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## Criteria for Evaluating Procedures and Techniques Used in Handling Supplies in the Farm Mechanics Departments in Utah High Schools

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**CRITERIA FOR EVALUATING PROCEDURES AND TECHNIQUES  
USED IN HANDLING SUPPLIES IN THE FARM MECHANICS  
DEPARTMENTS IN UTAH HIGH SCHOOLS**

by

**Clinton D. Zollinger**

A thesis submitted in partial fulfillment  
of the requirements for the degree

of

**MASTER OF SCIENCE**

in

**Agricultural Education**

**UTAH STATE AGRICULTURAL COLLEGE  
Logan, Utah**

1955

378.1

275

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The loyal support and help of Ethel Zellinger, my wife, is especially acknowledged, as she served without recognition throughout the period of the study.

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## CHAPTER I

### INTRODUCTION

A shortage of manpower during World War II and in the immediate years following the war forced the American farmer into an era of mechanized agriculture. His investment in machinery tripled. With this evolution in farming, additional training became necessary for the successful operation, care, and maintenance of his machinery. The farmer became, through no choice of his own, a mechanic. Many times the success or failure of his farming enterprises was a direct result of how well he operated his costly farm machinery.

The evolution in farming methods presented a new challenge to the instructor in agriculture. Problems of students were changing with the mechanization of agriculture. The instructor needed additional training and development of skills in this new field. Effective teaching of vocational agriculture problems requires student participation. In farm mechanics instruction the pupil learns, for example, how to weld by actually using a welder to weld two pieces of metal together. Much of his learning takes place on home projects which he must build and repair or maintain as a part of his supervised farming program. Modern farm mechanics instruction in the school shop, therefore, requires a wide variety of materials for use in project construction, instruction, and demonstrations given by the shop instructor and for the development of the skills necessary for the farmer and his sons to cope with the varied problems they meet on the farm today. Most of the skills the pupils acquire in the school farm shop require materials. To successfully complete the pupil's production

projects--feeders, gates, housing, repair of machinery, re-building machinery and equipment--requires many materials. These materials for the most part must be readily available in the farm mechanics shop. The efficiency of operation of the school farm mechanics shop is therefore dependent in a large measure on the availability of consumable and instructional supplies conveniently and systematically stored and issued to students with a minimum loss of time.

#### Statement of the problem

Criteria for Evaluating Procedures used in Handling Supplies in Farm Mechanics Departments in Utah High Schools; this title implies the formulation of a set of criteria for evaluating the methods of securing, storing, issuing and inventorying the supplies used by Future Farmers, Young Farmers, and adult farmers in the school farm mechanics shop in the rural high schools of the state.

#### Delimitation

The study was limited to the devising of an instrument for evaluating the procedures used in handling supplies in the farm mechanics departments of Utah high schools. This delimitation is due largely to the fact that Utah, unlike many of the states, has a system of consolidated schools. The problems in other states may be different.

#### Purpose of the study

The purpose of the study is to establish standards by which any teacher of farm mechanics may evaluate the effectiveness of his program. If and when criteria are established for measuring the effectiveness of any teaching procedure, then the teacher has a means of self evaluation and a basis for professional improvement and growth. It is thought by the writer that valid criteria will be the means of improving the

practices of handling shop supplies.

### Need of the study

The program in farm mechanics is young and yet has been growing rapidly. Mechanization in farming has increased the demand for this type of instruction. Consequently, there has been a lack of uniformity and a degree of inefficiency in handling shop supplies. The writer has not discovered any uniformity or existing standards on the practices used. During the past four years, representative agricultural shops in the Western States--as well as many of the high school shops in Utah--have been visited by the writer in seeking a satisfactory solution to this problem of standard procedures. These visits indicate that the teachers in every school district handle shop supply problems in their own way.

### Definition of terms used

Vocational Agriculture. Vocational agriculture according to Good<sup>1</sup> is, "education in agriculture for persons engaged in or expecting to engage in farming as a vocation." It has been established in the literature of vocational education in agriculture that the pupil with certain definite objectives in mind works toward the acquisition of a body of knowledge, skills, techniques, and attitudes from the simultaneous application of study and supervised practice.

Farm Mechanics. The term farm mechanics was defined by Cook<sup>2</sup> as:

The shop activities taught as a part of the agricultural program. The farm mechanics program includes all the unspecialized mechanical activities that a progressive farmer should perform on his home farm with the kinds of tools and equipment

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1. Carter V. Good (Editor), Dictionary of Education, p. 18.
  2. Glen Charles Cook, A Handbook on Teaching Vocational Agriculture, p. 411.

he will have accessible.

Handling. Webster<sup>3</sup> defines handling as "buying and selling; to manage and/or control, to direct, to perform some function with regard to; to pass through one's hands."

Materials. Webster<sup>4</sup> defines materials as "parts, goods, stocks of which anything is composed or made."

Supplies. The word is used in this study interchangeably with the term "materials." Webster<sup>5</sup> adds to the meaning the terms; "raw materials, goods, stocks, etc., set aside to be dispensed as needed. The quantity or amount on hand or needed."

Principle. The Dictionary of Education, edited by Good,<sup>6</sup> defines the word principle as, "a generalized statement through which otherwise unrelated data are systemized and interpreted."

Requisition. A request for the purchase, or otherwise acquiring of supplies or equipment for a department.

Evaluation. Evaluation as defined by Good<sup>7</sup> is "the process of ascertaining or judging the value or amount of something by careful appraisal."

Evaluative Criteria. Humpherys<sup>8</sup> defines "evaluative criteria" as:

. . . an instrument made up of a number of sections, each of which differs from the others. Each section includes for the most part, (1) a statement of principles; (2) a checklist of conditions, standards and provisions, which when present assures the conditions prescribed in the principles; (3) one or more statements of evaluation (measures) which constitute a measure (on a scale of points) of the extent

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3. G. & C. Merriam Co., Websters Dictionary.

4. Ibid.

5. Ibid.

6. Good, op. cit.

7. Ibid.

8. L. R. Humpherys, Unpublished Correspondence, Dec. 29, 1952.



to which the sum total of the conditions prescribed in the checklist conform to the principles. The section as a whole constitutes an instrument of evaluation which is used for rating, stimulation, growth, standardization, etc. These measuring instruments have been designated in our literature as Evaluative Criteria.

### Organization of the study

Chapter I of the thesis contains an introduction to the problem. Chapter II is devoted to the review of related literature, in which the development of the problem of procedures in handling supplies is treated on an area basis. Pertinent evaluative studies are also cited in the second chapter.

The procedures used in developing the criteria is treated in Chapter III, including the selection of a jury of experts, the formation of the tentative draft of the criteria, the first revision of the criteria, a second response from a larger group of the jury, and a trial application of the criteria.

Chapter IV consists of a third and final revision of the criteria, which is proposed as the instrument for evaluation in the study.

CHAPTER II  
REVIEW OF RELATED LITERATURE

Introduction

The literature in the fields of vocational agriculture, industrial arts, and general vocational education contains little specific information regarding the overall problem of how best to handle supplies in the average high school farm shop. However, in the writings of accepted authorities in vocational agriculture and in the findings of research in this area, there are a number of basic principles which might serve as controls in evaluating procedures in handling supplies in the farm mechanics shop. It is generally agreed that a farm mechanics teacher who is able to secure, store, and effectively issue needed supplies with a minimum loss of instruction time and a negligible loss of materials, other things being equal, is the better instructor. Teachers are agreed that handling shop supplies is a complex problem which requires good business management and cooperation on the part of other teachers, administrators, and pupils.

Godfrey<sup>9</sup> in 1948 found in a survey made of 63 beginning agricultural teachers in California with one to six years experience that 52 percent of them had difficulties in the management of supplies in the farm mechanics shop, while the remaining 48 percent expressed some difficulty.

Budget (a basis for purchase of supplies)

From the writer's observation, it seems that one of the most

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9. Arthur J. Godfrey, A Study of the Problems of Beginning Teachers of Vocational Agriculture.

important and probably most neglected jobs that must be accomplished by Utah shop teachers is to prepare an annual budget of supplies for the year ahead. Foard<sup>10</sup> reports (1942) that only a few of the 95 vocational agriculture teachers in Missouri prepared and used an annual budget. Micheels<sup>11</sup> directing a study on the Industrial Arts program with a committee of 15 Industrial Arts teachers of Utah, agreed:

It goes almost without saying that a well administered shop will need a carefully prepared budget. The budget will usually be made out in cooperation with the principal and will follow the accepted pattern used in that school.

The basis for making the budget will be the inventories and the estimated enrollment for the coming year. The inventories will tell what is on hand and the estimated enrollments will help in gauging needs for the coming year. By deducting the differences, it will be possible to budget the various things that will be needed.

The budget for farm mechanics shop supplies depends upon an additional factor, viz., the program of work of the farm shop as influenced by various local conditions as pointed out by Canada<sup>12</sup> in Colorado:

It is generally agreed that a graduated program of farm mechanics instruction should be taught each year if students are to have the essential information and skills required in the present day field of farm mechanics. This means that approximately one-half of each year should be devoted to the development of fundamental skills in the various farm mechanics enterprises. Here is the point of departure, for estimating with reasonable accuracy, the amount of supplies needed to carry out the instructional program in each class for that year. Instructors in farm mechanics can compile such a list during the summer months and submit the list of supplies for bids.

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10. J. H. Foard, Farm Mechanics in Vocational Agriculture, p. 14.
  11. William J. Micheels, Industrial Arts in Utah (Part one), pp. 141-142.
  12. R. W. Canada, Proper Systems of Storing, Checking and Inventorying Tools, Equipment and Supplies in the Farm Mechanics Shop, p. 7.

In this way, more supplies can be bought with the budget providing materials that will be on hand when needed. This efficient procedure will eliminate the objectionable practice of sending boys down town to purchase supplies during school hours. The purchasing of most of the materials at one time will also be appreciated by school officials, since this procedure will eliminate a continuous flow of small bills coming in. The amount of shop supplies to be carried by a department will be influenced by local conditions. A greater amount will need to be bought and stored in rural consolidated high schools where supplies cannot be purchased locally.

Casberg and Mays<sup>13</sup> state (1943) that the "usual procedure is that the teacher asks for what supplies he feels he needs and the high school principal decides whether he should get them or not." Their study further indicates that sound business procedure prevails when an annual budget is prepared during the spring semester as an indicator for the year ahead. The budget then becomes a basis for purchase of supplies for the following term.

#### Selection of supplies

Major consideration should be given to the proper selection of supplies. Lewis<sup>14</sup> (1945) recommends that supplies should be selected according to their use, merit, price, and purpose. Consideration should also be given to the vendor or vendors of these supplies, i.e., for service rendered, promptness, integrity, and honesty. Supplies are used, (a) for the construction of pupil's projects, and (b) for pupil instruction such as demonstrating how to cut a rafter for a farm building. Certain supplies such as nails, glue, and screws are expendable in the instruction process.

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13. Carl H. Casberg and Arthur B. Mays, *School Shop Administration*, p. 74.  
 14. John W. Lewis, Selecting Supplies and Equipment, pp. 372-374.

In the study made by the Iowa Department of Public Instruction,<sup>15</sup> supplies were classified in the two following categories:

Instructional supplies. Materials and supplies that are used for maintenance and instructional purposes and are not directly involved in the construction of articles that become the property of the student. It may include such items as oil, grease, glue, welding gas, sandpaper, finishes and other materials enough to last for the teaching year.

Project materials. Materials purchased from a revolving fund usually. Materials should include those that are used and paid for by the student. It may include such items as lumber, special hardware, metal stock, leather, etc. Most of these items should be purchased in large enough amounts to last a whole year effecting a savings in purchase price and time in recording.

Some supplies, such as forge coal, welding rods, and electrodes, are usually furnished by the schools, according to Phipps.<sup>16</sup> He further recommends that a school provide a revolving fund to pay for project materials:

As the instructor sells the supplies to the students, he collects the money and turns it in at the school's office, where it is credited to the revolving fund. When more supplies are purchased, these are charged to the same fund. Sometimes supplies are sold with a ten per cent (sic.) markup to allow for waste. When it is a general policy for a school to pay similar charges for other departments in the school, a markup is not used.

The use of a revolving fund is by no means a general rule in the schools of Utah. Downs<sup>17</sup> made a study of various plans used in financing farm mechanics programs in the rural high schools of Utah in 1952. He sent out a questionnaire to 50 schools in Utah conducting farm mechanics programs. Thirty-five of these schools returned the questionnaire.

