emphasis on career education.
- 2) Suggest more filmstrips that would be appropriate for use with the unit.
- 3) Amount of time allowed for instruction was too short.

S-110 Career Clusters

- 1) Availability of materials was inadequate.
- 2) Pre and post-test was not objective enough.
- 3) Not enough time to schedule field trips.
- 4) Provide a key for the test.
- 5) Too difficult for fifth grade students.
- 6) Teacher strategies need to be more informative.

S-111 Career Awareness

- 1) Not enough time allowed to properly teach the unit.

S-210 Growing with Responsibilities

- 1) Film strips called for in the unit were not available.
- 2) Unit was boring to most of the students.
- 3) Unit might be revised and taught at a lower grade level.

S-211 Self Awareness

- 1) The unit is so abstract that good concrete ideas still seemed vague.

S-408 Dealing with Decisions

- 1) Activities were either too time consuming or too difficult.
- 2) Need more worksheet type activities.
- 3) Unit was lacking in Audio-Visual aids.
- 4) Films and filmstrips were not available.
- 5) Perhaps more of the performance objectives could be activities. Third grades learn by doing not by just talking.
- 6) Include more role playing in the activities.
- 7) Use stories that are more relevant to the experiences of the children.

S-505 What, When & Why

- 1) Pre and post test show the front of the coins but the back of the coins were shown in the unit on those pages to be used as dittos.
- 2) More creativity on the part of the teacher needs to be added.
- 3) Test could be more comprehensive.
- 4) Individual participation and involvement called for in the unit is difficult for a class of thirty.

S-508 Money Matters

- 1) Goals and performance objectives were realistic and pertinent except for goal three. Goal three was too advanced in concept.
- 2) Goal one stresses job prestige for specialists. Career education should stress the dignity of work, all work; regardless of the amount of money made.

S-509 Yearnings and Earnings

- 1) Unit is excellent, because it is so practical.
- 2) Need more worksheets
- 3) Unit may be a little above the fourth grade students comprehension.

S-510 Sailing With Sales

- 1) Students enjoyed this unit and interest was high.
- 2) Filmstrips and records that are recommended should be on hand.

S-511 What's My Line

- 1) Not enough resource materials
- 2) Teacher strategies are repeated and incomplete.
- 3) Not enough time allowed.
- 4) More background information for the teacher.
- 5) A map of the state and U.S. should be included in the Appendix.
- 6) Filmstrips that were an essential part of the unit were not available.

S-608 Eye and Ear Tools

- 1) Goal (no. 3) statement seemed unrelated to the rest.
- 2) Test copy of unit incomplete. Goal No. 4 not included even in preliminary statement of goals.
- 3) Performance objectives are not specific in stating what per cent of students accomplish them or in method used (oral, written).
- 4) Resource materials were not available.
- 5) Activities were too easy.

S-609 Tooling Around

- 1) Unit may be too difficult for fourth grade level.

S-710 Readin', Writin', and Relevance

- 1) Include more teacher information concerning career clusters for performance objective 1.12
- 2) Resource materials should be more available.
- 3) Pre test question No. 1 had the wrong answer, choice A would have been better.
- 4) Test vocabulary was too difficult.

Table 21 provides individual teacher responses to questions contained in the Teacher Evaluation Form (see Appendix D). The teacher responses indicate their feeling about the useability of each Unit taught. Since the Units were in the Pilot Test stage of development one can expect that refinements to the Units would be set forth by the teachers. The number of teacher responses for each Unit should be compared with the number of times the Unit was replicated (the number below each Unit in the heading of Table 21). Generally all Units are in need of refinements as observed by the type of teacher responses.

TABLE 21 TEACHER EVALUATION OF INSTRUCT

Questions	S-99	S-108	S-109	S-110	S-111	S-210	S-211	S-408	S-5
	1 <sup>a</sup>	2	2	3	1	2	2	2	4
1. Student Ach. of goals									
a. All goals			2	1		2	1	1	
b. Only some goals	1	2		2	1	2	1	1	4
c. None of the goals									
2. Perf. obj. related to goal(s)									
a. All perf. obj. directed toward attainmnt. of goal(s)		2	2	2	1			1	2
b. Some perf. obj. directed toward attainmnt. of goal(s)				1	2	2	2	1	2
c. No perf. obj. directed toward attainmnt. of goal(s)									
3. How learnng. actvits. dlvr'd. perf. obj.									
a. All learnng. act. was effective.	1	1	1	1	1				2
b. Some learnng. acts, were effective		1	1	2		2	2	2	2
c. No learnng. acts, were effectiv.									
4. Percent of units learnng. acts. were used									
a. 100%									
b. About 75%	1	2	1	2					3
c. About 50%									1
d. About 25%								1	
e. Less than 25%									

