STORIES IN PICTURES

by
Paul W. Newlin

Students in conservation are competing in the bulldozer trenching and tree-felling contest at the New York State Conservation Contest. (Photo courtesy Richard Jones, Cornell)

Future Farmers of America in Oklahoma compete in a tractor driving contest at the Muskogee State Fair. Students test skill against the stop watch. (Photo courtesy Paul Newlin)

A list of soap, water and olive green goes into preparing a show animal for the show ring. These youngsters are preparing a steer for the Houston Livestock Show and Rodeo. (Photo courtesy the Houston Livestock Show and Rodeo)

FSA members and 4-H club teachers make last-minute preparations before going to the show ring for the Houston Livestock Show and Rodeo. (Photo courtesy Houston Livestock Show and Rodeo)
COVER STORY
Top Photo—After you run off tree limbs, it is necessary to adjust the stumps to promote healing and discourage sprouting. Mike Tullis, Livemore, Calif., does the job with a spade. Note the white gloves. (Photo courtesy of R.M. Morton and Morton Montesano Photo, Mount Vernon, Calif. Related article on page 16.)

Center Photo—Proper protection is important in using a chainsaw. Note the personal safety equipment: hard hat, face shield, left hand safety mitts, cut-up chains and chains break on this unit. (Photo courtesy of R.M. Morton and Morton Montesano Photo, Mount Vernon, Calif. Related article on page 16.)

Bottom Photo—Texas. Washington’s renewable natural resources, provide a group of_Forest Service employees with a means of earning during the off-season. (Photo courtesy of R.M. Morton and Morton Montesano Photo, Mount Vernon, Calif. Related article on page 16.)

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THE AGRICULTURAL EDUCATION MAGAZINE
October 1977 Volume 50 Number 4
THE ESSENTIAL EDUCATIONAL PHILOSOPHY USED
An educational principle that forms the foundation for the program is that students shall learn by doing. It is important to note that the newer this effort can be brought to resemble the real world of work, the greater benefit will be to the students. For example, this last school year the students had available a 150-acre tract where they built woods roads, harvested saw logs, log cabin logs, pulpwood, and firewood. The project offered basic work experiences, equipment breakdowns and incident weather. Also, the students saw the fruit of their labors in the finished products of forest products.

CURRENT PUBLICATIONS
Another fundamental principle is that every student shall be involved. A class is divided into work crews with 2 to 5 individuals per crew. Crew size depends upon the job at hand. A specific duty or work area is assigned to each crew and a crew is responsible for satisfactory completion of the assignment. When assignments vary between crews, there is a rotation of crew assignments. Care is taken in the planning that each crew member is made to develop the skill being worked upon. For example, a student may be quizzing in his boots to tackle the felling of a 70-foot high tree—but under close supervision, and using the instructed principles, he brings it to the ground successfully and just where he intended it to fall. This develops a student’s confidence in his own abilities, and with confidence comes greater capability.

CONTINUED ON PAGE 82

GUEST EDITORIAL
Vocational Training For Forestry Occupations

Educators have as a primary goal the preparation of young people to be technically capable for employment in a career of the student’s choice. During the course of technical training they are to prepare the students for opportunities for the student to influence those attitudes and standards which will guide the student in successful relations with fellow workers or future jobs.

This article deals with the manner in which the attainment of these educational goals is attempted in the training of high school junior and senior students in forestry education program. These students attend a Board of Cooperative Education Services Center for one-half of each school day over a period of two years. The remaining one-half school day is spent in their home schools in pursuit of academic subjects. The BOXES program is presented under the title of Conservation. Forestry is emphasized because the school is located in a forested region with principal land uses devoted to timber production and outdoor recreation.

NEW STUDENT ORIENTATION
Perhaps one of the most important works involved is a clear explanation to new students of what the school program involves and what careers they may qualify to enter following graduation. Some new entrants have illusions of stepping from vocational school into gainful roles as District Rangers, Wildlife Managers, or highly paid administrative positions. These students need to have the facts so that they may plan accordingly. Along this same line an effort is made to make those students who have plans for going on to college. To these students, the importance of an academic study program to provide the needed college entrance subjects is emphasized. If the vocational program will interfere with the achievement of the college entrance requirements, it is recommended that the vocational program be dropped. However, they are encouraged to make every effort to maintain both the necessary academic subjects and the vocational enrollment. This is because vocational training can be beneficial college preparation as it provides a practical experience background for the student to influence attitudes of things which may be presented only on a theory basis in college.
Opportunities for employment in occupations in the natural resources and forestry area are increasing each year.

With the growing awareness and concern about our dwindling supply of natural resources comes the need for more workers in this area to develop and protect those natural resources remaining so they may be utilized most effectively and efficiently.

Forestry occupations have been the backbone of our nation's economy. With the upsurge in home building and other uses of wood products, the demand in these occupations has increased tremendously. In turn, there is a need for training for these occupations through agricultural education programs in the secondary and post secondary classrooms.

As can be seen from the articles in this issue, programs have been effectively implemented at both these levels which are producing skilled workers for natural resources and forestry areas. There have been some programs developed for the urban areas in tree care. This indicates that teachers of agriculture are good at identifying the needs of the community and developing the programs to meet those needs.

I would say the Agriculture Teachers of America deserve a strong commendation for the fine job they are doing in preparing individuals in all phases of agriculture and for meeting the needs of those local communities.

Keep up the good work!

Our article written by a senior in Agricultural Education raises some important issues concerning the teacher shortage in agriculture. Whether you agree with the conditions or not, the issues raised are very real and it is good to see our future teachers are concerned about the problems of our profession.

I would like to say a word of thanks to you for the good supply of high quality articles and pictures you have been sending me. My only regret is that all of them can not be used. Keep up the good work.

The competition for space in the magazine will increase the quality of your professional journal.

Thanks also for your increased subscriptions. To those 14 states with 100% subscription, I would say congratulations for this fine show of professionalism. This is a real reflection of the strength of your teacher organization and the cooperation you exhibit among teachers, supervisors, and teacher educators. Keep up the good work! — Ed.

