

A MOBILE SHOP UNIT FOR OREGON'S RURAL SCHOOLS

by

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A MOBILE SHOP UNIT FOR OREGON'S RURAL SCHOOLS

CHAPTER I

INTRODUCTION

The basic concern of this study is the application of a mobile shop unit or units, as a means of assisting the rural schools of Oregon in offering a richer and more varied curriculum. In Oregon, and many other states, the rural schools have very limited educational facilities; practically no libraries, an insufficient number of teachers, inadequate operational funds, and a host of other problems that are depriving the rural child of his right to equal educational opportunities.

In an era when technological developments play a vital part in our everyday living, the educational process should consist of more than the fundamental "three R's." Education today, should include that information which will familiarize the student with tools, materials and processes in order that he may more readily cope with the problems of tomorrow.

The industrial arts program, because it offers laboratory exploration, using tools, materials and processes, is in a unique position to emphasize the technological developments common to everyday living.

A. Purpose of the Study.

The purposes of this study are:

1. To determine the extent of industrial arts and craft activity courses now taught in rural elementary and secondary schools in Oregon.
2. To determine to what extent a mobile shop unit might assist the rural school to meet certain objectives of education not currently met.
3. To determine the cost of installing a mobile unit within the State of Oregon.
4. To obtain information on mobile instructional units now in use by public schools elsewhere.

B. Methods and Procedure Used in the Study.

A questionnaire survey of the rural elementary and secondary schools was used to gain the following information (see appendix for copy of letter of transmittal and questionnaire):

1. The specific industrial arts and craft courses now taught.
2. The industrial arts and craft courses these schools would like to include.
3. Could a mobile shop unit offer assistance to the schools in helping them meet the needs of their students.
4. Would these schools be willing to pay a reasonable charge for services offered by a mobile unit.

5. Information concerning mobile units now in use by public schools of other states, collected by correspondence and survey of literature.

The rural elementary and secondary schools of Oregon contacted in this study were selected on a basis of enrollment, 25 to 100 for the elementary, and 25 to 150 for the secondary schools. In the selection of schools an attempt was made to have some response from every county within the State of Oregon. Page 72 of the appendix shows the geographical distribution of the schools contacted.

C. Limitation of the Study.

A study of this nature has presented many problems which unfortunately cannot be solved in a conclusive manner within the body of this paper. This study only opens the door to a potential medium by which the Oregon State Department of Education, or any group of associated schools of the state, may more adequately fulfill obligations of the state to the boys and girls under its jurisdiction.

CHAPTER II

A RESUME OF MOBILE UNITS NOW IN USE

The idea of placing the classroom on wheels is not exactly new. The pages of history give evidence that education, even though in meager amounts, was forthcoming from the covered wagon. In the twentieth century, however, Americans are inclined to visualize their schools as somewhat less nomadic, and are prone to question the value of a schoolroom on wheels even in this modern age. There is growing evidence that such a schoolroom does have a place in the education of rural youth.

School-Operated Mobile ClassroomsA. Iowa State Teachers College, Cedar Falls, Iowa.

Under the leadership of Dr. H. G. Palmer, Head of the Industrial Arts Department, Iowa State Teachers College put into operation in 1948 what is probably the largest mobile shop unit operated by any school. (See appendix page 49 for schematic drawing.) Pertinent facts concerning this unit are as follows:¹

1. Cost of unit.

a. Used tractor and trailer \$ 2700.00

¹Information concerning this unit was obtained by correspondence; see appendix, page 65.

b. Power tools \$ 3500.00
(loaned by tool dealers and
distributors on demonstration basis.)

c. Small tools and construction supplies 2000.00

Total cost \$ 8000.00

2. Operation cost.

a. Cost per day for instruction \$ 19.59

b. Average cost of materials per 20
pupils per day \$ 7.20

c. Average road cost per day \$ 30.00

d. Operation cost for eight weeks \$ 2271.60

3. Purpose of unit.

a. Instruction in this unit is not handled on a course basis; it is deemed more essential to demonstrate what a school can do with a small budget spread over the general areas of activity in industrial arts, and to show what school services are possible under school district reorganization.

b. To give elementary rural school children of Iowa an opportunity for varied experiences under the industrial arts program.

c. To provide in-service teacher education and adult education in the industrial arts area.

d. To upgrade the industrial arts program, especially in the small schools.

4. Operation and schedule plan.

a. Visits to the various schools throughout the state are requested by the individual county superintendent. Having studied the needs of his county each superintendent makes his own schedule and pays \$50.00 per week or \$20.00 per day toward the overall operational expense.

b. The mobile unit visits each school once a year depending upon assistance needed.

- c. Classroom teachers are briefed on their part in the day-long program, many assisting with materials, design and planning, and quite often assisting with the techniques.
- d. When convenient and practical, students are transported from several small schools to a central meeting place.
- e. The number of students per day for day-long programs averages thirty; as many as fifty students have been handled in one day, each completing one or more projects.
- f. A different staff member from Iowa State Teachers College is assigned to the mobile unit each quarter. This rotation of staff members has been found of great value in helping them keep in touch with the public school people and their problems.
- g. A special driver-supply man is employed to spot the unit about the state according to schedule, previously arranged on request by the individual schools.

B. Santa Clara County Schools, Santa Clara, California.

The philosophy of Santa Clara County Schools in regard to the mobile classroom is essentially . . . "If you can't take Mohammed to the mountain, we will bring the mountain to Mohammed." Mr. John Satterstrom, Supervisor of Industrial Arts, Santa Clara County Schools, has this to say about the mobile unit under his supervision:

There is reason to believe that many schools will eliminate themselves from the group requiring the services of the mobile shop by acquiring adequate facilities of their own. By thus eliminating itself the mobile unit will serve its highest purpose, in the minds of its creators. (13, p.263)

Pertinent facts concerning the Santa Clara Unit are:²

1. Cost of equipped unit.
 - a. Power tools; reclaimed city bus \$2500.00
2. Operating cost.
 - a. Operating budget for 1951-52 \$1885.30
 - b. The cost of maintaining the mobile unit is carried in the industrial arts supervisor's budget, which is a part of the County Supervisor's Service Fund.
3. Purpose of the unit.
 - a. To supplement the hand woodworking tools with which most of the small schools in Santa Clara County are equipped, and bring them for one day a week at least, some of the advantages of "big city" school shops. (The unit does not carry hand tools.)
 - b. To encourage and up-grade the industrial arts program.
 - c. To initiate and help plan new programs for the industrial arts areas of instruction.
4. Operation and schedule plan.
 - a. Visits to the schools are requested by the principal or supervisor, through the County Superintendent's office. The length of each visit is determined by the needs and desires of the individual school district.
 - b. Each school is scheduled to have the mobile shop service every other week. As many as 17 schools have been served by this unit during regular scheduling time.
 - c. Nearly all of the schools in the County served by the mobile unit have shops in which work is carried on with hand tools. Some of the minor assembly is done in the mobile unit if there is further power tool work to be done immediately following partial assembly.

²Information concerning this unit was obtained by correspondence; see appendix page 62.

It is possible to have six youngsters at work in the unit at any one time.

- d. The period of time given to industrial arts is determined by the traveling instructor, who is regularly credentialed as an industrial arts teacher. In some cases other teachers are involved but, generally speaking, these teachers desire to increase their own capabilities by observation of the program. By this method, the integration of the program into the general field is accomplished more effectively.
- e. The instructor is the driver of the Mobile Shop. He is not paid extra as it is understood that driving is a part of his job.

Mr. Satterstrom of Santa Clara County, California, aptly states . . . "Students in these rural schools regard an opportunity to use the facilities of the mobile unit as an opportunity well worth striving for, something akin to a meeting with Joe DiMaggio or a trip to the World Series." (13, p.263)

C. San Diego County Schools, San Diego, California.

San Diego County Schools operate a fleet of mobile units whose purpose is to assist the teachers of the one-room schools in meeting the needs of the students, from kindergarten through the eighth grade. Emphasis is placed on constructional activities suitable for the elementary grades, kindergarten through the eighth grade. In the small schools this activity is easily integrated into the curriculum of the elementary program of the San Diego County School System.

Pertinent facts concerning these mobile units have been

furnished by Ferdinand Liotto, Coordinator of Vocational Education, San Diego County Schools. They are as follows:³

1. Cost of units.

a. Surplus army vehicle	\$ 500.00
b. Tools and equipment	2700.00
	<hr/>
Total cost	\$ 3200.00

2. Operating costs.

a. Operating cost per year	\$ 7500.00
This includes consultants salary, road cost and maintenance of vehicle, construction supplies and tool maintenance.	

3. Purpose of units.

- a. To assist teachers and children in many kinds of construction activity, using a variety of media.

4. Operation and schedule plan.

- a. Service offered by the mobile units is contracted by the individual school on the half-day or full-day basis.
- b. Each mobile unit handles 5 to 10 schools and visits each school once a week.
- c. Teachers are requested to participate in the instructional program; in many cases the industrial arts teacher in charge of the unit merely acts as a consultant.
- d. The Industrial Arts Consultant does the driving and the teaching. His salary and contract are such that it would be impractical to hire a special driver. The consultant assigned to a mobile unit is asked to live within driving distance of the schools he serves, thus he is with the mobile unit at all times, and is responsible for the maintenance of the vehicle.

³Information concerning this unit was obtained by correspondence; see appendix page 68.

D. Kern County, California.

Under the supervision of Leo B. Bart, Superintendent of Schools, Kern County, four mobile classrooms are in service, with the possibility of more to be added. The fleet of mobile classrooms in Kern County consist of two industrial arts units, one home economics, and one business education unit—the latter being the latest addition.

General information concerning these units is as follows:

(1, pp.81-83)

1. Types of units used.

- a. The units for industrial arts are surplus shop trucks, purchased for approximately \$500 apiece. These have been re-equipped to meet the needs of industrial arts teaching.
- b. The home economics unit consists of the house-trailer type, the outside of which had been rejuvenated to appear as a small house. (10, p.45)
- c. A thirty-five passenger bus of war vintage, but practically new, comprises the commercial education unit. The original seats have been left in place and an adjustable top fastened to the back of each seat forms the desk top. The unit is equipped with typewriters, adding machine, and a duplicating machine.