10	S-111	S-210	S-211	S-408	S-505	S-508	S-509	S-510	S-511	S-608	S-609	S-710
1	2	2	2	2	4	2	3	3	3	2	3	3
1	2	1	1	1	4	2	3	2	3	2	2	2
1			1		2	1	2	3	2	2	2	3
2	2	2	1		2	1	1		1			
1					2	1	2	2		1	2	2
	2	2	2		2	1		1	3	1	1	1
							1					
					3	1	2	1		1		2
			1		1	1	1	1	2	1	2	1
							1				1	

TABLE 21 (cont.) TEACHER EVALUATION OF INSTRUCTIONAL UNITS (CONTI

Questions	S-99	S-108	S-109	S-110	S-111	S-210	S-211	S-408	S-505	S-5
	1 <sup>a</sup>	2	2	3	1	2	2	2	4	2
5. Unit activities organized sequentially										
a. Yes	1	2	1	2	1	2		1	5	1
b. No			1				2	1		
c. Not applicable				1						1
6. Specified duration of unit compared to time necessary to effectively teach it										
a. Specfd. time too long	1					1				
b. Specfd. time sufficient		2		1				1	1	
c. Specfv. time too short			2	2	1	1	2	1	3	2
d. Time not specfd.										
7. Extent unit held class interest										
a. Great inst.	1	2	1	1	1		1		4	
b. Some inst.			1	2		1	1	2		2
c. No inst.						1				
8. Overall rating										
a. Retain unit/ minor revisions	1	2	1	1	1			1	3	2
b. Retain unit with exten. revisions							1	1		
c. Recnsdr usg. unit			1		1	2				
d. Drop the unit										
9. What goals were not taught										
a. Goal No.		2		5	3			4	2	1
b. Goal No.		2		4	4			5	3	3
c. Goal No.		3						3	5	4
d. Goal No.									6	

INSTRUCTIONAL UNITS (CONTINUED)

	S-210	S-211	S-408	S-505	S-508	S-509	S-510	S-511	S-608	S-609	S-710
	2	2	2	4	2	3	3	3	2	3	3
		1	5	1	2	3	2	2	3	3	
	2	1		1	1		1				
		1	1		1	1		1	1	1	
	2	1	3	2	2	2	3		2	2	
1	1	2	4	2	1	2	3	1	2	2	
1	1				2	1		1	1	1	
		1	3	2	2	2	2	1	3	3	
	1	1			1			1			
2						1					
		4	2	1	2	3	1	3	3	2	
		5	3	3	3		2	4	4		
		3	5	4			3				
			6				4				

## IV. SUMMARY, CONCLUSIONS, RECOMMENDATIONS

### A. Summary

Primarily this study was conducted to investigate the instructional usefulness of selected Career Education Instructional Units in classrooms of school districts in Coconino County. The Units introduced in the classrooms were in the Pilot Test stage of development. Therefore, information obtained from this study can serve to assist persons to improve the utility of the Units tested before they are used more widely in other classrooms.

Student achievement and cost data were collected and displayed in order to provide the users of Career Education Instructional Units to more fully assess the complete requirements of implementing Career Education Instructional Units.

Selection of the Units to be included in the study and the classrooms was a joint effort of officials involved in the Coconino County Career Education Program. Data collection forms were developed for use in the study and the data collected was tabulated and processed through the use of a computer. Detail computer printouts have been transmitted to the Director of the Coconino County Career Education Program. This report has provided through narration and Tables essential data about the findings of this study.

### B. Conclusions

#### 1. Student Achievement

Data presented in the Tables reporting student achievement show that all Units did produce learning gains for the majority of students.

Even though the mean proficiency levels were not extremely high, students did acquire many career education concepts.

An analysis of the mean pre-test and post-test scores indicates that many students had a fairly high beginning knowledge of the learning materials and concepts prior to the instruction of the Unit. High entry knowledge tends to reduce the Unit's intended effectiveness. Also, the scheduling and timing of the study at the end of the school year and the shortness of time in which to prepare for the teaching of the Unit caused the achievement to be somewhat less than could usually be expected.