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15. Iowa Department of Public Instruction, Industrial Arts for Secondary Schools, p. 52.
  16. Lloyd J. Phipps, Handbook on Teaching Vocational Agriculture, p. 711.
  17. Elvin Downs, Funds for the Purchase of Supplies used in Farm Mechanics Shops in Utah High Schools, p. 2.

A summary of a part of the questionnaire reveals the following:

Question: Do you have a revolving fund which permits the purchase of lumber, iron, leather, etc. in quantity? (Yes or No)

Summary of answers:

- a. Twenty three answered yes.
- b. Twelve answered no.

Question: How much does the district provide each year per student enrolled in farm mechanics for instructional supplies and other consumable teaching materials?

Summary of answers:

- a. Amount furnished per student ranged from \$0.00 to \$5.00.
- b. The average was \$1.53 per student.

This report reveals the extreme lack of uniformity of practices used in the financing of the purchase of supplies in Utah farm shops, and that teachers are aware of the problem and feel that a study must be made before satisfactory practices can be adopted in school shops.

#### Requisition for supplies

Some teachers experience difficulty in knowing what supplies (kind, quality, etc.,) to select. In a Utah Industrial Arts study edited by Micheels,<sup>18</sup> it is suggested that the teacher;

. . . build an extensive library of catalogues, trade periodicals and other reference material that will be helpful when deciding on the kinds and types of materials to be ordered. Such a library can be developed easily by merely sending post cards to the various firms asking for a catalogue, and requesting to be put on their mailing list.

The inference is that making of an adequate requisition is not to be taken too lightly, for a single error can cause the teacher trouble and will often disrupt the teaching program.

When writing the various items of the requisition, Micheel<sup>19</sup> suggests the teacher be very exact, and include all the necessary

18. Micheels, op. cit., p. 151.

19. Ibid.

information. He suggests that the requisition contain:

- a. Number of units to be ordered.
- b. The correct name of the material.
- c. A complete description of the product, including: size, shape, any peculiar characteristics, number if any, and specific type desired.
- d. Catalogue number, name of company, and catalogue page.
- e. Unit cost.
- f. Total cost.

In addition to the above information suggested for the requisition, it is assumed that the requisition contain (a) purchase order number, (b) name and address of the shop ordering the supplies, (c) how to ship or deliver supplies, (d) delivery date after which supplies will not be accepted, and (e) who will make payment for the supplies.

The writer in his visits to Utah school districts determined that the purchase of supplies is normally made by the clerk of the board of education or the high school principal. From the literature cited, the prevailing practice is that the requisition, original and first carbon copy, after being completed and checked by the farm mechanics teacher, is filed with the high school principal for approval. He forwards the original to the superintendent or his duly authorized agent. Payment is made by the clerk or purchasing agent only upon the signature of the shop instructor on the invoice certifying that the supplies have been received.

#### Storage of supplies

The influence of the several writers is that materials must be checked as soon as they have been received to determine whether any breakage has resulted.

The basic storage requirements for supplies, according to

Cline,<sup>20</sup> (1946) are as follows:

- a. Space for supplies must be arranged to suite the size, nature, and kind of supplies to be stored.
- b. Space to afford adequate protection against loss, damage and deterioration.
- c. To be arranged and classified so that materials can be located or returned to storage with minimum time and effort.
- d. Fit into a general plan and design of the building and rooms,--both as to appearance and storage utility.
- e. Be located and arranged so as to afford maximum participation of students.
- f. Include provisions for necessary expansion and additions of new materials incident to growth and progress of the department.

Casberg and Mays<sup>21</sup> suggest that such items as paint, varnish, oils be stored in metal cabinets. In planning storage facilities for small items such as brads, screws, and bolts it is better to use containers or drawers that can be easily labeled and arranged in an orderly and accessible manner. Storage rooms should be well lighted.

Weaver<sup>22</sup> resolves the storage problem as follows:

- a. Conveniently to minimize labor.
- b. So they may be issued quickly and orderly.
- c. For ease of maintaining while in storage.
- d. So supplies may be accounted for easily.
- e. So they are visible so far as possible to prevent duplication, aid in maintaining adequate supplies, to permit quick inspection and prevent wastage.

#### Handling materials

In order to provide for economy in the use of materials and to train students in good business procedures, Weaver<sup>23</sup> points out that the student should always use a requisition form to withdraw materials

20. R. W. Cline, "Space for Teaching Materials," p. 24.

21. Casburg & Mays, op. cit., p. 78.

22. Gilbert G. Weaver, Shop Organization and Management for Vocational Teachers, pp. 49-51.

23. Weaver, op. cit., p. 51.



from the supply room whether a charge is made for them or not.

Ericson<sup>24</sup> also recommends the use of requisition blanks or forms;

Students should be required to make out and present bills of materials or requisitions for supplies that they wish to use. This should be done whether or not such materials are furnished free. Regularity in this respect is essential factor in the proper use of materials. Written orders, containing estimated costs, also impress students with the value of materials and make them less likely to ask for additional amounts without good reasons. A simple form for this purpose may be made up. The arrangement of the form is not essential. The fact that one should be used is important.

The requisition form or bill of materials should include; (a) a sketch drawn to indicate the type of project for which the materials will be used; (b) the kind and quantity of materials desired; (c) the student's name, address, his class, and the name of the project; (d) the estimated cost of the project; and (3) the final go-ahead initials of the teacher.

There are several methods commonly used in handling materials in the shop. Casberg and Mays<sup>25</sup> discuss four methods;

- a. Materials are issued as called for on the requisition form by a paid supply clerk.
- b. Students are appointed to serve as supply clerk by the instructor. Students are rotated throughout the semester.
- c. The student goes to the supply room to get materials under the general oversight of the teacher, or the teacher issues materials to students.
- d. Insist on accurate material bills made out in duplicate - Record keeping is minimized when the teacher requests an original material bill for each project made.

#### Inventory of supplies

In its simplest form an inventory is a written listing of material in possession of the owner. A continuous inventory is one which keeps

24. Emanuel E. Ericson, Teaching the Industrial Arts, p. 238.

25. Casberg and Mays, op. cit., p. 54.

the record up to date by posting additions and withdrawals at the time they are made and recording the balance. Smith<sup>26</sup> lists the many uses of an inventory record;

- a. A control of school properties for general accounting.
- b. Guide in purchasing for quantities to be bought in connection with the annual budget of needs.
- c. To prevent unnecessary duplication.
- d. Avoidance of obsolete and slow moving items.
- e. A guide for replacements, maintenance and repairs.
- f. A guide for insurance adjustments due to fire, theft and misplacement.

Because of its many purposes an inventory is very important. To accomplish the purposes listed by Smith it is necessary for items of the inventory to be adequately identified, giving explicit information regarding location, quantities on hand, condition of item, and accurate description of each item and cost.

The Illinois State Board<sup>27</sup> advocates the use of an inventory form that may be used for several years. The Board requires, as one of the first jobs of new teachers, the taking of a physical inventory of supplies on hand in the shop. This inventory is taken with the assistance of the retiring teacher and the principal of the school. It is generally agreed that the inventory (a) should be accurate, (b) should be made on a printed form, (c) should be made on a separate form for each classification of supplies, i.e., all plumbing supplies listed together, etc.

The Illinois study also recommends that "materials which are furnished by the Board of Education should be inventoried independently from materials purchased from a revolving fund; materials purchased out of a revolving fund should include cost of item and total value;

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26. George F. Smith, A Continuous Inventory of Supplies and Equipment, pp. 386-393.

27. State of Illinois Board for Vocational Education, Industrial Arts General Shop (Series A. Bul. 123), Sept. 1950. p. 69.

and students should assist in taking the inventory as part of their training."

Kramer<sup>28</sup> advocates the use of a continuous inventory system made upon 3-inch x 5-inch cards. These cards are located on the storage bin, shelf or rack where supplies are located. Each withdrawal is recorded. In this manner a teacher may always know at a glance what supplies he has on hand. This system is only one of many types used in shops today.

In a Utah Industrial Arts study, Micheel<sup>29</sup> recommends a complete inventory be taken at the end of each year, at the end of each semester, or a continuous inventory be taken. A copy should be placed in the principal's office, and it should be brought up to date from semester to semester, including any new purchases which may have been made. The inventory should include (1) "number, name, make and description of the article; (2) unit and cost when new as well as date of purchase and source of purchase."

According to Phipps<sup>30</sup> (1952) an annual inventory is needed. "Items of equipment and supply will be lost and will wear out. An inventory is an organized method of discovering needs and keeping a record of equipment. A normal loss and wearing out of equipment is expected each year by administrators."

Financial records of the farm mechanics shop

Casberg and Mays<sup>31</sup> recommend that a teacher should never handle school money unless he is bonded. It is unfair to require a shop

28. I. J. Kramer, Simple Inventory Systems for Materials and Supplies, p. 471.

29. Micheel, op. cit. p. 141.

30. Phipps, op. cit. p. 948.

31. Casberg and Mays, op. cit., p. 98.

teacher to assume such a responsibility. They recommend that all materials purchased by the pupil should first be paid for by the student to the principal's office. This payment is indicated by the presence of an approved requisition signed by the instructor to the principal's office by the student making the project. Following payment the student may draw the materials to be used in construction of his project.

Englehardt and Englehardt<sup>32</sup> recommend that all teachers who handle money should be bonded.

Some schools require pupils to purchase coupons or shop cards from the principal's office. When a student buys supplies the instructor punches the value of the sale from the card. Essential information that the card should contain include (a) name of student, (b) serial number for identification purposes if card is lost (teacher keeps a record of names of students and card serial numbers of each student), (c) name of school, and (d) value of card printed around the edge of the card in common coin values.

Wilbur<sup>33</sup> recommends concerning financial records the following:

Teachers should be particularly careful in keeping accurate records of all financial matters related to the school shop. Frequently a teacher's standing in a community may depend upon his ability to demonstrate clearly the disposition of funds collected for projects and materials.

Whatever else a teacher may do or leave undone his record of financial dealing should be clear and accurate.

a. Money received. It should be immediately recorded, if possible in presence of the student from whom the money is collected. A set of duplicate receipts one of which is given to the student has been found effective record for purposes of accounting.

b. Money turned over to the school. It is important that the teacher have a record of money which is turned

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32. N. L. Englehardt and Fred Englehardt, Public School Business Administration, p. 328.

33. Wilbur, op. cit., p. 238.

over to the proper school authority. The amount received from students unless other arrangements have been made. (Sic.) Here again a duplicate receipt should be made. One to be kept by the office and the other by the instructor.

c. Money paid out. In some schools teachers are permitted to use collected money for projects as a petty cash fund to purchase supplies for the shop. When this is the case the teacher should be particularly careful to keep an accurate record of all such expenditures. A specific entry for each purchase, together with a receipted sales slip should be sufficient evidence. Money received and money paid out plus cash on hand should always balance.

Records are likely to be effective and accurate to the extent to which they can be kept without an excessive expenditure of time and effort. A record system that requires more than one half hour a day of teachers (sic.) time is inefficient and should be discarded.

Davis School District\* over a period of years has developed what is acclaimed to be efficient forms and procedures used in the sales of supplies. When money is received it is immediately recorded, preferably in the presence of the pupil from whom the money is collected. Duplicate receipts are made, the original one of which is given to the pupil. This has been found to be an effective record for purposes of accounting. Money is turned over to the school treasurer each day. The instructor receives a duplicate receipt for such moneys from the school treasurer. All purchases are paid for by the school treasurer or the Clerk of the Board of Education.

#### Development of evaluative criteria

The American Technical Society<sup>34</sup> in 1952 developed after considerable work an excellent evaluation procedure to be used in trade and industrial education. This means a progressive teacher is always on the alert to discover new methods and new ideas. He is not content

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\* See Appendix A for sample supply forms used in Davis School District.  
34. American Technical Society, A Procedure for Evaluating a Local Program of Trade and Industrial Education.

to continue the use of inefficient methods. An effective method for improvement is through the use of approved evaluation instruments.

The Cooperative Study of Secondary School Standards<sup>35</sup> extending from 1936 to 1939 resulted in the formulation of a group of evaluating criteria which were validated by field tests and proved to be flexible for use in all departments of high school, including farm mechanics.

A body of guiding principles were selected from the literature of secondary schools; these principles were appraised, revised, and classified into six areas. Appropriate checklists were formulated to permit evaluation of prevailing conditions in terms of the criteria on a five-point scale. As a result of the use of these evaluations a seventh edition was published in 1950, which is now being used for evaluation, stimulation, and growth.