COMING ISSUES COMING ISSUES COMING ISSUES

NOVEMBER — Multiple Teacher Programs — Patterns and Priorities
DECEMBER — Ornamental Horticulture Occupations — A Growing Field
JANUARY — Agricultural Supplies and Services — Supplying and Soring the Market
FEBRUARY — The FFA — Training Leaders for Agriculture
MARCH — International Education in Agriculture — Serving Our Friends There and Here
APRIL — Servings Adults — Young Farmers, Adult Farmers, Agribusinessmen
MAY — Post-Secondary Education in Agriculture — An Emerging Partner
JUNE — Cooperative Education in Agriculture — Learning on the Job
JULY — Careers in Agriculture — Summer Employment Opportunities
AUGUST — Teacher Education in Agriculture — Laying the Foundation for Good Teaching
SEPTEMBER — Student Competition — An Incentive Approach
OCTOBER — Supervisors and Consultants — Important Members of the Team
THE AGRICULTURAL EDUCATION MAGAZINE

LET'S GET THE WOOD OUT!

John W. Parsons
Forestry Instructor
Foster Vocational Center
Farmington, ME

THE JUNIOR YEAR

After a maximum of a week's preparation in the classroom, the class moves right into the woods. Their work is basic timber stand improvement revolving around pruning and thinning. During this period they are taught to identify the standing trees as well as to be able to identify a tree's younger, smaller offspring by species. Naturally, the proper use and maintenance of chain saws is an integral part of their training. The removal of the pulpwood from their thinning is accomplished by the use of a John Deere 300 crawler tractor operated by the students. In order to determine the area of the stand, simple surveys are made using a steel compass and Gunter's chain. During this period the students are carefully evaluated and the more capable individuals are used as crew bosses and instructions. This technique has worked effectively and the students gain experience and an understanding of the equipment which will come with supervision and assistance. In addition to adding the teacher, the students gain insight and experience in dealing with each other. Being "the best" requires the individual to plan ahead and to coordinate various activities, resulting in a much better appreciation of the task performed.

Many of the students performing the winter period (January to April) much of the class activity returns to the classroom, and the routine becomes similar to the usual concept of education. The students take notes, have tests and quizzes, and view audio visual training aids. The material covered includes: tree physiology; selected insects and diseases; forest products; interpretation and preparation of maps; forest measurements; and harvesting methods. Also during this period, the State Forest Service provides personnel who train the class in forest fire control training. The training involves both classroom sessions and, later in the spring, an outdoor session.

In mid-April the class returns to the woods to begin the harvesting operation. They go on to the same operation, in which the seniors are involved, to facilitate their use of equipment. During the remainder of the school year several students are trained to operate the 440 John Deere skidder. These students become the student instructors for the following year, just as last fall's crawler operators are now training other students to operate the crawler.

THE SENIOR YEAR

Harvesting operations comprise the major portion of the senior class efforts. Since harvesting involves the use of skills and techniques, it is necessary to provide ample practice. Both clear cut selection and logging operations are practiced on selected sites. The students harvest large, mature and over-mature trees of both the coniferous and deciduous types. They are taught to utilize each tree to its greatest potential value — pulpwood vs. saw logs, etc. They learn to identify which trees should be removed from the stand to improve the remaining crop, and how to properly dispose of slash. Since the aesthetic value of a forest is high, students are taught to use harvesting equipment carefully to avoid damaging the forest floor and the remaining trees.

With the finishing portion of the class involved in the harvesting operation, groups of six students operate the skidder, demonstrating all of the duties in the mill, as well as operating a truck-mounted hydraulic loader. They saw limbs of logs harvested by the senior class. This involves all the class in a complete operation from the stump to suitable lumber. Our mill has only been operational for a year, so there is much potential development in this area.

During the winter period (January to April) the class spends one class period weekly in the classroom. At this time they are given instruction in the (Concluded on page 83)
WOOD HARVESTING TRAINING
AT THE POST-SECONDARY LEVEL

by
Joseph S. Kroeg
Department Chairman, Wood Harvesting
Washington County Vocational Technical Institute
Culver, Maine

Many young people would like to work in the great out-of-doors in some occupation or another, and woods work offers this opportunity.

For those who like the feeling of seeing their labor rewarded in the size of their paycheck, woods work as a cord-cutter or logger provides the answer, with great financial and personal rewards for those who are successful.

To gain employment in this field with one of the larger paper companies in the northeast, one must be 18 years of age and have at least 6 months prior harvesting experience, or have successfully completed a recognized wood harvesting training program.

PROGRAM DEVELOPMENT

Washington County Vocational Technical Institute's Wood Harvesting Training Program was developed out of a need for well qualified woods workers. There has been a steady increase in the demand for wood products over the past two decades, and at the same time a steady decline in the number of people entering this field. This decline was due to lack of experience for new employees, changes in harvesting methods, and lack of available training. It was also discovered that no other training facility was available at the post-secondary level within 1500 miles to perform this service. Therefore, a training program for woods workers was initiated at WCVTI.

With curriculum planned, instructors hired, WCVTI, on July 10, 1972, started to train wood harvesters. A wood harvester or woods worker, by WCVTI's definition, is one who is capable of harvesting standing timber with a chainsaw and rubber tired skidder, with the degree of efficiency to make a comfortable living. He is also an individual who understands what is happening around him with regards to the total wood harvesting picture. He should also have the ability to properly maintain his equipment and to keep his production standards at a level acceptable to himself and to industry.

The major aim of the program is to develop the student so that upon completion of the program, an entry level skill, or better, is possessed. The time frame within which this is accomplished is 22 weeks.

Part of the course 6648 Clark Rangers, ready to go to work.

During the 22 week training program the curriculum can be divided into three (3) major sections. These sections are chainsaw and skidder operation (Wood Harvesting) 65% of the time, and skidder maintenance 25%, subjects related to wood harvesting 10%.

The actual harvesting phase of the program is divided into three (3) sections. The first section is the production of four (4) feet of wood of small diameter limits, the second phase is the production of three feet length wood of intermediate size. The last phase is the production of average tree length wood out of one of Georgia-Pacific's regular cutting camps. This last phase is considered the grand finale of the program.

WCVTI offers six (6) wood harvesting training programs per year with the starting date staggered by approximately two months. This is accomplished with the aid of five (5) instructors, one (1) mechanic, and one (1) department chairman.

To date, approximately 70% of all graduates are working in the woods or woods related occupations.

EQUIPMENT AND FACILITIES

To accomplish their task, the equipment needed is as follows:

1. Rubber tired cable skidders (7 of which are the result of an agreement with the Clark Equipment Company and Chadwick-BaRoss Company of Ranger, Maine)
2. Grapple skidder
3. D-5 Dozer
4. Backhoe, front-end loader
5. 4-wheel drive Suburban with 2-way radio
6. 4-wheel drive 3/4 ton pickup
7. 60-foot army trucks
8. Portable fuel trailer
9. Chain saws
10. The classrooms, shop and storage facilities consist of one building, 60 feet by 100 feet, another 40 feet by 120 feet and one 40 feet by 60 feet.
11. The building is heated by a wood furnace, and the lack of adequate land could be a deterrent to any such program.

