

## AGRICULTURE IN THE CLASSROOM: EARLY 1900s STYLE

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### Abstract

In the early 1980s John Block, former secretary of Agriculture, advocated the use of agriculture as a teaching medium in elementary schools for a program called Agriculture in the Classroom. What he accomplished was revitalization of a concept almost 70 years old. Bricker noted the popularity of agricultural instruction in elementary schools as early as 1911. By 1951, 21 states required agricultural instruction in rural elementary schools. Many schools followed the teaching of Prestalozzi and used hands-on activities such as gardens. Schools were successful in integrating agricultural concepts into the academic areas of literature, mathematics, art, and science. Projects such as grading apples were for secondary vocational agriculture students. Others used nature-study as a means of teaching elementary children about agriculture. General agreement was that the source of teachers for the program should be normal schools, where some developed a specialty area in rural instruction. Today's supporters of Agriculture in the Classroom must look past the early 1980s for the beginning and learn from its history that it has gone through many forms and a great deal of evolution in order to be the successful program it has become.

### Introduction/Theoretical Framework

Former United States Secretary of Agriculture John Block was a strong advocate of literacy, particularly of agricultural literacy. With his support, a primarily elementary program emphasizing agricultural literacy called Agriculture in the Classroom was started in 1981. Since that time Agriculture in the Classroom has been utilized to some extent in all 50 states. However, while Agriculture in the Classroom has been very successful, it did not mark the beginning of agricultural instruction at the elementary level. Such instruction actually began in the early 1900s or even earlier.

Garland Bricker (1911) reported on the popularity of agriculture at the elementary level 70 years before Secretary Block advocated the most recent use of it.

Like the more popular sciences such as botany, physics, physiology, and chemistry, agriculture has its common, everyday, elementary facts with which every one (sic)

in country and village should be more or less acquainted. Such facts are: the proper time for planting seeds and for harvesting crops; the appearance of the various stages of development; the different kinds of soils; the use of manure; the structure and use of the common tools used on the farm and in the garden; the phenomena of the souring of milk, and the ripening of cream; the churning of butter; and a thousand and one other things common to ordinary farm life.

The foregoing will suggest a field for the work in elementary agriculture, or nature-study, in the elementary school. (pp. 1-3)

The instruction of agriculture in elementary schools had grown to the point that by 1915 Monahan and Lane could report that 21 states required such instruction in rural schools, and half required such instruction in urban schools. The states were Alabama, Arkansas, California, Florida, Georgia, Indiana, Iowa, Louisiana, Michigan, Mississippi, Missouri, New Mexico, North Carolina,

North Dakota, Ohio, Oklahoma, Tennessee, Texas, West Virginia, Wisconsin, and Wyoming (p. 295).

It was one thing to mandate instruction of agriculture in elementary schools, but it was something else to develop a curriculum and the activities that could go with that curriculum. What educational philosophy should be emulated? How should teachers be trained for this new emphasis on elementary agriculture?

### **Purpose/Objectives**

The purpose of this study was to document the instruction of agriculture at the elementary level in the early 1900s. The following specific objectives were accomplished:

1. Identify the curriculum used to provide instruction in agriculture at the elementary level.
2. Identify the uses of projects for elementary agricultural instruction.
3. Identify the uses of nature-study for elementary agricultural instruction.
4. Determine the type of training provided for teachers of elementary agriculture.
5. Draw conclusions for the contemporary Agriculture in the Classroom program from the early elementary agriculture program.

### **Methods/Procedures**

Historical research methods were utilized to accomplish the objectives of the study. Both primary and secondary sources were utilized to obtain the information needed. Primary sources included books, journal articles, and bulletins. Secondary sources included magazines. Information was collected at numerous sites including the Library of Congress, National Education Library, National Agriculture Library, and various land-grant

university libraries. All references were subjected to both internal and external criticism.