The sum total of the "guiding principles" in this study constitutes a philosophy out of which the objectives grow. The objectives in turn give direction to ways and means of securing desirable outcomes.

Another evaluative study was made of Vocational Education in Agriculture by the National Committee on Standards for Vocation Education in Agriculture.<sup>36</sup> Many of the techniques used in this study resemble those in the Cooperative Study. After three revisions and a trial in eight states, the criteria were revised. Trained evaluation committees made evaluations of the total program of vocational agriculture. On a basis of the characteristics rated, the department programs were termed "Very Superior," "Superior," "Average," "Inferior," and

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35. Cooperative Study of Secondary School Standards, Evaluation of Secondary Schools, p. 535.

36. Federal Security Agency, Office of Education, An Analysis of Local Programs of Vocational Education in Agriculture.

"Very Inferior."<sup>37</sup>

Following the evaluation of the 400 agricultural departments in 47 states, another revision of the criteria was made. The second edition of the criteria was printed for general evaluation purposes.<sup>37</sup> In this form there are ten major areas with accompanying criteria. The checklists of the criteria were adapted to a five-point scale and the evaluative ratings were designed on a five-point numerical scale.

Another study closely allied to the problem selected by the writer, Criteria for Evaluating Programs of Preparation for Teachers of Vocational Agriculture, was made by Brunner<sup>38</sup> of Pennsylvania. He used the opinion of a jury in setting up his criteria. He made a trial application of the criteria in the teacher training program of which he was director. This particular study has one characteristic that is quite unique. What Brunner terms "The Guiding Statements of Position" (equivalent to "guiding principles" in the present study with accompanying check lists and evaluating items) are weighted according to their relative importance. Another departure provided for a percentage score at the conclusion of the evaluation.

The Cooperative Study of Secondary School Standards<sup>39</sup> recommends that, "Criteria should be brief enough in extent, sufficiently varied in form, and convenient enough in arrangement to be practicable for use in secondary schools." As a further requirement this same source makes the observation, "The considered judgment of competent educators is an essential factor in the evaluation of the quality and character of the work of the school."

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37. National Committee on Standards for Vocational Education in Agriculture, Evaluative Criteria for Vocational Education in Agriculture.

38. Henry S. Brunner, Criteria for Evaluating Programs of Preparation for Teachers of Vocational Agriculture.

39. Cooperative Study of Secondary School Standards, op. cit., p.

Criteria for Evaluating Programs of Agriculture in the Community College by Clyburn<sup>40</sup> in a study national in character uses a similar technique to that of The Secondary School Study. His study uses the jury system of developing the criteria. Clyburn had the advantage of using people participating in a junior college convention in addition to his Campus Advisory Committee and an Off-Campus Jury. He also had the cooperation of the American Junior College Association. The work was validated by field trials and the judgment of his selected jury.

#### Summary

A few major deductions are apparent from a review of the literature in the several fields related to the problem of this study. These may be summarized as follows:

- a. There is available at the present time no valid instrument or device to measure the efficiency of handling supplies in the school farm mechanics shop.
- b. In a number of local and national studies cited, a jury of experts was selected to formulate concise statements of desirable guiding principles to be used in evaluating prevailing educational conditions.
- c. From a review of the literature some guiding principles may be crystallized and used as a basis for the formulation of criteria for evaluating the effectiveness of handling supplies in the farm shop.

These include the following:

- a. A well administered shop will need each year a carefully prepared budget as a basis for purchase of supplies.

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40. Lloyd E. Clyburn, Criteria for Evaluating Programs of Agriculture in the Community College.



- b. Instructors in farm mechanics should compile a list of supplies during the summer months on a proper requisition for supplies needed for the year ahead.
- c. The school should provide a revolving fund to pay for project materials, and furnish instructional supplies for the farm mechanics shop.
- d. Supplies and materials should be stored for ease of handling, convenient for use, and visible for checking in adequate containers.
- e. Pupils should be required to make out and present bills of materials or requisitions for supplies that they wish to use whether furnished free or purchased by the pupil.
- f. Acceptable inventory is taken of all materials in a businesslike method.
- g. Accurate records should be kept and should be subject to an independent annual audit.

## CHAPTER III

## THE DEVELOPMENT OF THE CRITERIA

A review of the literature in the fields related to the study provide definite help in formulating specific criteria. Accordingly the writer has expanded the list of principles assembled from the literature and included those which cover all aspects of the problem.

Guiding principles

These proposed principles were submitted as controls for evaluation to two members of the Faculty Supervisory Committee, Professors L. R. Humpherys and S. S. Richardson, for their criticism and comments. After close examination it was found that the form could be simplified by using a key word or words to identify quickly the "guiding principle" in each area. The revised list was again submitted to the Faculty Supervisory Committee members for their criticism and recommendations. The first set of these revised principles were;

1. Purchase of supplies. Supplies are purchased in accordance with a definite district policy.

2. Budget. A budget for farm mechanics supplies is submitted to the Board of Education each spring as a bases for authorization of purchases for the following year.

3. Inventory. An inventory is taken of all supplies at least once each year as a public record of expenditures for the shop.

4. Safety. Safety regulations are observed in the storage and handling of supplies.

5. Revolving fund. A revolving fund is set up by the district for the purchase of supplies used and sold for construction of home projects.

6. Estimating supplies. Students receive training in good business procedures in the estimating and purchase of supplies.

7. Sale of supplies. The student pays the school a fair price for all materials used from school supplies in project construction.

7. Sale of supplies. The student pays the school a fair price for all materials used from school supplies in project construction.

8. Annual report. The farm mechanics instructor submits to the high school principal a record annually of all school purchases, sales, and inventories of supplies.

9. Consumable supplies. The school district provides supplies used exclusively for shop demonstrations and instructional purposes.

10. Individual student records. An adequate record is kept of supplies purchased by students for the construction of projects in the shop.

11. Efficiency in handling supplies. A minimum of time and effort is spent by the instructor to control the storage and issuance of farm mechanics supplies.

#### Revised list of principles

With the recommendations of the Faculty Supervisory Committee, a consolidation and further revision was made. The eleven "guiding principles" were further reduced to seven, covering as many areas in the first revision. The revised principles are as follows:

1. Purchase of supplies. The efficiency of operation of a farm mechanics shop is dependent in a large measure on the availability of consumable and instructional supplies conveniently and systematically stored in the farm mechanics shop. Adequate supplies should be purchased well in advance of the opening of school on a basis of the spring inventory of supplies on hand, the estimated enrollment of the year ahead, and the estimated needs for projects of individual students. Purchase of all supplies is made through the use of approved requisition forms initiated by the farm mechanics teachers and channeled through the high school and school district office.

2. Annual report of inventory. The farm mechanics instructor submits to the high school principal annually a record of inventories of materials on hand.

3. Orderly issuance. Adequate space is provided for the storage and orderly issuance of all supplies.

4. Estimating supplies. Students receive training in good business procedure in estimating and purchase of supplies.

5. Safety in handling supplies. Safety regulations are observed in the storage and handling of supplies. Sufficient space for present and future storage requirements are provided.

6. Revolving fund. A revolving fund is set up by the school district for the purchase of supplies used and sold to students in the construction of home projects.

7. Sale of supplies. The student pays the school a fair price for all materials used from school supplies in the construction of home projects.

#### Needed information and checklists

To each of the "guiding principles" was added the specific information items needed to make a valid evaluation, together with a group of "check items" believed to be essential and helpful in evaluating the extent to which the prevailing conditions conform to the "guiding principle."

#### Evaluation statements

One or more evaluation statements was designed to help the evaluator to register judgment on the pertinent area in the light of the standard of excellence stated in the guiding principle. Provisions were made for scoring the check items and registering the evaluations on a five-point qualitative scale.

Each criterion then is composed of a guiding principle, information concerning prevailing conditions, a checklist of specific items needed to make an evaluation and the evaluation statements.

#### Validation of the criteria

The writer in consultation with his Faculty Advisory Committee made a first draft of the criteria and submitted it to a selected group of six competent farm mechanics teachers for suggestions and recommendations for revision. With the suggestions of this group and the Faculty Advisory Committee a first revision was made and mailed to a larger group of 30 farm mechanics teachers in Utah and other vocational leaders for their criticism and recommendations. In the light of these suggestions a second revision was made.

The second revision was used for a trial evaluation in the Farm Mechanics Department at South Cache High School, Hyrum, Utah.

The first revision of criteria

The revision of the first draft of the criteria as explained elsewhere was mailed to 30 farm mechanics teachers and other leaders attached to a circular letter\* inviting these individuals to familiarize themselves with the proposed measuring instrument, make criticisms and recommendations, and return by letter. Twenty-three responded with constructive suggestions.

The contents and arrangement of the first revision of criteria are set forth in the following pages:

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\* See appendix

CRITERIA FOR EVALUATING PROCEDURES AND TECHNIQUES USED IN HANDLING SUPPLIES  
IN THE FARM MECHANICS DEPARTMENTS IN UTAH HIGH SCHOOLS

Directions

Principles

The principles are statements subscribed to by a group of successful individuals (teachers, administrators, supervisors, and lay people) from Utah and other states. These guiding principles form the bases by which a teacher may determine how well that phase of his farm mechanics program is meeting the standards of a good department.

Checklists

The checklists consist of practices, provisions, and conditions found in a good farm mechanics department. A local shop program may lack some of these items, but excell in others. The checklists are intended as a factual determination of how well a department measures up to the principles involved in shop supply procedure.

The checklist items are to be marked in the parentheses preceeding them with the symbols A, B, C, and N.

- A. Indicates that the provision or practice or condition is present fully.
- B. Indicates that the provision, practice, or condition is present to some extent.
- C. Indicates that the provision, practice, or condition is missing but is needed.
- N. Indicates that the provision, practice, or condition does not apply or is not desirable.

Evaluation summary

Evaluations represent the best judgment of those making the evaluation. The evaluation summary is based on personal observation and judgment in the light of the checklist items as they have been scored on the available information needed. This evaluation is made on a point scale commonly used in many evaluations:

- 5 - Excellent; provisions are functioning fully and/or conditions are extensive.
- 4 - Very good; provisions are moderately extensive and function well.
- 3 - Good; the provisions are average, present and functioning about average.
- 2 - Fair; the provisions are limited and are functioning below average.
- 1 - Poor; the provisions are very limited and are functioning very poorly.
- N - Missing or does not apply.

How to use this evaluation

Effective use of these forms depends upon the individual understanding its prupose and how it is to be used; The teacher should go

over these criteria with someone who is familiar with it even though it may be used only as a self help.

## AN EVALUATION OF METHODS OF HANDLING SUPPLIES IN THE FARM MECHANICS SHOP

### I Purchase of Supplies

The efficiency of operation of a farm mechanics shop is dependent in a large measure on the availability of consumable and instructional supplies conveniently and systematically stored in the farm mechanics shop. Adequate supplies should be purchased well in advance of the opening of school on a basis of the spring inventory of supplies on hand, the estimated enrollment of the year ahead, and the estimated needs of projects of individual students. Purchase of all supplies is on approved requisition forms initiated by the farm mechanics teacher and channeled through the school district office.

