

AN ASSESSMENT OF THE FOREST TIMBER MANAGEMENT
TECHNICIAN PROGRAM AT EASTERN OKLAHOMA
STATE COLLEGE

By

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CHAPTER I

INTRODUCTION

American society appears to have an increasing awareness of the natural resources which contributes to the national standard of living by providing materials and aesthetic beauty. The impact of the growing awareness in natural resources has had a significant influence on forest management.

The author perceives that the need for the forest technician is a response to an increasing division of labor brought about by urbanization and greater demands being placed on the forest resources by that urban public.

The proper management of forestland for wood products is important to the public in the form of wood derivatives which can be purchased at a reasonable cost. Short-term deficits of these products have been evident during the latter portion of the 1960's to the present. This has brought about more stringent land uses in the timbered areas to meet the increasing demand for wood products. In meeting this demand, the various owners of forestland (through possible legislative action concerning land use, public opinion, and in some instances economic factors) have seen a need to employ professionals and technicians trained in forestry.

Historical Perspective

Eastern Oklahoma State College began its Forest Technician program in the fall of 1968 and has since expanded the program into three options: Timber Management (1968), Park Management (1971), and Agriculture (1973). The programs were initiated due to:

1. A need of industry to obtain trained forestry personnel to accomplish various tasks and act as intermediaries between the professional forester and the worker accomplishing a variety of specific jobs (10).
2. The necessity to increase forest production efficiently and economically by personnel that are trained in a variety of forestry skills.
3. Various public outcries which created an almost insurmountable task on the professional forester to involve himself to a greater extent in long range planning, public relations, forecasting and management.

The Division of Vocational and Technical Education, U. S. Office of Education stated:

The increase in applied technology in the forest resource management, and the passage of the Land and Water Conservation Act in 1963, have produced a need for more and better trained technicians. Population growth has increased the recreational use and potential of forests. Competition among companies to produce better products in a shorter time requires better educated personnel. Local, state, and national efforts to conserve forests and other natural resources have increased the requirements for trained manpower. As a result, the forest technician is in greater demand now than ever before (10, p. 1).

With the need for technicians who can perform quality work on the job, those responsible for their training must be aware of the changing needs of forest landowners for forest technicians. Communication with these landowners must be effective to affect curriculum changes which are necessary to provide forest technicians with the proper skills and knowledge essential to their performance on the job.

Statement of Problem

In terms of the needs of industry to obtain trained forestry personnel there arises a continuous need for Eastern Oklahoma State College to evaluate and make needed improvements in the Forest Timber Management program. Evaluation of the program should determine curriculum deficiencies which impair the graduate's opportunity to succeed.

Purposes

The purpose of the study was:

1. To ascertain employers' and graduates' perceptions concerning the adequacy of training received by graduates of the Forest Timber Management Program of Eastern Oklahoma State College, at Wilburton, Oklahoma.
2. To determine if there was a difference between the graduates' and employers' perceptions evaluating the training of forestry students.
3. To determine needed curriculum changes based upon graduate and employer perceptions.

Research Questions

To achieve the objectives of the study, the following research questions were formulated:

1. What are graduates' perceptions regarding the relationship between the 11 skill areas and the job in which they are presently employed?
2. What are employers' perceptions regarding the relationship between the 11 skill areas related to the graduates' jobs?
3. How do employer and graduate perceptions compare in the 11 skill areas?
4. What are the graduates' perceptions toward their own skills in the 11 skill areas upon graduation?
5. What are the employers' perceptions toward the graduates' skills in the 11 skill areas upon initial employment?
6. How do employers' and graduates' perceptions compare with regard to the graduates' skills in the 11 skill areas?
7. Do graduates see a need for further training after graduation in any of the 11 skill areas?
8. Do employers of graduates see a need for the employee to receive further training in any of the 11 skill areas?
9. How do employers' and graduates' perceptions compare regarding further training in the 11 skill areas?
10. What is the order of importance of the 11 skill areas according to the graduate?
11. What is the order of importance of the 11 skill areas from the employers' viewpoint?

12. What level of education or training do graduates feel they learned most about each of the 11 skill areas?
13. How do employers compare Eastern Oklahoma State College Forest Timber Management technician graduates with other entry level forest technicians, who have received their training from other institutions?

Need for the Study

The field of forestry is expanding and changing at a rapid rate. The curriculum should change as industrial activities change to provide competent forest technicians upon graduation. Venn states that:

When historians come to write of the great contributions of American civilization, they will surely give prime attention to our amazing public education system. This truly great accomplishment of the United States, not yet fully achieved, is the marvel of present civilization. It is now recognized as the basis for our economic growth, our technological superiority, and our sometimes uncomfortable political leadership role in the world. But the major question today is, can our educational structure adapt and change to fit the future? (11, p. 91).

In the above statement, Venn points out that although the educational system is amazing, it may not be capable of changing at the rate of our future needs. Techniques have changed similar to giant stairsteps and our educational system has often been a stairstep or two behind the technological changes.

Evaluation of an institution's training ability should draw on three sources to determine its effectiveness. These three sources are the forest technician faculty, the graduates, and the employer or supervisor. These sources should give the institution information concerning the relevance of the program. The information needed

includes: training needs; retraining needs; and the effectiveness of the graduate on the job. Eastern Oklahoma State College needed an assessment of the forestry program by forestry graduates and their forestry employers to accomplish these needs.

Limitations of the Population

The population in this study was restricted to Timber Management technician graduates, who were enrolled in the Timber Management program at Eastern Oklahoma State College from 1968 to 1976 and their employers. Graduates and their employers of the Park Management and Arboriculture programs will not be included in this study.

Definitions of Terms

Administration - a level of responsibility which includes executive duty over a segment of an organization.

Forest Landowner - an individual having direct or indirect management control over a forest land area.

Laborer - an individual who is in a training capacity with industry having a minimum of responsibility within an organization.

Middle Management - a work force category which is between a labor and administrative level. It is one which is termed as a first or second line supervisor having responsibility over a small group of individuals or area of land.

Professional Forester - an individual who has successfully completed a four-year prescribed curriculum in a forestry program and occupies a position with a job classification of forester.

Timber Management - the practical application of scientific, economic, and social principles to the administration and working of a forest estate for specific objectives.