### **Results and/or findings**

#### Elementary Agriculture Curriculum

An example of the early elementary agricultural curriculum can be found in Arkansas. The Arkansas Department of Education advocated a uniform approach for providing instruction for elementary agriculture. The Department advocated using four divisions for grade levels. The first division was composed of pupils in the primary and first grades; the second division was composed of second, third, and fourth grades; the third division was composed of pupils in the fifth and sixth grades; while the fourth division was composed of pupils in the seventh and eighth grades (Twenty-Second, 1911-1912). Showing the influence of the Swiss educator Johann Pestalozzi, the Arkansas Department of Education did not advocate the use of textbooks until the fourth division was reached. "The field, garden, woods, roadside, all should be the textbook and laboratory" (p. 245).

The Arkansas recommendations went on to establish themes for instruction centered around plants and animals. Specific examples included suggesting that primary and first grade students study parts of plants such as roots, stems, and branches. Students at this age could study birds and pets to fit the animal theme. The study recommended that second division students study the functions of plant parts and learn the uses of specific animals such as poultry, meat, and feathers. Third division students could conduct experiments in growing cuttings in water and sand as well as classifying the uses of horses, cattle, sheep, hogs, and goats. Fourth division students should have more depth on the same topics of study than the first three division students. In the spring, fourth division students could learn about seed germination and preparation of seedbed. For fall the older students could learn about markets and seed selection (Twenty-Second, 1911 - 1912).

The United States Department of Agriculture, along with the Virginia Department of Public Instruction and the Virginia Agricultural and Mechanical College (VPI), issued a publication by E. A. Miller in 1918 entitled Elementary Agriculture for Virginia Schools. The introduction for the publication stated

Purpose -This publication presents a series of lessons in Elementary Agriculture for the public schools of Virginia. The lessons are outlined after a monthly sequence plan and are designed to meet the needs of the public schools of the State. It is hoped that by presenting these lessons at the time the principles are practiced, or should be practiced on the farm, two things may be accomplished, namely: the classroom work will be greatly vitalized by having timely material at hand for practical work, and the things that are best to do on the community farms will be taught at a seasonable time. (p. 5)

The publication went on to suggest that teachers procure references and bulletins from Virginia Polytechnic Institute and the United States Department of Agriculture. It was also suggested that if at all possible a school garden be established in order to put into practice things learned in the classroom. The Virginia publication had the thematic approach of the Arkansas recommendations. Virginia teachers were encouraged to follow the themes of soil, crops, hogs, the orchard, vegetable gardening, poultry, farm animals, and crops as appropriate on a monthly basis. An example of such a recommendation for September on the theme of cover crops was the topical outline of purpose, kinds of cover crops, dates of seeding, rates of seeding, methods of seeding, and inoculation. These topics were followed by suggested references and activities (Miller, 1918).

Experienced agricultural educators can identify both the scientific method and problem solving showing through the above suggestions. Other educators advocated the use of agricultural subject matter for curriculum integration with academic

subject matter. One such example was the recommendation by M. A. Leiper of the Western Kentucky State Normal School in 1912 to teach language through both agriculture and domestic science. Leiper's main concern was the general inadequacy of rural elementary schools as compared to urban elementary schools.

The teacher in the rural school undertakes a difficult task when he attempts to lift his school to the standard outlined. The consolidated school may attack the problem with reasonable hope of solution, but for the teacher in the one-room rural school, confronted with the necessary schedule of from 20 to 30 classes each day, the situation is far more serious. For him the solution must be found largely in correlating the necessary instruction in the practical fields of nature study, agriculture, and domestic science. (pp. 7-8)

Leiper went on to make specific suggestions such as having conversation exercises for developing oral skills in the early grades where students could describe home life and pictures displayed in the classroom and by the teacher. Another example of a suggestion was the use of observation reports where students would observe something at home and having an assignment at school to give either an oral or written report on the observation. He also recommended instruction in narration, essay, and description, all incorporating agricultural examples. In addition, teachers were given several suggested references, such as: Feeding Her Birds, Shoeing the Bay Mare, The Village Blacksmith, and Oxen Going to Work.