#### A. Information needed

1. List of the school shop enrollment (number of students on class rolls)
  - a. All day students \_\_\_\_\_
  - b. Young farmers \_\_\_\_\_
  - c. Adult farmers \_\_\_\_\_
  - Total enrollment \_\_\_\_\_
2. A copy of the annual budget in farm mechanics.
3. Copies of approved purchase or requisition order forms used in purchasing supplies.
4. Shop problems and projects of enrollees and the necessary supplies stored in the supply room. PLACE A CHECK denoting the importance of stocking the necessary supplies in the table below:

Shop problem	Importance			Necessary supplies stocked in shop for use in connection with solving of shop problem	Importance		
	Major	Minor	None		Major	Minor	None
a. Farm carpentry area				b. Farm carpentry supplies			
(1) Feeders, bins				(1) Belts, machine & Carriage			
(2) Farm structures				(2) Bolts, stove			
(3) Gates, fences				(3) Hinges, hasps, etc.			
(4) Estimating				(4) Lumber, instr. & project			
(5) Sketching				(5) Nails			
(6)				(6) Screws, brads, fasteners			
(7)				(7) Sandpaper			
				(8) Glue			
				(9)			

## 4. (Shop problems and supplies, continued)

Shop problem	Importance			Shop supplies necessary on hand	Importance		
	Major	Minor	None		Major	Minor	None
c. General shop problems				d. General shop supplies			
(1) Concrete construction				(1) Blades, hacksaw			
(2) Electrical projects				(2) Cement, portland			
(3) Irrigation structures				(3) Sand and gravel			
(4) Rope work				(4) Paint, implement, and wood			
(5) Painting				(5) Supplies, electrical			
(6) Plumbing, sanitation				(6) Supplies, plumbing			
(7)				(7) Tape, friction			
(8)				(8) Varnish, shellac			
				(9) Compressed air			
				(10)			
e. Machinery, farm				f. Farm machinery supplies			
(1) Planting machinery				(1) Cleaning solvents			
(2) Harvesting machinery				(2) Gasoline &/or kerosene			
(3) Cultivating machinery				(3) Oil, motor & machine			
(4) Garden equipment				(4) Grease, lubricating			
(5) Tractor, truck				(5) Parts, farm machinery			
(6)				(6) Rivets, farm machinery			
(7)				(7) Bolts & washers, F.M.			
				(8)			
				(9)			
g. Metal work area				h. Metal working supplies			
(1) Hot and cold metal				(1) Coal, coke, water			
(2) Arc welding				(2) Fluxes, welding			
(3) Acetylene welding				(3) Solder, acid core			
(4) Sheet metal				(4) Welding roc, arc & acet.			
(5) Soldering				(5) Metal, angle, flat, channel, etc.			
(6) Tempering				(6) Washers, screws, rivets			
(7)				(7)			
				(8)			
				(9)			



B. Checklist on supply purchase (Rate A, B, C, & N)

1. Availability of supplies for student use

- ( ) a. A sufficient quantity of supplies is purchased for the entire teaching year.
- ( ) b. Essential supplies used in the production of student projects in the instructional program are stocked in the school shop.
- ( ) c. Supplies are purchased and stocked for instructional demonstrational purposes.

2. Annual budget, a basis for purchase of supplies

- ( ) d. The budget includes:
  - (1) An itemized list of supplies specifying description, quantity, and quality of each item.
  - (2) Needed repairs and improvements.
- ( ) e. The basis for the annual shop budget is:
  - (1) Total shop enrollment for the year
  - (2) Supplies on hand as reflected by the spring inventory.
  - (3) Type of community projects and problems enrollees are instructed in.
- ( ) f. A copy of the annual budget is filed for future reference in the office of the principal, the district superintendent, and the F. M. instructor.

3. Purchase procedure is businesslike

- ( ) g. The requisition form resembles the district purchase order form.
- h. The requisition form provides for:
  - (1) Name and or names of vendors handling the desired supplies.
  - (2) Name and address of the purchaser, payee, and consignee.
  - (3) A definite order number, order date, and space provided for signature of responsible persons involved in making the purchase.
  - (4) Description, amount, and cost of the purchase by item.
- ( ) i. All supply requisitions are approved by the high school principal.
- ( ) j. Little administrative delay is involved in processing the requisition.
- ( ) k. A copy of the requisition is retained by the shop, the principal's office and the district clerk of the school board.
- ( ) l. Shop instructor checks incoming supplies against duplicate requisition or copy of purchase order from the Clerk of the Board of Education.
- ( ) m. Payment of supplies is made only upon evidence from the shop instructor that the supplies have been received. (Checked and approved duplicate order form)

C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. To what extent are supplies available for use by students in the several areas of instruction?

- ( ) 2. To what extent is a meaningful budget prepared and used as a basis for requisition for purchases for the year ahead?
- ( ) 3. To what extent are supplies purchased in accordance with definite businesslike policies?

## II Annual Report of Inventory

The farm mechanics instructor submits to the high school principal a record annually of inventories of materials on hand.

### A. Information needed

- 1. A copy of the annual inventory.
- 2. When is the inventory accomplished?
- 3. Who is responsible for accomplishing the inventory?

### B. Checklist (Rate A, B, C, & N)

- ( ) 1. The shop instructor uses a definite printed inventory form to accomplish the inventory.
- ( ) 2. A provision is made for recording obsolete items in the inventory.
- ( ) 3. A provision is made in the inventory to record losses due to damage, fire, and theft.
- ( ) 4. A provision is made to write off obsolete supplies and supply losses due to fire and theft.
- ( ) 5. The inventory is taken counting and recording all-items of supply irregardless of size and number.
- ( ) 6. Students receive training in conducting a businesslike inventory of supplies by actual participation in counting and recording items of supply.
- ( ) 7. At the time of inventory the supplies are put back in an orderly arrangement.
- ( ) 8. Good housekeeping practices are involved during the shop inventory.
- ( ) 9. In addition to the annual spring inventory, an inventory is made of all supplies when a new instructor is hired to take over the shop.
- ( ) 10. The new instructor is assisted in accomplishing an inventory of supplies by the retiring instructor and the high school principal or his representative.
- ( ) 11. A continuous inventory file card on each item of supply is posted on the shelf, rack, or drawer where the supply is stored.
- ( ) 12. A copy of the shop inventory is kept on file by the instructor, high school principal and the Superintendent of schools.
- ( ) 13. The inventory record clearly shows the amount of supplies on hand and the value of each item.
- ( ) 14. The inventory record clearly shows the amount of supplies on hand and the value of each item, for the previous year.
- ( ) 15.
- ( ) 16.

## C. Evaluation summary (Rate 5, 4, 3, 2, 1, - N)

- ( ) 1. To what extent is an annual inventory made?
- ( ) 2. To what extent is the inventory accomplished in a businesslike manner?
- ( ) 3. To what extent does the inventory show the actual financial picture of supplies on hand?
- ( ) 4.

## III Orderly Issuance

Adequate space is provided for the storage and orderly issuance of all supplies.

A. Information needed

- 1. What storage space is available for shop supplies?
- 2. How are supplies arranged according to the following criteria?
  - a. Orderly issuance
  - b. Safety measures
  - c. Student participation in issuance (ease of).
- 3. What arrangements are made for additional new supplies and necessary expansion?

B. Check sheet (Rate A, B, C, or N)

- ( ) 1. Supplies are stored as far as possible so as to be visible for ease in checking and issuance.
- ( ) 2. Small items of supply are stored in compartmentized bins, drawers.
- ( ) 3. Supplies are stored according to some recognized filing system such as "storing according to units of instruction."
- ( ) 4. The storage space affords adequate protection against loss.
- ( ) 5. Maximum student participation is used in the issuance of supplies.
- ( ) 6. To a great extent supplies not affected by weather are stored in enclosed, non-heated area adjoining the shop.
- ( ) 7. The storage area is adequately illuminated.
- ( ) 8. Suitable entrances are provided to storage area for proper receipting of materials.
- ( ) 9. Inflammable supplies are stored in metal cabinets properly secured in air-tight containers.
- ( ) 10. The storage area is so arranged for necessary expansion to include new supplies.
- ( ) 11. Lumber and steel supplies are stored in either vertical or horizontal racks located for convenience of issue and safe storage.
- ( ) 12. The storage area is conveniently located to the shop for ease of issue.

C. Evaluation summary (Rate 5, 4, 3, 2, 1, - N)

- ( ) 1. To what extent is the storage space arranged to suit the size, nature, and kind of materials stored?
- ( ) 2. To what extent are the supplies stored to afford maximum participation of students and the orderly issuance of supplies.
- ( ) 3.

IV Estimating Supplies

Students receive training in good business procedure in the estimating and purchase of supplies.

A. Information needed

- 1. What methods are used by students to procure the necessary supplies for project construction?
- 2. What forms are used for estimating and recording the supplies used by students?
- 3. Who stores, maintains inventory in an orderly manner, and issues the supplies to students?

B. Check sheet (Rate A, B, C, or N)

- ( ) 1. When a student desires to construct a farm mechanics project, he first makes a sketch and a bill of materials needed in the construction of the project.
- ( ) 2. The sketch and bill of materials is made upon a printed standard form made up for this particular purpose.
- ( ) 3. The materials form is checked and approved by signature of the instructor before any supplies are issued for project construction.
- ( ) 4. Students are assigned the duty of supply clerk to receive training in good business procedure.
- ( ) 5. The student supply clerk checks and places in storage all incoming supplies under the direction of the instructor.
- ( ) 6. The student supply clerk issues supplies upon presentation of teacher-approved materials form.
- ( ) 7. The student supply clerk keeps supplies in storage in an orderly manner - he maintain good housekeeping habits and procedures.
- ( ) 8. As student supply clerk he records on the materials form what he has issued and after each issue authenticates the issue by the proper signatures.
- ( ) 9. As materials are issued the bill of materials form becomes a supply record of materials issued.
- ( ) 10. Upon completion of the student's project and before the project is taken home, the teacher records on the materials form the final grade, payment in full, and receipt number for payment.
- ( ) 11. The bill of materials form upon completion is placed in the teacher's permanent supply file as evidence of supplies used in project construction.
- ( ) 12.

C. Evaluation (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. To what extent are supplies checked in, stored in an orderly fashion, and issued by the students under the supervision of the teacher as a phase of good business management teaching?
- ( ) 2.

V Safety in Handling Supplies

Safety regulations are observed in the storage and handling of supplies.

A. Information needed

1. How well does the physical facilities for the storage of supplies meet existing state safety regulations?
2. Is there adequate protection against fire?
3. Are entrances constructed to eliminate common hazards, i.e., adequate lighting, wide corridors, non-skid floors, freedom from overhead obstructions.
4. Are supplies stored in well constructed cabinets, bins, racks, or shelves in an orderly fashion?

B. Check sheet on safety (Rate A, B, C, or N)

- ( ) 1. Adequate storage space is provided to prevent loss, breakage, and spoilage.
- ( ) 2. Construction of supply cabinets, racks, bins, and containers are adequate.
- ( ) 3. Cabinets, racks, and containers used for storage of materials are well constructed.
- ( ) 4. Supplies are stored neatly and in an orderly fashion.
- ( ) 5. Supplies are stored within easy reach of students and instructors.
- ( ) 6. Fire protection equipment is adequate and prominently displayed within easy reach of all personnel.
- ( ) 7. Floors in the storage areas are made of non-skid fireproof materials.
- ( ) 8. Entrances, corridors, and stairways are provided with adequate illumination.
- ( ) 9. Stairways are provided with the necessary guard-rails and skid proof steps.
- ( ) 10. Entrances to supply areas are free from overhead of otherwise obstructions.
- ( ) 11. Safety standards used which are basic in industry are adopted as far as is reasonable and in keeping with educational practices.
- ( ) 12. The students and instructor participate in organized safety inspections periodically.
- ( ) 13. Good housekeeping procedures are evident in the supply areas.
- ( ) 14. Inflammable materials such as paint, mineral spirits, and gasoline are stored in metal cabinets in containers that are fireproof.

- ( ) 15. materials not immediately used for project construction or instruction are promptly placed in storage in a neat and orderly fashion.

C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. To what extent are safety regulations observed in storage and handling of supplies.
- ( ) 2. To what extent are physical facilities constructed and maintained in keeping with existing safety regulations.

## VI Revolving Fund

A revolving fund is set up by the district for the purchase of supplies used and sold to students in the construction of projects.

A. Information needed

1. How is the purchase of supplies financed by the shop?
2. What supplies are charged against the revolving fund?
3. Revolving fund records.

B. Checklist (Rate A, B, C, or N)

- ( ) 1. A revolving fund of sufficient size is set up by the school district for the purchase of supplies used and sold to students in the construction of projects during the teaching year.
- ( ) 2. The student pays for all materials issued to him that are used in the construction of projects.
- ( ) 3. Materials-used in demonstrations and for general instruction are paid for by the district and are not a part of the revolving fund.
- ( ) 4. The student pays a fair price for materials issued him for student project construction.
- ( ) 5. A duplicate record is maintained of all purchases and sales of shop supplies.
- ( ) 6. All money collected from the sales of material are returned to the shop revolving fund for further anticipated purchases.
- ( ) 7. The district underwrites the purchases of supplies and maintains the necessary bookkeeping to insure the return of funds from sales of supplies.
- ( ) 8.

C. Evaluation (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. To what extent is the revolving fund adequate that is set up for the purchase of supplies used and sold to students in the construction of shop projects?
- ( ) 2. To what extent are records kept of purchases and sales of supplies by the district?

## VII Sale of Supplies

The student pays the school a fair price for all materials used from school supplies in project construction.

### A. Information needed

1. Price list for salable materials used in student project construction.
2. Policies of school district regarding sales of materials.
3. Records of sales of materials.
- 4.