2. Purpose of the units.

- a. To provide the children in the rural schools with educational advantages heretofore reserved for their city cousins.

3. Operation and schedule plan.

- a. Services to be offered to the sixty-two rural schools of the county are scheduled in the spring of the year. This enables the individual school

to make the necessary budget allowances if they desire to participate in any of the mobile classroom units.

- b. The teacher selected to serve with these units is awarded a contract from each district, and is a member of the faculty of each school served. Each school served pays a portion of the teachers salary. An authorization is signed by the trustees empowering the county superintendent to draw on the district funds to establish a fund from which the salary warrants are paid. Thus the teacher receives only one check at the end of the month.

E. Ontario, Canada.

In northern Ontario, seven converted railway coaches offer the only schooling to thirty-one isolated communities which otherwise would receive no formal instruction in the way of reading, writing and arithmetic.

Actually each of the seven converted railway coaches is a separate school providing service to a designated area. The teacher and his family are provided with additional railway coaches as living quarters; thus the schoolroom and living quarters comprise one unit.

The units are spotted on railroad sidings in various areas, and students make their way to the schoolhouse-on-wheels by dog team or skis in the winter, by canoe or trail in the summer. Automobiles are still unseen and unheard in this remote part of Canada. Each unit spends five days in one locality, and assigns enough home work to keep the students busy until the return visit. These units

seldom have over sixteen students at any one time, thereby allowing the teacher to give much-needed individual attention. Schooling is not limited to children alone, but open to adults who care to take advantage of the opportunity. Many so called "bushmen" have been taught to read write and use simple arithmetic by means of the schoolhouse-on-wheels. (3, pp.65-68)

F. University of Texas, Austin, Texas.

The Division of Extension Instruction, University of Texas, in conjunction with the State Board of Vocational Education, offers display training and window trimming instruction through the medium of a mobile unit. Display training was requested by a number of cities throughout the state of Texas as early as 1939. However, due to lack of trained instructors, the idea seemed impractical until the extension service hit upon the idea of a mobile unit. This service was inaugurated and offered display training until the beginning of World War II, but not without some limitations. The bulkiness of appropriate props, models and other equipment necessary to carry on adequate training proved to be the most impractical aspect of the whole program.

In 1949 the program was again offered after many requests, but this time with new approach. Scale models of display equipment, including fixtures, clothes, lights, manikins, and display windows provided adequate training facilities, and in many cases provided

advantages heretofore unseen. Several displays could be arranged and analyzed for effectiveness in a fraction of the time formerly used for one life-size display. Several small groups could work more effectively pursuing group interest. Working with miniature construction brought forth the ingenuity and resourcefulness of the students to a greater degree since they could more readily view the problem in its entity. (2, pp.7-8)

Summarizing the activities of the foregoing mobile units, their objectives could be stated as follows:

1. Assist the rural schools in enlarging their individual programs to a point previously conceived as impossible.
2. Give the rural school children an opportunity for varied experience, including industrial arts, home economics, and business education.
3. Provide formal instruction in various phases of adult and other group experiences that otherwise would not be obtainable.

CHAPTER III

SERVING OREGON'S RURAL SCHOOLS WITH MOBILE INSTRUCTIONAL UNITS

The foregoing chapter described some of the mobile educational units and their operations. In this chapter an attempt will be made to show how a mobile unit or units could be of service to the schools of the State of Oregon.

Service Number One: To introduce the industrial arts program to the rural elementary and secondary schools.

The mobile shop unit would undoubtedly find the maximum demand for introducing the objectives of the industrial arts program on the elementary level, due to the fact that fewer elementary schools offer industrial arts. Inquiries concerning this study showed that seventy per cent of the returns from elementary schools with enrollment of 25 to 100 had no industrial arts program, but expressed a desire and need for such a program. When compared to the returns from the high schools contacted, with enrollment from 25 to 150, only thirty-two per cent showed no industrial arts program but expressed a need and a desire for the program. Donald F. Santee claims

The presence of these many small schools affects the industrial arts offerings to a marked degree. The small schools, hampered by a lack of teaching personnel, must either exclude industrial arts from their curriculums, or they must offer a restricted program, thereby neglecting the need for broadened curricular experiences of the type ideally furnished by the industrial arts. (12, p.26)

Seeing and participating in the industrial arts program through the medium of the mobile shop unit, would be an effective way to introduce to the rural schools the educational benefits to be achieved through a properly administered industrial arts program. Schools without some phase of industrial arts activity may be lacking, or at least not fulfilling their complete obligation to the student. These schools "are ignoring the fact that the whole student, and not just the academic part of him comes to school." (6, p.138)

Service Number Two: To offer assistance and suggestions in planning the industrial arts program, thus minimizing costly mistakes and avoiding inadequacies.

With due consideration for the numerous responsibilities of school administrators, it is impossible and impractical to expect them to be authorities in every phase of school planning. Each area of instruction has its own requirements for equipment, objectives and teaching methods, and only those closely associated with a given area are in a position to provide adequate planning.

The superintendent or principal, whose schedule is heavy in other categories and whose background is limited in industrial arts, in most cases would find the industrial arts consultant serving with a mobile shop unit of invaluable assistance in planning the industrial arts program. Such a consultant, with the mobile unit

as his laboratory, library, and office would be in a position to assist in a constructive manner, offsetting the likelihood that the industrial arts program would "grow like Topsy"--without planning or foresight.

Staffed with a qualified teacher well versed in the techniques of school shop planning and objectives of the industrial arts program, the mobile shop could be used for the service feature to small schools, the planning of programs, and the selection of equipment and materials.

Concerning the planning of the industrial arts program, Roy G. Fales, Supervisor of Industrial Arts in New York State, is quoted by Leaf: (7, p.15)

The industrial arts shops which have been set up in the schools throughout the state have been planned in many different ways. Local conditions and individual needs necessarily prevent a single standard being followed. Nevertheless, there are many elements which are common to all shops, and a standardization of these elements should greatly aid in eliminating waste space, in removing hazardous working conditions, and utilizing the available floor space to the greatest advantage.

Fales statement exemplifies the fact that many problems of a school shop are not necessarily characteristic of one shop, but may apply to school shops in general.

Service Number Three: Introducing new materials and techniques to teachers in the field.

Discoveries in media suitable for educational purposes are

increasing so rapidly that the average teacher is taxed considerably to keep abreast of these developments within one subject matter area. To add to the confusion, new discoveries seem to point the way for new application of old techniques. For example: fast drying, self-leveling laquers originally reserved for the spray gun technique can now be applied successfully with a brush; ceramic clays and glazes formerly requiring high firing temperatures, can now be fired within the temperature range of the household electric oven; some non-ferrous metals formerly requiring metal working tools can now be worked successfully with certain woodworking tools. Blackboards, the mainstay of the rural school insofar as a visual aid is concerned, are back with new characteristics. They have increased legibility, are easier to clean, especially when colored chalk is used, and are more readily available than the natural slate blackboards.

These and hundreds of other recent developments are a boon to the busy teacher, whose classroom teaching can be made more effective by knowing how to apply these latest scientific developments. Administrators and teachers are interested in developments of new educational media from the standpoint of doing a better job, satisfying the needs of the students, and the cost involved in their application.

A consultant serving with the mobile unit could perform invaluable service to school personnel by gathering and disseminating information concerning new products.

Service Number Four: Promoting an interchange of ideas on teaching, shop planning, and project ideas.

In a recent survey in which thirty in-service training techniques were evaluated by industrial arts teachers of California, project exchange among teachers was rated as of the greatest value. (4, p.21) By photographs, slides, film strips, movies, drawings, and exhibits the industrial arts consultant of a mobile unit would be in a position to exchange ideas on many phases of teaching which normally never go beyond the door of the room where they were created. At the present time, magazines and books provide the principal medium of exchange for educational ideas, but by no means do all of the best ideas find their way into publications.

Service Number Five: Providing in-service training and summer work shops.

In the study of Donald F. Santee (1947), concerning the extent of industrial arts training of 132 industrial arts teachers in the State of Oregon, the following facts were brought out: (12, p.48)

1. Forty and seven-tenths per cent of 132 industrial arts teachers in the State of Oregon, reported that they had not more than five credits of industrial arts education.
2. Twenty-five and seven-tenths per cent of the 132 had 45 credits or more in industrial arts education.
3. The remaining 33.6 per cent of the 132 teachers surveyed, ranged from 6 to 40 credits in industrial arts education.

The results of Santee's study are by no means a reflection on the individual training of the teachers who participated in his study. The fact is self-evident, however, that if the industrial arts program in Oregon is to flourish on a sound basis, these teachers are going to need help. At this point it may be well to emphasize the fact that of the thirty in-service training techniques rated by California industrial arts teachers, supervision by qualified industrial arts personnel rated fourth in the rank of importance.

(4, p.21)

Teacher institutes could well profit from the examples of industry where mobile shop units are used for training purposes. The significance of mobile instructional units are well expressed in the following statement by Mr. A. B. Robertson, of General Motors training Division:⁴

1. During our first year of operation, 1951, we trained 1800 men. This is 600 more than the total trained by our base school during twelve years of operation.
2. The cost of moving the unit from one location to another is negligible when compared to the cost of having students come into a permanent school location.

During the school year in-service training could be provided to industrial arts and other interested teachers. Summer workshops for students and teachers could be provided in the form of outdoor living, using the mobile unit as the laboratory. Units in science,

⁴Information obtained by correspondence; see appendix page 57 to 58.

living together, and leisure time activity could be combined into a beneficial experience for all participating.

Service Number Six: Unifying the objectives of the industrial arts program within the State of Oregon.

With unification of objectives comes supervision, an excess of which can be detrimental to sound progress. Likewise, with no supervision, objectives of any program become lost in a maze of generalities.

Oregon is still one of the several states where little or no concentrated effort has been expended in an attempt to unify the objectives of the industrial arts program. Wayne Martin, in his study of 1948 (8, pp.78-79) expressed a point of view which, if put into effect could be of great assistance in unifying the industrial arts program.