THE AGRICULTURAL EDUCATION MAGAZINE

OCTOBER 1977
A NATURAL RESOURCES MANAGEMENT PROGRAM

by George B. Lancaster, Instructor
Agreement Education in Natural Resources
Louisiana Agricultural College
Mineral, Virginia

The Natural Resources Management Program at Louisiana High School began in 1971. Through surveys and observation over a number of years, the need for a class in forestry was established. Louisiana County is entirely rural except for a couple of small towns and villages. The land is rolling and located near the foothills of the Blue Ridge Mountains. Approximately 70 percent of the land is woodland (nearly 233,000 acres); 6 percent of all sales in the county are from forest products. There are six large lumbering companies in Louisiana County, two pulpwood yards and two others within 20 miles driving distance of any point in the county. Several thousand acres of woodland are owned for production purposes by businesses such as Continental Can Co.

Within these years our program was broadened to include Forestry, Soils, Water, Wildlife and Recreation. Most of the open land and woodland in Louisiana County is subject to erosion. With the help of the Federal and State Governments, a half dozen flood control projects have been constructed or are in the process of being developed to control water and soil erosion. Efforts are still being restored and aer in use. Thousands of acres are being strip cropped.

Lake Anna, which is associated with a nuclear power plant, runs along most of the entire north side of the county. Outdoor recreation is becoming a big thing: hunting, fishing, and water skiing are the primary activities. Air, water, and land will have to be watched very closely because of being exposed to pollution.

OFFERINGS

Three years of instruction in Natural Resources Management are offered at our school. It is the accepted policy that two years of basic Agriculture Science and Mechanics be completed by the students before entering NRM to give the students information in plant, soil and animal life.

FACILITIES AVAILABLE

We have approximately 30 acres of outdoor classroom to work with. All of these facilities are on the school grounds and within a five minute walk of the school building. The facilities first started being developed by V&G Cansino before Forestry or NRM became an option course. Several of our forestry plots were planted as early as 1955; however, most of the facilities have been developed within the past 6 years. The 30 acres of land has been used for the following:

- 3 plots of Loblolly Pines planted in 1952, 1955, and 1957
- 70 acres of 40-year-old plots of short pine, naturally seeded
- 5 plots of pine seedlings for Christmas trees
- 7 plots of Loblolly pines from 1 through 6 years old
- 1 white pine area of about 1/2 acre
- 3 acres being prepared for commercial hauling. This fall and planting of seedlings in the Spring of 1970
- 20 acres used for soil conservation practices
- Shade trees and plants used for hunting, fishing, and wildlife

Three prepared areas planted to wildlife feed, each spring:

- 3/5 acre long-lake-like area with fish, ducks and geese
- A 1/5 acre area containing the NRM students for laboratory use
- A 1/4-acre area consisting of 3 groups of 2 acres each, each consisting of 2 acres of soil profiles

A nature trail around the school grounds with blooming wildflowers, squirrels, deer, rabbits, foxes, grape vines, hickory, and pecan trees, etc.

AVAILABLE MACHINERY AND EQUIPMENT

A list of the machinery and equipment available to the school for use in the NRM program follows:

- 2000 Ford Tractor
- A dual wheel trailer for hauling pulpwood and saw logs was constructed in the spring of 1972
- A brush fire engine
- A spring of 1972
- A brush fire engine
- A 3/5 acre long-lake-like area with fish, ducks and geese
- A 1/5 acre area consisting of 3 groups of 2 acres each, each consisting of 2 acres of soil profiles

A nature trail around the school grounds with blooming wildflowers, squirrels, deer, rabbits, foxes, grape vines, hickory, and pecan trees, etc.

Three views of how the system originated, how the system progressed, and where the system will go in the future all are in the foreground. The first five parts of the book are: (1) Significance to Farmers of Today’s Resource Class in the Process of Land Improvement, (2) Pioneering Innovations, (3) Basic Principles and Major Guidelines Developed, (4) Working Relationships with Other Organizations and Groups, (5) Farmers’ Needs for Credits—Expire After Slow Buildup.

The book will be the most valuable as background reading for teachers and students of agricultural finance at the secondary level. Farm and ranch management students and adults studying to upgrade farm management skills will find this material interesting and helpful.

High school students may use this book as a reference for the use of borrowed capital for their own production enterprises.

W. Giford Houg, the author, writes clearly and concisely. His experience in agricultural finance, along with a strong sense of enthusiasm for agriculture, is evident throughout the book. The only problem I foresee is in updating the statistics. However, this is not a major problem for the user who keeps current in the field of agricultural finance.

I recommend that every working with farmers and ranchers to read and study THE FARM CREDIT SYSTEM—A HISTORY OF FINANCIAL SELF-HELP.
SPECIFIC FORESTRY TRAINING

Actual course content may vary somewhat depending upon field projects which may be available for student participation. However, the essential components are as follows:

1. Safety orientation: An emphatic point is made with the students concerning the fact that the class work is hazardous and that each individual is responsible for their own and their fellow classmates’ well-being. Specific safety equipment to protect feet, hands, head and hearing is shown. As each new subject of instruction is started, safe working practices are demonstrated and the point is made that careless disregard for safety rules is prima facie cause for disciplinary action. Incidentally, the American Pulpwood Association Books, "What the Occupational Safety and Health Law Means to Loggers," is an excellent manual on safety practices.

2. Equipment operation: Standard operation and daily maintenance of the following equipment is given:
   a. Crawler tractor with angle, tilt blade and winch
   b. Damp truck with low-boy equipment trailer
   c. Wheeled tractor with front-end loader and back hoe
   d. Chain saw
   e. Chainsaw hand tools such as ax, bow saw, pruning saws, and fire fighting tools

3. Surveying:
   a. Map and aerial photograph interpretation
   b. Property borders, interpretation of boundary line location
   c. Location survey, using a 1-second transit
   d. Differential leveling with engineer's level

4. Tree identification of local trees

5. Timber cruising:
   a. Timber division and topographic mapping is done using staff compass, tape and aborti level
   b. Cross-sections are established on machine-squared and tallying trees are done by prism angle
   c. Tree dimensions are determined by circular estimation, diameter tape and counting stick. Volumes are computed by use of volume tables.