### B. Checklist (Rate A, B, C, - N)

- ( ) 1. The student pays the school a fair price (not more than local merchants charge) for materials used in project construction.
- ( ) 2. The bill of materials form used by the student in securing project materials becomes a record of materials sold by the instructor.
- ( ) 3. The student pays for materials actually received, used or wasted, in student project construction.
- ( ) 4. Before a completed project may be taken from the shop it is paid for by the student.
- ( ) 5. The teacher upon receiving payment for student project completed makes out a receipt showing payment in presence of student.
- ( ) 6. The student retains the original copy of the receipt showing payment for supplies.
- ( ) 7. The instructor files the carbon copy of the receipt showing payment for supplies.
- ( ) 8. The instructor turns into the high school treasurer all moneys received each day and receives a receipt for the same.
- ( ) 9. At the close of school, the bill of materials forms, (2) the receipt for payment of supplies, and the receipt for moneys turned into the school treasurer balance.
- ( ) 10. The instructor keeps an alphabetical student account record of all student sales.
- ( ) 11.

### C. Evaluation (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. To what extent are adequate financial records of sales of materials kept by the Farm Mechanics Instructor?
- ( ) 2. To what extent does the student pay a fair price for all materials used in project construction?

Summary of criticisms and recommendations of the first revision of the criteria

The first revision of the criteria was sent by mail to 23 selected farm mechanics instructors and supervisors and ten industrial arts teachers engaged in teaching and supervision of vocational education in Utah. Twenty-three teachers responded with constructive suggestions.

The number of comments recorded on the criteria ranged from one to eight. Under the first general area, "Purchase of Supplies," Elvin Downs, Assistant State Director of Vocational Agriculture, recommended that (A-4) shop problems be changed to shop projects; another recommendation suggested the two terms be included. Several instructors recommended additional items be added to the lists of supplies needed by the farm shop. Under the heading I-B-1, an additional check item was recommended, "Supplies needed in the construction of large projects are purchased by the students from local merchants where and when possible." Additional check items were suggested under "Annual Report of Inventory." One additional statement on evaluation summary regarding complexity of inventory systems was suggested and adopted.

Under "Orderly Issuance" an additional evaluation summary was suggested to point out to what extent the storage system suggested a like arrangement for the farm shop of the student. "A check list item was suggested for 'Safety'." A further comment was: "Is a written record available showing that safety precautions were taught to all students in the operation of power equipment." This check item was not included because it does not pertain to the problem of "Safety in handling supplies." It was suggested that a joint supply room to operated by a school bus driver employed by the district rather than



by students. This item has merit, but was not included because of its controversial nature.

Under the General Principles several suggestions were made recommending changes in the wording of certain sentences. For example a different method of numbering supplies was recommended and this was adopted.

Eleven teachers indicated that the first revision of criteria was excellent. One teacher reported that the phase dealing with the keeping of accounts was too complex. This section was therefore revised.

The foregoing suggestions were analyzed, and in the light of all conditions, a second revision of the criteria was made.

#### Second revision of the criteria

As a result of the many suggestions of the Faculty Advisory Committee and the group of teachers of farm mechanics, the second revision was made. It was felt by the writer that the form of this revision would serve a purpose for the professional improvement of the teacher.

#### Summary of evaluations

Prior to the trial application of the second revision of the criteria it was suggested by Professor L. R. Humpherys that a summary of evaluations of the areas covered by the criteria be made on a five-point scale. The purpose of this summary was to show the teacher or evaluator in graphic form the strengths and weaknesses of the farm mechanics supply procedures. Accordingly a form\* was devised for this purpose and subsequently used as a part of the trial application of the criteria at the South Cache High School.

#### Trial application

A part of the validating procedure used in devising these criteria

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\* See last page of second revision in Appendix.

was to make a trial application of the instrument in a typical farm mechanics department of a high school.

It was thought that the recommendations of the Faculty Advisory Committee and the 23 farm mechanics and industrial arts teachers, in addition to the benefit of an application of the revised criteria in a typical farm mechanics department, would provide an instrument of high reliability for use in evaluating procedures used in handling supplies in the farm mechanics departments of high schools of Utah.

The purposes of the trial application in this study were to determine the clarity of the several criteria, the presence of unnecessary items, or improper coverage, the extent to which the criteria reveal the prevailing conditions in the shop, and whether after the application is made specific recommendations could be made for the improvement of the program.

After careful consideration of various departments it was decided that the farm mechanics department of South Cache High School would be desirable for a trial application. This department has students enrolled in all phases of the program. It represents typical farm mechanics conditions and the school administrator and the farm mechanics teacher expressed a desire to cooperate.

Accordingly, Mr. Ray Cannon, instructor; Professor L. R. Humpherys; and the writer used the second revision\* of the criteria in making a trial evaluation on the afternoon of April 13, 1955. An effort was made to evaluate prevailing conditions in terms of the criteria.

#### Changes in the second revision of criteria

The committee made an effort to determine the effectiveness of each criterion in terms of its usefulness in appraising prevailing conditions.

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\* See Appendix

Some beneficial changes seemed desirable as a result of this trial.

The major changes are enumerated as follows;

1. A revolving fund is set up for purchase of supplies. No changes suggested.
2. Instructor submits annual inventory. Item 11 in B Checklist does not appear to be practical under Utah conditions. Therefore, it was stricken out. Item 5 in C. Evaluation Summary is not in reality an evaluative statement and belongs under the checklist.
3. Purchase of supplies. A. Information needed, f. Farm machinery supplies, item 5 parts, farm machinery; it is questionable whether farm machinery parts should be stored in the farm mechanics shop. It was felt that some instructional parts such as mower ledger plates, knife sections, and different type guards could be kept on hand.
4. Adequate space and spacing - C. Evaluation summary. Item #3 was shifted to the checklist and an additional evaluation statement was added; "To what extent are supplies conveniently stored and efficiently issued?"
5. Estimating and purchase of supplies - C. Evaluation. Item #2 was changed to read, "Is the system of checking out supplies adequate and efficient and still not too time-consuming for the teacher?"

## CHAPTER IV

## CONCLUSIONS AND RECOMMENDATIONS

Much attention is given in our research studies to the problem of developing reliable instruments for evaluation of programs in education. For some time there has been a felt need for the development of an instrument to appraise the efficiency and effectiveness of handling supplies in the school farm mechanics departments of Utah and other states.

With this need in mind the writer has formulated criteria for the evaluation of this aspect of the program of vocational agriculture. These criteria have been revised as a result of the judgments of representative groups of teachers in the field of farm mechanics. The revised criteria were applied in a trial evaluation in South Cache High School, Hyrum, Utah. As a result of the judgments of the farm mechanics teachers and the trial application, the final draft of the criteria was made which appears in the following pages. The writer feels that the use of these criteria will provide a means of self improvement for teachers of farm mechanics.

CRITERIA FOR EVALUATING PROCEDURES AND TECHNIQUES USED IN HANDLING SUPPLIES  
IN THE FARM MECHANICS DEPARTMENTS IN UTAH HIGH SCHOOLS

Instructions for Making Evaluations

Guiding principles

The guiding principles enumerated in each section of these criteria are statements subscribed to by a group of successful teachers, administrators, supervisors, and lay people from Utah and other states. The use of these principles, supplementary information, checklists and evaluations taken together are intended to be helpful to any teacher in determining the efficiency of his important phase of the local farm mechanics program. The guiding principle serves as a standard of excellence against which the prevailing aspects of the school may be evaluated.

Scoring the checklists

The checklists consist of practices, provisions, and conditions which in the opinion of the group of experts are found in a good farm mechanics department. A local shop program may lack some of these items, but excel in others. The checklists are intended to be used in a factual determination of how well a department measures up to the standards involved in handling shop supplies. They are to be used to score provisions and conditions existing in the local program as revealed in the collected "Information needed" and by the personal observations of the evaluators.

The prevailing conditions in the checklist items are to be evaluated in the parentheses preceding them with the symbols A, B, C, and N.

- A. Indicates that the provision, or practice, or condition is present fully.
- B. Indicates that the provision, practice, or condition is present to some extent.
- C. Indicates that the provision, practice, or condition is missing

but is needed.

- N. Indicates that the provision, practice, or condition does not apply or is not desirable.

#### Registering evaluation summaries

Evaluations represent the best judgment of those making the evaluation. The evaluation summary is based on personal observation and judgment in the light of the checklist items as they have been scored by the use of the available information collected. This evaluation is made on a five-point scale and should be used to indicate the following qualities:

- 5 - Excellent; provisions are functioning fully and/or conditions are extensive.
- 4 - Very good; Provisions are moderately extensive and function well.
- 3 - Good; the provisions are average, present, and functioning about average.
- 2 - Fair; the provisions are limited and are functioning below average.
- 1 - Poor; the provisions are very limited and are functioning very poorly.
- N - Missing or does not apply.

#### Comments

The comment areas should be used freely by evaluators in order to record additional information considered pertinent to the successful operation of the program.

#### Who may use this evaluation

The use of this instrument is intended to be helpful to any teacher in determining the efficiency of handling supplies in a farm mechanics program. It is suggested by the writer that the local teacher request

the assistance of the high school principal and one or more additional people (state and college supervisory staff, lay people, or other teachers). As a result of the evaluation the high school principal may be able to more intelligently assist the teacher of farm mechanics in the improvement of the farm shop by providing better facilities, management relations, record systems, etc.

I. Revolving Fund

A revolving fund is set up by the school district for the purchase of supplies used by and sold to pupils in the construction of farm and home projects. The fund revolves or the funds expended for supplies returns in the form of receipts for materials sold. This fund is adequate for the pupils' needs. The school district maintains necessary bookkeeping to insure the return of funds from the sale of supplies.

A. Information needed

- 1. Secure a copy of school district policies and standards regarding the purchase and sales of supplies.
- 2. The amount of the revolving fund is \$ \_\_\_\_\_.
- 3. Secure a copy of the revolving fund records.

B. Checklist (Rate A, B, C, or N)

- ( ) 1. A revolving fund is set up by the school district for the purchase of supplies used and sold to pupils.
- ( ) 2. A revolving fund of sufficient size is maintained based on pupil enrollment, the shop budget, and the annual program of work.
- ( ) 3. All money collected from the sales of materials is credited to the shop revolving fund for further anticipated purchases.
- ( ) 4. The district underwrites the purchases of supplies and maintains the necessary bookkeeping to insure the return of funds from the sales of supplies.
- ( ) 5. Cost of materials used in demonstrations or for general instruction is paid for by the district and is not charged to the revolving fund.
- ( ) 6. An audit of the revolving fund records is made each year.



- ( ) 7. Provision is made to increase the fund when such need is demonstrated by the instructor.
- ( ) 8. A record is kept of all purchases of shop supplies.
- ( ) 9. A duplicate record is maintained of all sales of supplies.
- ( ) 10. When a revolving fund is not in use, the school district honors all reasonable requests for purchase of supplies.

C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. The school district has a revolving fund adequate for the purchase of supplies used and sold to students.
- ( ) 2. Adequate records are kept of purchases and sales.
- ( ) 3. In absence of a revolving fund the school district honors all reasonable requests for supplies.

D. Comments

## II. Annual Report of Inventory

The farm mechanics instructor submits to the high school principal a record annually of inventories of materials on hand. He employs proper inventory forms. His pupils receive training by assisting him in conducting a businesslike inventory.

### A. Information needed

1. A copy of annual inventories for two or more years.
2. When is the inventory taken? (usual dates) \_\_\_\_\_
3. Who is responsible for taking the inventory? \_\_\_\_\_

### B. Checklist (Rate A, B, C, & N)

- ( ) 1. The shop instructor uses an acceptable printed inventory\* form to make the inventory.
- ( ) a. The inventory form clearly shows the amount of each item of supply on hand.
- ( ) b. The inventory record clearly shows resale items, unit cost, and total value.
- ( ) c. An adequate description of each item of supply is made.
- ( ) d. Provision is made in the inventory to record losses due to fire, theft, etc.
- ( ) e. Provision is made to write off obsolete supplies.
- ( ) f. Provision is made to allow an estimate on the number of small items which are purchased by number instead of weight; i.e., cotter pins, washers, etc.
- ( ) g. Provisions are made for price changes on stocks of supplies held over from the previous year.
- ( ) h. The signature of the shop instructor or person taking the inventory appears on the completed inventory record.

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\* See Appendix for form used by Davis School District.

- ( ) 2. Pupils receive training in conducting a businesslike inventory.
- ( ) 3. The inventory is taken by actual physical count of the items of supply except where an estimate is allowed or other means of measurement is employed.
- ( ) 4. Good housekeeping is practiced during the inventory.
- ( ) 5. Supplies are replaced in an orderly manner as the inventory is taken.
- ( ) 6. In addition to the annual inventory, an inventory of supplies is made when a new instructor is employed.
- ( ) 7. The new instructor is assisted in taking the inventory by the retiring instructor and the high school principal or his representative.
- ( ) 8. A copy of the inventory record is kept on file in the office of the shop instructor, the high school principal, and the school district when required.
- ( ) 9. The use of inventory forms do not require excessive time and effort of the instructor.