Following are definitions of terms as used in the questionnaire of this study:

Business - understanding of and ability to deal with accounting systems, inventory systems, and records systems.

Communications - includes ability to transmit ideas, concepts and information by writing, speaking, listening and reading.

Dendrology - ability to identify trees by more than one criterion (leaves, bark, location, branching habit, etc.).

Forest Conservation - planned management practices for continuous yield of resources.

Forest Measurements - application and understanding of concepts, tools, and methods in all phases of the mensuration task.

Forest Products - understanding of harvesting methods, product classification, and raw material use.

Forest Protection - understanding of fire, insects and diseases, and ability to fit into the suppression and detection system.

Mathematics - use of algebra and trigonometric concepts in forestry applications including ability to read and construct graphs and charts.

Personnel - adaptability to problems of human relations and training. Use of time, employer loyalty, and morals.

Silviculture - ability to make site evaluations, cutting, prescriptions, timber stand improvement decisions, and timber marking skill.

Surveying - construction and reading of topographic maps, ability to establish new and old land lines, use of all surveying instruments.

CHAPTER II

REVIEW OF LITERATURE

Introduction

The purpose of this study was: (1) to ascertain employers' and graduates' perceptions concerning the adequacy of training received by graduates of the Forest Timber Management Program of the Eastern Oklahoma State College, Wilburton, Oklahoma; (2) to determine if there was a difference between the graduates' and employers' perceptions; evaluating the training of forestry students; and (3) to determine needed curriculum changes based upon perceptions of graduates and employers.

To effectively present the review of literature, this chapter is divided into the following segments: (1) Program and Curriculum Problems; (2) Program and Curriculum Needs; (3) Development of the Questionnaire; and (4) Summary.

Program and Curriculum Problems

Bently (1) indicates that it is necessary to evaluate a curriculum based on its sequential structure as it relates to the student's ability to comprehend and assimilate information which upon graduation becomes useful in the technician jobs. Valuable information may be disassociated due to the sequency of courses. Integration of specific

courses may prove to enhance a technician's chances for success. Bently explains a theory of sequencing and combining courses which helps to increase the relevancy of the curriculum for the forestry student.

The current curricular structure is quite dependent upon sequences of basic disciplinary material, then professional-disciplinary courses are followed, in best situations, by some sort of case studies or other applied courses. Each element needs to be examined, not only in light of direct relevance, but to identify where a conceptual linkage is possible which could lead to less, but more relevant, course work. For example, mathematics, statistics, silviculture, and economics might be combined and save from eight to 15 credit hours. Composition, speech, and professional course combinations not only would save credits, but probably improve too general, often weak skills of foresters (1, p. 84).

Bently's (1) theory may be useful in recommending actions to be taken in the Forest Timber Management Technician program at Eastern Oklahoma State College. Combinations of some courses may increase the graduate's ability to perform a skill.

In a study conducted by Guthrie (4) evaluating the mathematical content required by selected technologies at Eastern Oklahoma State College, he found that forestry required 63 per cent of a mathematical checklist containing 204 concepts. Guthrie further reports: "The lowest percentage was Automotive at 17 per cent and the highest was 76 per cent for Electronics and Electromechanical with a mean of 50.7 per cent" (pp. 13-14).

Guthrie's study also indicates that forestry department faculty members have more mathematical skills than do the graduates.

Program and Curriculum Needs

According to Dana and Joahnson (3) forest technicians were needed as early as the 1600's. The need for forest technicians has increased in recent years as expressed by Willhite's study:

Intensified forestry is expanding the need for field technicians having a wide variety of specialized skills and some advanced education. This need is increasingly being met by graduates of two-year college forest technology programs. The most successful graduates are those experienced with forestry tools and the practical field aspects of forestry in adverse weather conditions and terrain. Such training makes them readily adaptable to on-the-job training and productive almost immediately, and their training in written and other communicative skills proves valuable in dealing with contract regulations and forest practice act rules in some states (14, p. 418).

There was no conclusive evidence from Willhite's (14) study of 18 forest technician curriculums taught in two-year colleges in the western United States that a specific curriculum could be adapted to that geographical area. Willhite used a mailed questionnaire which asked for the annual hours of field training in coursework, percentages of specialized and forest technology courses, attrition rates, and employment opportunities for graduates. The results indicated that since these curriculums varied extensively, employers could benefit by hiring graduates from a number of schools to assimilate a variety of skills needed in their industry.

Development of Questionnaire

In a study by Blenis (2) in 1969, questionnaires were sent to industrial, provincial and federal employers of forest technicians along the Atlantic seaboard to determine their perceptions concerning

the curriculum in the various forest technician schools in that area. The objective of Blenis' study was to investigate the possibility of developing a single forest technician curriculum appropriate to meet the needs of a variety of forest technician employers. The subject areas used in the questionnaire were obtained from catalogs published by these schools and were grouped into 52 specific subjects. The subjects were placed on the questionnaire to be rated by employers of forest technicians on a five-point numerical rating scale. Blenis reported the following results:

Each employment category places a high value on such nonforestry subjects as ethics and communication and a low value on nonforestry subjects such as rural sociology, psychology and anthropology. Subsequent inquiry of a cross section of raters suggested that the difference was due to the differing relevance of the two groups of nonforestry subjects to forestry practice in this region at this time. Results of this investigation indicate that it is possible to provide a single technical forestry curriculum that is reasonably satisfactory to federal, provincial and industrial employers in the Atlantic provinces of Canada, but that such a curriculum will probably meet the needs of provincial and industrial technicians in federal service (2, p. 249).

Blenis (2) indicated in his study that a curriculum could be developed to meet the needs of forest technicians along the Atlantic seaboard based on input from employers of forest technicians.

Summary

Based on studies involving the effectiveness of forest technology programs, evaluation data should come from faculty, graduates, and from those who employ forest technicians.

During the evaluation process attention should be focused on course content and skills necessary to accomplish the tasks to be performed and their relationship to other courses. A technical program should keep abreast of what is current in that industry. Mager (7) emphasizes this point by stating:

The professional instructor would no more stop improving his instruction than the professional physician would stop improving his medical skills. Vocations change, new teaching techniques and devices become available, and the average characteristics of the incoming student may gradually shift. It is appropriate, therefore, to set in motion a process guaranteeing that the course will always be as fresh and up-to-date as the morning newspaper (p. 26).