6. Timber harvesting:
   a. Marking of timber for cutting
   b. Harvesting practices to protect the environment
   c. Road layout and construction
   d. Tree felling, topping, skidding
   e. Bucking of trees into products
   f. Sealing of logs by various log rules, and cordwood measurement by standard or face cords
   g. Loading and hauling of logs and pulpwood

7. Tree planting of local conifers for future tree crops

8. Outdoor recreation:
   a. Hiking trails, layout and clearing
   b. Rustic structures construction—These include such things as log lean-to's, benches, tables, and chains
   c. Drinking water supplies
   d. Solid waste disposal by use of sanitary land fill
   e. Sewage disposal systems

STUDENT PERSONAL DEVELOPMENT

As was discussed at the beginning of this article, there are also opportunities for an educator to influence the personal development of students. This may be productive in various degrees and is certainly worth the effort. Some of its applications are as follows:

1. Day by day work situations:
   a. The crew assignments procedure is an effective tool in developing work habits. It brings into play the participation of fellow crew members upon each student to carry a fair share of the work load. Crew work also simulates the instructor's evaluation of progress, the supervisor's intolerable trait such as laziness or disregard for tool care is called aside by the instructor and talked with privately to try to correct the problem. Also, honestly telling them what they are doing a good job should not be neglected.

2. Environment for growth:
   a. Man is in constant conflict with nature. It is his responsibility to adapt to this situation, and to learn to work within it, not against it.

3. Group recreation:
   a. Sportsmanship, cooperation, and team effort are brought into play in this situation.

4. Career orientation:
   a. Reference library is available for student use. This is presently quite limited in nature, but does include forestry and recreation magazines, college catalogs, government pamphlets, industrial brochures, and a few reference textbook领导者. Students having a curiosity in a certain subject matter find this library useful.
   b. Students are required to maintain a loose-leaf notebook of all classroom handouts. These are graded before the final exam and returned to the students. The main objective in doing this is to insure that they will have their handouts for future reference when needed.

5. Miscellaneous:
   a. Before graduating students are aided in preparing a resume of their qualifications for use in job applications. It is interesting to see the pleasure they express in seeing a formal statement of their work experience. Of these there is a good confidence boost to the fearsome task of students presenting themselves to the employment market for the first time.

CONCLUSION

The program outlined in this article has met with a reasonable degree of success. However, as teachers know, career education is a dynamic, always changing process. There will be deletions and additions to this program as circumstances dictate. One thing evident is the need for greater emphasis upon the actual placement of graduates into productive employment. Young people need the opportunity for work in a job of their training as a natural follow-through of the educational process.

CONTINUED

LET'S GET THE WOOD OUT!

Financial and business aspects of logging equipment: loggers - including logging trucks, harvesters, dozers, and skidders; income tax preparation and financial accounting; simple business procedures; and advertising.

Operational practices:

Safety, naturally, is of major concern in such a program. To date, our safety record has been excellent. The most serious accident in the 8 years of the program has been a chain saw accident requiring 7 days of hospitalization. Each student is provided a hard hat, a safety chain saw, a safety shoe, a safety vest, and a safety helmet. Any student not wearing proper safety gear will not be allowed to operate the equipment.

Operational practices:

Operational principles:

Safety, naturally, is of major concern in such a program. To date, our safety record has been excellent. The most serious accident in the 8 years of the program has been a chain saw accident requiring 7 days of hospitalization. Each student is provided a hard hat, a safety chain saw, a safety shoe, a safety vest, and a safety helmet. Any student not wearing proper safety gear will not be allowed to operate the equipment.

October 1977
Tree Care Service—Branching Out in Vocational Agriculture

by

Ray Morton
Graduate Student
Ohio State University

The vocational agriculture department in Pleasonton, California, is teaching young men and women to climb at a height, and care for landscape trees as part of a class in arboriculture, or tree care service. Graduates with a "B" grade or better are almost sure of a well-paying job.

The course in arboriculture, started in 1972, is sponsored by the Livermore and Amador Valley High School District's Regional Occupational Program (R.O.P.). Approximately 60 high school and adult students, including two young women, have completed the program. So far, every successful graduate seeking a job has been placed.

Several graduates have gone into business for themselves; this is discouraged. It is felt that graduates with entry-level competency need to work with experienced climbers a while to gain more experience.

CLASS ORGANIZATION

The class is organized for one semester of instruction. The period of instruction covers 160 hours in 16 weeks. The ideal class size is 12-15 students for one instructor; Safety training is given to all students beyond 15 students. Class meetings are scheduled 2-3 afternoons each week, lasting 4-5 hours each session. Seventy-five percent of the time is given to horticulture equipment used in the field. The remaining 25% is spent on related instruction. An abbreviated course outline is shown in Table 1.

Grading is based upon performance criteria established for "A," "B," and "C" grades. Students below "C" are encouraged to repeat the course or to drop out. Students receiving a "B" or "C" grade are recommended for job placement. All students completing the course with a "C" or above receive a Certificate of Completion, including a list of instructional units and hours.

TABLE No. 1

<table>
<thead>
<tr>
<th>Unit of Instruction</th>
<th>Time Allotted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Introduction; occupational guidance and placement; administration</td>
<td>5</td>
</tr>
<tr>
<td>2. Rotterdam</td>
<td>5</td>
</tr>
<tr>
<td>3. Safety; principles and practices (includes part of other units)</td>
<td>15</td>
</tr>
<tr>
<td>4. Climbing techniques</td>
<td>5</td>
</tr>
<tr>
<td>5. Pruning; principles and practices</td>
<td>30</td>
</tr>
<tr>
<td>6. Power equipment; principles and field maintenance (chainsaws, aerial baskets, chipper, and hydraulic loppers)</td>
<td>20</td>
</tr>
<tr>
<td>7. Advanced techniques; large limbs removal; felling; topping</td>
<td>20</td>
</tr>
<tr>
<td>8. Tree identification; disease identification and control of diseases</td>
<td>7</td>
</tr>
<tr>
<td>9. Field trips; guest speakers</td>
<td>3</td>
</tr>
</tbody>
</table>

NECESSARY COOPERATION

The partnership between business, public service agencies, and the local school districts was crucial in making this program work. Davey Tree Expert, Inc., a nationwide public service company, was instrumental in establishing this program. The idea for the class was actually Davey's, and the operation was set up by the director of the Livermore, Amador's R.O.P. The vocational instructors have been provided by John Greed and Ray Morton.