In view of the extensiveness of the program of industrial arts in Oregon, and of the diversity of opinion as to the purpose of the subject, the degree of emphasis, and the success in attaining the objectives, it is recommended that:

1. The Oregon State Department of Education extend its services to include a more comprehensive program of directing and supervising of industrial arts.
2. The State Department of Education maintain an extensive service for the exchange of ideas and materials for industrial arts teaching.
3. A cooperative arrangement be established with the Oregon State College Department of Industrial Arts for the dissemination of new educational concepts

and information, in order that the industrial arts teachers of Oregon may be assured of keeping abreast of the latest developments of the profession.

Martin's recommendations dovetail nicely with the services that could be offered through a mobile unit as thus outlined (introducing the objectives of industrial arts, aid in planning, introducing new material and techniques, promoting an exchange of educational and project ideas, instituting in-service training and summer workshops). Such a program could play a vital and significant part in up-grading and unifying the objectives of industrial arts in the State of Oregon.

Service Number Seven: To promote good public relations between the schools and the people of the state.

A mobile instructional unit equipped with industrial arts teaching media, would be invaluable in demonstrating to the public the educational benefits derived from the industrial arts program. The consultant assigned to a mobile unit would be in a position to emphasize the importance of having the opportunity to develop skills and knowledge, and that one of the objectives of the industrial arts program is a realistic approach to job exploration. Such a unit could bring to the public any phase of the school program, in the form of exhibits, public appearance of students or live demonstrations by students.

James O. Reynolds, McKinley Occupational School, Dayton, Ohio,

has this to say about public relations in the area of industrial arts: (11, p.360)

Much has been said regarding the need for improved public relations in industrial arts education but not too much has been accomplished in that direction. It should be a part of the over-all public relations program of the entire school, not just a departmental policy since good school-community relations are dependent upon the attitudes and activities of all areas of the school.

CHAPTER IV

THE STUDY

Survey Procedure and Results

The success of a mobile shop unit or any type of a mobile instructional unit would depend a great deal upon the initial groundwork that preceded the actual operation. This study can hardly be considered the necessary groundwork. More aptly, it is a probe to determine the receptiveness of the mobile shop unit for Oregon's rural schools. An attempt was made to determine from the following, the need for a mobile shop and the receptiveness of the schools to such an idea.

1. To what extent industrial arts and craft activities were taught in the rural elementary and secondary schools of Oregon.
2. To what extent a mobile unit would assist the schools in meeting the needs of their students.
3. Would these schools be willing to pay a service charge for use of the mobile unit?
4. Would small schools be willing to transport participating students to a central meeting place, not to exceed 15 miles?

To limit the questionnaires to a reasonable number, and to establish a starting point, a geographical distribution of schools with an enrollment figure of 25 to 100 pupils was selected for the elementary schools, and 25 to 150 pupils for high schools. See appendix, pages 73 to 76.

Elementary Schools: To what extent are industrial arts and craft activities taught in the rural elementary schools of Oregon.

Two hundred and seventy-four questionnaires were sent to elementary school principals and teachers whose school enrollment ranged from 25 to 100. A sample questionnaire and letter of transmittal can be found in the appendix. One hundred and fifty-two (56 per cent) of the questionnaires were returned, and of these 139 (91 per cent) showed a positive response. Returns on the questionnaire indicated that 110 (72 per cent) of the rural schools contacted had no shop or craft activity of any kind. Table I shows the specific areas of industrial arts and craft activity taught in 139 elementary schools as indicated by the returned questionnaire. The woodworking area listed the largest number of students participating, but as a whole the industrial arts and craft programs show a very meager offering in these schools.

Table II shows the areas of metal, wood, and craft activity indicated as desirable by 139 elementary school principals and teachers in the State of Oregon. Thirteen indicated a disapproval of either industrial arts or craft type programs. The desirability of including various phases of industrial arts and crafts in the elementary school is clearly indicated, with the woodworking area again in the place of first preference, craft areas second and metal third.

TABLE I

Number of schools specifying areas of industrial arts and craft activity currently taught in 139 elementary schools of Oregon; enrollment 25 to 100 pupils.

	Number	Percentage*
METAL AREAS		
Welding and forging	3	2.16
Metal craft	13	9.35
WOOD AREAS		
General Woodwork	17	12.2
Wood carving	17	12.2
Wood finishing	13	9.35
CRAFT AREAS		
Beadwork	3	2.16
Blockprinting	14	10.
Bookbinding	4	2.86
Leather	9	6.5
Plastics	3	2.16

*Percentages figured on the positive response of 139.

TABLE II

Number of schools indicating areas of industrial arts and craft activity as desirable in 139 elementary schools of Oregon: enrollment 25 to 100 pupils

	Number	Percentage*
METAL AREAS		
General metal	42	30.
Sheet metal	20	14.4
Welding and forging	24	17.3
Metal craft	54	38.8
WOOD AREAS		
General woodwork	82	59.
Woodcarving	66	47.5
Woodfinishing	68	47.8
CRAFT AREAS		
Beadwork	64	46.
Blockprinting	59	42.4
Bookbinding	46	33.1
Lapidary	40	28.8
Leather	88	64.
Plastics	81	58.3

*Percentages figured on the positive response of 139.

High Schools: To what extent are industrial arts and craft activities taught in the rural high schools of Oregon.

One hundred and ten questionnaires were sent to rural high school superintendents, principals, and teachers whose school enrollment ranged from 25 to 150 pupils. The same questionnaire and letter of transmittal were used throughout the study. See appendix for copy. Ninety-one (82.7 per cent) of this group of questionnaires were returned, and of these eighty (88 per cent) showed a positive response. Only twenty-nine (32 per cent) of the returned questionnaires indicated no industrial arts or craft program; however twelve of the twenty-nine were in the process of revising their curriculums and reported they would include industrial arts.

Table Ia shows the specific areas of industrial arts and crafts activity taught in eighty rural high schools as indicated by the returned questionnaire. The areas of woodworking show the greatest number of students participating, with crafts second and metal area third.

Table IIa shows the areas of industrial arts and craft activity indicated as desirable by eighty rural high school superintendents, principals and teachers in the State of Oregon. In the rural high school the areas indicated in order of preference were crafts, metals, and woodwork. A comparison of tables I and Ia, II and IIa will follow.

Table Ia

Number of schools specifying areas of industrial arts and craft activity taught in eighty rural high schools of Oregon; enrollment 25 to 150 pupils.

	Number	Percentage*
METAL AREAS		
General metal	6	7.5
Sheet metal	6	7.5
Welding and forging	20	25.
Metal craft	6	7.5
WOOD AREAS		
General woodwork	56	70.
Woodcarving	24	30.
Wood finishing	44	55.
CRAFT AREAS		
Beadwork	3	3.75
Blockprinting	6	7.5
Leather	18	22.5
Plastics	14	17.5

*Percentages figured on the positive response of 80.

TABLE IIa

Number of schools indicating areas of industrial arts and craft activity as desirable in eighty rural high schools of Oregon; enrollment 25 to 150 pupils.

	Number	Percentage*
METAL AREAS		
General metal	45	56.3
Sheet metal	34	42.5
Welding and forging	38	47.5
Metal craft	33	41.3
WOOD AREAS		
General woodwork	25	31.2
Woodcarving	17	21.2
Woodfinishing	25	31.2
CRAFT AREAS		
Beadwork	26	32.4
Blockprinting	31	38.8
Bookbinding	29	36.2
Lapidary	24	30.
Leather	43	53.7
Plastics	43	53.7

*Percentages figured on the positive response of 80.

At this point it may be well to emphasize some of the data brought out by the foregoing tables. Comparing Table I and Ia it is found that:

- a. The rural elementary and high schools offer very little in the way of craft activity; however both indicate a need and a desire to include such in their curriculums.
- b. Woodworking and related areas are indicated as the industrial arts subject-matter most predominantly taught.
- c. Very little emphasis is placed on metal work in either level, with the exception of welding on the secondary level.

Table II and IIa indicate the following:

- a. High schools show the strongest interest in the metal working area with the craft area second and woodworking third. This could be due to the fact that the high schools which include some phase of the industrial arts program in their curricular programs have already indicated woodworking; therefore any addition would be in the metals areas.
- b. The elementary group showed a first preference for the woodworking area, with the crafts second and metals third.

Elementary and High School: To what extent would a mobile unit assist the schools in meeting the needs of their students.

Table III shows the response to the question above. Percentages are figured on the total returns with 152 (56 per cent) out of 274 for the elementary group, and 91 (82.7 per cent) out of 110 for the high school group.

TABLE III

<u>Mobile shop would assist:</u>	<u>Elementary</u> (Per cent)	<u>High School</u> (Per cent)
Very much	49	42.7
Some	23.7	36.
Very little	8.6	21.3
No response	18.6	0.

This seems to indicate that the high schools place less emphasis on the immediate assistance a mobile shop would render; however 87.7 per cent of the high schools indicated that they would like to see the mobile units installed in the state, as compared to only 72 per cent of the elementary schools. See page 76, question 2, of appendix.

Elementary and High School: Would these schools be willing to pay a service charge for the use of the mobile unit.

To maintain a mobile unit, a service charge of \$20.00 per day or \$50.00 per week was suggested. This figure was based on similar units now in operation. See page 76 of appendix. This service charge would be used to help cover the cost of materials and

expendable supplies, and to defray actual road cost of keeping the vehicle in service. Table IV tabulates the willingness to pay at this rate for both elementary and high schools as indicated by the returned questionnaire. Percentages based on the total returns.

TABLE IV

<u>Willing to Pay</u>	<u>Elementary</u> (Per cent)	<u>High School</u> (Per cent)
Yes	21.6	34.6
No	13.6	12.3
Not in position to say	44.5	48.3

Elementary and High School: Would small schools be willing to transport participating students to a central meeting place, not to exceed 15 miles.

Anticipating the possibility that many rural schools might feel the services of a mobile shop unit would be impractical due to their limited enrollment, they were asked to indicate the feasibility of transporting students to a larger school or central meeting place, not to exceed fifteen miles. Table V tabulates the response to that question for the elementary and high school groups. Percentages based on the total returns.