The evaluation process of a curriculum must begin with a well-designed data measuring instrument and the evaluation process should be continually ongoing.

CHAPTER III

METHODOLOGY

The purpose of this study was: (1) to ascertain employers' and graduates' perceptions concerning the adequacy of training received by graduates of the Forest Timber Management program at the Eastern Oklahoma State College in Wilburton, Oklahoma; (2) to determine if there was a difference between the graduates' and employers' perceptions evaluating the training of forestry students; and (3) to determine needed curriculum changes based upon graduate and employer perceptions.

To achieve this purpose, it was necessary to collect data from graduates and their employers.

Population

The population of this study was comprised of all 55 graduates of the Forest Timber Management program at Eastern Oklahoma State College from 1968 through 1976 and their employers.

Methodology

Given the number of individuals, time, and distance of the writer from the population, it was decided that a mailed questionnaire would be the best method to use in collecting the data.

The questionnaires used to collect the data was developed from two similar study instruments. One was a lengthy instrument used in the Project Able, 1971 (12, p. 16) follow-up study of the accomplishments of handicapped individuals who had been exposed to a curriculum designed to develop a set of skills. The instrument used three numerical Likert-type scales involving specific skill achievements resulting from the implementation of the curriculum.

A similar instrument used in a study by Vicars in 1972 (12, p. 22) was reviewed. The Vicar's instrument was used to evaluate a farm machinery curriculum in California. The instrument used three numerical Likert-type scales involving specific skill achievements related to courses taught in the curriculum. Both the Project Able and Vicar's instruments were reported as being successful in achieving results and were used in evaluating the curriculums in two different institutions.

The questionnaires developed for this study (Appendix A) were put along with cover letters (Appendix B) which explained the purpose of the study to the forest technician graduates and to their employers.

Development of the Questionnaire

The instrument utilized in this study included the following 11 skill areas which were identified by the Forest Technician staff at Eastern Oklahoma State College and a professor in the Forestry Department at Oklahoma State University. The skill areas selected were based on skills taught in the Forest Timber Management curriculum at Eastern Oklahoma State College. These skill areas are the result of the various skills taught in the Forestry curriculum at Oklahoma State

University, Stillwater, Oklahoma, which were used as a base for developing the original curriculum at Eastern Oklahoma State College.

The following 11 skills were the selected skill areas utilized in the questionnaire.

1. Forest Measurement
2. Forest Product
3. Forest Protection
4. Silviculture
5. Personnel Management
6. Dendrology
7. Surveying
8. Business
9. Communication
10. Mathematical
11. Forest Conservation

The 11 skill areas were rated across two five-point Likert-type scales, one four-point Likert-type scale, and one three-point Likert-type scale.

The following statements were transformed into questions to produce information regarding the curriculum which could be used to evaluate the effectiveness of the program.

For the graduate the Likert-type scales used encompassed the following:

1. importance of the skill for the job
2. a self-evaluation on that particular skill
3. where the greatest amount of the skill was learned
4. did the individual feel a need for additional training
in any of the 11 skill areas?

For the employer the Likert-type scales used encompassed the following:

1. concerned the importance of the skill on the job
2. evaluation of the graduate in relation to each skill
3. comparing the graduate on each skill with other entry level workers
4. determining if the graduate needed additional training in any of the 11 skill areas

Each questionnaire contained an additional open-ended item to allow respondents to make any comments they felt were necessary. Such free responses cannot be tested statistically, but often such comments are useful in this type evaluation.

Each mailed questionnaire included a self-addressed, stamped envelope for return. The graduate's name was typed on the graduate's questionnaire for the purpose of identifying those that responded.

Three weeks after the initial mailing, a follow-up letter (Appendix B) was mailed to the non-respondents. The follow-up letter asked them if they had misplaced the questionnaire and reminded them of its importance. A copy of the questionnaire was sent to the non-respondent employers and graduates along with the follow-up letter.

Statistical Procedure

Frequency distributions and percentages were established on data collected.

Descriptive statistics and the Chi-square technique were used to analyze graduate and employer responses. The response information was placed on computer data cards for processing.

The Statistical Package for Social Sciences (SPSS) was used in the statistical analysis.

The Chi-square technique was aborted due to the low response rate and lack of significant values appearing in the data. The data therefore was presented in such forms as mean, median, percentage, and frequency count.

CHAPTER IV

FINDINGS AND ANALYSIS

The purpose of this study was: (1) to ascertain employers' and graduates' perceptions concerning the adequacy of training received by graduates of the Forest Timber Management program at Eastern Oklahoma State College, Wilburton, Oklahoma; (2) to determine if there was a difference between the graduates' and employers' perceptions evaluating the training of forestry students; and (3) to determine needed curriculum changes based upon graduate and employer perceptions.

Study Participants

Twenty-four of the 55 graduates of the Forest Timber Management program at Eastern Oklahoma State College responded to the survey. Twelve of their employers responded. The response rate was 41.8 per cent for the graduates and 23.6 per cent for their employers.

The non-respondents in this survey were identified as being employed by the same or similar industrial organizations and holding similar job titles as the respondents. It was determined that non-respondent graduates held similar jobs based on data held by the Forestry Department.

Employment of Graduate Respondents

Graduates of the Forestry program were divided into four categories of employment (Table I): full-time forestry; continuing education; part-time non-forestry; and full-time non-forestry. There were 21 graduates (87.4 per cent) employed in forestry and one each in the remaining three categories (4.2 per cent in each).

Graduates were divided into job title categories of administrative, middle management, and laborer to indicate a level of job achievement. Table II indicates that 81 per cent of the graduates were employed in the middle management and laborer categories while 19 per cent were employed in the administrative category. Those employed as laborers were individuals that graduated in 1976 and were in an on-the-job training program before being advanced into a first-line supervisory or middle management category.

Table III indicates that 29.2 per cent of the graduates have held more than one job since graduation. Nearly 71 per cent of the graduates are employed in their first job.