(Concluded on next page)

CONTINUED TREE CARE SERVICE...

REWRITING SERVICES

(4) Are you willing to climb with your students? Sound health, agility, and freedom from vertigo are prerequisites for instructors and students alike.

Arboriculture is hard work, although some pay hazards are always a cause for concern. The instructors of this program state that there has never been a serious accident in four years of operation. The reason for this successful record is due to the instructors and students' constant awareness of the potential for serious accidents. Safety is a part of each lesson and practice session.

OPPORTUNITIES

For those students that complete the course, the job market is good. Trained tree care workers are in short supply, particularly in the Pacific Northwest. This profession is high-paying, challenging, and advancement is fairly rapid. Most experienced managers of large tree care service companies began by climbing and pruning landscape trees.

The best employment of this unique program has been given by graduates themselves. Many stated that the course was the first class that they could remember that emphasized immediate application of knowledge and skills to solve real-world problems. Hanging from a 35-inch manila climbing rope, 75 feet above the ground, with a chain saw on full throttle, does demand mature behavior!

NEW FFA EXECUTIVE SECRETARY

C. Coleman Harris has been appointed by the FFA Charter, Public Law 740. The announcement was made by Richard E. Carlin, Director, Division of Vocational and Technical Education, Harris, who has been serving as Acting Executive Secretary, will assume the position of Executive Secretary on July 1. An FFA employee for 10 years, Harris was hired by the National Organization in 1967 as a Program Specialist to develop FFA program areas and regional leadership programs. In 1971 Harris was named Associate Director of FFA Executive Secretary and was given more responsibility for the development of FFA leadership programs as well as for working with the National FFA Officers.

Harris is a graduate of Purdue University where he earned a bachelor's degree in Agricultural Education in 1961 and a Master's Degree in 1964. An FFA employee for 10 years, Harris was hired by the National Organization in 1967 as a Program Specialist to develop FFA program areas and regional leadership programs. In 1971 Harris was named Associate Director of FFA Executive Secretary and was given more responsibility for the development of FFA leadership programs as well as for working with the National FFA Officers.

Harris is a graduate of Purdue University where he earned a Bachelor of Science degree in Agricultural Education in 1961 and a Master's degree in 1964. In 1966-65 he did additional graduate work at the University of Maryland as part of the National FFA Executive Fellowship program.

Prior to his employment with the National FFA Organization, Harris was a teacher of vocational agriculture from 1961-64 in the Southeastern School of Technology in West Lafayette, Indiana. In 1965 he was employed by the Indiana State Department of Public Instruction as Assistant State Supervisor of Vocational Agriculture Education and Executive Secretary.

A native of Lynn, Indiana, Harris, his wife Joan and their three children (Cindy, Sandy and Greg) have been living in Honora, Indiana, for the past 10 years.

BROCHURE AVAILABLE

A copy of the new brochure published by the Agricultural Division of the AIA, “TEACH VOCATIONAL AGRICULTURE,” is a revision of an earlier publication—“Opportunities in Teaching Vocational Agriculture.” Up to 3 copies may be secured free of charge. Larger quantities can be purchased for 50¢ per copy from NVATA, Box 4488, Lincoln, NE 68504.

Payment must accompany orders.

OOPS!

RESEARCH METHODOLOGY

The procedures used in conducting this study were basically the procedures recommended by the national project. Some modification, however, was neces-
sary. The original scale recommended for use in the project was modified by adding additional categories to the skill and knowledge needed to enter and advance in their chosen occupation.

The National Project for Identifying Competencies in Agricultural Occupa-
tions was begun in 1973 to coordinate a nation-wide effort to establish the importance of competencies needed to enter occupations in all sectors of the agriculture-agribusiness industry. The project involved dividing the work of identifying competencies into the more than forty states which par-
ticipated in the study. Subcommittees were appointed from each of the several broad agricultural areas designated by the U.S. Office of Education.

Mississippi accepted the responsi-
ble for the survey for its compet-
tencies needed in selected occupa-
tions in forest production and log-
ning, hauling and transporting of forest products.

This study identified the degree of impor-
tance of interest competencies re-
quired in selected occupations in forest production and logging, hauling and transporting of forest products. During the study the following specific ques-
tions were addressed:
1. What occupations are available for entrance by trained high school stu-
dents in forest production and log-
ging, hauling and transporting of forest products?
2. Which of these "listed" occupations offer satisfactory pay scales or ad-
vancement possibilities for the
75 percent of students?
3. What competencies are needed for entrance into these occupations?

Logging Skidder Operator. A total of 31 responses was obtained from the 75 percent of the sample population. Among the respondents it indicated that general work attitudes concerning safety, personal responsibility, cooperation and personal attitudes were the most im-
portant competencies on the survey. It is interesting to note that the job descriptions of the skidder operators were also indicated to be the most important for the beginning logging skidder oper-
ator to possess maintenance equipment. Competencies such as maintaining engine and hydraulic oil levels and maintaining skill and fuel levels were rated as being essential. The data tended to indicate that the person who would perform preventive maintenance on a regular schedule. The most impor-
tant operation competency was to recog-
nize any malfunctions in the operation of the skidder.

Other important competencies asso-
ciated with the actual operation of the machine were: using winches to skid logs or pull stalled skidder, safely set as operation, attaching cable or chain chokers, and pulling stalled vehicles to wheels on the skidder, as well as indicating that they expected the beginning operator to perform only the most important duties associated with operating and maintaining the skidder, the operator should also be familiar with various other pieces of equipment.

Wood Products: A total of 32 re-
sponses was obtained from the 75 per-
cent of those who were surveyed instru-
ments. The instruments contained a total listing of 162 identified competencies. Some of the competencies which were surveyed included:
1. Reading and writing.
2. Safety and injury prevention.
4. Knowledge of equipment.
5. Knowledge of logging operations.
6. Knowledge of forest management.
7. Knowledge of wildlife management.
10. Knowledge of forest fire prevention.
11. Knowledge of forest fire suppression.
12. Knowledge of forest inventory.
13. Knowledge of forest planning.
14. Knowledge of forest policy.
15. Knowledge of forest economics.
17. Knowledge of forest conservation.
18. Knowledge of forest health.
19. Knowledge of forest protection.
20. Knowledge of forest pathology.
22. Knowledge of forest genetics.
23. Knowledge of forest genetics and breeding.
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Sources of Preparation for Agricultural Resources and Forestry Occupations

by Brian Douglass
Conservation Teacher
Waveny, Washington, Hamilton
and Elver Coasters EDGERS
Hudson Falls, NY

ENTER WORK DIRECTLY
The person that goes to work straight
after high school graduation gen-
erally has a rough road ahead because
there are some advantages. As long
as he is at least eighteen years old, many
employers are willing to train a person for
a specific job or jobs. A person has
a greater potential to repay the cost
of training than an older person. For
a person who has been working ever-
since he was old enough, the employer
realizes this person has work experience
and wants to work. High school gradu-
atons are generally more willing to do
any kind of work to get their feet started.
Not all young people accept the
fact that a person generally starts
from near the bottom and works his way
up to where he wants to be. There
is no question that most people enter
into occupations after high school. A
more or less trial-and-error method of
one occupation to the next is used by
students until they find the one they
like best and agricultural and forestry occupa-
tions are no exception.