TABLE V

<u>Willing to Transport</u>	<u>Elementary</u> (Per cent)	<u>High School</u> (Per cent)
Yes	31	47.4
No	16	20
Not in position to say	33	32.6

Cost of Installation

The majority of mobile units now in operation were obtained as war surplus vehicles, and were purchased at prices far below the current market prices. Hand and power tools were also obtained by public institutions through war surplus distributing centers at a fraction of the original cost.

Inquiries, therefore, concerning a mobile shop unit suitable for the State of Oregon, were sent directly to manufacturers of semi-trailers and tractors. (See appendix for list of manufacturers and replies of those who sent pertinent information.) Trailer and tractor prices are quoted from correspondence; the remaining equipment and prices were taken from current tool and supply catalogs.

The average price for a mobile unit,
including tractor and trailer \$ 8,945.00

(See "A" on the following page for prices quoted. These prices as a whole do not include allowable discounts to educational institutions, nor do they include modifications such as windows or additional doors.)

Power tools and large equipment as listed under "B" .	2,730.90
Hand tools and small equipment as listed under "C" . .	525.51
Miscellaneous craft tools, general supplies, and books	200.00
Benches and storage cabinets	<u>150.00</u>
Total cost for installation	\$12,551.41

A. The Mobile Unit.

Tractor, quoted prices \$3,195.00
 4,110.00
 6,987.00

Average price \$4,761.00

Trailer, quoted prices \$3,825.00
 4,175.00
 4,345.00
 4,402.00

Average price \$4,184.00

B. Power Tools and Large Equipment.

Quantity	Cat. No.	Description	Price
1	27-100*	7 inch Delta metal shaper, with motor	\$ 429.65
1	MF6**	Atlas milling machine, table size 4½ x 18" complete with motor	407.00
1	QC54**	Atlas, 10" Quick change lathe, motor, and accessories	366.05
1	677*	Stanley edge tool grinder, 1" x 7" wheels	95.00
1	756*	Welding and cutting outfit: regulators, cutting and welding	112.50
1	None*	Lincwelder, 180 amp. A.C.	166.00
1	28-305*	14" Delta combination metal and wood band saw, complete with motor	286.45

Quantity	Cat. No.	Description	Price
1	30-20**	8" Atlas tilting arbor bench saw, complete with motor and two table extensions	\$ 201.75
1	37-207*	6" Delta jointer, complete with motor	169.10
1	7122**	12" Atlas wood lathe, complete with motor	117.75
1	4021**	24" Atlas jig saw complete with motor	134.65
1	None*	24" Berkroy box and pan brake	245.00

*All catalog numbers followed by asterisk were taken from Bradhead-Garrett Tool Catalog, 1951.

**From Atlas Catalog No. M50.

C. Hand Tools and Small Equipment

Quantity	Cat. No.	Description	Unit Price
2	9RD*	Columbian woodworking vise, 12" opening	\$ 14.67
2	No. 5 $\frac{1}{4}$ *	Stanley 'Junior' jack plane	5.00
4	No. 12*	Stanley Try-Square 6"	1.04
4	No. 34 $\frac{1}{4}$ v*	Stanley 12" bench rule, Maple	.93
2	No. 65*	Stanley Marking Gauge	1.46
2	No. 78*	Bench duster, 8"	.70
2	No. 118*	Stanley block plane	3.45
1	No. 8-D*	Disston Hand Saw 22", 10 pt. C-C	4.55
1	No. D-8*	Disston Hand Saw 26", 5 $\frac{1}{2}$ pt. R-S	4.96

Quantity	Cat. No.	Description	Unit Price
2	No. 10*	Disston coping saw frame	\$.66
1 ea.	No. 60*	Stanley butt chisel 1/4", 3/8", 1/2"	2.00
1	No. 20*	Stanley screw driver 4"	.60
1	No. 20*	Stanley screw driver 6"	.66
1	No. 2702*	Phillips screw driver	.39
1	No. 2703*	Phillips screw driver	.50
1	No. 38C*	India combination oil stone, 8" x 2" x 1"	1.90
2	No. 489*	Wallet, wood	.83
2	No. 52 1/2*	Claw hammer, 10-oz.	1.92
1	No. 733*	Ratchet brace Miller-Falls, 8"	5.25
2	No. 3*	Stanley smooth plane	4.60
1	No. 151M*	Spoke shave	1.41
1	No. 4*	Disston Compass saw, 12"	1.67
1	No. 1*	Burnisher, for cabinet scraper blades	.65
1	No. 80*	Stanley cabinet scraper	1.92
1	No. 181*	India slip stone, medium	1.00
1	No. 21*	Stanley try and metre square, 12"	1.67
1	No. 113/4*	Stanley cup pt. nail set	.21
2	No. 540*	"C" Clamp, 4", light	1.23
1	No. 325-GR*	R. Jennings, Auger Bits, 1/2" to 1"	17.84
1	No. 100*	Clarks Pattern expansion bit, 7/8"-3"	2.06

Quantity	Cat. No.	Description	Unit Price
1	No. 626*	Hand drill, 3/8" cap.	\$ 4.56
1	No. 22*	Jobber drills, 1/16" to 1/4" set	1.72
1	No. 18*	Stanley T-Bevel, 6"	1.50
1	No. 73*	Inside calipers, 6"	2.28
1	No. 79*	Outside calipers, 6"	2.28
1	No. 277*	Spring calipers, 6"	3.04
2	None*	Slim taper file, 6"	.25
2	None*	Auger fit file, 7"	.35
2	None*	Mill smooth file, 10"	.55
1	None*	Disston file card and brush	.99
1	No. 6*	First aid cabinet	7.50
1	No. 428*	Combination-slip joint pliers, 8"	.67
1	No. 40*	Side cutting pliers, 6"	1.63
1	No. 270*	Diagonal cutting pliers, 6"	1.91
1	No. 63*	Long nose pliers, 6"	2.07
1	None*	Countersink, 5/8"	.33
1	No. 137*	Wiss trimmer shears, 7"	2.25
1	No. 59*	Dowling jig	3.73
4	No. 6*	Scratch awl, 6"	.54
2	No. 5*	Stanley jack plane, 14" x 2"	5.25
4	No. 3*	T-square, 24"	2.20
4	No. 146*	45 degree triangle, 6"	.20
4	No. 145*	30-60 degree triangle, 8"	.32
4	No. 18*	Triangle hardwood scale, 12"	.50

Quantity	Cat. No.	Description	Unit Price
4	No. A-170-V*	Drawing set	\$ 14.20
6	None*	Drawing boards, 1/2" x 18" x 24", 3-ply basswood	2.10
1	No. 503*	Machinist vise, Columbia	16.80
1	None*	File, half-round, bastard, 8"	1.58
1	None*	File, half-round 2nd cut, 8"	1.65
1	None*	File, mill, bastard, 8"	.33
1	None*	File, mill, 2nd cut, 8"	.38
1	None*	File, mill, smooth, 8"	.43
1	No. 384*	Engineers hammer, 3 lb.	2.70
1	No. 32-A*	Blow torch, Layton-Lambert, 1 qt.	10.53
1	No. 48*	Hack saw frame, ad.	2.53
1	None*	Hack saw blades, 12", 24-T 1-doz.	2.40
1	No. 10*	Crescent wrench, 10"	1.33
1	No. 6*	Crescent wrench, 6"	.89
1	No. 1006*	Wrench set, open end	5.93
1	No. 11*	Pipe wrench, 14" Stilson	2.39
1	No. 130*	Crow bar, 30"	1.12
1	No. 9*	Stock-die, 10 1/2" for 1"	1.65
1	None*	Die (round split) 1/8"	1.14
1	None*	Die " " 3/16"	1.14
1	None*	Die " " 1/4"	1.14
1	None*	Die " " 5/16"	1.14
1	None*	Die " " 1/2"	1.14

Quantity	Cat. No.	Description	Unit Price
1	None*	Die (round split) 7/16"	\$ 1.14
1	No. N-8*	Wiss, straight snips	3.80
1	No. 8*	Trojan snip	1.88
1	None*	Grooving tools, 3/8"	1.84
1	None*	Grooving tools, 5/16"	1.67
1	None*	Grooving tools, 7/42"	1.59
1	No. 461*	Riveting hammer 8 oz., Stanley	1.50
1	No. 452*	Setting down hammer, 12 oz. Stanley	1.50
1	No. 6*	Solid punch	.38
1	No. 7*	Solid punch	.38
1	No. 8*	Solid punch	.38
1	No. 1-C*	Cold chisel, hand, 6", Stanley	.23
2	No. 35*	Dividers, 8", wing	1.38
1	No. 95*	Circumference rule, 3"	5.50
1	No. 3*	Steel square, 16" x 2 1/4", Stanley	2.37
2	None*	Soldering Copper, 2 lb.	1.70
1	None*	Set of rivet sets	8.66
1	No. 901*	Beak horn stake, 38", Pexto	40.00
1	No. 936*	Common square stake 2 1/2" x 4 1/2", Pexto	7.50
1	No. 910*	Hollow mandrel, 40" Pexto	24.00
1	None*	Bench plate, 8" x 30", Pexto	15.00
1	No. 622*	Pexto All-In-One, turning, wiring, burring, beading	80.00
1	No. 308*	Chasing hammer, 1-1/8" face	2.00

Quantity	Cat. No.	Description	Unit Price
1	No. 44*	Forming hammer	\$ 2.50
1	No. 33*	Raising hammer	2.50
1	No. 47*	Planishing hammer	2.00
1	No. 521*	Forming hammer	2.00
1	No. 63*	Forming hammer	3.00
1	No. 53*	Raising hammer	3.00
1	None*	Dapping Pie, cube	10.00
1	No. 577*	T-Stake, 10 $\frac{1}{4}$ " x 1 $\frac{1}{2}$ " x 7 $\frac{1}{4}$ "	5.70
1	No. 579*	T-Stake, 11" x 1 $\frac{1}{2}$ " x 7 $\frac{1}{4}$ "	7.00
1	No. 576	T-Stake, 10 $\frac{1}{4}$ " x 1 $\frac{1}{2}$ " x 7 $\frac{1}{2}$ "	6.10

*All catalog numbers followed by asterisk were taken from Broadhead-Garrett Tool Catalog 1951.