Florence Fox (1921), a specialist in educational systems for the United States Bureau of Education, recommended several ways to integrate agriculture with other subject matter at the elementary level. For example, she recommended teaching history with such agricultural topics as Cortez introducing wheat into Mexico and the Pilgrims discovering corn. She suggested teaching about historical

animal life with the horse in Mexico, the sacred cow in India, the Pilgrim's turkey, and wild honey and beeswax. For an area described as stories, poems, and supplementary reading Fox had a lengthy list of recommendations that included Little Red Hen, Story of Joseph, Redheaded Woodpecker, Black Beauty, King Solomon and the Bees, The Friendly Cow, The Three Little Pins, and Children of the Plains (p. 89) shared integration ideas for nature-study and art.

### Projects

In the Pestalozzian mode several projects were recommended by experts of the day that utilized agricultural content for elementary instruction. These recommendations were occurring at about the same time high school agricultural education programs were also using the project method as way to teach content.

An example of the project approach was advocated by Miller (1918). He suggested using apple sorting as a project activity. Students could use a scorecard for grading apples and compare their score to the correct score established by some authority. The second step for the project activity was to have students integrate agricultural content with academics by preparing apple scorecards for language skill development, making a sketch of the apple sorting table for art, and determining the total barrels of apples produced in their community for arithmetic.

Another example advocated by Miller was one of having students observe two chickens. One chicken should be laying and the other should not be laying. The students should report the differences between the two for language development. For geography skills the students should use a map to point out markets for poultry and poultry products. For arithmetic skill development students should secure facts at their home for poultry sold that month.

Biological principles could be taught by a

project method suggested by the Superintendent of Instruction in Arkansas in the Twenty-Second Biennial Report (19 11 - 19 12).

1. Have each pupil bring to school an ear of corn in the shuck.
2. Look closely at the outer ends of the silks.
3. Carefully remove the shuck without disturbing the silks.
4. Trace several silks to see where the other ends are.
5. How does the number of silks compare with the number of kernels?
6. Do you know which appears first, the silks or the pollen?
7. Do you know any relation between the pollen and the silks?
8. Will a stalk of corn grown some distance from other stalks probably have well-filled ears?
9. What is mixed corn?
10. What causes mixed corn? (p. 82)

Building a farm on a sand table was a project advocated by Fox (1921). She described numerous ideas for such a project.

The building of the farm on the sand tables is a project which has been frequently used in primary and kindergarten schools as a center of interest in the daily program. Such a study is rich in subject matter. From the art side it offers a wide field of selection. It possesses also a broad historical background and a voluminous literary content and presents numberless opportunities for the presentation of problems in nature study.

The activities of the farm are varied and suggest many projects for the primary grades. These farm problems make an especial appeal to the child because his larger interest in life lies in the matter of feeding. A close connection is easily formed between this interest in his consumption of food and the activities that produce it, and this affords most excellent material for the problem-project type of instruction. (p. 28)

Gardens and gardening proved to be popular projects and ways for elementary students to learn about agriculture. Miller (19 18) recommended teaching about gardening in March. His recommended topics included work in the hotbed, preparing the garden soil, planting early vegetables, and transplanting. From a project perspective he advocated having the garden at home. However, most of his ideas could have worked at a school garden as well. For practical exercises he recommended having Tomato Club members sowing seeds in hotbeds. For non-Tomato Club members he recommended having them grow at least a small plot of garden at home or at school. His ideas on content integration involved having students make sketches of their gardens (drawing) and doing arithmetic problems that involved seed population and crop yield.