FURTHER EDUCATION
The person wishing to improve his
chances at a specific occupational area
through more education has many op-
tions. One should keep in mind that
the extra education alone is not going
to get one to the top. Using all one's
education, hard work, and a positive
attitude are still necessary. For
much of this higher education, one must
have a specific occupational area or even a
specific job in mind before moving for-
ward with their educational plans.
There are some of the higher educa-
tional possibilities.
One choice is correspondence school.
These move a varying amount of time,
to work directly after high school and, second,
get on to higher education.

THIS WORKED FOR ME!

Resource Materials in Natural Resources

Waveny O. Wells
Agricultural Education
Hollins High School
Danvers, Vt.

TENTBOOKS
I have reduced my library references
in natural resources to three texts. I use
the "Forestry Handbook" by R. D.
Forbes as a technical teaching refer-
ce, the "Forestry in Agricultural
Education in Virginia" by Agricultural
Education Services, Division of State
Department of Education, Richmond,
Va., as a student reference for
forestry to my home state of Virginia, and
"Patterns of Preservation" by David
Tillett as a student text in natural
resources management and conserva-
tion. "Patterns of Preservation" is the
best single text that I have found for a
single option. It covers the natural re-
sources option as I view natural re-
sources courses. The table of con-
tents includes the following:
1. History of Conservation
2. Ecology
3. Background Science for
Conservation
4. Local and Soil
5. Minerals
6. Recreation and Scenery
7. Waters Resources
8. Forestry
9. Wilderness
10. Wildlife
11. Fishery Resources
12. Urban and Conservation Problems
13. Population Problems
14. Air Pollution
15. International Resource
Management
16. Survival Techniques
17. Careers in Conservation

As you can see, this text covers the
natural resources area. It is written
on the level that a secondary school
student can understand as well as
be a resource book up into short,
precise lessons chapters. This
is the backbone of our natural re-
sources option, the main reason
that we teach the broad area of
natural resources and do not confine
the option to forestry.

SIMULATION GAMES
Another item that has put interest
and class participation into the teach-
ing of natural resources is the use of
Natural Resource Educational Games.
Two good examples are INDIAN VALLEY AN EDUCATIONAL
GAMING TECHNIQUE ON ENVI-
RONMENTAL MANAGEMENT, de-
veloped by Norman G. Thomas, M.Ed.,
Springfield School District, Springfield,
Oreg., in cooperation with the
American Forest Institute and SUE
SUM CREEK VALLEY, published by
Southern Forest Institute.

Both of these games are about the
many concepts of environmental man-
agement in relation to a local com-
unity. They cover the interests of
timber management, outdoor recrea-
tional management, wildlife manage-
ment, watershed management and
wildlife protection. They provide for
student participation in applying the principles
that they have learned in the class-
room.

Three of these topics discussed can
make a natural resources classroom
more interesting place to be. They have
been a great help to me in making my
classroom come alive in teaching.
The VocAg Teacher Shortage From A College Student's Point of View

by Dale A. Hanson
Agricultural Education Senior University of Wisconsin—Platteville

Each time a group of educators in Vocational Agriculture gets together to converse, we hear from the last golf game to the latest Farm Shows. Yet, another topic is usually discussed, that is the shortage of agriculture teachers. Every time I identify myself as a college student majoring in agricultural education in the presence of one or more agriculture teachers, I always receive encouragement, to go on to become an agriculture teacher because of the need. The reason that I and many agricultural education students like myself receive this encouragement is because of the great deal of concern about the shortage of agriculture teachers. The problem is caused by two major factors: 1) The number who leave the field each year, and 2) The reluctance of agricultural education students to go into vocational agriculture teaching rather than into a different area of agriculture.

I have studied the agriculture teacher shortage from the agricultural education student's viewpoint and have attempted to answer the question of why so many agricultural education students get jobs as agriculture teachers.

THE SURVEY
Right now college agriculture enrollments are on the increase, so this is a step in the right direction. However, if it is estimated that 50% of the college agriculture education students in the national level take a teaching job, I conducted a survey of approximately 500 agricultural education students in six Midwestern universities and received a 57.4% response. On this survey I asked questions pertaining to the possible factors and dislikes of the field of teaching agriculture that teaching these students held. I asked three main questions: 1) Do you plan to become a high school agriculture teacher? 56.2% said yes.

2) Do you plan to teach in a post-secondary vocational school? 3% said yes, and 3) Do you plan to enter the field of agriculture-business, agriculture production, or agriculture extension? 40.6% said yes. So out of 200 plus students who responded to the survey, 43.8% of the people, less than one-half, knew how that they do not want to teach high school vocational agriculture.

In addition to these three main questions, I also included some questions directed specifically towards those who don't plan to teach to determine why they decided so. The questions that received the majority of responses were those pertaining to education of students in their teaching years and questions pertaining to school administration.

I believe that we have hit upon several reasons for the agriculture teacher shortage, and why merely 50% of the agricultural education students never take a teaching job.

When the students I surveyed were asked about their school, their agriculture teacher's job could have seemed very difficult at times. True, it isn't always an easy job, but it is also impossible. According to my survey, some don't feel comfortable around teenagers. This is a very serious reaction for adults, and it is easy to become impatient with teenagers. I feel future teachers need some understanding of the students and their understanding of what makes American teenagers what they are today. To do this we need to understand the happenings. We need knowledge in the areas of psychology, sociology and related subjects. I don't necessarily mean formal training in these areas, although that is important also, but much of the psychology and sociology as they relate to the teaching of teenagers can best be learned by working with these teenagers. I believe that more promotion contacts with high school students would help promote a better understanding of teenagers on the part of students of agricultural education.