CHAPTER V

SUMMARY AND RECOMMENDATIONS

The implications of technological developments in a modern society compel each citizen to absorb more and more knowledge in every phase of education. During the early period of development in America, a citizen who could read, write, and use simple arithmetic was considered well equipped with the fundamental tools of knowledge. The schools, therefore, emphasized only that type of training.

Today, however, schools have a more complicated task. The fundamental tools of knowledge include a wider range of subject matter. Technological developments have undeniably lessened the burden of mankind, but in doing so have increased the range of need for education of every citizen by many fold. To more adequately meet the added responsibilities that inevitably come with technological developments, the scope of education must necessarily be broadened and expanded to include those experiences which will aid in gaining a knowledge of and respect for tools, processes, and materials common to everyday living.

In this study an attempt had been made to ascertain the extent to which the industrial arts program is included in the rural elementary and secondary schools, and to what extent a mobile shop unit could supplement existing programs so that they might include those experiences which will aid in gaining a knowledge of tools, processes, and materials common to everyday living.

The 1951 Oregon School Directory (15, pp.143-167) lists 508 elementary schools with enrollments between 25 and 100, for a total of 15,204 students, or an average of 30 students per school; and approximately 110 rural high schools with enrollments between 25 and 150, for a total of 5,753 students, or an average of 52 students per school.

By projecting the findings proportionately of the questionnaire survey in which 110 out of the 152 elementary schools, and 29 out of the 110 high schools offered no industrial arts or craft program, the computations below reveal the following:

- a. Approximately 11,000 (73 per cent) of the rural elementary school children of Oregon are receiving no industrial arts or craft work.
- b. Approximately 1500 (26 per cent) of the rural high school pupils are receiving no industrial arts or craft work.

Computations: Elementary

508	elementary schools listed, enrollment 25 to 100
<u>152</u>	contacted
356	remaining

110 of the 152 contacted indicated no industrial arts program, therefore,

$\frac{110}{152} \times \frac{x}{356} = 257$	257	
	<u>30</u>	(average number of students per school)
	7710	
	<u>3300</u>	
$\frac{110}{30}$	11,010	total
3300		(approximate number of elementary pupils included in survey)

Computations: High School

110 rural high schools listed, enrollment 25 to 150
110 contacted (all)

29 of the 110 contacted offered no industrial arts.
52 students per school, average
1508 students receiving no industrial arts or craft work.

This study clearly indicates the following facts:

- a. Several thousand rural school children in the State of Oregon are being denied the opportunity of the rich and varied offerings of the industrial arts program typical of larger schools.
- b. Superintendents, principals and teachers have expressed a desire and need for offering this type of training in the school program.⁵
- c. Mobile instructional units have been successfully used by other schools to introduce and to supplement existing industrial arts and other areas of the school program.

In view of the above information the following recommendations are made:

1. Consideration be given by the Oregon State Department of Education for the installation and operation of a mobile

⁵Besides the tabulated information as indicated in Table III, page 31, the quotations taken from returned questionnaires, and offered in commentary form without signatures, are shown in appendix, pages 70 and 71.

industrial arts unit.

2. The initial cost of installation for a mobile unit and one year operational cost be provided from state educational funds, and by solicitation from industrial and manufacturing concerns in the State of Oregon
3. Only well-qualified industrial arts personnel should be permitted to organize and operate the mobile unit.

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APPENDIX

APPENDIX

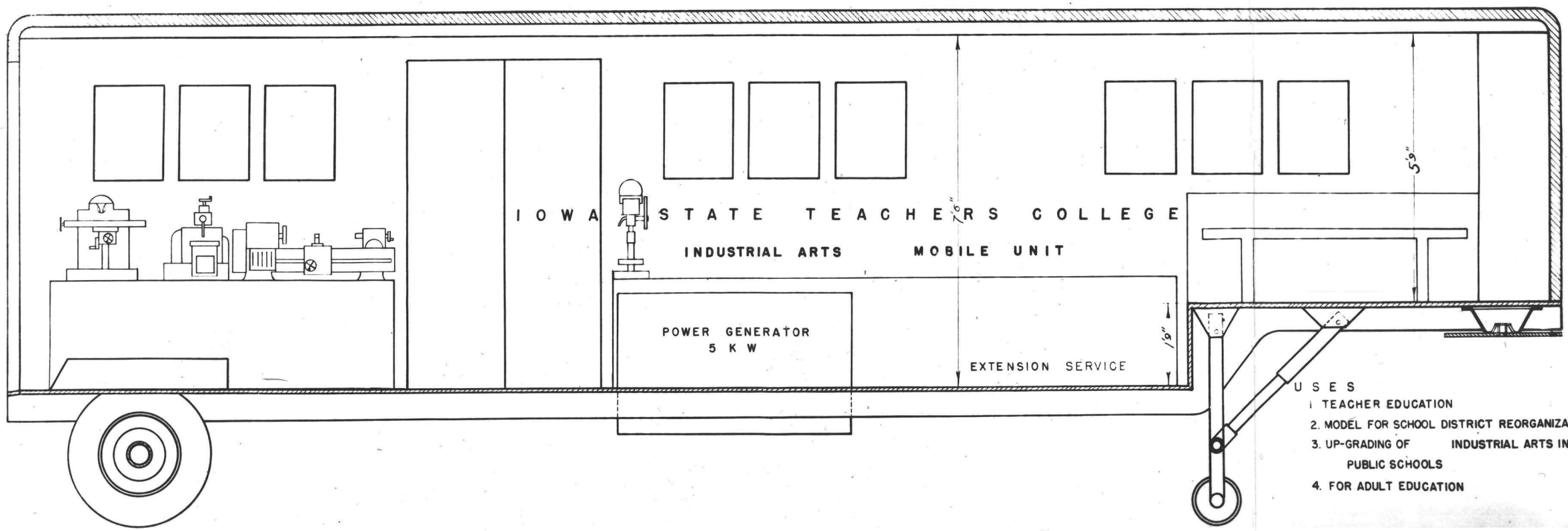
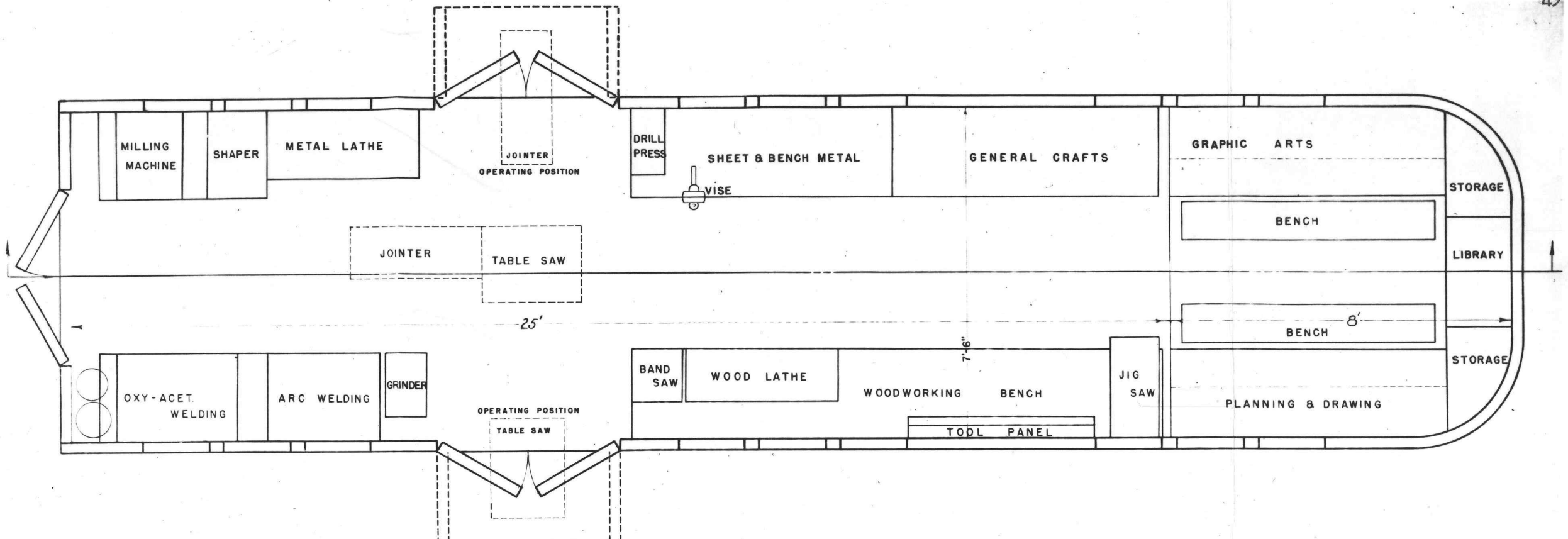
Inquiries concerning approximate cost and sizes of available tractors and trailers for a mobile shop unit were sent to the companies listed below. A schematic drawing as shown on page 49, accompanied each letter of transmittal, samples of which are shown on pages 50, and 53. Replies from the companies that sent pertinent* information are included, in pages 51 to 56 inclusive.

Trailer Companies:

1. *Trailmobile Company
31st and Robertson Aves.
Cincinnati 9, Ohio
2. *Edwards Trailer and Body Co.
2901 S. Main St.
South Bend 23, Indiana
3. Fruehauf Trailer Company
Detroit 32, Michigan

Tractor Companies:

1. *General Motors Corporation
660 South Boulevard, East
Pontiac 11, Michigan
2. *Federal Motor Truck Company
5780 Federal Ave.
Detroit 9, Michigan
3. Diamond T Motor Car
4517 West 26th St.
Chicago, Illinois
4. *Autocar Company
Ardmore, Pennsylvania
5. *White Motor Company
Cleveland 1, Ohio



- U S E S
1. TEACHER EDUCATION
 2. MODEL FOR SCHOOL DISTRICT REORGANIZATION
 3. UP-GRADING OF INDUSTRIAL ARTS IN PUBLIC SCHOOLS
 4. FOR ADULT EDUCATION

February 16, 1952

Dear Sir:

For the past two months I have been investigating the feasibility of a mobile shop unit for Oregon's rural schools. Responses from questionnaires indicate that such a unit would be highly desirable in rural areas where facilities for the industrial education program are extremely limited.