Achievement levels for Career Education Instructional Units was effected by the level of the student's I.Q., the same is generally true for any other type of instructional unit.

## 2. Cost and Cost-Effectiveness

The cost of implementing Career Education Instructional Units varied widely and was largely dependent upon the teacher cost, instructional time, materials, and equipment utilized in the instructional process. Costs also varied between districts and this again was due mainly to the above mentioned items.

Summary cost data for Units is of less value than the individual Unit cost data. Districts seeking to implement Units should expect a wide variation in costs, even for similar Units at the same classroom level.

Unit costs per student decrease in direct proportion with the number of students in the classroom. However, it is reasonable to expect that achievement will suffer if the number of students in the classroom becomes excessive. Also, classrooms with too few students caused costs to be prohibitive and did not seem to increase student proficiency.

### 3. Teacher Evaluation of Unit

Teachers were generally satisfied with the quality of the Units and were able to utilize most of the activities to obtain goal and objective achievement. Three main areas of difficulties were encountered. The teaching materials, supplies, and equipment required by the Unit were troublesome to acquire. In many instances teachers had to improvise and substitute other items instead of what was recommended in the Unit. This situation could be remedied by planning and ordering far in advance of teaching the Unit or redesigning the Unit required materials, supplies, and equipment. Another difficult area, a crucial one to the measurement of achievement, was the evaluation instruments; the pre- and post-tests. The tests included in the Unit were perhaps the weakest Unit component. The tests at the kindergarten, first, second, and third grades were difficult to administer and evaluate in terms of student performance. Some of the Units did not clearly set forth precise evaluation procedures.

A third problem area was in the goal, objective, and activity components. The goals and objectives were not as directly related as they might have been in some Units. Also, many activities seemed unrelated to the objectives.

Some goals were found non-useful in particular classroom situations and so were not taught. Thus, the Unit failed to be as useful as was originally intended by the developers. Considerable modification of the Unit was necessary before it could be taught.

### C. Recommendations

The following recommendations are, for the most part, directed toward the refinements that could be made in the Units included in this study. The refinements of the Units will naturally have considerable

impact upon student achievement and the costs of teaching the Unit. The recommendations are:

1. Each Unit should be carefully analyzed to ascertain that it is appropriate for the student and grade level it is designed for in terms of the student's intellectual skill level. Since many pre-test scores were quite high on the Units, it appeared that much of the learning concepts were already acquired by the students prior to the teaching of the Units.
2. Goals, objectives, and activities must be directly related to each other. This was not so in some of the Units.
3. Instructional materials, supplies, and equipment should be available to the teacher. Many Units required items that teachers were unable to obtain.
4. Detailed teaching procedures and alternative approaches should be clearly set forth in each Unit.
5. Reliable and valid testing instruments must be included in each Unit. Keys for each test should be included for use by the teacher. More than one evaluation instrument should be prepared for each Unit so that the teacher can have available several sources of data for assessing the progress of each student.
6. Each Unit should be developed or be capable of being modified by the teacher to meet the individual learning needs of his (her) students. Perhaps the Unit should be developed by each individual district's teachers with the aid and assistance of qualified instructional program experts or curriculum designers.
7. All Units included in this study are in need of refinement before larger useage. This was expected since all Units were in the Pilot Test stage of development.
8. A continuous program of assessment should be maintained which will provide student achievement and cost data for each Unit that is taught in the classroom. The result of data collection should lead to further refinement of each Unit.

APPENDICES

APPENDIX A- COCONINO COUNTY CAREER EDUCATION COST-EFFECTIVENESS  
STUDY ADMINISTRATIVE-COST DATA INSTRUMENT

APPENDIX B - COCONINO COUNTY CAREER EDUCATION PROGRAM PILOT  
TEST PROGRAM for INSTRUCTIONAL UNITS-  
STUDENT ACHIEVEMENT FORM

APPENDIX C- COCONINO COUNTY CAREER EDUCATION COST-EFFECTIVENESS  
STUDY- COST DATA INSTRUMENT

APPENDIX D- COCONINO COUNTY CAREER EDUCATION PROGRAM-  
PILOT TEST TEACHER EVALUATION INSTRUMENT

APPENDIX E- COCONINO COUNTY CAREER EDUCATION- PILOT TEST  
WORKSHOP

APPENDIX F- COCONINO COUNTY CAREER EDUCATION- PILOT TEST  
WORKSHOP

APPENDIX A  
 COCONINO COUNTY CAREER EDUCATION  
 COST-EFFECTIVENESS STUDY  
 ADMINISTRATIVE COST DATA INSTRUMENT

Because of the nature of the information needed and the fact that staff teaching the instructional packages have other forms to complete we are asking you, the administrative staff to provide us with the following information and/or forms. Thank you for your help.