The last question on the survey concerned to school administration. In the particular area I discovered that a veritable surprise to many educators and agriculture administrators. Of those answering survey 67.2% indicated that they believed that working for many school administrators is very difficult.

NATIONAL STUDENT TEACHING CONFERENCE
I attended the annual meeting of the National Association of Student Teachers in Agriculture, put on by the N.V.A.T.A. and held in Kansas City in conjunction with the 1976 National FFA Convention. This meeting is attended by college students from all over the country. During the two-day conference, the student delegates spent several hours in small group discussions. The main goal of these small groups was to discuss, discuss, and discuss other students for problems in agricultural education. The problems most often brought up were: lack of basic skills in the high school students, difficulties in motivation, and teachers. Each of these problems lent itself to the problem of discipline in the classroom. Some are of the problems students are thinking about, but the uncertainty of their future in education because of these problems hurt many students away from taking teaching positions.

THE ANSWER
I am one of the 56.2% of college agricultural education students who plan to become a high school agriculture teacher upon graduation. So what about the 35.8% who plan not to teach? To those of you who are in that 43.8% and are part responsible for the agriculture teacher shortage.

(Concluded on page 94)
Analysis of Timber Harvesting Occupations in Virginia

by J. Dale Oliver and K. Kurt Eschenmann
Teacher Education, Virginia Polytechnic Institute and State University

According to statistics from the U. S. Department of Labor (Occupational Outlook Handbook, 1976-77: 650), there were nearly 85,000 wage and salary workers employed in 1974 to help harvest and remove trees from forests. A much larger number—200,000—worked in sawmills and planing mills. In addition, about 50,000 workers were self-employed, most of whom were in logging.

Increased harvesting costs and technological advances have brought about a need for better trained men in timber harvesting occupations. Because the building and furnishing of homes, hospitals, schools, stores, and most other structures depend upon lumber and wood products, thousands of job openings will be available each year through 1980 (Occupational Outlook Handbook, 1976-77: 650).

This favorable employment picture for timber harvesters has brought with it the need for better trained workers, and has caused concern regarding the preparation of workers for this area. Such concern prompted the Virginia state supervisory staff of the Vocational-Technical Education of the State (V.T.E.C.S.). This consortium is a major effort, involving 16 states and two agencies, to develop catalogs of performance objectives, criterion-referenced measures, and performance guides in vocational education.

PROCEDURES

This study was based on the use of task analysis procedures as a foundation for the development of job-relevant instruction. The procedures used were as follows:

1. Develop an Occupational Inventory
   The occupational or task inventory was based on a state-of-the-art study, a review of technical procedures used by workers, and interviews with incumbent workers, supervisors, and instructors. The final inventory contained the following: background information for the worker; 72 tasks in four duty areas; and 86 pieces of equipment (Oliver, Lee, and Martin, 1975). The duty areas were: A. Planning, Supervising, Coordinating; B. Maintaining and Repairing Equipment and Tools; C. Loading and Hauling; and D. Felling, Limbing, and Bucking.

2. Survey Incumbent Workers
   A sample size provided by the V.T.E.C.S. total was 150 workers. Those workers were contacted for interviewing at 50 randomly selected permanent sawmills and pulp and paper mills. Up to 10 interviews were secured at each location and the workers were asked to provide: background information, indicate the equipment used, identify the tasks performed, and rate the relative amount of time spent on each task on a seven-point scale. Percent interview were employed full time in one of the following job titles adopted from the D.O.T. (U.S. Department of Labor, 1965): woods laborer, logging contractor, and logging foreman.

3. Analyze the Data
   Data from the inventories were analyzed by the V.T.E.C.S. The following information was provided: the percent of workers performing each task; the average percent time spent on each task; the percentage of workers using each piece of equipment.

4. Prepare a Catalog
   The performance objectives, criterion-referenced measures, and performance guides were prepared by a writing team. The members included an instructor of agricultural education, an experienced foreman, two technical writers, a criterion-referenced measurement specialist and a state-level supervisor of agricultural education. After the catalog was prepared, it was field reviewed by instructors to determine its instructional acceptability. Input from these individuals was used to develop the final version of the catalog (Oliver, Lee, Eschenmann, and Martin, 1976).

FINDINGS

As a result of the procedures followed, 127 timber harvesting tasks were surveyed. All 72 tasks in the inventory were performed by two or more workers and all but eight tasks were performed by over 50 percent of all workers. Eight tasks performed by less than one-half of all workers the percent performing were as follows:

- Estimate tree yield (65.7 percent)
- Hitching equipment (64.9 percent)
- Mark trees to be cut (20.9 percent)
- Attack and remove roots (12.6 percent)
- Fell trees according to cutting pattern using feller buncher (5.9 percent)
- Fell trees according to cutting pattern using crosscut saw and hand tools (1.6 percent)
- Move felled trees to a loading point using animal power (0.7 percent)

The table with the highest average percent time spent by all workers performing them is shown in Table 1. Also, shown in the table is the percent of members performing each task.

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Average % of Workers Performing</th>
<th>Daily Time Spent</th>
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</thead>
<tbody>
<tr>
<td>Clearing access to cutting pattern using feller buncher</td>
<td>92.9</td>
<td>5.8</td>
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<tr>
<td>Clearing access to cutting pattern using crosscut saw and hand tools</td>
<td>82.9</td>
<td>5.0</td>
</tr>
<tr>
<td>Loading trees using feller buncher</td>
<td>89.0</td>
<td>4.5</td>
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<tr>
<td>Loading trees using crosscut saw and hand tools</td>
<td>84.6</td>
<td>4.0</td>
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<tr>
<td>Moving felled trees to a loading point using animal power</td>
<td>85.0</td>
<td>7.0</td>
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<tr>
<td>Moving felled trees to a loading point using mechanical means</td>
<td>79.9</td>
<td>7.4</td>
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<tr>
<td>Clearing access to cutting pattern using mechanical means</td>
<td>67.4</td>
<td>7.0</td>
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</tbody>
</table>

The writing team prepared a catalog which contained 60 performance objectives, criterion referenced measures and performance guides. In addition, the catalog contained four appendices. These appendices included the following information:

1. A list of job titles
2. A list of the number and percentage of workers using each piece of equipment
3. A list of references used to document the sources of the standards for performance materials from the state-of-the-art studies
4. A cross-reference table to aide teachers in adapting the objectives to individual programs.

CONCLUSIONS

This study provided a picture of the tasks being performed by workers employed as woods laborers, logging contractors and logging foremen. The data can be used by secondary and post-secondary instructors in developing programs that are realistic in terms of competencies required for employment.