In the near future it would be desirable to present this report to the Oregon State Board of Education for consideration of installing such a unit in the state. In order that the report will be complete as possible it would be beneficial to include estimated prices of all equipment. Enclosed is a schematic drawing with dimensions of a trailer unit found practical for this purpose by Iowa State Teachers College, Cedar Falls, Iowa.

Location of equipment has been indicated to show approximate weight distribution — this could be altered to some extent for better road stability. Your suggestions as to equipment arrangement, as well as your estimated cost of the trailer without equipment would be greatly appreciated.

Very truly yours,

A. C. Corbett

TRAILMOBILE INC.

WEST COAST DIVISION
901 GILMAN STREET
BERKELEY 6, CALIFORNIA

March 4, 1952

Oregon State College
School of Education
Corvallis, Oregon

Attention: A. C. Corbett
Dear Sir:

Your letter of February 19th, addressed to our Cincinnati office has been turned over to the West Coast sales division for reply.


In checking over your sketch, we would like to suggest the following model for your proposed mobil shop unit. Model WDTS-66 Drop Frame Van, which has an overall length of 22'3" to 34'3" including our standard dock bumper. The inside height of these units could be from 6'6" to 9'0" whatever your requirements might be. The inside height ahead of the drop would be 21" less than the overall height you select. This unit comes equipped with full length rear doors, double side doors with an opening of 59½" can be had as an option. Outside panels and roof sheets are 22 ga. and 24 ga. steel. The body posts are 14 ga. steel "C" section with bridge construction, the cross bolsters are on 18" centers and are die formed 12 ga. steel. Inside lining on the unit is 1/4" plywood in the sides only. If you wish plywood in the roof it can be had as an option.

After checking over your blue print, I believe the following specifications would be in order. Overall length 34'3", inside body height back of drop 8'0", tires 9.00x20 10-ply, axle 18,000 lb. with 16½x6" vacuum brakes, 1/4" plywood on the sides, nose, and doors. One double roadside door and one double curbside door with an opening of 59½", vertical prop legs, I.C.C. clearance lights 6-8 volt system, one pair of rubber mud flaps.

Your net price on the above proposed unit would be \$4144.00 plus Federal tax \$258.90, total cost \$4402.90 F.O.B. Berkeley, California.

If there is any further information you require either from this office or our Engineering department, please contact the writer.

Yours very truly
Trailmobile Inc.


G. R. McCloud
Factory Sales & Service
Parts Manager

Encl.
GRM:g

TELEPHONE 6-5511

EDWARDS IRON WORKS, Inc.

2901 South Main Street • SOUTH BEND 23, INDIANA, U. S. A.

February 26, 1952

STEEL FABRICATION
Structural Steel
Plate Work
Heavy Press Work
INDUSTRIAL TRUCK PARTS
AND COMPONENTS
STEEL TANKS
SPECIAL PLANT EQUIPMENT
STEAM BOILER REPAIRS
STEEL WAREHOUSING
Structural Shapes
Bars and Bar Shapes
Plates • Sheets
Cold Finish Bars
Boiler Tubes
Flame Cutting Service
WELDING SUPPLIES

Oregon State College
School of Education
Corvallis, Oregon

Department of Industrial Education

Attention: Mr. A. C. Corbitt

Dear Mr. Corbitt:

Thank you for your inquiry of February 19 pertaining to the possibility of our furnishing an EDWARDS Semi-Trailer unit to be set up by you as a mobile shop unit for Oregon's rural schools. Even though your plan unquestionable seems quite practical, it would be impossible for us to quote intelligently on the proper type of semi-trailer unit to serve your purpose with out having more exact details, concerning the interior installation of machinery.

To give you some idea as to the cost of such a unit, we are herewith listing gross capacity weights and prices covering three models of single axle units which we manufacture.

20,000#	-	\$3825.00
25,000#	-	\$4175.00
30,000#	-	\$4345.00


All prices quoted are list prices subject to your institutional discount, f.o.b. drive-away South Bend, Indiana.

In the event, your program develops to the point of actual procurement of a trailer unit such as you have described, we would kindly appreciate a further opportunity to discuss details with you.

We wish to thank you for your interest in our product and would welcome any further opportunity to discuss it with you.

Very truly yours,

EDWARDS IRON WORKS, INC.

Per 
Judd Bush

JB:bjl

February 16, 1952

Dear Sir:

For the past two months I have been investigating the feasibility of a mobile shop unit for Oregon's rural schools. Responses from questionnaires indicate that such a unit would be highly desirable in rural areas where facilities for the industrial education program are extremely limited.

In the near future I want to present this report to the Oregon State Board of Education, for consideration of installing such a unit in the state. In order that the report will be as complete as possible it would be beneficial to include estimates of all equipment. Enclosed is a schematic drawing with dimensions of a trailer unit that has been found practical for this purpose by Iowa State Teachers College, Cedar Falls, Iowa.

Information concerning the size and price of a suitable tractor for this size of trailer would be greatly appreciated. Much of the terrain to be covered is semimountainous.

Very truly yours,

A. C. Corbett
Coordinator



MANUFACTURED BY

CABLE ADDRESS FEDTRUCK
CODES ACME BENTLEYS

FEDERAL MOTOR TRUCK COMPANY

DETROIT 9, MICHIGAN, U.S.A.

February 28, 1952

Oregon State College
School of Education
Corvallis, Oregon

Attention: Mr. A. C. Corbett
Coordinator

Gentlemen:

This will acknowledge your letter of February 18, 1952 enclosing blueprint of proposed Mobile Shop Unit for your rural schools.

In checking your requirements we are estimating the body and trailer weight at 11,000 lbs. and the equipment at 6,000 lbs. making a total of 17,000 lbs.

In order to have ample power and grade ability for this special tractor trailer combination we would suggest our Model 2502-T tractor and cab which incorporates a 282 cu. in. engine 116 HP at 3200 RPM and 218 lbs. ft. torque at 1400 RPM. A two speed double reduction rear axle is standard in this model with a fast ratio of 6.13 and a slow of 8.15.

The tractor has a wheelbase of 136" and a cab to center of rear axle dimension of 60.5". We would suggest 8.25 x 20 10 ply dual rear tires with highway tread.

Other weights involved would amount to fuel 155 lbs., driver 180 lbs., miscellaneous equipment including spare tire 560 lbs. or gross combination 24,000 lbs.

With the above figures and having the engine governed at 3000 RPM this would result in highway speed of approximately 53 MPH in fast range with transmission in direct and 40.0 MPH in slow range with transmission in direct. The grade ability in slow range with transmission in direct using the standard U.S. Government formula is 3.02%. This is exceptionally good for a vehicle of this type and we think is quite necessary in order to handle the loads, grades and other conditions likely to be encountered. The list price of the tractor and cab as outlined above is \$3195.00 at our plant in Detroit not including tire taxes and the usual 3% Federal excise tax.

We are referring your letter, blueprint and copy of our reply to our dealer, Roberts Motor Company, 7 N.E. Oregon Street, Portland, Oregon, Mr. H. W. Roberts or Mr. J. F. Groce, and you will hear from them shortly.

AUTOCAR TRUCKS

Proposal

No.

Date March 20, 1952

To OREGON STATE COLLEGE
School of Education
Corvallis, Oregon

ATTENTION: Mr. Arthur C. Corbett, Coordinator

Gentlemen:

We hereby propose to furnish the following equipment, built in accordance with the attached specifications which are made a part of this proposal, and to deliver in about 30 working days after the date of approval of the order or contract and specifications:

CHASSIS MODEL:—	C50T	ENGINE:—	377	PRICE	\$6,987.50
Wheelbase—	118"				
C. A. dimension—	68"				
Frame Length (back of cab to end of frame)—					
Gear Ratio—	7.56-1				
Wheels—	Cast Spoke - 7.5 x 20				
Transmission—	DF 5 Speed				
Front Axle—	35112 Timken				
Rear Axle—	FT Autocar				
Tires, (size) Front—	10:00 x 20				
Rear—	10:00 x 20				
Cab—	Autocar - all steel				

Extras and Special Equipment—

Add for:

Cab Heater
Air Horn

\$41.75
29.75

F. O. B. Portland, Oregon

Terms Usual

This proposal shall be for immediate acceptance only. In accepting this proposal, the purchaser agrees to pay to Oregon Truck Sales, Inc. any tax or taxes, Federal, State or Local, now or which may hereafter be imposed upon Oregon Truck Sales, Inc. with respect to the manufacture or sale of any motor vehicles or parts thereof offered in this proposal. The company reserves the right to make changes in the parts and/or materials of the equipment herein or otherwise specified as may be necessary because of delays and/or restrictions resulting from governmental regulations, priorities, or by any causes beyond our control.

Respectfully submitted,

OREGON TRUCK SALES, INC.

By [REDACTED]
Chas. F. Hull, Sales Mgr.

THE WHITE MOTOR COMPANY

Manufacturers of America's Most Modern Trucks and Busses

PORTLAND 12, OREGON

216 No. Hancock Street

Factory and Home Office
Cleveland 1, Ohio

March 5, 1952

Mr. A. C. Corbett
Coordinator
Oregon State College
Corvallis, Oregon

Dear Mr. Corbett:

Sorry that there has been an unavoidable delay in answering your letter of February 18 addressed to our home office.

We have studied your problem and the sketch of the semi trailer attached. There was one thing lacking and that was an estimate of the weight of the trailer when loaded with shop equipment. The weight necessarily is an important factor in selecting a tractor with adequate power and other component units. Off hand, it would seem that the loaded trailer would run somewhere around 20,000 lbs. or 22,000 lbs., and this a very rough estimate at best.

It would seem that on an operation such as you contemplate, your total mileage will be light in any one period, and you should strive to have adequate power and gearing to maintain normal highway speeds. With this in mind, we make the following specification recommendations:

White, Model 16T Tractor - GVW Rating, 30,000#

Approximately 148" wheel base.