TABLE I
DISTRIBUTION OF STUDY RESPONDENTS
BY EMPLOYMENT STATUS

Employment Status Category	Number of Respondents	Percentage
Forestry	21	87.4
Continuing Education	1	4.2
Part-time Non-Forestry	1	4.2
Full-time Non-Forestry	<u>1</u>	<u>4.2</u>
Total	24	100.0

TABLE II
DISTRIBUTION OF STUDY RESPONDENTS BY JOB TITLE

Job Title Category	Number of Respondents	Percentage
Administration	4	19.0
Middle Management	8	38.0
Laborer	<u>9</u>	<u>43.0</u>
Total	21	100.0

TABLE III
DISTRIBUTION OF OTHER JOBS HELD BY RESPONDENTS

	Number of Respondents	Percentage
Have held other jobs	7	29.2
Have not held other jobs	<u>17</u>	<u>70.8</u>
Total	24	100.0

Education Level of Respondents

There were three respondents who had completed an additional educational program beyond an Associate of Applied Science degree in Forest Technology-Timber Management (Table IV). The three respondents received another Associate degree in Park Management at Eastern Oklahoma State College. This should not affect the data since the skills developed are different from those contained in the first degree program. There were no graduates who completed a degree higher than the Associate of Applied Science.

TABLE IV
DISTRIBUTION OF STUDY RESPONDENTS
BY EDUCATION LEVEL COMPLETED

Degree	Number of Respondents	Percentage
Associate Degree in Forest Timber Management Technical Program at Eastern Oklahoma State College	21*	87.5
Forest Technology and another Associate Degree	<u>3</u>	<u>12.5</u>
Total	24	100.0

*The three graduates in non-forestry occupations or continuing their education are in this category.

Importance of Skill Areas

The graduates' and employers' responses were ranked as to their perception of the importance of the 11 skill areas. Personnel management and communications were ranked as one and two respectively by the graduates and reversed by the employers (Table V). This indicates that there is a definite need for both skills as related to the forest technician's job. Personnel management is of importance due to the technician's role in middle management. A forestry organization depends on the forest technician to organize and manipulate a manpower force to produce the desired end result of a management objective. The forest technician must also possess the ability to

TABLE V
SUMMARY OF GRADUATE AND EMPLOYER RANKINGS
OF THE IMPORTANCE OF THE SKILL

Skill Areas	Graduate		Employer	
	Mean*	Rank	Mean*	Rank
Personnel	1.43	1	1.75	2
Communications	1.52	2	1.58	1
Business	2.33	3	3.42	11
Forest Protection	2.48	4	2.17	5
Surveying	2.57	5	2.66	7
Forest Measurements	2.81	7	2.00	3
Silviculture	2.81	7	2.08	4
Dendrology	2.81	7	2.50	6
Forest Products	2.95	9	3.08	8
Forest Conservation	3.00	10	3.17	9.5
Mathematics	3.19	11	3.17	9.5

*Code Mean:

- (1) Extremely Important
- (2) Very Important
- (3) Somewhat Important
- (4) Undecided
- (5) Not Important

interpret written and oral communications to carry out a management plan or other task. There also exists a need for the forest technician to communicate various facts to a superior.

Forest conservation was ranked 10 by the graduates and 9.5 by the employers which is a low level of importance for this skill. Conservation includes many skills related to a variety of tasks accomplished in the forest. It is difficult to separate the conservation skills from other skills that either, directly or indirectly, involve sound management practices which conserve a natural resource.

Mathematics was ranked 11 by graduates and 9.5 by employers which was last by graduates and second from last by the employers. The pure mathematical concepts are normally used by the forest technician. Where mathematical skills are required are hidden in the traditional formulas and terms associated with the field. Because of this the technician does not apparently relate to the importance of the mathematical skill.

Graduates' Abilities to Perform Skills

Table VI represents a summary of the graduates' and employers' rankings by the graduates' abilities to perform the skill. Both sets of respondents rated the graduates' abilities to perform the 11 skills as being above average. This indicates that the graduates' performance of the 11 skill areas is above an adequate level of performance as compared with others performing the skills. This indicates that graduates from Eastern Oklahoma State College have more superior ability to perform in these 11 skill areas than forest technicians receiving their training elsewhere.

TABLE VI
 SUMMARY OF GRADUATE AND EMPLOYER RANKINGS BY
 GRADUATES' ABILITY TO PERFORM SKILL

Skill Areas	Graduates		Employer	
	Mean*	Rank	Mean*	Rank
Dendrology	2.42	1	2.00	1
Personnel	2.48	2	2.17	3.5
Forest Measurements	2.55	3.5	2.08	2
Forest Protection	2.55	3.5	2.17	3.5
Silviculture	2.58	5	2.50	7.5
Surveying	2.60	6	2.50	7.5
Communications	2.62	7	2.50	7.5
Forest Conservation	2.63	8	2.82	11
Forest Products	2.65	9	2.33	5
Business	2.67	10	2.64	10
Mathematics	2.90	11	2.50	7.5

*Code Mean:

- (1) Outstanding
- (2) Generally Above Average
- (3) Average
- (4) Generally Below Average
- (5) Need Much Improvement

The employers ranked the graduates' abilities to perform the skills higher than did the graduates. This indicates a lower level of self-confidence among the graduates than the level of ability as perceived by the employers.

The dendrology skill was ranked one by both sets of respondents indicating that this skill was mastered better than the remainder of the skills by the graduates.

The forest conservation skill was ranked eight by the graduates and 11 by the employers. Although the employers ranked forest conservation as being the skill in which graduates attained the least ability, their performance was still generally above average.

Instruction Received by Graduates

Table VII is a summary of graduate and employer rankings as to whether the graduates received sufficient instruction in the skill areas. The graduates answered the question "Did you receive sufficient instruction in the skill area?" with "yes," "undecided" or "no." The employers answered the question "Do you feel the employee should have received more instruction in this skill area?" with "yes" or "no."

All of the graduates indicated that they had received sufficient instruction in the dendrology skill area while the employers indicated that strengthening was needed in the area. There is a similarity between the graduates' ability to perform the dendrology skill to the graduates receiving sufficient instruction in the dendrology skill area. In both instances the dendrology skill was ranked first by the graduates. This similarity indicates that the graduates were sufficient in the skill.