C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. An inventory is taken at a desirable time and in a businesslike manner.
- ( ) 2. Acceptable inventory forms are employed.
- ( ) 3. Students receive training in taking inventory.

### III. Purchase of Supplies

The efficiency of operations of a farm mechanics shop is dependent in a large measure on the availability of needed consumable and instructional supplies conveniently and systematically stored in the farm mechanics shop. Adequate supplies should be purchased well in advance of the opening of school on a basis of the spring inventory of supplies on hand, the estimated enrollment of the year ahead, and the estimated needs of projects of individual students. Purchase of all supplies is made with the use of approved requisition forms devised by the farm mechanics instructor and channeled through the high school and/or school district office.

#### A. Information needed

1. A list of the school shop enrollments.
  - a. All day pupils \_\_\_\_\_
  - b. Young Farmers and adults \_\_\_\_\_
2. The file of farm surveys made by the instructor.
3. Copies of purchase order and/or requisition forms used for the purchasing of supplies (attach.).
4. A copy of the annual budget in farm mechanics submitted for the current year (attach.).
5. A survey of farm mechanics supplies on hand in the shop. Check on the following form the available supplies stored in the shop for use by the student. The most common supplies are listed and classified according to the accepted areas of farm shop instruction. Space is provided for listing additional supplies. Check each item of supply as to whether the amount is adequate or inadequate for the teaching year.

Survey of Farm Mechanics Supplies

Instructions:

1. In the column "On hand" mark with the letters  
 "/" indicating an adequate supply on hand for teaching year,  
 "x" indicating an inadequate supply on hand,  
 "n" indicating item of supply not on hand.
2. Under the heading "Comments" indicate in writing if used for  
 instruction, resale for project use, brought from home, etc.

Item of supply	' On ' ' hand '	Comments (Indicate in writing)
<u>a. Woodwork and farm carpentry</u>		
1. Bolts, machine and carriage		
2. Bolts, stove, other		
3. Chaulk, marking		
4. Fastner, corrigated, other		
5. Glass, window		
6. Glue, wood, other		
7. Hardware, hinges, hasps, locks		
8. Lumber, rough and common		
9. Lumber, finish, plywood		
10. Pumice stone, leadwood		
11. Screws, wood, brads		
12. Nails, common, finish, box		
13. Handles, wood		
14.		
15.		
<u>b. Cold metal, forging and tempering</u>		
1. Coal, coke, water		
2. Steel, flat, angle, channel		
3. Steel, round, square, tool		
4.		
5.		
<u>c. Concrete and masonry</u>		
1. Block, concrete, cinder, brick		
2. Cement, cement color powder		
3. Slaked lime		
4. Steel, reinforcing		
5. Aggregate, sand, gravel		
6.		
7.		
<u>d. Electrical</u>		
1. Boxes, junction, outlet, etc.		
2. Switches, single, circuit- breaker knife, rotary, etc.		
3. Fittings, misc., electr., other		
4. Tape, friction, rubber or plastic		
5. Wire, single, two and three conductor, common sizes		
6.		

Item of supply	On hand	Comments (Indicate in writing)
<u>e. Painting</u>		
1. Paints, implement, project, etc!	'	'
2. Rags, paint remover	'	'
3. Sandpaper, wood, wet or dry	'	'
4. Shellac, varnish, steel wool	'	'
5. Solvents, thinners, linseed oil	'	'
6.	'	'
7.	'	'
<u>f. Plumbing and pipe fitting</u>		
1. Fittings, pipe, assorted	'	'
2. Fittings, sanitary, assorted	'	'
3. Lead, oakum	'	'
4. Pipe, 1/2, 3/4, 1, 1 1/4 in. black galvanized	'	'
5. Pipe dope	'	'
6.	'	'
7.	'	'
<u>g. Rope - Leather work</u>		
1. Leather, harness, halter	'	'
2. Oil, harness, wax, thread	'	'
3. Rope, 3/8"-20#, 1/2"	'	'
4. Twine, string, 2 balls	'	'
5. Rivets, copper, tubular	'	'
6.	'	'
<u>h. Sheet metal and soldering</u>		
1. Galvanized sheet metal, 16, 24 ga.	'	'
2. Salimoniao, emery cloth	'	'
3. Solder, acid core	'	'
4. Rivets, sheet metal, assorted	'	'
5.	'	'
<u>i. Truck, tractor, and farm machinery</u>		
1. Bolts, washers, rivets	'	'
2. Fuels, solvents	'	'
3. Gaskets, gasket materials	'	'
4. Lubricants, oils	'	'
5. Parts, small, mis., i.e., ledger plates, sections, guards	'	'
6.	'	'
7.	'	'
<u>j. Welding, arc and oxy-acetylene</u>		
1. Fluxes, welding	'	'
2. Gas, acetylene & oxygen, carbide	'	'
3. Rod, acetylene, 1/16, 3/32, 1/8"	'	'
4. Rod, arc, cutting, welding	'	'
5. Scrap, plate, or used steel	'	'
6.	'	'
7.	'	'

B. Checklist (Rate A, B, C - N)

1. The annual budget is a basis for purchase of all supplies.
  - ( ) a. Anticipated pupil enrollment, scope of instructional program for the year ahead, and supplies on hand as reflected by the inventory are the basic factors affecting the annual shop budget.
  - ( ) b. The budget includes:
    - (1) An itemized list of supplies needed for the year ahead.
    - (2) Quantity, adequate description, quality, and estimated unit price specification.
    - (3) Needed repairs and improvements of the supply areas to be made.
  - ( ) c. The annual budget, as a future reference, is filed in the office of the principal and/or superintendent and shop instructor.
2. Availability of supplies for student use.
  - ( ) a. Supplies are purchased in advance of use for the teaching year.
  - ( ) b. Certain supplies needed in the construction of large projects are purchased by the pupil from the local merchant or brought from home.
  - ( ) c. Essential supplies that are used in the production of pupil projects or the instructional program are stocked in the shop
3. The purchase of supplies is made in a businesslike manner.
  - ( ) a. The requisition and/or purchase order form in duplicate or triplicate is employed in the purchasing of all supplies.
  - ( ) b. Requisition or purchase order forms contain the following pertinent data:

- (1) Space for name, address of vendor, payee, and purchaser.
  - (2) Space for description, quantity, quality, and price of items.
  - (3) Space for the date of order and deadline date after which supplies will not be accepted.
  - (4) A printed order number.
  - (5) Space for signature of person authorized to make payment for supplies.
- 
- ( ) c. The requisition is initiated by the shop instructor.
  - ( ) d. The principal approves the requisition.
  - ( ) e. A copy of the requisition is retained by the instructor.
  - ( ) f. The copy retained by the shop instructor is used to check all incoming supplies.
  - ( ) g. Payment for supplies is made only upon certification by the instructor that supplies ordered have been received.
  - ( ) h. Little administrative delay is involved in processing the requisition.
  - ( ) i.

C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. A survey was conducted and a meaningful budget is prepared and used as a basis for requisition of supplies for the year ahead.
- ( ) 2. Supplies are available for instructional and pupil use.
- ( ) 3. Supplies are purchased in a businesslike manner.

D. Comments



#### IV. Orderly Storage and Issuance

Adequate space and spacing is provided for the storage and orderly issuance of all supplies and materials. A recognized system is employed in the storage of supplies in well arranged and constructed bins, cabinets, and racks. Supplies are conveniently located to the shop and are easily accessible for use.

##### A. Information needed

1. Secure a sketch of the storage space available for supplies (attach).
  2. Indicate how each of the major items of supply are stored:
    - a. Lumber \_\_\_\_\_
    - b. Steel, pipe \_\_\_\_\_
    - c. Inflammables \_\_\_\_\_
    - d. Small supplies \_\_\_\_\_
    - e. Used steel \_\_\_\_\_
  3. What system of storing supplies is employed? Explain \_\_\_\_\_
- 

##### B. Checklist (Rate A, B, C, or N)

- ( ) 1. The facilities for storing supplies and materials provide visibility and ease in checking and issuing.
- ( ) 2. Supplies are stored according to some recognized system such as storing according to units of instruction or according to sizes.
- ( ) 3. Small items of supply are stored in compartmental bins or drawers.
- ( ) 4. The storage space affords adequate protection against undue loss.
- ( ) 5. Supplies not affected by weather or temperature are stored in an enclosure adjoining the shop.

- ( ) 6. The storage areas are adequately illuminated.
- ( ) 7. Suitable entrances are provided for the storage areas for proper receiving and dispensing of the supplies.
- ( ) 8. Inflammable supplies are stored in metal cabinets properly secured as prescribed by the fire underwriters' code.
- ( ) 9. The storage area provided for necessary expansion to include new supplies and materials.
- ( ) 10. The storage area is conveniently located in the shop for ease of issuance of supplies.

C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. The storage space is adequate.
- ( ) 2. Supplies are stored according to some definite plan, in an orderly fashion in proper compartments, bins, racks.
- ( ) 3. Supplies are easily accessible and safeguard from undue loss.

D. Comments

## V. Estimating Materials and Supplies

Pupils receive training in good business procedure in estimating kind, quantity, quality, and cost of materials and supplies used in the construction of projects.

### A. Information needed

1. Outline procedures used by pupils to procure supplies;
  - a. \_\_\_\_\_
  - b. \_\_\_\_\_
2. Procure forms for estimating and recording supplies used by pupils (attach.).
3. What training do pupils receive in the procedure of estimating kind, quantity, quality, and cost of materials used in project construction?

Record of evidence \_\_\_\_\_

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### B: Checklist (Rate A, B, C, or N)

- ( ) 1. A pupil makes a sketch and compiles a bill of materials upon an acceptable form before beginning construction of a project.
- ( ) 2. The bill of materials is checked and approved by the instructor or an assistant before supplies are issued.
- ( ) 3. Pupils are assigned the responsibility of "supply clerk" at intervals to receive training in issuance of materials.
  - ( ) a. The supply clerk checks and places in storage incoming supplies and materials as directed by the instructor.
  - ( ) b. The supply clerk issues supplies to pupils upon presentation of instructor-approved lists.
  - ( ) c. The supply clerk maintains the supplies in an orderly manner observing good housekeeping habits.

- ( ) d. The supply clerk records materials issued and after each issue requires the pupil receiving the materials to sign for the supplies.
- ( ) 4. Before the completed project is taken home by the pupil,
- a. The instructor grades the project and checks the bill of materials for accuracy and completeness.
  - b. Pupil completes payment of supplies used in construction.
- ( ) 5. The bill of materials form upon completion is filed in the office of the instructor as evidence of supplies used and sold for project construction.
- C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)
- ( ) 1. Supplies are properly accounted for on acceptable forms.\*
  - ( ) 2. Handling supplies does not demand excessive time of teacher.
  - ( ) 3. Pupils receive effective training in acceptable procedures in estimating and purchasing materials and supplies.

D. Comments

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\* See Appendix for forms used by Davis School District.

## VI. Sale of Supplies

The student pays the school a fair price for all materials and supplies used from school supplies in project construction for the home or farm.

### A. Information needed

1. Procure a copy of policies and regulations of the school district regarding sales of materials (attach or make notation).
2. Determine the price in percent of cost to pupils for materials used in the construction of projects:
  - a. When materials are sold as a complete or whole unit. Price \_\_\_\_\_
  - b. When a piece of material is sold that must be cut from a large piece in stock. Price \_\_\_\_\_
3. Procure copies of records and receipt forms used in the process of sales of materials for project construction (attach.).

### B. Checklist (Rate A, B, C, - N)

- ( ) 1. The pupil pays the school a fair price for materials used in project construction (not more than local merchants charge for materials in similar amounts.)
- ( ) 2. The pupil pays for materials or supplies actually received whether used or wasted in project construction.
- ( ) 3. Before a completed project is taken from the shop the materials used in the construction of the project are paid for by the pupil.
- ( ) 4. When receiving payment for a completed project or for materials used, the instructor issues to the pupil in his presence a receipt for the payment received.
- ( ) 5. A copy of the receipt showing payment of supplies or materials is filed in the office of the shop instructor.

