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IDENTIFICATION EXERCISES FOR ELEMENTARY AGRICULTURE

Teachers of elementary agriculture find that the exercise which involves constant activity on the part of the class is more effective than the question and answer recitation. The exercise which is motivated by competition is especially effective notwithstanding the limitations of competition as a motive. The following three exercises are outlined somewhat in detail to illustrate this type of exercise.

Teachers do not necessarily abolish the textbook when the exercise form of teaching is used. Exercise 2 on legume seeds shows that the text may be used as a means of preparing the class for the identification contest. The class reads the description of legume seeds not as an end but as a means. On the other hand, the text may follow any one of these exercises to good advantage. If we accept the principle that a person is interested in what he has experienced, we must conclude that a class will be interested in reading about feeds after Exercise 1 has been given. In either of these two situations the text is not the core; it is supplementary.

In *The Visitor* for January, 1924, the same type of exercise was described for breeds of animals and varieties of crops. The same sort of exercise may be devised where the aim is to learn parts, e.g., the cuts of beef, pork and mutton, the parts of an insect, a horse or a hen.

Exercise 1. Commercial Feeds

Aim

To enable the class to identify common feeds such as bran, middlings, corn meal, ground oats, linseed oil meal.

Materials Needed

Three pint samples of bran, middlings, corn meal, ground oats, linseed oil meal, a prepared dairy feed. Paper plates, a quart measure, scales, tripod magnifiers, paper bags.

Procedure

1. Develop pupil's aim, i.e., to be able to compete successfully with other members of the class in identifying feeds.

2. Place on the board a tabular form

for describing feeds. The items are (1) weight per quart, (2) color, (3) texture (designating the coarsest feed as coarse), (4) distinctive odor or taste and (5) appearance through magnifier.

3. Class copies form on paper and each pupil is given paper plate. Teacher distributes pinch of each feed to each pupil, telling class the name of each feed. Two boys may be selected to weigh feeds. They do this by pouring quart measure of feed into paper bags and placing these on the scale.

4. Class describes feeds.

5. A set of paper plates is numbered from 1 to 20. Samples of feeds are placed on these, e.g., bran might be placed on plates 2, 5, and 14. Pupils place numbers 1 to 20 on a sheet of paper.

6. If possible, place pupils in a continuous line or arc. Give one or more plates to each pupil to identify. He will write the name of the feed opposite the proper number on his paper. At word from teacher he will pass plate to his left. The teacher will pass the plates between the two boys on the ends of the line or arc. Proceed until each plate has come to each boy.

7. Pupils change papers and teacher names feeds on each numbered plate. Papers are scored and returned to owners.

8. Teacher ascertains high and low scores.

9. Teacher discovers that certain feeds are most difficult to identify and develops comparisons and contrasts which will aid identification.

Exercise 2. Legume Seeds

Teacher's Aim

To enable the class through study of descriptions, use of key, drawing and comparison to identify medium red, alsike, and white clovers, alfalfa and sweet clover.

Sources of Information

Farmers' Bulletin 428. Testing Farm Seeds in the Home and Rural School. Montgomery, Productive Farm Crops, page 331.

Materials Needed

Medium red, alsike, white, sweet clover and alfalfa seed. Tripods. Sheets of paper with five 1½ inch squares.

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Procedure

1. Develop pupil's aim.
2. From samples containing all five seeds each boy will select specimens of each seed and place them correctly in labelled $1\frac{1}{2}$ inch squares on paper $8 \times 10\frac{1}{2}$. Seeds to be recognized from description aided by tripod magnifiers. Teacher checks to see if seeds are in correct squares. Pupils to recognize seeds from descriptions.
3. Take unlabelled samples and run them down with a key. See Montgomery, page 331.
4. Draw outline of each kind of seed in the squares referred to in Step 2. Draw largest seed at least an inch in diameter.
5. Number ten vials from 1 to 10. In the vials put various combinations of the five kinds of seeds, three kinds in each vial. The class will identify these mixtures and record them.
6. Members of class change papers after which they proceed to correct papers and count number right.
7. Find out most frequent mistakes. Draw contrasts and comparisons of the seeds frequently identified incorrectly.

Exercise 3. Evergreens

Aim

To enable class to identify white pine, Norway pine, jack pine, balsam fir, cedar, black and white spruce, tamarack.

Sources of Information

Comstock, A. B. Handbook of Nature Study, pp. 789-801.

Keller, Harriet L., Our Native Trees.
Emerson and Weed, Our Trees and How to Know Them.

Materials Needed

Twigs of evergreens to show needle-like leaves. Cones. Sections of bark and wood.

Procedure

1. Develop pupil's aim, i.e., to be able to compete successfully with other mem-

bers of the class in identifying evergreen twigs, cones, bark and wood.