I. District \_\_\_\_\_

II. Cost Information

A. <u>Teachers' Name</u>	<u>School</u>	<u>Classroom Enrollment</u>	<u>Salary</u>
a. _____	_____	_____	_____
b. _____	_____	_____	_____
c. _____	_____	_____	_____
d. _____	_____	_____	_____
e. _____	_____	_____	_____
f. _____	_____	_____	_____
g. _____	_____	_____	_____
h. _____	_____	_____	_____
i. _____	_____	_____	_____
j. _____	_____	_____	_____
k. _____	_____	_____	_____
l. _____	_____	_____	_____
m. _____	_____	_____	_____
n. _____	_____	_____	_____
o. _____	_____	_____	_____
p. _____	_____	_____	_____

- B. School teaching contract length \_\_\_\_\_ days (number of days in teaching year).
- C. Workday length in hours for teachers \_\_\_\_\_ Hrs.
- D. Percentage for fringe benefits paid by the school district for teachers \_\_\_\_\_%
- E. Average district teachers salary \$ \_\_\_\_\_
- F. Amount paid per mile by district for private vehicle use \_\_\_\_\_¢
- G. Para-Professionals hourly salary \$ \_\_\_\_\_
- H. Percentage for fringe benefits for para-professionals in the classroom \_\_\_\_\_%
- I. Bus Operation and maintenance cost per mile 72-73 \_\_\_\_\_
- J. Bus drivers hourly salary \_\_\_\_\_
- K. Percentage for fringe benefits for bus driver \_\_\_\_\_%
- L. Amount provided per pupil for normal classroom instructional supplies, i.e., paper, chalk, etc.  
  - Elementary \_\_\_\_\_
  - Junior High School \_\_\_\_\_
- M. Number of instructional days in the school year for the student \_\_\_\_\_ days
- N. Number of hours in a normal school day for the student \_\_\_\_\_ Hrs.

The Coconino County Career Education Project Staff thanks you for your time and cooperation in completing this form and providing the additional information requested.

APPENDIX B

COCOMINO COUNTY CAREER EDUCATION PROGRAM  
PILOT TEST PROGRAM for INSTRUCTIONAL UNITS

STUDENT ACHIEVEMENT FORM

The purpose of this study is to examine program effectiveness as it relates to the cost of implementation. This form is for recording the data needed to determine student achievement for the Career Education Instructional Unit (hereafter referred to as the Unit). It is requested that you please provide the following information. If you have any problems or questions please contact your Career Education Coordinator or Dr. Sam W. Bliss, Box 5774, Northern Arizona University, Flagstaff, Arizona 86001, phone 523-4470.

Thank you for your time and cooperation in this project.

I. UNIT DATA

- a. District \_\_\_\_\_
- b. School \_\_\_\_\_
- c. Unit Title \_\_\_\_\_
- d. Teacher Name \_\_\_\_\_  
Last
First
MI
- e. Classroom No. \_\_\_\_\_
- f. Number of students enrolled at start of Unit \_\_\_\_\_
- g. Grade Level or Levels \_\_\_\_\_

II. STUDENT DATA

Student Name	M/F	Age	I.Q.	Ach. Level	Mental Age	Pre-Test Score	Post-Test Score	Unit Gain
1.								
2.								
3.								
4.								
5.								
6.								
7.								
8.								

STUDENT DATA (continued)

Student Name	M/F	Age	I.Q.	Ach. Level	Mental Age	Pre-Test Score	Post-Test Score	Unit Gain
9.								
10.								
11.								
12.								
13.								
14.								
15.								
16.								
17.								
18.								
19.								
20.								
21.								
22.								
23.								
24.								
25.								
26.								
27.								
28.								
29.								
30.								
31.								
32.								
33.								
34.								
35.								