TABLE VII
 SUMMARY OF GRADUATE AND EMPLOYER RANKING OF THE
 GRADUATES' RECEIVING SUFFICIENT INSTRUCTION

Skill Areas	Graduate		Employer	
	Mean*	Rank	Mean**	Rank
Dendrology	1.00	1	1.83	1.5
Surveying	1.15	2.5	1.83	1.5
Forest Protection	1.15	2.5	1.58	7.5
Forest Conservation	1.16	4	1.64	5.5
Mathematics	1.26	5	1.75	3
Silviculture	1.37	6	1.58	7.5
Forest Measurements	1.40	7	1.67	4
Communications	1.48	8	1.33	11
Forest Products	1.53	9	1.50	9.5
Business	1.71	10	1.64	5.5
Personnel	1.76	11	1.50	9.5

Graduate (*) Mean:

- (1) Yes. I received sufficient instruction.
- (2) Undecided
- (3) No, I did not receive sufficient instruction.

Employer (**) Code Mean:

- (1) Yes, the graduate needs more instruction.
- (2) No, the graduate need no further instruction.

The personnel skill area was ranked 11 by the graduates and 9.5 by the employers. Sufficient instruction is not being received in this area based on a mean of below average. However, the graduates are able to perform the skill (rank two by graduates and a rank of 3.5 by the employers as indicated in Table VI) at an adequate level. A similar indication is reflected in the communication skill. The graduates' ranked communication as eight compared to the employers' ranking the skill in the eleventh position in receiving sufficient instruction. This is compared to the graduates' ability to perform the communication skill where the graduates ranked their ability as seventh while the employers ranked the graduates' ability as 7.5. This indicates that effective instruction is not being accomplished in the content of the course to train students in an effective communication process. There may also be a need to emphasize communication skills in other courses to create a need in the student to learn and understand effective communication.

Location of Skill Attainment

In an attempt to locate the source of skill attainment, the question "Where did you learn about the skill?" was asked the graduates. To improve Eastern's Forest Timber Management program, the instructors must know how effective their class presentations are. Table VIII is a summary of where the graduates think they learned the skill. The most notable percentage indicated that 95 per cent of the forest mensuration skill was learned at Eastern Oklahoma State College with the remaining five per cent being learned in an apprentice situation.

TABLE VIII

SUMMARY OF WHERE THE GRADUATE LEARNED THE SKILL

Skill Areas	High School	Value in Percentages			Total	
		EOSC Forest Technician Program	Apprentice	On Regular Job		Elsewhere
Business		70.0	5.0	20.0	5.0	100.0
Communications	15.0	65.0		10.0	10.0	100.0
Dendrology		84.2	5.3	10.5		100.0
Forest Conservation		84.2		10.5	5.3	100.0
Forest Measurements		95.0	5.0			100.0
Forest Products		90.0		10.0		100.0
Forest Protection		85.0	5.0	10.0		100.0
Mathematics	10.5	78.9		5.3	5.3	100.0
Personnel		60.0	5.0	35.0		100.0
Silviculture	5.3	73.7	5.3	15.7		100.0
Surveying		85.0		15.0		100.0
Mean \bar{X}	2.8	79.2	2.8	12.9	2.3	100.0

The lowest percentage for a skill learned at Eastern was 60 per cent for personnel management while 35 per cent was learned on the job, and five per cent was learned in an apprenticeship. A mean of 79.2 per cent of the 11 skill areas was thought to be learned by the graduates of Eastern's forest timber management program

The importance of the forest conservation skill was ranked low by both sets of respondents (Table V) and was of low rank in the graduates' ability to perform this skill (Table VI). Table VIII indicates that 84.2 per cent of this skill was learned through instruction at Eastern Oklahoma State College. This indicates that the instruction is not applicable to actual practice on the job.

Comparison of Graduates to Other

Forest Technicians

Table IX consists of a summary of the employers' comparisons of graduates with other entry level forest technicians who were trained at an institution other than Eastern Oklahoma State College. This comparison is of importance in the placement of Eastern's Forest Timber Management Technician graduates. The responding employers indicated that 32.7 per cent of Eastern's graduates ranked in the upper quartile with other forest technicians, 34.5 per cent in the second quartile, 28.3 per cent in the third quartile, and 4.5 per cent ranked in the lower quartile. The majority (67.2 per cent) of Eastern's graduates ranked in the upper 50 per cent of forest technicians of whom the employers were acquainted. Graduates were more deficient (20 per cent or less in the upper quartile) in surveying (20 per cent), mathematics (20 per cent), forest conservation (20 per cent),

TABLE IX

SUMMARY OF THE EMPLOYERS' COMPARISON OF GRADUATES WITH OTHER ENTRY LEVEL
FOREST TECHNICIANS WHO WERE TRAINED ELSEWHERE

Skill Areas	Quartiles				Total
	<u>Value in Percentages</u>				
	Quartile 1	Quartile 2	Quartile 3	Quartile 3	
Business	10.0	50.0	30.0	10.0	100.0
Communications	40.0	30.0	20.0	10.0	100.0
Dendrology	40.0	40.0	20.0		100.0
Forest Conservation	20.0	20.0	50.0	10.0	100.0
Forest Measurements	40.0	40.0	20.0		100.0
Forest Products	40.0	40.0	20.0		100.0
Forest Protection	50.0	10.0	40.0		100.0
Mathematics	20.0	30.0	40.0	10.0	100.0
Personnel Management	50.0	30.0	10.0	10.0	100.0
Silviculture	30.0	40.0	30.0		100.0
Surveying	20.0	50.0	30.0		100.0
Mean \bar{X}	32.7	34.5	28.3	4.5	100.0

and business (10 per cent) as compared with other forest technicians. Eastern Oklahoma State College graduates were strongest (40 per cent or more in the upper quartile) in forest measurements, forest products (40 per cent), dendrology (40 per cent), communications (40 per cent), forest protection (50 per cent), and personnel management (50 per cent) as compared with other forest technicians.

The forest protection, forest conservation and mathematics skills need closer examination. The graduates may have received instruction which was not applicable to their employment and could not be associated with specific tasks as indicated in Table IX.

CHAPTER V

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

Introduction

The Forest Timber Management program at Eastern Oklahoma State College was analyzed in this study to determine strengths and improvement needs in the program.

