

VARIABLES RELATED TO THE  
DIFFUSION OF SAFETY EDUCATION INTO  
ALABAMA AGRIBUSINESS EDUCATION PROGRAMS

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The nature of the many subjects which are taught and the kinds of machinery and tools used in the instructional program place vocational agriculture students and teachers in a school environment where there is inherent danger. Power driven machinery, equipment with movable parts, and sharp tools are all potential sources of serious cuts, dismemberment, and loss of sight. This situation is compounded by the fact that the students generally range in age from 14 to 18 years, with the greater percentage being males. According to the National Safety Council (1973), accidents claim more lives of youth between 15 and 24 years of age than all other causes combined. Four out of five accident victims in this age group are males. Therefore, it is necessary that approved safety practices be adopted by agribusiness teachers to minimize potential physical dangers to students.

An educational system must adapt continuously to the new needs and demands of society. For the most part educational change is slow. According to Ross (1958) the adoption period for some educational innovations may take as long as 50 years. It is frightening to think that the diffusion of safety practices into agribusiness education programs may be this slow. It is common practice for manufacturers of equipment used in school laboratories to prescribe safety practices to be followed. Laws have been made to prescribe safety practices for educational settings. However, many situations have been observed by the authors and reported by others where such safety practices were not being used. Therefore, a study of the diffusion of safety education was the focus of research recently completed at Iowa State University (Preyer, 1976). Safety education in agribusiness education programs was defined as approved practices in the safe operation and maintenance of the tools and equipment used in secondary school agricultural mechanics laboratories.

### *Purpose of the Study*

The purposes of this study were (1) to determine the degree of diffusion of safety education into the agribusiness program and (2) to relate selected teacher and situational variables to the diffusion of safety education. The teacher and situational variables studied included:

1. Teacher innovativeness.
2. Number of college credit hours earned by the teacher above the B.S. degree.
3. Number of college credit hours earned by the teacher above the B.S. degree in agricultural mechanics.
4. Age of the teacher.
5. Years of experience as a teacher of agribusiness.
6. Percent of time the teacher spent teaching agricultural mechanics.
7. Department annual maintenance budget.
8. Number of square feet of floor space in the agricultural mechanics laboratory.
9. Number of teachers in the agribusiness department.
10. Number of students enrolled in agribusiness education.
11. Number of students who had agricultural mechanics as an occupational objective.
12. Number of students using agricultural mechanics study guides.

### *Procedures*

Three instruments were constructed and used to obtain data for the study: (1) a teacher open-end questionnaire designed to gather information related to the agribusiness department and the teacher, (2) a diffusion scale, and (3) a teacher innovativeness scale.

The diffusion scale was developed to measure the degree of diffusion of safety education into the agribusiness education program. Safety practices were identified through a review of the literature and from the experiences of the researchers. Each statement described one safety practice. A panel of judges consisting of individuals knowledgeable of approved safety practices in agribusiness education assisted with the selection of practices to be included. The judges indicated the importance of each practice by rating it on a five-point scale. A practice of little or no importance was rated one and a practice of utmost importance was rated five. The fifty items selected for the diffusion scale included the ones with the greatest agreement among the judges. Practices receiving a

mean rating of one or less were deleted. Teachers participating in the research marked "yes" beside the practices they were using and "no" beside the practices they were not using. Each "yes" response received the mean rating of the judges for that item. In this manner, a total score representing the extent of diffusion of safety education in the agribusiness program was derived for each department.

The innovativeness scale was designed to measure teacher innovativeness when adopting new innovations. According to Rogers (1962), an innovativeness scale provides a means for measuring the degree to which an individual is relatively early to adopt new ideas and practices when compared to other members of the society. Rogers (1962) recommended that scales for measuring innovativeness should: (1) contain a minimum of fourteen items, (2) take into consideration the number of innovations adopted, (3) consider the relative time of adoption, (4) include items that most of the respondents could adopt, and (5) include a correction factor for specific items that do not apply to all situations.

A tentative list of innovations introduced into agribusiness education during the past few years was generated by the researchers. This list was then mailed to each of the Agribusiness District Supervisors in the State of Alabama with instructions to indicate whether or not the innovations were applicable for agribusiness education programs in the State and to give the year when each innovation was first available for teacher adoption. The innovations with most agreement among the supervisors were incorporated into the innovativeness scale.

The final innovativeness scale consisted of fourteen items with three alternative responses for each item: (1) the date the innovation was first adopted, (2) the innovation does not apply, or (3) the innovation has not been adopted but does apply. A procedure developed by Christiansen (1965) and used by Williams (1968) was used to determine the innovativeness score for each teacher.

Data were collected from a random sample of agribusiness teachers representing a population of 238 teachers in Alabama. The sample of teachers was 25 percent of the agribusiness teachers with four or more years of teaching experience. Data were collected through a questionnaire completed by the 60 agribusiness teachers during the State's annual Vocational Agribusiness Teacher's Conference in Birmingham, Alabama, in August, 1976. Stepwise regression which included the computation of a simple correlation matrix, the computation of partial and multiple correlation coefficients, and the formulation of a multiple regression equation were used to analyze the data.

## *Findings*

The findings of the study are summarized below:

1. A mean diffusion score of 124 was only 57 percent of the possible 217 points on the diffusion scale. This indicated that many of the safety practices studied were not used by agribusiness teachers.
2. There was no significant correlation between the 12 independent variables studied and diffusion of safety education into the agribusiness program. Therefore, the 12 personal and situational variables studied have not significantly effected the diffusion of safety education into agribusiness programs in Alabama.
3. The 12 variables studied accounted for only 15.68 percent of the variation in the diffusion of safety education into the agribusiness program. Therefore, variables not included in this study are responsible for most of the variation in the diffusion of safety education.
4. The department's annual maintenance budget accounted for more of the variation (3.76 percent) in diffusion of safety education than any other variable. Other variables studied that accounted for more than one percent variation each in diffusion of safety education were:
  - a. College credits above the B.S. degree.
  - b. College credits in agricultural mechanics above the B.S. degree.
  - c. Number of students using agricultural mechanics study guides.
  - d. Number of square feet of floor space in the agricultural mechanics laboratory.
5. The following variables accounted for less than one percent variation:
  - a. Number of teachers teaching in the department.
  - b. Number of students with occupational objectives in agricultural mechanics.
  - c. Percentage of time spent by the teacher teaching agricultural mechanics.
  - d. Number of years teaching experience.
  - e. Teacher innovativeness.
  - f. Number of students enrolled in agribusiness education.
  - g. Age of the teacher.

6. Based on the large standard error of estimate (35.35) and the small amount of variance accounted for (15.68 percent), the 12 independent variables are weak predictors of the diffusion of safety education into agribusiness education programs in Alabama

### *Recommendations*

On the basis of the findings of this study, the recommendations which appear to be pertinent are as follows:

1. The mean score of 124 was only 57 percent of the possible diffusion score. This indicates that many approved safety practices have not been adopted. Therefore, it is recommended that in-service education in agricultural mechanics safety be provided for agribusiness teachers in Alabama.
2. Further research is needed to identify the variables that stimulate and inhibit diffusion of safety education into the agribusiness education programs. One additional variable that could be considered in future research is the attitude of school administrators toward the diffusion of safety education.
3. In this study agribusiness teachers were recognized as diversified teachers of agriculture in the assessment of teacher innovativeness. Perhaps future studies of this nature should study teacher innovativeness from a specialized vocational agriculture teacher perspective, such as horticulture teachers or agricultural mechanics teachers.

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