- ( ) 6. The instructor remits all moneys received from sales of supplies to the high school principal's office at regular intervals.
- ( ) 7. The high school principal or his representative issues the instructor a receipt for all moneys deposited.
- ( ) 8. At the close of the school year the bills of materials, the receipts for payment of supplies, the inventory of materials on hand, and the receipts for money remitted to the high school principal are reconciled.
- ( ) 9. The instructor keeps an alphabetical account of records of all pupil purchases and sales.
- ( ) 10. An independent audit of the financial records (record of sales of supplies to pupils for construction or projects) of the shop is made annually.
- ( ) 11. School employees responsible for handling moneys from the sales of supplies are bonded.
- ( ) 12.

C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. An adequate record of sales of material and supplies is kept.
- ( ) 2. Pupils pay a fair price for supplies.
- ( ) 3. The sales of supplies does not require excessive teacher time.

D. Comments

## VII. Safety in Handling Supplies

Acceptable safety regulations are observed in the storage and handling of supplies. Pupils receive effective training and observe adopted safety practices in the handling and issuance of supplies from well constructed supply facilities conveniently located to the farm mechanics shop.

### A. Information needed

1. Secure a copy of the local fire and safety regulations observed by the high school shop (attach.).

### B. Check sheet (Rate A, B, C or N)

- ( ) 1. Copies of safety regulations are displayed prominently in the shop.
- ( ) 2. Training is given pupils in safety procedures, drills, inspections, and regulations.
- ( ) 3. Supply cabinets, racks, bins, and containers used for the storage of supplies are adequate and substantially constructed.
- ( ) 4. Floors in storage areas are made of non-skid fireproof materials.
- ( ) 5. Fire protection equipment is adequate and properly displayed within easy reach of all personnel.
- ( ) 6. Stairways are provided with necessary guard rails and skid-proof steps.
- ( ) 7. Entrances, corridors, and stairways are provided with adequate illumination.
- ( ) 8. Entrances to supply areas are free from overhead or other obstructions; i.e., attic eaves, water pipes, or heating pipes.
- ( ) 9. Safety standards, basic in industry are adopted as far as is reasonable and in keeping with educational practices.

- ( ) 10. Students and instructors participate periodically in organized safety inspections and drills.
- ( ) 11. Good housekeeping procedures are used in the supply areas.
- ( ) 12. Inflammable materials are stored in metal cabinets in leak-proof containers.
- ( ) 13. Gasoline is stored in cans equipped with safety spouts.
- ( ) 14. Oily rags are kept in air tight metal containers.
- ( ) 15. Materials not immediately used for project construction or pupil instruction are promptly placed in storage in a orderly fashion.

C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. Safety regulations are observed in storing and handling supplies.
- ( ) 2. Physical facilities are constructed and maintained in keeping with desirable safety regulations.
- ( ) 3. Pupils observe safety habits and participate in safety inspections and drills.

D. Comments

Summary of evaluations

Teachers and evaluators are encouraged to plot the numerical evaluations on a five-point scale on the chart on the following page. The line graph made by connecting the points of evaluation will be helpful in recognizing the weak and strong areas of the program and planning for an improvement program



## SUMMARY OF EVALUATIONS

Item	Ratings				
	1	2	3	4	5
	Poor	Fair	Good	Excellent	Superior
I. <u>A revolving fund is set up for supply purchases</u>					
1. The revolving fund is adequate					
2. Adequate records are kept of sales and purchases					
3. School district honors all requests					
II. <u>The instructor submits an annual inventory</u>					
1. Inventory taken in businesslike way					
2. Proper inventory forms are employed					
3. Pupils receive training					
III. <u>Purchase of supplies</u>					
1. A survey is conducted and a meaningful budget prepared					
2. Supplies available for all use					
3. Supplies are purchased in a businesslike way					
IV. <u>Adequate space is provided for storage of supplies</u>					
1. Storage space is adequate					
2. Supplies stored in orderly manner					
3. Supplies easily accessible to pupils					
V. <u>Estimating materials and supplies</u>					
1. Supplies handled in a businesslike way					
2. Handling supplies requires a minimum of teacher time					
3. Pupils receive training in estimating and purchasing					
VI. <u>The pupil pays for materials used</u>					
1. A record of sales of pupil's materials is kept					
2. Pupils pay a fair price for supplies					
3. Sales of supplies requires minimum teacher time					
VII. <u>Safety is observed in handling supplies</u>					
1. Safety regulations observed in storage and handling					
2. Physical facilities for storage of supplies meet standards					
3. Pupils participate in safety inspections					

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**APPENDIX**

CRITERIA FOR EVALUATING PROCEDURES AND TECHNIQUES  
USED IN HANDLING SUPPLIES IN THE FARM MECHANICS  
DEPARTMENTS IN UTAH HIGH SCHOOLS

Second Revision

## DIRECTIONS

Principles

The guiding principles enumerated in each of the following sections of these criteria are statements subscribed to by a group of successful teachers, administrators, supervisors, and lay people from Utah and other states. Following each principle, certain specific items of information are requested as essential in appraising the prevailing conditions against the principle or standard. A number of items are enumerated which taken together designated as "checklists", assist the appraiser in evaluating the effectiveness of the prevailing conditions.

Checklists

Each checklist consists of items, practices, provisions, and conditions which are considered desirable and acceptable. A local farm mechanics shop program may conform to these items to various degrees. The checklists are intended to assist the appraiser in determining how well a department measures up to the standards set up in these criteria.

The prevailing conditions in the shop are to be evaluated through the use of the checklist items in the parentheses preceding them with the symbols A, B, C, and N.

- A. Indicates that the provision, practice, or condition is present fully.
- B. Indicates that the provision, practice, or condition is present to some extent.
- C. Indicates that the provision, practice, or condition is missing but is needed.

- N. Indicates that the provision, practice, or condition does not apply or is not desirable.

### Evaluation summary

Following each checklist one or more statements of evaluation are listed. These evaluations or ratings are to be made on a five-point scale which will measure the extent to which prevailing conditions conform to generally accepted principles or standards.

Evaluations represent the best judgment of those making the evaluation. The evaluation summary is based on personal observation and judgment in the light of the checklist items as they have been scored on the available information needed. This five-point scale is to be used with the following interpretations:

5. Excellent; Provisions are functioning fully and/or conditions are extensive.
  4. Very good; provisions are moderately extensive and function well.
  3. Good; the provisions are average, present and functioning about average.
  2. Fair; the provisions are limited and are functioning below average.
  1. Poor; the provisions are very limited and are functioning very poorly.
- N. Missing or does not apply.

### How to use this evaluation instrument

Effective use of this evaluation device depends upon the familiarity of the individual with the technique proposed and a thorough understanding of the prevailing conditions in a given farm mechanics department. The teacher should become thoroughly familiar with the rating

device as a self evaluation instrument and use it for the improvement of the farm mechanics department.



## I. Purchase of Supplies

The efficiency of operation of a farm mechanics shop is dependent in a large measure on the availability of consumable and instructional supplies conveniently and systematically stored in the farm mechanics shop. Adequate supplies should be purchased well in advance of the opening of school on a basis of the spring inventory of supplies on hand, the enrollment as determined by preregistration for the year ahead, and the estimated needs of the projects of individual students. Purchase of all supplies is made with the use of approved requisition forms devised by the farm mechanics teacher and channeled through the school district office.

### A. Information needed

1. An estimate of the farm mechanics shop enrollments (number of students on class rolls)
  - a. All day students \_\_\_\_\_
  - b. Young farmers \_\_\_\_\_
  - c. Adult farmers \_\_\_\_\_
  - d. Total enrollment \_\_\_\_\_
2. A copy of the annual budget in farm mechanics (attach).
3. Copies of approved purchase order and/or requisition forms used for the purchasing of supplies.
4. An estimated list of shop projects of enrollees and the necessary supplies stored in the supply room. The local teacher places a check denoting the importance of the project and the importance of stocking the supplies in the table below:

Shop project	Importance			Shop supplies necessary	Importance		
	Major	Minor	None		Major	Minor	None
a. Farm carpentry projects				a. Farm carpentry supplies			
(1) Feeders, bins				(1) Bolts, carriage & machine			
(2) Farm structures				(2) Bolts, stove			
(3) Gates, fences				(3) Hinges, hasps, etc.			
(4) Estimating				(4) Lumber, instructional			
(5) Sketching				(5) Nails, common and finish			
(6)				(6) Screws, brads, fasteners			
(7)				(7) Sandpaper, glass			
				(8) Glue, putty			
				(9) Staples			
				(10) Paper, drawing			
				(11) Paper, scratch & ditto			
b. General farm shop projects				b. General farm shop supplies			
(1) Concrete projects				(1) Blades, hacksaw			
(2) Electrical projects				(2) Cement, portland			
(3) Irrigation structures				(3) Sand and gravel			
(4) Rope work projects				(4) Paint, implement, wood			
(5) Painting projects				(5) Supplies, electrical			
(6) Plumbing, sanitation				(6) Supplies, plumbing			
(7) Masonry				(7) Tape, friction & elec.			
				(8) Varnish, shellac, etc.			
				(9) Compressed air			
				(10) Wire, baling, electr.,			
c. Farm machinery projects*				c. Farm machinery supplies			
(1) Planting machinery				(1) Cleaning solvents			
(2) Harvesting machinery				(2) Gasoline and/or kerosene			
(3) Cultivating mach.				(3) Oil, motor & machine			
(4) Garden equipment				(4) Grease, lubricating and pressure			
(5) Tractor, farm				(5) Parts, farm machinery			
(6) Truck, farm				(6) Rivets, farm machinery			
				(7) Bolts, washers, cap screws			
				(8) Teaching aids			
				(9) Cotter, spring			

\* Machine is either repaired, serviced, or built or a combination thereof.

Shop projects	Importance			Shop supplies necessary	Importance		
	Major	Minor	None		Major	Minor	None
d. Metal work projects (1) Projects made of sheet metal (2) Projects requiring soldering (3) Chisels, punches (4) Forging projects (5) Cold metal projects				d. Metal working supplies (1) Coal, coke, water (2) Fluxes, welding (3) Solder, acid core, salimoniae (4) Welding rod, arc and acety. (5) Metal, angle, flat, channel galvanized, plate (6) Screws, metal, rivets (7) Cloth, emery			

B. Checklist - Purchase of supplies (Rate A, B, C, & N)

1. The annual budget is a basis for purchase of supplies
  - ( ) a. Anticipated pupil enrollment, scope of instructional program for the year ahead and supplies on hand as reflected by the spring inventory are the basic factors affecting the annual shop budget.
  - ( ) b. The budget includes needed repairs, improvements, and additions for the year ahead.
  - ( ) c. The annual budget as a future reference is filed in the office of the principal and/or superintendent as well as the farm mechanics instructor.
  - ( ) d.
2. Availability of supplies for student use.
  - ( ) e. A sufficient quantity of supplies is purchased in advance of the time of use for the entire teaching year.
  - ( ) f. Supplies are purchased and stocked conveniently for instructional and demonstrational uses.
  - ( ) g. Certain supplies needed in the construction of large projects are either purchased by the pupil from the local merchant or brought from home.
  - ( ) h.
3. The purchase of supplies is accomplished in a businesslike manner.
  - ( ) i. The requisition and/or purchase order form in duplicate (or triplicate) is employed in the purchase of all supplies.
  - ( ) j. Requisition or purchase order forms contain the following pertinent data:
    - (1) Space for name, and address of vendor, payee, and farm shop.
    - (2) Space for name and description of supply or material ordered.
    - (3) Space for quantity, quality, and price of materials ordered.
    - (4) A printed order number (serial).
    - (5) Space for date of order and dead-line date after which supplies will not be accepted.
    - (6) Space for signature of person authorized to make payment for supplies.
  - ( ) k. An approved requisition form is initiated by the Farm Mechanics instructor.
  - ( ) l. The principal approves the requisition.

- ( ) 2. A copy of the requisition and/or order form is retained by the instructor and the principal and/or superintendent.
- ( ) 3. The requisition and/or order form is used in checking all incoming supplies by the farm mechanics instructor.
- ( ) 4. Payment of supplies is made only upon certification by the farm mechanics instructor that supplies have been received.

C. Evaluation summary (Data 5, 4, 3, 2, 1 - N)

- ( ) 1. To what extent is a meaningful budget prepared and used as a basis for requisition for purchases for the year ahead?
- ( ) 2. To what extent are supplies available for use by pupils in the several areas of instruction?
- ( ) 3. To what extent are supplies purchased in accordance with definite businesslike policies?
- ( ) 4.

D. Comments

## II. Annual Report of Inventory

The farm mechanics instructor submits to the high school principal annually a satisfactory record of inventories of materials and supplies on hand.