Of the 55 graduates, 24 responded to their questionnaire and 12 of their employers responded to their questionnaire. Eleven major skill areas were used to evaluate the program. These 11 major skill areas were determined by courses and terms with which the respondents would be familiar. These skill areas were reviewed by Eastern's forestry staff and by Dr. David W. Robinson of Oklahoma State University as to their relevance to the study.

The graduate respondents were asked to determine the importance of the 11 skills to their present job and to state if they received sufficient instruction in the 11 skills. The employers were asked to determine the importance of the 11 skill areas to the graduates' present job, to evaluate the graduates' ability in the 11 skill areas, to compare the graduate with other entry level forest technicians who were trained elsewhere, and to state whether the graduate should have received more instruction in the 11 skill areas. Background data collected included employment status, job titles, other jobs held, and education level attained by the graduates.

Limitations

The findings of this study must be interpreted with knowledge of the limitations: the number of graduate and employer respondents was not adequate to show sufficient significant relationships in this study. The response rate from the graduates was 41.8 per cent and the rate of response from employers was 23.6 per cent of the total population of 55. A greater number of respondents would have increased the validity of this study.

Through various means it was determined that there were no real differences between the respondents and the non-respondents. As a result of this study, it is believed that the results have allowed a generalized value to the evaluation of the Eastern Oklahoma State College Forest Timber Management program.

Summary of Findings

An important finding was the ranking of the skill areas by responses by graduates and employers. When the skill areas were reviewed, prior to the final writing of the survey instrument, they were ranked in importance as perceived by the professional foresters reviewing the instruments. As shown in Table V, this was not the ranking when compared with the survey instrument in Appendix A. "Personnel Management" and "Communications" were ranked one and two by the respondents and five and nine respectively by the professional educators in order of importance. An inference which could be drawn is that these skill areas are perhaps more fully understood in a

natural setting rather than by a classroom presentation. A different approach to presenting information to students might increase their understanding of the course material if it was presented in a field situation.

The graduates' ability to perform the 11 skill areas was perceived by the employer respondents as being generally above average. The graduates perceived that they received sufficient instruction in dendrology and somewhat less than sufficient instruction in the remaining 10 skill areas. The employers, as a group, did not perceive that sufficient instruction was received in any skill area. The employers perceived that the skill area where the greatest need for improvement occurred was in "Communications."

The graduates indicated that they learned 79.2 per cent of their present Forest Technology skills at Eastern Oklahoma State College, 12.9 per cent on-the-job, 2.8 per cent in an apprenticeship, 2.8 per cent in high school, and 2.3 per cent of the skills were developed elsewhere. When the employers were asked to compare entry level forest technicians receiving their training other than at Eastern Oklahoma State College, they indicated that 80 per cent of the graduates were in the upper 50 per cent of their technicians on knowledge of "Personnel Management" and 70 per cent of the EOSC graduates were in the upper 50 per cent of their technicians on knowledge of "Communications." Although they indicated a weakness in these skill areas, the graduates of EOSC were judged to be above average in their ability to perform these skills.

In the graduate population 12.5 per cent of the graduates received a second Associate degree in Park Management. These were the only

graduates indicating an education level completed other than the Associate degree in Forest Timber Management. The majority of the graduates were satisfied with the training received in the Forest Timber Management program.

The study revealed that 87.4 per cent of the graduates were employed in forest management and that 29.2 per cent of the graduates have changed jobs within the forest industry since graduation.

Conclusions

Graduates and employers have expressed deficiencies in the communications and personnel skill areas. The EOSC graduates' ability to perform the skills compared with forest technicians receiving their education elsewhere was ranked above average by the employers. This indicates that other forest technician graduates have difficulties in these skill areas and may not be unique to Eastern's graduates. Because of the importance of communications and personnel management skills to the graduates' ability to perform on the job, more emphasis should be placed on these areas in the program. Due to the nature of these skills, more emphasis can be placed on these skills in several different courses in the forestry curriculum.

Both graduates and employers need to have a similar appreciation of each of the 11 skill areas for effective learning and utilization.

Recommendations

Based on the findings of this research, the author suggests the following recommendations:

- (1) That personnel management and communication skills be more effectively taught at Eastern Oklahoma State College.
- (2) That further studies of a similar nature be conducted periodically by the Eastern Oklahoma State College Forestry Department to evaluate the program's effectiveness as related to the graduates' ability to perform on the job.
- (3) That further studies of a similar nature include forestry technician educators in an area such as the Southern region of the United States.

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APPENDIXES

APPENDIX A
QUESTIONNAIRES

FOREST TECHNOLOGY CURRICULUM QUESTIONNAIRE

Form A - Eastern Oklahoma State College

Forest Technician Graduate

All information provided will be held in strict confidence.

Name _____

Current Mailing Address _____

Name of Company _____

Address of Company _____

Office Telephone Number _____

If not employed in forestry, please circle the response below that best describes your current employment status:

1. Continuing education
2. Military service
3. Unemployed
4. Employed part-time in area other than forestry
5. Employed full-time in area other than forestry
6. Seeking employment

For individuals in each of these categories, disregard having your immediate supervisor complete Form B.

If employed, what is your current job title? _____

Have you held other jobs since graduation? Yes _____ No _____

If yes, give job title(s) _____

Have you completed additional college work since graduation? Yes _____

No _____. If yes, circle the response that best described your additional college work.

1. Associate degree in another area
2. Bachelor of Science degree in Forestry
3. Bachelor degree in another area
4. Masters degree in any area
5. Other. Specify _____

For each of the skill areas listed on the following pages, respond to the statements underlined by circling the number in the blocks below the question which best reflects your opinion relative to the skill areas listed on the left of the survey form.