The catalog which has been developed can be used as a planning and instructional tool for the development of curricula with objectives that have been validated against actual job performance. Use of the catalog will allow teachers to concentrate more on how rather than what to teach, knowing they are teaching career relevant skills.

The catalog can also be used to promote individualized learning. Students can know exactly what is expected of them and be secure in the knowledge that they are learning the skills needed for employment. The catalog is being made available to Virginia teachers through an in-service training program and has been distributed to V.T.E.C.S. member states through the distribution channel.

REFERENCES CITED

Oliver, J. Dale, Debora W. Lee and Janet Martin, Occupational Inventory for Timber Harvesting, Virginia Division of Vocational Education, Virginia Polytechnic Institute and State University, Blacksburg, Virginia, May 1975.


Table 2

<table>
<thead>
<tr>
<th>Task Description</th>
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<tr>
<td>Clearing access to cutting pattern using feller buncher</td>
<td>5.8</td>
</tr>
<tr>
<td>Clearing access to cutting pattern using crosscut saw and hand tools</td>
<td>5.0</td>
</tr>
<tr>
<td>Loading trees using feller buncher</td>
<td>4.5</td>
</tr>
<tr>
<td>Loading trees using crosscut saw and hand tools</td>
<td>4.0</td>
</tr>
<tr>
<td>Moving felled trees to a loading point using animal power</td>
<td>7.0</td>
</tr>
<tr>
<td>Moving felled trees to a loading point using mechanical means</td>
<td>7.4</td>
</tr>
<tr>
<td>Clearing access to cutting pattern using mechanical means</td>
<td>7.0</td>
</tr>
</tbody>
</table>

Regarding specific job titles, there were 21 woods laborers, 92 logging contractors, and 14 logging foremen surveyed. It should be noted that while the highest percent time spent for all job titles was in the categories of felling and moving trees in a loading point, the logging contractors and logging foremen were more involved in loading trees to the manufacturing.

It is interesting to note the number of tasks performed by over one-half of the workers in each job title and to examine the distribution of these tasks by duty area. Only a few of the tasks were performed by over one-half of the workers. A list of the tasks performed by over one-half of the workers is shown in Table 2. As would be expected, the logging contractors and foremen performed considerably more tasks than were performed by woods laborers. The logging contractors and foremen also engaged in more data tasks in duty C.
CONTINUED THE VO-AG TEACHER SHORTAGE...

The VO-AG teacher shortage continues to be a concern. The problem is not limited to the vocational agriculture field, as it affects many other areas of education as well. The shortage is a result of several factors, including the lack of qualified candidates, low salaries, and the perception of the teaching profession as not being prestigious. The shortage is particularly severe in rural areas, where the population is more scattered and the competition for qualified teachers is less intense.

New NYATA Executive Director

The Board of Directors of the National Vocational Agricultural Teacher Association (NYATA) has named Sam Steuerwald NYATA Executive Director. Steuerwald will assume the position on July 1, 1981. NYATA President Al Renne has announced the appointment of Dr. James G. Hines as NYATA Executive Director. Hines will begin his duties on July 1, 1981.

The NYATA is a national professional organization for vocational agriculture educators, dedicated to serving the interests of classroom teachers of vocational agriculture in secondary and post-secondary schools. It is composed of over 10,000 members. The NYATA is affiliated with the American Vocational Association. The membership includes a high percentage of state and supervising agricultural education, teacher educators, and classroom teachers. The national office is located in Lincoln, NE.

IOWA AGRICULTURAL EDUCATOR OF THE YEAR

The Iowa Agricultural Education Foundation has named the 25th year of history of the organization, "Professional Leadership And Service," to be the Year Award during the 60th annual Iowa Agriculture and Agricultural Education Conference in Des Moines. The award was presented by Rural Education, Rural City, president of the IVATA, and is given in honor of the now retired but long-time head of the agriculture education department at Iowa State University. This is the fifth year the award has been given. Miehe has just completed thirty-two years as VO-Ag Instructor.

continued LEADER...

In his first year in large measure to his efforts that the National Agricultural Education Student Teacher Conference was inaugurated and continues to be held each year at the Iowa FFA Convention. He has long been an advocate of Collegiate FFA chapters as a tool for the training of prospective vocational agriculture teachers. On many occasions he has served as a special consultant to watch over the efforts of the OSU Office of National Programs. He has also been a member of the OSU Alumni Association and Blue Key. These honors are particularly fitting since he is the only individual who was a leader in all three organizations.

The United Methodist Church owns the success of many programs to the efforts and dedication of Bob Price. He has served as the executive secretary of the Board of Education, the board of trustees of the College of Education, and the board of trustees of the University of Iowa. He has also been a member of the Board of Directors of the National Farm Bureau, the National Agricultural Education Foundation, and the National Council of Teachers of English. He has been a member of the National Council of Teachers of English and the National Council of Teachers of Mathematics.

CONTINUED SOURCES OF

Thus far, the program has been successful in recruiting new students and doubling the size of the program. However, there are still some challenges that need to be addressed. The first challenge is the lack of qualified instructors. The program relies heavily on part-time instructors who are not always available to teach during the week. The second challenge is the lack of funding. The program has been able to secure some grants and donations, but more funding is needed to sustain the program. The third challenge is the lack of exposure to students. The program is still relatively new and needs to be marketed to students in order to attract more participants.

Preparation...

To prepare for the next year, the program will continue to focus on recruiting new students and improving the quality of the program. It is also important to ensure that the program remains financially sustainable. The program will continue to explore new funding opportunities and partnerships with local businesses and organizations. The program will also continue to promote the program to students through social media and community events.

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Stories in Pictures

by Paul W. Newlin

Students of vocational agriculture from Oregon learn how to scale at a forestry skill contest. Students learn how to determine the amount of lumber in the logs. (Photo courtesy of Howard Beck, Salem, Oregon)

Vocational agriculture students from Oregon participate in a forestry skill contest. Here they have to identify equipment for the logging industry. (Photo courtesy of Howard Beck, Salem, Oregon)

A student from the Kilgore, Texas, vocational agriculture program uses a small bulldozer to maintain his forestry project in good condition. (Photo courtesy Doug Bishop, Montana State University)

Students in New York are testing a log as part of their vocational agriculture curriculum. (Photo courtesy of William G. Olin, Agricultural Education Center, Saranac Lake, N.Y. Related article on page 38.)