### A. Information needed

1. A copy of two or more annual inventories.
2. When is the inventory taken? (usual dates)
3. Persons responsible for taking the inventory?

### B. Checklist (Rate A, B, C, & N)

- ( ) 1. The shop instructor uses an acceptable printed inventory form to make the inventory.
- ( ) 2. A provision is made for recording obsolete items in the inventory. (See attached form)
- ( ) 3. Provision is made in the inventory for a record of losses due to fire, theft, breakage, and damage. (See attached form)
- ( ) 4. The inventory is taken by counting and recording all items of supply and material, except such items as brads, cotter keys, etc.
- ( ) 5. Provision is made to allow an estimate of small items as mentioned in (4) above or to indicate by weight the quantity on hand.
- ( ) 6. Students receive training in conducting a businesslike inventory by actual participation in counting and recording each item of supply.
- ( ) 7. Good housekeeping practices are practiced during the inventory.
- ( ) 8. Whenever a new instructor is employed, an inventory is made of all supplies by the retiring instructor, the school principal, and the new instructor.
- ( ) 9. Inventory cards are kept on all supplies and materials by the farm mechanics instructor and the superintendent of schools.
- ( ) 10. The inventory record clearly shows the amount and value of supplies on hand.
- ( ) 11. Provision is made to indicate the condition of each item on inventory, (i.e., excellent, good, fair, poor).

( ) 12. Provision is made for price changes on stocks of supplies held over to the following year.

( ) 13.

( ) 14.

C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

( ) 1. To what extent is an annual inventory taken in a businesslike manner?

( ) 2. To what extent are proper inventory (printed) forms employed?

( ) 3. To what extent can a satisfactory inventory be taken without excessive time?

D. Comments

### III. Orderly Storage and Issuance

Adequate space and spacing is provided for the storage and orderly issuance with student participation of all supplies and materials.

#### A. Information needed

1. What storage space is available for the storage of shop supplies?
  - a. Area available for lumber
  - b. Area available for steel
  - c. Area available for inflammables ( gas, oil, paint, etc.)
  - d. Cabinet area for small supplies (Nails, bolts, screws)
  - e. Area for materials and parts (misc.)
2. How are the supplies and materials arranged;
  - a. For orderly issuance?
  - b. From the standpoint of safety measures?
  - c. For the ease of student participation in the issuance of the supplies?
3. What arrangements are made for additional new supplies and necessary expansion of the supply area?

#### B. Checklist (Rate A, B, C, or N)

- ( ) 1. The facilities for storing supplies and materials provides visibility and ease in checking and issuing.
- ( ) 2. Small items of supply are stored in compartmental bins or drawers.
- ( ) 3. Supplies are stored according to some recognized system such as "Storing according to the units of instruction."
- ( ) 4. The storage space affords adequate protection against loss.
- ( ) 5. Maximum student participation is used in the issuance of supplies.
- ( ) 6. Supplies not affected by weather or temperature are stored in an enclosure adjoining the shop in covered racks or bins.
- ( ) 7. The storage areas are adequately illuminated.
- ( ) 8. Suitable entrances are provided to the storage areas for proper receiving and dispensing of the supplies and materials.
- ( ) 9. Inflammable supplies are stored in metal cabinets properly secured in metal containers.
- ( ) 10. The storage area provides for necessary expansion to include new supplies and materials.
- ( ) 11. Lumber and steel supplies are stored in either vertical or horizontal racks located for convenience of issue and safe storage.



( ) 12. The storage area is conveniently located to the shop for ease of issue.

( ) 13.

( ) 14.

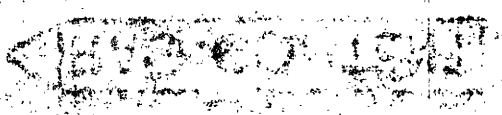
C. Evaluation summary (Rate 5, 4, 3, 2, 1 - N)

( ) 1. To what extent is the storage space adequate in size and location to suit the nature and kind of materials stored?

( ) 2. To what extent are the supplies stored to afford desired participation of students in an orderly issuance of supplies?

( ) 3. To what extent is storage worked out to some definite plan?

D. Comments



#### IV. Estimating Materials and Supplies

Students receive effective training procedure in estimating quantity, quality, and cost on the form of materials and supplies used in the construction of projects used.

##### A. Information needed

1. What methods are used by students to procure the necessary supplies for project construction?
2. What forms are used for estimating and recording the supplies students use?
3. Are students used or trained in recording supplies estimated and issued?
- 4.

##### B. Checklist (Rate A, B, C, or N)

- ( ) 1. A student makes a sketch and a bill of materials needed before beginning the construction of a farm mechanics project.
- ( ) 2. The sketch and bill of materials are made upon a standard form designed for this particular purpose.
- ( ) 3. The estimate of materials is checked and approved by signature of the instructor before any supplies or materials are issued for project construction.
- ( ) 4. Students are assigned the responsibility of "supply clerk" at intervals to receive training in good business procedure.
- ( ) 5. The student supply clerk checks and places in storage all incoming supplies as directed by the instructor.
- ( ) 6. The student supply clerk issues supplies to pupils upon presentation of instructor approved lists. (Material forms)
- ( ) 7. The student supply clerk maintains the supplies in an orderly manner observing good housekeeping habits.
- ( ) 8. The supply clerk records materials issued and after each issue requires the pupil receiving the materials to sign for them.
- ( ) 9. As materials are issued the bill of materials becomes a record of supplies issued.

- ( ) 10. When a project is completed the instructor records on the materials form a final grade, a record of payment, and receipt for payment. (serial number)
- ( ) 11. The materials form becomes a permanent record of evidence of supplies issued after the project is completed and is so filed.
- ( ) 12.
- ( ) 13.

C. Evaluation (Rate 5, 4, 3, 2, 1 - 0)

- ( ) 1. To what extent is teacher time consumed in the process of estimating and checking supplies?
- ( ) 2. To what extent are supplies properly accounted for by pupils on some type of bill of materials form?
- ( ) 3. To what extent do the pupils receive acceptable training procedures in estimating and purchasing materials and supplies?

D. Comments

## V. Safety in Handling Supplies

Safety regulations and standards are formulated, made a part of the instruction program, and are generally observed in the storage and handling of materials.

### A. Information needed

1. A copy of prevailing regulations and standards governing safety.
2. Copy of provisions concerning accidents in the school district.
3. Records of periodical safety checks made by the state industrial commission.
- 4.

### B. Check sheet (Rate A, B, C, or N)

- ( ) 1. Supply cabinets, racks, bins, and containers are substantially constructed and are adequate.
- ( ) 2. Fire protection equipment is adequate and prominently displayed within easy reach of all personnel.
- ( ) 3. Floors in storage areas are made of non-skid fireproof materials.
- ( ) 4. Entrances, corridors and stairways are provided with adequate illumination.
- ( ) 5. Stairways are provided with necessary guard rails and skid-proof steps.
- ( ) 6. Entrances to supply areas are free from overhead or other obstructions.
- ( ) 7. Safety standards basic in industry are adopted as far as is reasonable and in keeping with educational practices.
- ( ) 8. Students and instructors participate periodically in organized safety inspections and drills.
- ( ) 9. Good housekeeping procedures are used in the supply areas.
- ( ) 10. Inflammable materials are stored in metal cabinets in closed leakproof containers.
- ( ) 11. Such materials not immediately used for project construction are promptly placed in storage in a neat and orderly fashion.

C. Evaluation summary (Part 5, 1, 2, 1 - N)

- ( ) 1. To what extent are safety regulations formulated and observed in the storage and handling of materials?
- ( ) 2. To what extent are physical facilities constructed and maintained in keeping with desirable safety regulations?
- ( ) 3.

D. Comments

## VI. Revolving Fund

A revolving fund is set up by the school board for the purchase of supplies and materials used and paid for by students in the construction of home projects.

### A. Information needed

1. Available records of the revolving fund indicating purchases, sales, and receipts.
2. What method is used by the school district to finance the school shop?
- 3.
- 4.

### B. Checklist (Rate A, B, C, or N)

- ( ) 1. A revolving fund of sufficient size is set to purchase supplies used and sold to students in the construction of home projects.
- ( ) 2. The student pays the farm mechanics department for all materials issued to him for the construction of home projects.
- ( ) 3. Cost of materials used in demonstrations and for general instruction is paid for by the school district from funds other than the revolving fund.
- ( ) 4. The student pays a fair price for materials issued him for some project construction.
- ( ) 5. A duplicate record is retained by the farm mechanics department of all purchases and sales of shop supplies.
- ( ) 6. All money collected from sales of materials are credited to the shop revolving fund for further anticipated purchases.
- ( ) 7. The district maintains the necessary bookkeeping to insure the return of funds from sales of supplies.
- ( ) 8. Money collected for the sale of materials and supplies maintains the revolving fund.
- ( ) 9. Provision is made to increase the revolving fund if such need is demonstrated by the instructor.
- ( ) 10. Where a revolving fund is not in operation the school district honors all reasonable requests for the purchase of materials and supplies.

C. Evaluation (Rate 5, 4, 3, 2, 1 - N)

- ( ) 1. To what extent is the revolving fund adequate for the purchase of supplies used and sold to students in the construction of individual and group projects?
- ( ) 2. To what extent are records kept of purchases and sales of supplies by the school districts?
- ( ) 3. To what extent is the amount of the revolving fund maintained through sales to pupils from year to year?

D. Comments

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## VII. Sale of Supplies

The student pays the school a fair price for all materials and supplies used from school supplies in project construction for the home or farm.

### A. Information needed

1. Policies of the school district regarding the sales of materials to students.
2. Price lists for salable materials for quantities used in home project constructed.
3. Records of sales of materials to students.
- 4.

### B. Checklist (Rate A, B, C - N)

- ( ) 1. The student pays the school a fair price (not more than local merchants charge for materials in similar amounts) used in project construction.
- ( ) 2. The bill of materials form used by the student in securing project materials becomes a record of materials sold by the instructor to the pupil.
- ( ) 3. The student pays for materials or supplies actually received whether used or wasted in student project construction.
- ( ) 4. Before a completed project is taken from the shop the materials used in its construction are paid for by the pupil.
- ( ) 5. The instructor upon receiving payment for student projects completed issues a receipt in the presence of the student.
- ( ) 6. The student retains a copy of the receipt showing payment of purchased supplies for home projects.
- ( ) 7. The instructor files a copy of the receipt of payment for supplies used by the student.
- ( ) 8. The instructor remits to the high school treasurer at regular intervals all money received for supplies and receives a receipt for the same.
- ( ) 9. At the close of the school year the bills of material, the receipts for payment of supplies, the inventory of materials on hand, and the receipt for money remitted to the school treasurer are reconciled.
- ( ) 10. The instructor keeps an alphabetical student account record of all student purchases and sales.



( ) 11. The teacher of farm mechanics has an adequate vault or depository for funds received from day to day.

( ) 12.

C. Evaluation (Rate 5, 4, 3, 2, 1 - N)

( ) 1. To what extent are adequate financial records of sales of materials kept by the farm mechanics instructor?

( ) 2. To what extent does the student pay a fair price for all materials used in home project construction?

( ) 3. To what extent does the amount of sales equal the loss in inventory?

( ) 4. To what extent does the work of sale of supplies consume excessive teacher time and effort?

D. Comment

SUMMARY OF EVALUATIONS

	1 - Poor	2 - Fair	3 - Good	4 - Excellent	5 - Superior
I. A revolving fund is set up for supply purchases					
A. The revolving fund is adequate.					
B. Adequate records are kept of sales and purchases					
II. The instructor submits an annual inventory					
A. Inventory taken in business way					
B. Proper inventory forms are employed					
C. Pupils receive training					
III. Purchase of supplies					
A. Meaningful budget prepared and used					
B. Supplies available for all use					
C. Supplies are purchased in business way					
IV. Adequate space provided for storage of supplies					
A. Storage space is adequate					
B. Supplies stored in orderly manner					
C. Supplies easily accessible to pupils					
V. Estimating materials and supplies					
A. Supplies handles in a business way					
B. Handling supplies requires a minimum of teacher time					
C. Pupils receive training					
VI. The pupil pays for materials used					
A. A record of sales of pupil's materials is kept					
B. Pupils pay a fair price for supplies					
C. Sales of supplies requires minimum teacher time					
VII. Safety is observed in handling supplies					
A. Safety regulations observed in storage and handling					
B. Physical facilities for storage of supplies meet standards					
C. Pupils participate in safety inspections					

**SUPPLY ACCOUNTING FORMS**