Form A - Questionnaire

SKILL AREAS	<u>How important is the skill to your present job?</u>					<u>How would you evaluate yourself on the skill?</u>					<u>Where did you learn about the skill?</u>					<u>Did you receive sufficient instruction in the skill area?</u>		
	1.	2.	3.	4.	5.	1.	2.	3.	4.	5.	1.	2.	3.	4.	5.	1.	2.	3.
Forest Measurements: application and understanding of concepts, tools, and methods in all phases of the mensuration task.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3
Forest Products: understanding of harvesting methods, product classification, and raw material use.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3
Forest Protection: understanding of fire, insects and diseases, and ability to fit into the suppression and detection system.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3
Silviculture: ability to make site evaluations, cutting, prescriptions, timber stand improvement decisions, and timber marking skill.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3
Personnel: adaptability to problems of human relations and training. Use of time, employer loyalty, and morals.	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3
Dendrology: ability to identify trees by more than one criterion (leaves, bark, location, branch habit, etc.).	1	2	3	4	5	1	2	3	4	5	1	2	3	4	5	1	2	3

Form A - Questionnaire (Continued)

SKILL AREAS	<u>How important is the skill to your present job?</u>	<u>How would you evaluate yourself on the skill?</u>	<u>Where did you learn about the skill?</u>	<u>Did you receive sufficient instruction in the skill area?</u>
	1. Extremely important 2. Very important 3. Somewhat important 4. Undecided 5. Not important	1. Outstanding 2. Generally above average 3. Average 4. Generally below average 5. Need much improvement	1. High school 2. EOSC Forest Technician Program 3. Apprentice 4. On regular job 5. Elsewhere	1. Yes 2. Undecided 3. No
Surveying: construction and reading of topographic maps, ability to establish new and old lines, use of all surveying instruments.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3
Business: understanding of and ability to deal with accounting systems, inventory systems, and records systems.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3
Communications: includes ability to transmit ideas, concepts, and information by writing, speaking, listening, and reading.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3
Mathematics: use of algebra and trigonometric concepts in forestry applications including ability to read and construct graphs and charts.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3
Forest conservation: planned management practices for continuous yield of resources.	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3

Please make additional comments regarding the Forest Timber Management Program.

FOREST TECHNOLOGY CURRICULUM QUESTIONNAIRE

Form B - Employers of Eastern Oklahoma

State College Forest Technician

Graduates

All information provided will be held in strict confidence. A self-addressed envelope is attached so the form can be sent to my office directly.

Company or Firm _____

Address of Company or Firm _____

Supervisors Department _____

Name of Rating Supervisor _____

Name of Employee _____

For each of the skill areas listed below, respond to the statements underlined by circling the number in the blocks below the question which best reflects your opinion relative to the skill areas listed on the left of the survey form.

Form B - Questionnaire

SKILL AREAS	<u>How important is the skill to the employees' present job?</u>	<u>How would you evaluate the employee on the skill?</u>	<u>How does the employee compare with other entry level Forest Technicians who were trained elsewhere?</u>	<u>Do you feel the employee should have received more instruction in this skill area?</u>
	1. Extremely important 2. Very important 3. Somewhat important 4. Undecided 5. Not important	1. Outstanding 2. Generally above average 3. Average 4. Generally below average 5. Needs much improvement	1. Falls in the upper 25% 2. Falls in the upper middle 25% 3. Falls in the lower middle 25% 4. Falls in the lower 25%	1. Yes 2. No
Forest Measurements: application and understanding of concepts, tools, and methods in all phases of the mensuration task.	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2
Forest Products: understanding of harvesting methods, product classification, and raw material use.	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2
Forest Protection: understanding of fire, insects and diseases, and ability to fit into the suppression and detection system	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2
Silviculture: ability to make site evaluations, cutting, prescriptions, timber stand improvement decisions, and timber marking skill.	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2
Personnel: adaptability to problems of human relations and training. Use of time, employer loyalty, and morals.	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2

Form B - Questionnaire (Continued)

SKILL AREAS	<u>How important is the skill to the employees' present job?</u>	<u>How would you evaluate the employee on the skill?</u>	<u>How does the employee compare with other entry level Forest Technicians who were trained elsewhere?</u>	<u>Do you feel the employee should have received more instruction in this skill area?</u>
	1. Extremely important 2. Very important 3. Somewhat important 4. Undecided 5. Not important	1. Outstanding 2. Generally above average 3. Average 4. Generally below average 5. Needs much improvement	1. Falls in the upper 25% 2. Falls in the upper middle 25% 3. Falls in the lower middle 25% 4. Falls in the lower 25%	1. Yes 2. No
Dendrology: ability to identify trees by more than one criterion (leaves, bark, location, branch, etc.)	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2
Surveying: construction and reading of topographic maps, ability to establish new and old lines, use of all surveying instruments.	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2
Business: understanding of and ability to deal with accounting systems, inventory systems, and records systems.	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2
Communications: includes ability to transmit ideas, concepts and information by writing, speaking, listening, and reading.	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2

Form B - Questionnaire (Continued)

SKILL AREAS	<u>How important is the skill to the employees' present job?</u>	<u>How would you evaluate the employee on the skill?</u>	<u>How does the employee compare with other entry level Forest Technicians who were trained elsewhere?</u>	<u>Do you feel the employee should have received more instruction in this skill area?</u>
	1. Extremely important 2. Very important 3. Somewhat important 4. Undecided 5. Not important	1. Outstanding 2. Generally above average 3. Average 4. Generally below average 5. Need much improvement	1. Falls in the upper 25% 2. Falls in the upper middle 25% 3. Falls in the lower middle 25% 4. Falls in the lower 25%	1. Yes 2. No
Mathematics: use of algebra and trigonometric concepts in forestry applications including ability to read and construct graphs and charts.	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2
Forest Conservation: planned management practices for continuous yield of resources.	1 2 3 4 5	1 2 3 4 5	1 2 3 4	1 2

Please make additional comments regarding the Forest Timber Management Program.

APPENDIX B

TRANSMITTAL AND FOLLOW-UP LETTERS

TO STUDY POPULATION



EASTERN OKLAHOMA STATE COLLEGE

WILBURTON, OKLAHOMA 74578

(918) 465-2361

We at Eastern Oklahoma State College are conducting a study of our Forest Technology-Timber Management graduates and we need your help. This study is being conducted for the purpose of identifying the areas of strength as well as the areas of weakness of our Forest Technology-Timber Management Program.

We feel the best method of determining any changes needed in our Forestry curriculum is to survey our graduates and their employers. We are sincerely concerned about the appropriateness of our program and we need your evaluation of the graduate's ability to perform on the job.

Please find enclosed a questionnaire marked Form B which we hope you will complete and return directly to us. Completion of the form should require no more than ten minutes of your time. A self-addressed stamped envelope is attached for your convenience

Please be assured that your responses will remain strictly confidential and no individual or business will be named in the report of the study.