Engine: White Super Power, Model 120A-114 H.P.-318 cu. in displacement-250 lbs. ft.

Five speed main transmission; fifth direct.

Two speed rear axle to give adequate performance in hilly, mountainous terrain or on off highway roads.

All Steel Cab with usual driving accessories such as:

Dual Rear View Mirrors

Dual Windshield Wipers

Trailer Brake Connections

Trailer Lighting Connections, etc.

Tires: 8.25X20 on Budd Disc wheels.

Service Brakes: 4 wheel hydraulic with Hydrovac booster and vacuum reserve tank.

The balance of the detail specifications are continued in the attached specification sheet.

Your net price (based on maximum discount enjoyed by the State) F. O. B. Portland, Oregon before Federal Excise Taxes is \$4,110.84.

FOR MORE THAN 50 YEARS THE GREATEST NAME IN TRUCKS

GMC TRUCK & COACH DIVISION
General Motors Corporation
660 South Boulevard, East
Pontiac-11, Michigan

March 15, 1952

Mr. Arthur C. Corbett
Coordinator
Oregon State Teachers College
School of Education
Corvallis, Ore.

In answer to your request for information on a suitable tractor and substantiating information for your presentation of the mobile shop unit we offer the following suggestions and information.

With regard to the size and price of a suitable tractor for your operation we suggest you contact Mr. C. H. Fancher or Mr. L. Stevens of Wentworth and Irwin Inc. 123 N.E. Oregon St. Portland, Oregon.

These men will be happy to talk with you about determining the proper size tractor for the job and are in a position to discuss delivery since they operate the Distributorship for Oregon. Information such as trailer weight, desired speeds, miles operated per year, etc., will be valuable to them in considering your needs.

In regard to our experience with Mobile Diesel Service Training Units we can say the following:

We have found this method of training most effective in reaching our dealers who could not send a man into our base school in Flint, Michigan.

During our first year of operation 1951, we trained 1800 men. This is 600 more than the total trained by our base school during twelve years of operation.

We increased the number of dealerships having trained people from 272 to 346.

The cost of moving the unit from one location to another is negligible when compared to the cost of having students come into a permanent school location.

The course is of five days duration and quite complete coverage of the engine is given. We use lectures, to teach the theory, bench work to give the students actual practice on disassembling the various sub-assemblies and live engine work to give the student the necessary practice at engine tune-up and diagnosis procedures. We are set up to handle twelve men per week.

I am enclosing a picture of the unit which will give you some idea of its size and the equipment we carry. If you would care to see this unit, one of them will be in Eugene, Oregon April 14-18, 1952 at A. B. Scarlett, GMC Truck Sales 475 W. Fifth. The unit will be in Salem, Oregon the following week April 21-25, 1952 at Truck Sales and Service Co., 555 N. Front St.

If you desire further information about these schools please send us back a list of the specific points you want covered and we shall get an answer to you as quickly as possible.

Thank you very much for the interest you have shown in our schools. We hope that this information will be of use to you. If we can be of any further help to you please do not hesitate to write.

Very truly yours,

GENERAL MOTORS CORPORATION
(GMC Truck & Coach Division)

W. W. Edwards
Supervisor, Service Training Activities

By
A. B. Robertson



The questions listed below concerning mobile shop units were sent to the following people. Their replies are included in the following pages.

1. Mr. John Satterstrom
Supervisor of Industrial Arts
Santa Clara County Schools
Santa Clara, California
2. Dr. H. G. Palmer
Head of the Industrial Arts Department
Iowa State Teachers College
Cedar Falls, Iowa
3. Ferdinand V. Liotta
Coordinator of Vocational Education
San Diego County Schools
San Diego, California

Questions:

1. How many industrial art courses do you find can be successfully taught from a mobile unit?
2. What courses have you found that adapt themselves to this type of teaching procedure?
3. Do you offer courses selected by the group through previous survey, or does your administration govern the type of courses offered?
4. What is the number of schools that one mobile unit can handle?
5. How often do you visit each school, and how long does the unit remain at the school?
6. Do any of the teachers at the various schools assist in the instructions given by the mobile unit?
7. What is the average size class? Are they limited to boys only?
8. By what means were the schools selected that receive the services of the mobile unit?

9. Could you give approximate cost of vehicle and equipment, and approximate cost of operating vehicle per school year?
10. Does the teacher employed do the driving when the unit is in use, and if so is he paid extra for driving?

COUNTY OF SANTA CLARA

Superintendent of Schools

2320 Moorpark Ave.
Cypress 2-1474
San Jose 28, California

October 5, 1951

Mr. Arthur C. Corbett
806 Western Avenue
Corvallis, Oregon

I am in receipt of your letter dated October 2nd and will attempt to supply answers to each of your questions. I shall answer them categorically as presented:

1. We have no limitation as to field of endeavor due to use of the Mobile Unit. It is designed flexibly so as to fit the various situations and fill their needs. It is, as all shops seem to be, basically woodworking.
2. Most readily adaptable to this type of teaching is woodwork, sheet metal, plastics, and electricity.
3. I am not certain that I understand this question, but the selection of type of work is based upon the needs of the particular school being visited. This is determined largely by discussion between the instructor and students, then by consultation between the instructor and supervisor.
4. The number of schools being served by the Mobile Unit in Santa Clara County at the present time is 17.
5. Each school is scheduled to have the Mobile Shop service every other week. The traveling instructor then drives his own car to the school for the alternate week. The ideal would be regular weekly visits with the Mobile Shop, but under present circumstances, we must share the unit between two full time instructors. The length of each visit is determined by the needs and desires of the individual school district.
6. The period of time given over to industrial arts is in charge of the traveling instructor who is regularly credentialed as an industrial arts teacher. In some cases other teachers are involved, but generally speaking, these teachers desire to increase their own capabilities by observation of the program. By this

method, we are better able to integrate the program into the general field, etc.

7. Nearly all of the schools in the County being served by the Mobile Unit at the present time have shops in which all work is carried on with the exception of power tool operations. Some of the minor assembly is done in the unit if there is further power tool work to be done immediately following. It is possible to have six youngsters at work in the unit at any one time.

8. The class size ranges from five to twenty-five youngsters. We do not limit the class to boys only; however, the home economics instruction is scheduled at the same hour for the girls. We have at present two classes carried on a co-educational basis.

9. All schools being served contribute a portion of the instructor's salary. For example: A school is served one-half day per week—they pay one tenth of the instructor's salary. The cost of maintaining the Mobile Unit is carried in the Industrial Arts Supervisor's budget, which is a part of the County Superintendent's Service Fund.

The method by which schools are selected is entirely up to the individual school. If they feel that they can supply sufficient funds to cover the instructor's salary, maintain their own hand tools, and supply materials for instructional purposes, they need only make it known to the County Superintendent's office, and the service will be granted.

10. Any figure given at this time concerning the original capital outlay would be distorted, due to two basic facts. Namely, inflation and cost is dependent upon possibility of support of merchants by discounts, etc. Our capital outlay to date is approximately \$2500.00, but it could not be duplicated for that figure. Our operating budget for the year 1951-52 is \$1,885.30.

11. The instructor is the driver of the Mobile Shop. He is not paid extra for this, as it is understood that it is a part of the job, and his salary is sufficient that we can include this as a part of the job.

I believe that answers your questions. If you have any additional, feel free to write. I would like to suggest that you look in the September 1950 issue of "Industrial Arts and Vocational Education Magazine" for an article on the Santa Clara Unit.

Yours truly,

John Satterstrom
Supervisor of Industrial Arts
Santa Clara County Schools

INDUSTRIAL ARTS DEPARTMENT

Iowa State Teachers College
Cedar Falls, Iowa

October 5, 1951

Mr. Arthur C. Corbett
806 Western Avenue
Corvallis, Oregon

Your letter of the 2nd at hand regarding the Mobile Unit program. It is a pleasure to know about your plans to write on this as a phase of educational service to the rural schools.

We feel that the activity is doing considerable for the whole picture of Industrial Arts in Iowa:

1. Along the line of interpretation of a modern philosophy.
2. A demonstration of what a school can do with a small budget spread over the general areas of activity in Industrial Arts.
3. The public relations program and backing for the teachers who schedule the unit and can point with pride to "This is what we should have and be doing."
4. The on the spot investigation does more than 10,000 words of explaining.
5. The aid of pupils enthusiasm and telling at home is a great asset in generating opinion and of course our "Open House" for Boards of Education, Service Clubs etc. also shows again what is needed to those who pay for the schools.

Now for your questions.

1. We don't handle the work on a course basis as such if I get your question. Being totally a demonstration program, our efforts are in the direction of as varied experiences for all students as possible. Elementary technical & materials breadth would sum up our objective. Most of the projects held to only a day long experience.
2. We find few limitation in project areas-they all try to complete several in various areas.
3. Activities offered, since its only one day stand, have been adjusted for time element by our staff. Once in a while some better student is allowed to deviate, but we try to add new materials areas to his experience rather than concentrate in one field. Each student is required

to add his ideas of design (under control of some major suggestions by the teacher) to his plan.

4. Number of students, as we started out in 1948—we thought it best to take the students from 3 rural schools to a center school, the county superintendent selected the school most likely to remain under school district reorganization plans. Some days we handle 55 students from 9:00 A.M. to 4:00 P.M.—the number varied of course—but now we are placing emphasis on assisting the teachers with a more careful demonstration teaching day. This being done with an average of 20 students. To date the total student participation is 18,000 last count and now should be around 19,000.
5. Visit each school once a year on the improvement and school district reorganization assist.
6. Yes we brief the teachers in their part in the day long program, many assisting with materials, design and planning and quite often assisting with techniques, hand and machines.
7. The specialized work, of course, machines in the mobile unit, however we carry a small portable bench, planned for rural schools, which is located in the classrooms—hand tools etc. This gives extra space and also sparks the idea that "this is what we need." A blue print with direction is left on the wall just above where they used the small work bench. A number of schools caught the idea and now have added these work bench equipment.
8. Average size of classes - 30 pupils both boys and girls. No program for just boys allowed.
9. Selection of schools—County superintendents have studied the needs and reorganization plans—each superintendent makes his own schedule and pays \$50 per week or \$20 a day.
10. (a) Cost of unit

Used tractor trailer unit	Ind. & Educ. cooperation
\$2700	cost to college

value less	
wheel tax	
credit	\$1225

Machines	
\$3500	Dem. Loan

Small tools and	
construction supply	
\$2000	\$2000

Full Value	\$8200	\$3225
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(b) Cost per year (only on the road Fall & Spring)

Cost per <u>Day</u> -Instruction	-	\$19.59	
Expense	-	30.74	
Average per pupil	-	.565	Starting
Average materials		.360	1948
8 wks total net operational cost	-	\$1321.88	

1949-50-51 figures are somewhat lower.