A 1919 publication from the United States Commissioner of Education reported the popularity of gardening projects. The commissioner suggested three reasons for their popularity. One was the shortage of food caused by World War I, a second was the recognition by school officials of the educational value of gardens, and the third was emphasis given to gardens by the National Government. The publication noted that gardens were especially popular in urban areas, where the food shortage had been most keenly felt. The United States Bureau of Education had attempted to help the situation by sending posters, class lessons, record blanks, and insignias to local schools. An army known as the United States Garden Army was established to encourage more children to participate. Total enrollment in the gardening program in states and territories ranged from 2 10 in Wyoming to 284,977 in Illinois. It was also reported that the United States Department of Agriculture had primary responsibility for children's gardening instruction through Boys and Girls Clubs in rural areas.

Jarvis (19 16) provided a good summary of why gardening was an effective way of providing instruction. He noted "Most of the criticism of the

school today is based upon its failure to meet the living needs of boys and girls." (p. 9) He reported that gardens were democratic in nature as they expanded opportunities, they helped obtain parental interest, and they helped obtain students' interest.

### Nature-Study

Nature-study was a movement for teaching science at the elementary level that became active in the early 1900s. Much of the curriculum content was agriculturally based. Liberty Hyde Bailey (1903), dean of the Cornell College of Agriculture, described nature-study as an elementary school movement aided by university faculty. He believed the movement started between 1884 and 1890 with early usage in New York and Massachusetts primarily in reaction to "dry-as-dust" science teaching. Even though there were extensive agricultural examples used in nature-study, he also noted that it was a product of the common schools, not of scientific investigation. He wrote "Nature-study is not a science. It is not knowledge. It is not facts. It is a spirit. It is concerned with the child's outlook on the world" (p. 5). Bailey went on to note that nature-study was influenced by many great educational reformers--among them were Comenius, Pestalozzi, Emile, Rousseau, and Froebel.

Bailey also reported that there were numerous ways to teach nature-study, but it was the end result that really counted. The end result was sympathy for nature and the outdoors. From that sympathy would come the development of keen interest in every natural object and phenomenon. Such observations and interests would logically lead to a greater interest in agriculture, but not necessarily make the students agriculturalists.

Moreover, it is not our purpose to teach technical agriculture in the common schools, but to inculcate the habit of observing, to suggest work that has distinct application to the conditions in which the child lives, to inspire enthusiasm for country life, to aid in home-making, and to

encourage a general movement toward the soil (P. 67).

Perhaps because of Bailey's support, Cornell University published a 600 page book of bulletins written by faculty members and others on the nature-study topics for elementary schools. The topics ranged from "A Handful of Soil, What It Is" to "Some Carpenter Ants and Their Kin" (Cornell, 1904).

A magazine, The Nature-Study Review, was established in 1905 by Professor M. A. Bigelow of Teachers' College, Columbia University (Nature-Study Review, 1910). The Review described itself as "Devoted primarily to all scientific studies of nature in elementary schools" (Nature-Study Review, 1910, p. 1). The movement also included a professional organization called the American Nature-Study Society.

Examples of the use of nature-study in elementary schools included the project idea of gardening. The program was recommended for the fourth grade and older. Fred Charles of the University of Illinois made such activity recommendations for the nature-study garden as experimental studies with plant varieties and fertilizers. Charles recommended the use of scientific research which could be used for both educational and agricultural principles. "a thorough working knowledge of a subject, together with a thorough working knowledge of children, will make it possible for the fundamentals in almost any field of science to be satisfactorily presented in the nature-study course of the elementary school" (1910, p. 87). Charles' article went on to describe both scientific and academic principles that could be taught via the nature-study garden. They included (a) a definite plan with a drawing of the garden to be planted, (b) good seed with instruction on viability and germination rate, (c) good soil with instruction on fertility and pH, (d) the weather and instruction on its elements, (e) good sense on such factors as marking rows and

distance between rows, and (f) the theory practical instruction on agriculture can be provided at the elementary level, even if it is a very scientific field, as long as instructors understand both science and children.