With your help we will be able to identify both strengths and weaknesses in our Forestry Program.

Sincerely,

Bill Albright, Chairman
Forestry Department
Eastern Oklahoma State College

Enclosure



EASTERN OKLAHOMA STATE COLLEGE

WILBURTON, OKLAHOMA 74578

(918) 465-2361

We are conducting a study of the Forest Technology-Timber Management Curriculum at Eastern Oklahoma State College, Wilburton, Oklahoma and we need your help. This study is being conducted for the purpose of identifying areas of strength and areas of weakness.

We feel the best method of determining any needed changes in our curriculum is to survey the graduates of this program and their employers. We are sincerely concerned with your evaluation of the Forest Technology Program you completed at Eastern.

Please find enclosed two different questionnaires which we need for you and your supervisor to complete and return. Please take about ten minutes of your time and complete the questionnaire marked Form A. Then ask your immediate supervisor to complete the questionnaire marked Form B which should require no more than ten minutes of his time. This information is needed to help evaluate our Forest Technology Program.

Please be assured that you and your employer's responses will remain strictly confidential and no individual or business will be named in the report of the study.

Sincerely,

Bill Albright, Chairman
Forestry Department
Eastern Oklahoma State College

Enclosures



EASTERN OKLAHOMA STATE COLLEGE

WILBURTON, OKLAHOMA 74578

(918) 465-2361

A short time ago, you were mailed a packet of materials which you were asked to complete and return. We have not yet received your response and we are sending you another packet in the event the packet was misplaced in the mail.

Would you please take time now to respond to the enclosed questionnaire and return it to us in the enclosed envelope? It should take less than ten minutes of your time.

We sincerely appreciate your interest in the Forest Timber Management Program at Eastern Oklahoma State College.

Sincerely,

Bill Albright, Chairman
Forestry Department
Eastern Oklahoma State College

P.S. If you have already forwarded your response, please disregard this letter.

APPENDIX C

COMMENTS FROM STUDY RESPONDENTS

COMMENTS FROM GRADUATES

"You need more training (field experience) in marking timber and surveying."

"As a forest worker, there is sufficient training, if you plan on working for the U. S. Forest Service. I am receiving training to work into the marking crew, and I am working with the Land Line Surveying Crew as a chairman."

"I encourage all new students to apply themselves to surveying, dendrology, forest measurements, raw materials, fire, and timber marking."

"The one thing I feel I needed more understanding of was forest soils."

"From the actions of some of the graduates of later classes than mine: I feel from my supervision over them that they certainly needed more training in the mensuration field. As a technician, we're required to work and use the equipment. The better we use them and with more accuracy, the easier it will be on us and the better job ratings the employee will get, and move up."

"There was a need in my class for more sincerity in the personnel classes I attended. I personally didn't get much help from this class."

"The technician family from Eastern Oklahoma State College seems to be growing and doing very well."

"At present, I am in a training position with a target level of GS-9. I attribute this directly to the degree I received at Eastern Oklahoma State College."

"The training I received in the areas of business accounting, personnel management, and business communications have been extremely helpful. I believe that anyone completing the forest management courses offered at Eastern Oklahoma State College can successfully compete in any business field he enters. The courses cover a wide variety of subjects and give the student a confidence and knowledge to take on any challenging field he enters."

"I feel that my greatest areas for improvement are: personnel management, business methods, and communication skills. The instructions I received on these subjects were very good, although if the subjects could have been somewhat broader, they would have been of greater benefit."

"I feel like if a person will learn to use the instruments you have for them, and learn the surveying techniques, and can communicate with people, then he or she has a good chance of getting a good job in the forestry profession."

"I think that an alternate program on raw materials should be offered. At least more emphasis on this phase of your program. Stress to the students that there are many jobs in this area also."

"I feel the basic skills I received at Eastern Oklahoma State College were good. I also feel most were sufficiently covered to give me a good base on which to start and learn in my job."

"I think communications and personnel management are most important, since a foreman must get his work done through his people. Mathematics is also very important, but should be tuned to forestry uses and not strictly to algebra and trigonometry. Although not real important for most foreman, forest conservation is becoming increasingly more important."

"The school needs some type of placement service for its graduates."

"There are some areas that I feel if you would go into more, that the graduates would be better qualified. One field is forest insects. I have found that it is of extreme importance to be able to identify nearly all the southern insects. Another field is forest conservation. This is a major field that I feel you need to be concerned with in depth."

"It seems to me that more practical application should be stressed; let students actually do more, especially in protection and silviculture."

COMMENTS FROM EMPLOYERS OF GRADUATES

Only one comment was received from an employer of an Eastern Oklahoma State College graduate:

"Management program seems adequate."

VITA

Billy Joe Albright

Candidate for the Degree of

Master of Science

Thesis: AN ASSESSMENT OF THE FOREST TIMBER MANAGEMENT TECHNICIAN
PROGRAM AT EASTERN OKLAHOMA STATE COLLEGE

Major Field: Technical Education

Biographical:

Personal Data: Born in Sulpher, Oklahoma, August 12, 1947, the
son of Loren and Helen Albright.

Education: Graduated from Red Oak High School, Red Oak, Oklahoma,
in May, 1965; attended Eastern Oklahoma State College at
Wilburton, Oklahoma from 1965-1967; attended Oklahoma State
University at Stillwater, Oklahoma from 1967-1970; received
a Bachelor of Science degree in Forest Management in
January, 1970; engaged in graduate study at Oklahoma State
University, Stillwater, Oklahoma in 1974-76; completed
requirements for the Master of Science degree, with a major
in Technical Education at Oklahoma State University in
December, 1976.

Professional Experience: Forestry Specialist, The Kerr Foundation,
Inc., Poteau, Oklahoma, 1970-73; Forestry instructor, Eastern
Oklahoma State College, Wilburton, Oklahoma, 1973 to present.

Professional Organizations: Society of American Foresters,
Oklahoma Forestry Association, Oklahoma Technical Society,
Oklahoma Education Association, National Education Associ-
ation, Higher Education Alumni Council, Oklahoma Jaycees,
State of Oklahoma Licensed Professional Forester, License
No. 49.