2. For each evergreen, pupils describe (1) size and arrangement of needles, (2) size and shape of cones, (3) appearance of bark and wood. Items 1 and 2 can be described by means of outline sketches. Place descriptions in tabular form.

3. Number in continuous series all samples of twigs, cones and wood sections. Conduct identification contest, following steps suggested in Exercise 1.

WHAT IS YOUR EXPERIENCE?

Watch the teacher of experience who has been interested in improving his teaching technique. His teaching activities are the result of careful selection. The experience of each day increases his capital.

As a teacher of agriculture, your experience is valuable to you; it is also of value to other teachers. If the teachers of agriculture in Minnesota could pool their experience, the teaching of agriculture would advance by leaps and bounds.

The Visitor, knowing of the wealth of experience which ought to be utilized, is attempting an experiment in this issue. The plan is to present in each issue some material which has resulted from teaching experience. You, as a teacher of agriculture, can contribute by answering the question, "What is your experience?" In other words, criticise the material constructively or destructively.

If you have some material such as an assignment, an exercise for grade agriculture, a field trip outline, a project plan, a skill chart, The Visitor will be pleased to use it as a target. We shall use your name unless you request otherwise.

The target this month is a job and lesson analysis of corn growing. The jobs are not arranged in the order of teaching. The lessons under each job are arranged in the order of teaching.

Corn

Determining What Land to Devote to Corn

1. Soils and rotations in relation to corn
2. Labor requirements and capital requirements
3. Cost of producing corn
4. What price may be expected

Procuring Seed Corn (including selection of variety)

5. Local requirements of a corn variety
6. Characteristics of important varieties
7. Selection of variety or varieties and identification
8. Selecting a grower (includes discussion of home grown vs. foreign grown seed and certification)

9. What kind of seed. (Ear, field selected, tested)

Testing Seed Corn

10. Practicum. Test seed corn for germination
11. Reading test. Practicum

Plowing for Corn

12. A study of the plow and its selection
13. When and how deep to plow
14. The principles of tillage
15. How to plow

Fitting the Land

16. Local practice in preparing corn land
17. Study of pulverizing implements
18. Principles. Pulverizing corn land

Planting

19. Local corn planting practices
20. The corn planter
21. Principles underlying time, depth, rate, method

Cultivating the Crop

22. Cultivation practices in the community
23. Cultivating machinery
24. Principles of cultivation

Gathering Seed Corn

25. Principles of seed corn selection
26. Field trip on seed corn selection

Storing Seed Corn

27. Devices and principles

Harvesting and Storing

28. Local harvesting practices
29. Harvesting machinery
30. Filling the silo
31. Soft corn
32. Hogging off corn
33. The corn crib
34. Principles of storage

Finding a Market

35. Study of local marketing of corn
36. Corn prices
37. The corn hog ratio
38. Corn markets

Controlling enemies of corn

39. Identification, life history, damage and control of important insects
40. Identification, life history, damage and control of important diseases

Improvement of Corn

41. Structure of ear and tassel
42. Principles of improvement
43. Methods of improvement.

Will you not write to The Visitor describing your experience in organizing the subject matter of corn? If the above is not the best organization, how would you change it? Your fellow teachers will benefit by your criticism.

THE FARMER'S JOB BASIS FOR TEACH- ING FARMING

Professor N. E. Fitzgerald, of the University of Tennessee, contributed much to the success of the State Conference of Vocational Agricultural Teachers held at Athens, July 27-August 1.

The following are some of the reasons Professor Fitzgerald developed with the conference group as to why "The Farmer's Job Basis is a Good Basis for Selecting Teaching Units":

1. The farmer's job basis permits the teaching of fundamentals in close connection with a definite practical production problem in the enterprise being considered.

2. The farmer's job basis leads pupils to reason out problems that are real in farm business rather than work on hypothetical cases.

3. The farmer's job basis is a natural unit of work, and hence, a good teaching unit because natural teaching units are better than artificial ones.

4. The farmer's job basis teaches pupils to think in terms of problems or questions which are motivated by the pupil's knowledge of the common farm practices and also by the economic returns possible.

5. Specific job statements or problems hold the pupils' thinking to one definite point—no chance to wander over the field of subject matter as is true in "topical study."

6. The farmer's job basis gives a definite objective for each lesson. This objective if based on the farmer's job is vocational. The individual lessons must have vocational objectives that are well defined if the course as a whole is to have a well defined vocational objective.

7. The farmer's job basis helps us train boys in farming for a particular region by selecting for teaching those jobs actually done by farmers in that region.

8. The farmer's job basis enables the teacher more easily to properly allot the teaching time to the various enterprises because the method of teaching will be selected for the lesson unit (farmer's job) instead of for the enterprise as a whole.