Other examples of nature-study use included the study of insects. Comstock (1910) recommended using a Lubbock nest for observing ants. In addition, she recommended studying such creatures as striped cucumber beetles and the cabbage worm. Among other advantages of studying the beetle and the worm was the fact that they were generally readily available.

Ornithology was also recommended as a part of nature-study. Hodge (1910b) advocated the practice of observing passenger pigeons. Hodge (1910a) also recommended studying the bobwhite.

Prior to passage of the Smith-Hughes Act in 1917, but with rapid growth in the number of agricultural education students at the high school level, some advocated turning nature-study teachers into agricultural education teachers. Bricker (1914) considered such an idea to be a mistake. He noted that nature-study teachers instructed with no idea of building lessons into parts of a great science. He believed the teacher of agriculture should do this conscientiously. He further noted that agriculture had an economic base and that nature-study did not.

### Teacher Training

In addition to the training of agricultural education teachers in the early part of the twentieth century, another significant issue was on how best to prepare teachers for providing instruction in elementary agriculture. The most common source of elementary teacher training during that time was normal schools. Most educators believed that these schools should continue to be the source of elementary teachers. Many also viewed the greatest need was to prepare teachers to be elementary teachers for rural schools.

Jarvis (1921) reported that many normal schools had established a modification of their usual training to offer a specialty training for rural elementary schools. "The modification of the rural curriculum to meet the needs of the rural people necessarily means that more attention must be given to agriculture as the dominant interest of rural communities. In other words, farm life must form the basis of the course of study." (p. 23) Leiper (19 12) believed that normal schools had started to do a good job of preparing rural teachers to provide instruction in elementary agriculture and that the day would soon come when all states would require such preparation.

E. C. Bishop of the State Agricultural College in Ames, Iowa agreed with both Jarvis and Leiper that normal schools would be the source of teachers. However, Bishop (1912) believed that elementary agriculture instruction should be provided in both rural and urban schools. "While we are preparing these needed teachers, we may well be working out better courses of study in agriculture, not only for rural schools but for all public schools" (pp. 53-54).

Tadd (1901) had suggestions for teachers using the nature-study concept. He criticized teachers who simply had their students look at natural objects. He wanted teachers to appeal to more of their students' senses with touching and feeling of natural objects and drawing of natural objects, which was very compatible with nature-study's typical use. "It is the performance of actions through a number of the modes of expression that calls forth powers of perception and conception and expression, and makes so vivid an impression on the brain as never to be forgotten (pp. 63-64).

### **Conclusions/Recommendations/Implications**

Almost 100 years ago educators, both those with an agricultural background and those without

such a background, had found that the subject matter of agriculture was a wonderful delivery system for instruction at the elementary school level. Such instruction utilized the position of some of the most respected educational philosophers such as Froebel and Pestalozzi.

The project method of instruction proved to be very successful and was used extensively. Most elementary teachers used such agricultural projects as gardens, crop products such as corn, and a sand table farm. Nature-study with its agricultural flavor was an effective way to teach science to elementary students. Nature-study utilized project-type strategy, observation, and manual activities such as drawing.

A degree of special teacher training was needed for elementary instruction in agriculture. Some argued that the instruction should be provided exclusively in rural schools, while others argued that it should be in all schools. The primary source of elementary classroom teachers was normal schools. This was equally true for elementary agricultural instruction. In the early 1900s many normal schools established a specialty area in rural instruction which emphasized agricultural instruction.

Today's proponent and user of Agricultural in the Classroom must look past the early 1980s to find its beginning. The groundwork was established in the early 1900s. That groundwork included a sound philosophical base exemplified by extensive project utilization and hands-on instruction. A significant lesson for today's user is to follow the same path. The lesson is that what was successful conceptually in the beginning of the program will still be successful today. The agricultural examples that make academic subjects interesting can also accomplish former Secretary of Agriculture John Block's objective of making people more literate about agriculture and such basics as where their food and fiber comes from.

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