11. Driving-We employ a driver-supply man-his job is to spot the unit about the state under schedule prepared in our extension department arranged on request of the schools.

One of my staff is assigned each quarter-rotation plan. This has great value to keep in touch with public school people and problems.

Sincerely,

Dr. H. G. Palmer,
Head Industrial
Arts Department

Oct. 16, 1951

Dear Mr. Corbett:

Your letter of Oct. 2, 1951, addressed to me via San Diego, California has been forwarded to me in La Paz, Bolivia.

I have taken leave of absence from the San Diego County Schools and will be here for almost 2 years. I assume you have a carbon copy of your letter to me, if so please use it to obtain the key to my answers to your questions.

#1 You must recognize that our Mobile Shops are now chiefly interested in the constructional activities that are a part of the K-1-2-3-4- etc. Social Studies program. We do not teach courses but try to be of assistance to teacher and child in all kinds of construction with all types of media.

#2 Again I cannot give a definite answer, however I can say that we are equipped and trained to perform almost any kind of practical operation. Trying at all times to meet the needs of children and teachers.

#3 The type of constructional activity is selected by the school. We offer them trained help, and the know how of construction and materials.

#4 We average $\frac{1}{2}$ day for each school. Some schools contract for 1 day service. I would guess that the average number of schools one mobile shop could handle would be 10 in five days. Providing, that distances between schools were less than 20 minutes travel time.

#5 Once a week. We remain $\frac{1}{2}$ day or 1 day depending on how much time the school has contracted for.

#6 We ask the teacher to participate. Most of our programs include Teacher, Industrial Arts man, and children. We almost demand that the teachers help out.

#7 Average size classes about 22. We want both boys and girls working together. We frown on isolated classes.

#8 Schools contract for this service. However we do select, if too many schools request service. We try first to give preference to the one room school, next 2 or 3 room school etc., etc., and if we have extra schedule time we offer it to a large elementary school.

#9 Our Vehicles were purchased from U.S. Surplus Div. - costing about \$500 each. However schools in other areas are using Buses, Vans, etc. Our initial cost of truck and equipment was about \$3200.00. We find that it costs us about \$7500 per year for each Mobile Shop. This includes Consultants salary, gas, oil, repairs, upkeep, and the maintenance of small supplies and repairs to equipment.

#10 The Industrial Arts Consultant does the driving and the teaching. His salary and contract calls for the doing of this at no extra pay. His shop is with him most of the time. We ask our men to live in areas close to the schools they are to service. The trucks are driven home (consultants home) nightly, and in one or two cases the men stay overnite in a town rather than to drive back the next day.

Our mobile shops serve purely on the elementary level. In many cases we have become a part of the social studies program. We do not have any specific industrial arts classes. However we can say that we bring and teach industrial arts practices and experiences to children from Kindergarten to the eighth grade. I hope I have answered your questions.

Sincerely,

Ferdinand V. Liotta

Comments Returned with Questionnaires

The comments offered below were taken from the returned questionnaires and are offered in commentary form without signatures.

"I think the mobile unit would be a valuable asset to our school programs, especially for the smaller schools who have no physical facilities of their own."

"I believe that there is definitely needed some type of training in this field. The use of tools is universal either as a means of livelihood or as a hobby. The small school in giving this training is sometimes handicapped for lack of space, equipment, and personnel."

"Seems to me it would answer a much needed cause, especially for those boys and girls who do not go on to high school."

"Such a plan would greatly benefit all of us who do not have access to such. We hope it can be done."

"We are a small two room school in a rural area and a mobile unit such as this would be of great benefit to us even if we're able to have access to such help once a month."

"We need a program of this kind in our seventh and eighth grades."

"Ours is a one room rural school. We have about 8 upper grade pupils. It would be fine if we could combine with other schools."

"A program of this nature should prove very valuable to schools of rural communities. We have a school of 90 students and we are less than 15 miles from two more schools of approximate size."

"I think this mobile unit would be a wonderful thing, especially for communities where the kids have so few opportunities."

"The recreational facilities in this area are meager, and this would give the students an opportunity to learn as well as make use of spare time."

"It seems to me that this is a very fine project, one which I have favored for rural elementary schools for sometime. I believe that all rural districts should be made to see its values for the children in its community."

"One of very few projects emanating from universities that are down to earth. This is really something needed by the small schools. Our pupils need this type of school activity."

"In rural areas this type of mobile unit would serve well. As you know many small high schools and elementary schools are unable to give this type of training. We are one and I'm sure a mobile unit would aid in this type of education."

"Of all the new ideas being introduced this is one of the best. So many children need this kind of education, our non-readers mainly. I believe this is the answer to many an under-privileged boys' and girls' dream of success. Here's hoping it makes the grade."

"This seems like a very excellent plan, especially for this area. The pupils have no opportunity for work of this kind, as there are no facilities either here, or at the high school at which they attend."

"This work would be a powerful argument for more consolidation."

"I am very much in favor of such a plan and have often wondered why it hadn't been instituted, especially for scientific experiments which are definitely neglected in the rural schools."

OREGON STATE COLLEGE
School of Education
Corvallis, Oregon

Department of
INDUSTRIAL EDUCATION
Industrial-Arts Education
Industrial-Vocational Education

For a research problem at Oregon State College, Department of Industrial Education, I am investigating the feasibility of a mobile shop unit for the rural schools of Oregon. The primary purpose of such a unit is to help boys and girls in grades seven through twelve develop a degree of familiarity with tools, materials, and techniques related to industrial application (the usual nonvocational objectives of industrial arts) and thereby gain experiences not otherwise available.

Besides offering a unique experience to boys and girls, a mobile shop might also be used to stimulate adult education and to supplement teacher education. During the summer months it could be used to conduct workshops for teachers.

One of the great needs of Oregon's rural schools is consolidation—for the purpose of offering students a richer and more varied experience whereby they may be more adequately prepared to meet life's demands. Seeing the great number of educational benefits that can be gained from shop experience through the medium of a mobile shop may be a convincing factor in providing for a richer and more varied experience through consolidation. For many seeing is believing.

Your cooperation in completing the enclosed form will be greatly appreciated.

Very truly yours,

A. C. Corbett
Coordinator

OREGON STATE COLLEGE
School of Education
Corvallis, Oregon

Department of
INDUSTRIAL EDUCATION
Industrial-Arts Education
Industrial-Vocational Education

In a recent survey concerning the feasibility of a mobile shop unit for the rural schools of Oregon, ninety per cent of those expressing opinions were very much in favor of such a program. Of the 400 questionnaires mailed to teachers, principals, and superintendents in Oregon public schools, fifty per cent have been returned.

Because of the great amount of enthusiasm expressed by most of those reporting, I am anxious to hear from you, pro or con, concerning your reaction to a proposed mobile shop unit.

The primary purpose of such a unit is to help boys and girls in grades seven through twelve participate in exploratory activities, using materials and techniques offered by the industrial arts program, and thereby gain experiences not otherwise available.

Basically it would serve the smaller schools, those without facilities for industrial arts, and to some extent it could also be used to stimulate existing programs of schools with very limited facilities. At all times the mobile unit would be in a position to bring to schools new ideas, techniques, materials, and an interchange of ideas among schools, teachers, and administrators. During the summer months it could be used to supplement teacher education in the form of summer workshops.

Your cooperation in completing the enclosed form will be greatly appreciated.

Very truly yours,

A. C. Corbett
Coordinator

Research Concerning a
MOBILE SHOP UNIT FOR THE RURAL SCHOOLS OF OREGON

Listed below are suggestions for subject matter and experience areas that could be offered through a mobile shop. Would you please check in Column I those subjects you think would best suit the needs of your students, or which you think would be of interest to the students. In Column II, please check any of these subjects that are now taught in your school, either as regular industrial arts courses or as club activities.

Areas of instruction which could be offered through a mobile shop.

1. METAL WORK

- a. General metal work, bench and machine
- b. Sheet metal work
- c. Welding and forging
- d. Metal craft (also under crafts)

Column I (Desirable)	Column II (Now taught)

2. WOODWORK

- a. General woodwork, bench and machine (including turning)
- b. Woodcarving (also under crafts)
- c. Wood finishing

3. CRAFTWORK

- a. Beadwork
- b. Blockprinting
- c. Bookbinding
- d. Lapidary
- e. Leatherwork
- f. Metalcraft
- g. Plastics
- h. Woodcarving

Please list below any other craft or subject you would like to see included.

1. Do you believe such a service offered by a mobile shop would be of value to your school in helping to meet the needs of the students?
Check one:

a. Very much _____
b. Some _____
c. Very little _____

2. Would you like to see such a service inaugurated in the state of Oregon? Yes _____ No _____

- *3. Based on states now operating mobile units, there is a service charge of approximately \$20.00 per day or \$50.00 per week for each school served. The charge might differ in Oregon. Do you believe your school board would be willing to pay a reasonable operating charge?

Yes _____ No _____ Not in position to say _____

4. Would it be possible to transport pupils from nearby rural or elementary schools to a central meeting place, not to exceed 15 miles, at the time the mobile unit visited your vicinity?

Yes _____ No _____ Not in position to say _____

5. Your comments, pro or con, will be appreciated. Thank you.

* The service charge mentioned in question 3 is used to help cover the cost of materials and expendable supplies used by students, and to defray actual road cost of keeping the vehicle in service. The initial investment in the truck, trailer and equipment for a mobile unit would undoubtedly have to be financed from State school funds and by other groups interested in seeing such a unit put into operation.