9. The farmer's job basis is easier for the teacher to organize the material for teaching because it is a normal, natural organization based upon specific work done.

10. The farmer's job basis is easier to teach using the job as a teaching unit because the child with farm experience has already naturally worked with this unit. This gives opportunity to base the teaching upon the child's experience.—Georgia State College of Agriculture Bulletin.

DETERMINING WHAT LAND TO DEVOTE TO OATS

The Aim

The objective in teaching this job is to determine what land will be devoted to oats on a given farm. The job may be considered as a type since there is a corresponding job for every crop and animal enterprise. The statement of the aim indicates that we are dealing with a real farm job, i.e., a natural unit of work distinct from other work with respect to purpose, character and requirements of equipment and supplies if any.

The Introduction of the Problem

The starting point may be a brief survey and tabulations of the acreages of oats on the farms represented in the class. Then the question which naturally arises is, "Did we grow the right acreages of oats?" A yes or no answer calls for a further series of questions: "How do we know whether these acreages are correct or incorrect?" "How does one determine the correct acreage?" The problem is now stated. Doubtless, the class can now state some of the factors which determine the correct acreage.

The Factors

During the assignment of the job, the factors which determine the correct acreage should be stated. Some of these are indicated below in the form of questions. Some of the references which bear on these factors are noted.

1. What kind of soils does the oat crop do well on?
Cox, J. F., Crop Production and Soil Management, p. 38
Montgomery, E. G., Productive Farm Crops, p. 158
2. In what respects is our climate suitable for oats?
Cox, p. 33; Montgomery, p. 157.
U.S.D.A. Yearbook, 1922, pp. 476-77
Minnesota Agricultural Experiment Station, Bulletin 205, p. 11
University of Minnesota, Minnesota Geological Survey Bulletins 12, 13, or 14 (chapter on Minnesota climate)
3. Why are oats used in the rotation in preference to other small grains? (Involves labor requirements, necessity for a feed crop, necessity for straw, necessity for a nurse crop)
U.S.D.A. Yearbook, 1922, pp. 471-72
App, Frank, Farm Economics, pp. 209-12
4. What is the labor requirement of oats and with what enterprises are there conflicts?
App, Frank, Farm Economics, p. 143
Spillman, Farm Management, Ch. 20
Minnesota Agricultural Experiment

- Station Bulletin 205, p. 42
5. What does it cost to produce oats and what are the major items?
Minnesota Agricultural Experiment Bulletin 179, p. 40
Minnesota Agricultural Experiment Station Bulletin 205
U.S.D.A. Bulletin 1000. (Compute cost from labor and materials given)
6. What is likely to be the price of oats?
U.S.D.A. Yearbook, 1922, p. 475
7. How much land is available on my farm?

Conclusion

After these and other factors have been studied, each pupil should be in a position to state approximately what should be the acreage on his home farm and he should be able to justify this acreage in terms of the factors.

Advantages of This Organization

The advantage of using this kind of lesson is that the teacher may organize a considerable number of topics under a real job. Such topics as soil adaptation (which may include a study of soil types), place of oats in the rotation, oat climate and geography, cost of producing oats, labor requirements and prices are studied as they naturally arise in the vocations of farming. They are brought in to contribute to the solution of a problem. This is more desirable than teaching them as topics detached from jobs.—F. W. L.

Directory of Minnesota State-Aided Agricultural Departments for the School Year 1925-1926

In the September Visitor was included a list of agricultural departments aided by state and federal funds. The following departments are aided by state funds:

Place	Supt. or Principal	Instructor
Aurora	Stanley Adkins	J. F. Gillach
Chisholm	J. P. Vaughan	H. S. Hanson
*Chokio	E. S. Billings	E. S. Billings
Crosby-		
Ironton	F. E. Perkins	L. R. Peel
Eveleth	J. V. Voorhees	J. H. Kneebone
International		
Falls	H. R. Peterson	R. E. Blackburn
Lancaster	H. Sunderland	O. G. Johnson
Le Sueur		
Center	H. C. Poehler	C. L. Larrabee
*Littlefork	N. T. Myhre	C. A. Anderson
Moorhead	J. J. Bohlander	E. M. Gillig
Nashwauk	J. E. Lunn	E. R. Johnson
Northfield	O. W. Herr	H. M. Byram
*Rapidan	G. A. Strobel	G. A. Strobel
South St.		
Paul	D. E. Hickey	Wm. Brandon
Two Harbors	C. E. Campton	R. S. Harris
*Ulen	R. E. Duddles	R. E. Duddles
Virginia	E. T. Duffield	Nels L. Nelson
Warren	G. Holmquist	A. D. Collette

* Graded schools.