APPENDIX C

COCONINO COUNTY CAREER EDUCATION

COST-EFFECTIVENESS STUDY

COST DATA INSTRUMENT

The Coconino County Career Education Program is conducting a study of the cost-effectiveness of career education in the school districts of Fredonia, Flagstaff, Page, Tuba City, and Williams. This form is for the cost analysis portion of the study, and is to be completed by the teacher as he or she teaches the Career Education Instructional Unit (hereafter referred to as the Unit). This form is to be returned with the Unit.

Your time and cooperation is essential for the successful completion of this project. We sincerely thank you for your assistance.

I. Descriptive Data

- A. Unit Title: \_\_\_\_\_
- B. Unit Code: \_\_\_\_\_
- C. Teacher's Name: \_\_\_\_\_
- D. Grade or Grades: \_\_\_\_\_
- E. Date Unit Started: \_\_\_\_\_
- F. Date Unit Completed: \_\_\_\_\_

II. In-Service Training

- A. What were the dates and the amount of time you spent in workshops, orientation and training sessions preparing to teach this Unit?

Date	_____	Minutes involved	_____
Date	_____	Minutes involved	_____
Date	_____	Minutes involved	_____

B. Was any time involved during the normal contract day \*for transportation from your school to meetings or workshops dealing with the career education units? If so, indicate number of minutes so used.

Travel time \_\_\_\_\_ (in minutes) Was school transportation

Travel time \_\_\_\_\_ (in minutes) provided? Yes \_\_\_ No \_\_\_

### III. Field Trips

Indicate dates, departure and return time, and destination of field trips taken in connection with teaching this unit. Attach additional sheet if space provided is insufficient.

A. Date \_\_\_\_\_ Destination \_\_\_\_\_  
Departure time \_\_\_\_\_ Time of Return \_\_\_\_\_  
Mode of transportation \_\_\_\_\_  
Vehicle starting mileage \_\_\_\_\_ Vehicle ending mileage \_\_\_\_\_

B. Date \_\_\_\_\_ Destination \_\_\_\_\_  
Departure time \_\_\_\_\_ Time of Return \_\_\_\_\_  
Mode of transportation \_\_\_\_\_  
Vehicle starting mileage \_\_\_\_\_ Vehicle ending mileage \_\_\_\_\_

C. Date \_\_\_\_\_ Destination \_\_\_\_\_  
Departure time \_\_\_\_\_ Time of Return \_\_\_\_\_  
Mode of transportation \_\_\_\_\_  
Vehicle starting mileage \_\_\_\_\_ Vehicle ending mileage \_\_\_\_\_

### IV. Additional Cost Items

If any additional items had to be ordered or purchased to teach this specific unit, please identify the item and cost.

A. Item \_\_\_\_\_ Cost \_\_\_\_\_

B. Item \_\_\_\_\_ Cost \_\_\_\_\_

\*Contract day means the normal working day as defined by your school district for the teaching year.

Additional Cost Items (continued)

C. Item	_____	Cost	_____
D. Item	_____	Cost	_____
E. Item	_____	Cost	_____



TABLE 20. UNIT COST EFFECTIVENESS FOR ALL STUDENTS

Unit Title	Unit No.	District	Grade	Number of Students	Actual Prof. Level	Cost of Unit	Cost per Student	Cost per Unit of Proficiency
Career Awareness	S-99	Williams		13	62.9%	\$ 61.49	\$ 4.73	\$ 7.53
Airport Awareness	S-108	Flagstaff		25	66.6	127.00	5.08	7.63
Airport Awareness	S-108	Williams		18	43.0	97.49	5.42	12.60
Ecology	S-109	Page		19	17.8	124.51	6.55	36.79
Ecology	S-109	Fredonia		18	37.6	309.19	17.18	45.74
Career Clusters	S-110	Flagstaff		24	65.9	72.23	3.01	4.57
Career Clusters	S-110	Tuba City		28	24.2	344.19	12.30	50.77
Career Clusters	S-110	Fredonia		12	21.2	184.73	15.39	72.72
Career Awareness	S-111	Tuba City		30	20.5	313.84	10.46	51.01
Growing With Resp.	S-210	Flagstaff		32	35.4	127.09	3.97	11.22
Growing With Resp.	S-210	Flagstaff		19	11.2	175.61	9.24	82.37
Self Awareness	S-211	Flagstaff		27	61.0	151.87	5.63	9.22
Self Awareness	S-211	Flagstaff		21	20.4	123.62	5.89	28.88
Sealing With Dec.	S-408	Tuba City		15	7.8	204.56	13.64	175.56
Sealing With Dec.	S-408	Flagstaff		19	25.0	79.81	4.20	16.78
What, When, Why	S-505	Tuba City		27	25.2	145.78	5.40	21.44
What, When, Why	S-505	Flagstaff		20	28.5	267.84	13.39	46.94
What, When, Why	S-505	Page		27	68.8	475.70	17.62	25.59
Money Matters	S-508	Flagstaff		21	18.7	129.31	6.16	32.93
Money Matters	S-508	Williams		18	0.0	90.40	5.02	-58.96
Earnings, Earnings	S-509	Flagstaff		28	27.0	189.75	6.77	25.14
Earnings, Earnings	S-509	Flagstaff		31	38.2	162.04	5.23	13.58
Earnings, Earnings	S-509	Williams		28	34.2	118.48	4.23	12.36
Sealing With Sails	S-510	Williams		26	25.5	126.63	4.87	19.10
Sealing With Sails	S-510	Flagstaff		21	55.0	216.76	10.32	18.75
Sealing With Sails	S-510	Page		28	54.8	200.62	7.17	13.09
What's My Line	S-511	Williams		37	55.7	180.24	4.87	8.75
What's My Line	S-511	Page		55	36.7	128.50	2.33	6.36
What's My Line	S-511	Fredonia		22	29.0	160.76	7.31	25.24
Eye Pools	S-608	Page		22	61.4	246.71	11.21	18.26
Learning Around	S-609	Tuba City		24	33.6	175.28	7.30	21.71
Learning Around	S-609	Page		27	5.3	235.54	8.72	163.80
Learning Around	S-609	Flagstaff		32	18.4	106.07	3.32	18.02
Learning Around	S-609	Flagstaff		26	31.5	141.19	5.43	53.38
Learning, Rel. S-710	S-710	Tuba City		21	10.7	119.57	5.69	19.23
Learning, Rel. S-710	S-710	Flagstaff		26	26.0	129.91	5.00	19.23

APPENDIX D

COCOHINO COUNTY CAREER EDUCATION PROGRAM  
PILOT TEST TEACHER EVALUATION INSTRUMENT

Introduction

This instrument is designed to gather information which will be used to help refine Career Education Instructional Units (hereafter referred to as the Unit). As the instructor in the pilot test, you are the most qualified individual to provide this information. As this is a pilot copy of the unit, you will find that you will have many suggestions and comments for its improvement. It is important that while completing this instrument you are as specific as possible in suggesting improvements for the unit.

Read over the entire instrument as soon as you receive it. Please complete those parts of the instrument on which data are available as soon as possible. This will alleviate the problem of trying to recall at the end of the unit what actually took place. It is hoped the format of this instrument is such that it will take a minimal amount of your time.

Again we thank you for your part of this cooperative effort in developing a career education program.

Demographic Data

1. Unit Identification Title: \_\_\_\_\_
2. Unit Identification Code: \_\_\_\_\_
3. Name of School and District \_\_\_\_\_
4. Grade \_\_\_\_\_

Attitudinal Data

The following questions pertain to the unit as you received it, not to changes that you may have introduced while teaching the unit.

- a. \_\_\_\_\_ All of the unit goals were achieved.
  - b. \_\_\_\_\_ Only some of the unit goals were achieved.  
No. of goal(s) not achieved \_\_\_\_\_
  - c. \_\_\_\_\_ None of the unit goals were achieved.
2. Which of the following best describes how the performance objectives related to the goal(s) of the unit?
- a. \_\_\_\_\_ Each performance objective was directed toward the attainment of the goal(s) of the unit.
  - b. \_\_\_\_\_ Only some performance objectives were directed toward the attainment of the goal(s) of the unit.
  - c. \_\_\_\_\_ None of the performance objectives was directed toward the attainment of the goal(s) of the unit.

3. Which of the following best describes how the unit learning activities delivered the unit performance objective?
- a. \_\_\_\_\_ Each learning activity was effective in delivering the performance objective(s).
  - b. \_\_\_\_\_ Only some learning activities were effective in delivering the performance objective(s).
  - c. \_\_\_\_\_ No learning activities were effective in delivering the performance objective(s).
4. Approximately what percent of the unit's learning activities did you use?
- a. \_\_\_\_\_ All of the activities (100%)
  - b. \_\_\_\_\_ About 75%
  - c. \_\_\_\_\_ About 50%
  - d. \_\_\_\_\_ About 25%
  - e. \_\_\_\_\_ Less than 25%
5. Were the unit learner activities organized sequentially with respect to levels of difficulty?
- a. \_\_\_\_\_ Yes, sequence was adequate
  - b. \_\_\_\_\_ No, sequence needs revision
  - c. \_\_\_\_\_ Not applicable
6. How does the specified duration of the unit compare to the amount of time you felt was necessary to effectively teach it?
- a. \_\_\_\_\_ The specified time was too long.
  - b. \_\_\_\_\_ The specified time was sufficient.
  - c. \_\_\_\_\_ The specified time was too short.
  - d. \_\_\_\_\_ Time was not specified.
7. To what extent did the unit hold class interest?
- a. \_\_\_\_\_ Most of the class showed great interest.
  - b. \_\_\_\_\_ Most of the class showed some interest.
  - c. \_\_\_\_\_ Most of the class showed no interest.
8. Overall rating:
- a. \_\_\_\_\_ Retain the unit with minor revisions as indicated in this form.
  - b. \_\_\_\_\_ Retain the unit with extensive revisions as indicated in this form.
  - c. \_\_\_\_\_ Seriously reconsider using the unit.
  - d. \_\_\_\_\_ Drop the unit from consideration.

9. What goals were not taught?

A. List goal number(s)

Goal \_\_\_\_\_ Goal \_\_\_\_\_ Goal \_\_\_\_\_ Goal \_\_\_\_\_

B. Reasons not taught

Goal No. \_\_\_\_\_ Reason \_\_\_\_\_

Suggest any further changes that you feel should be made in order to improve the unit.

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APPENDIX E  
COCONINO COUNTY CAREER EDUCATION  
PILOT TEST WORKSHOP

SCHOOL DISTRICTS: Flagstaff, Tuba City and Williams  
 PLACE: Flagstaff Supervisors Office  
 North Isabel  
 South of Coconino High School  
 DATE: April 25, 1973 TIME: 6:00p.m. - 9:30p.m.  
 PARTICIPANTS: Flagstaff, Tuba City and Williams  
 Teachers pilot testing instructional units

Flagstaff Teachers

Teachers to be identified at a later date

Tuba City

Williams

<u>Grade</u>	<u>Name</u>	<u>Grade</u>	<u>Name</u>
Kindergarten	Ms. Feibus	3rd	Marilyn Duffy
3rd	Ms. Richmond	3rd	Charlene Myers
3rd	Ms. Lockett	4th	Ruddy Sanchez
4th	Ms. Parker	5th	Dale Winchester
5th	Ms. Brietenbach	6th	J. C. Fain (Mr.)
5th	Ms. Baca	8th	Richard Hoyt
6th	Ms. Alma Thomas		

TOPICS TO BE DISCUSSED

6:00p.m. - 6:20p.m.	I. Introduction A. Participants B. Workshop Procedures
6:20p.m. - 8:00p.m.	II. Pilot Test Procedures
8:00p.m. - 9:00p.m.	III. Distribution and Discussion of Career Education Instructional Units and Data Collection Forms
9:00p.m. - 9:30p.m.	IV. Summary of Pilot Test Activities

COCONINO COUNTY CAREER EDUCATION  
PILOT TEST WORKSHOP

SCHOOL DISTRICTS: Page  
Fredonia

PLACE: Page Elementary School Library

DATE: April 17, 1973 TIME: 4:30p.m.

PARTICIPANTS:

Page Teachers

Fredonia Teachers

<u>Grade</u>	<u>Name</u>	<u>Grade</u>	<u>Name</u>
Kindergarten	Thelm LaFever	3rd grade	Paul Heaton
3rd grade	Lucille O'Riely	5th grade	Veldon Black
	Alice Koeje	6th grade	Dan Haycock
4th grade	June Wakefield		
5th grade	Beverly Huntley		
	Allyn Watson		
6th grade	Betty Holder		

TOPICS TO BE DISCUSSED

1:00p.m. - 1:20p.m.	I. Introduction A. Participants B. Workshop Procedures
1:20p.m. - 2:00p.m.	II. Pilot Test Procedures
2:00p.m. - 4:00p.m.	III. Distribution and Discussion of Career Education Instructional Units and Data Collection Forms
4:00p.m. - 4:30p.m.	IV. Summary of Pilot Test Activities