

RECRUITING VOCATIONAL AGRICULTURE TEACHERS from industry - BOON OR BANE?

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The rapid expansion of Vocational Education during the last decade has helped contribute to a shortage of Vocational Agriculture teachers. To help relieve this shortage, people are being recruited from agricultural industries and business to teach Vocational Agriculture in many states. According to Doering (1975) there are presently 34 states with emergency certification programs which have provisions for certifying Vocational Agriculture teachers other than the traditional four-year college prepared teacher.

The basic plan is to select people to teach who have at least a high school degree and X number of years of experience in the particular skill being sought and then provide them with instruction in "how to teach" through a summer workshop or in some states through an in-service program as the school year progresses.

The practice of recruiting Vocational Agriculture teachers from industry has been a controversial topic in certain quarters of the Agricultural Education fraternity. There are those who claim:

1. the industry teachers are too job oriented and are not student oriented.
2. the industry teachers are not professional and damage the professional image of Vocational Agriculture teachers.
3. the industry teachers cannot effectively teach.

However, other factions claim:

1. X number of years of practical technical experience in industry is needed to be an effective teacher.
2. the university faculties who prepare Vocational Agriculture teachers are not geared up to producing specialty teachers such as agricultural mechanics and horticulturalist thus the only solution is to recruit teachers from industry.

If Vocational Agriculture is to continue to expand with quality programs and quality teachers, the issue of recruiting teachers from industry must be thoroughly examined to determine if industry teachers are a boon to the profession or a bane.

The Rationale For Recruiting Teachers From Industry

The basic rationale for recruiting teachers from industry is the fact that Trade and Industrial Education has been doing it for years. When the shortage of teachers in Vocational Agriculture became critical, state leaders in Vocational Education suggested to Vocational

Agriculture that it "look" at the programs other service areas use to prepare teachers. A very brief cursory "look" was all that was done before the conclusion was reached - if other vocational service areas used teachers from industry, so could Vocational Agriculture.

However, one question that was not raised was, "How do the teacher educators in other vocational service areas rate their industry teachers?"

At a national siminar of Trade and industrial Education in 1968. Fagan reported that over half of the T & I teacher educators were dissatisfied with the teacher education program as it existed. (The Center for Vocational-Technical Education, 1968).

Another question that was ignored was, "What research base is available to support the practice of recruiting teachers from industry?"

A thorough review of the literature reveals only five studies (Gross, 1974; Pfahl, 1971; Fagan, 1970; Musgrove, 1968; Popham, 1968) that are applicable to teachers recruited from industry. Even in the few studies available the findings are often unclear and contradictory.

Three of the studies use student perceptions as the criterion of teacher effectiveness with varying results. One researcher found non-degree industrial education instructors in Oregon community colleges were rated higher by students than teachers with a degree. The second researcher found professional business teachers were rated higher by community college students in Houston, Texas, than were teachers from industry. The third researcher concluded using student rating scales was very questionable after collecting teacher effectiveness ratings from 2,738 electronics students in seven states.

One researcher concentrated on peripheral criteria such as lesson planning and the use of instruction sheets to determine the effectiveness of the teacher preparation program for beginning T. & I. teachers. His conclusion was that college preparation tended to increase the level of teacher performance.

Only one study used the measure most advocated by the leaders in teacher evaluation - student achievement - and this yielded mixed results concerning the teacher and non teacher.

Because of the unclear findings and the fact that none of the studies dealt specifically with Vocational agriculture teachers, a research project was conducted in Ohio which sought to clarify whether or not Vocational Agriculture teachers recruited from industry were a boon or a bane to the Agriculture Education profession.

The Study to Assess the Teaching Effectiveness of Vocational Agriculture Teachers Recruited From Industry

The purpose of the study was to determine if there was a difference in the teaching effectiveness of entry-level Vocational Agriculture teachers recruited from industry and entry-level Vocational Agricult-

ure teachers who had been through the four year college preparation program. Three measures of teaching effectiveness were collected. The primary criterion used to determine teacher effectiveness was increase in knowledge and skills of students taught by each teacher. The secondary criterion used was a teacher educator's evaluation of each teacher. The tertiary measure of teaching effectiveness was a rating of each teacher by his students. In addition to these three measures, each teacher's teaching behavior was recorded on video tape during his teaching and then analyzed.

Methodology

Thirty-two entry-level teachers of Vocational Agriculture were selected for this study. Sixteen of the teachers were randomly selected from the 36 industry teachers attending the four-week teacher preparation workshop at Ohio State University during August of 1974. The other sixteen were college prepared teachers who were selected randomly from the 21 teachers who were completing the final phase of their teacher preparation program (student teaching) during the autumn quarter of 1974.

Each of the teachers was asked to teach a 30 minute mini-lesson to a group of high school Vocational Agriculture students. The lessons to be taught were randomly selected from a pool of lessons that had been developed for this study and were randomly assigned to the teachers. Each lesson had two or three specific behavioral objectives to be accomplished.

The high school Vocational Agriculture students to be taught were selected through a multistage sampling technique from 24 high schools within a 25 mile radius of the University. The students were brought into the University and were randomly divided into two classes. The teachers were randomly divided into two groups and were assigned to teach one of the classes. Each class had been given a pretest over the material that was to be taught to the other class in an effort to prevent pretest sensitization. After each teacher taught his lesson a posttest was immediately administered to the students he had taught. As each teacher taught his lesson he was videotaped.

The second phase of the study involved collecting teacher educators' evaluations of each teacher. The four-year college prepared teachers were observed teaching by a teacher educator two or three times during their quarter of student teaching. The industry teachers were visited twice a month by a teacher educator who observed them teaching. Using the Evaluation of Trainee Performance sheet each teacher was assigned a combination of three grades by a teacher educator.

The third part of the study involved a rating of each teacher by his students. The regular college prepared teachers were rated at the completion of student teaching in December of 1974 by the high school students they had taught while student teaching. The industry teachers were rated by their high school students during March of 1975.

The videotape recordings of each teacher were analyzed by an ex-

pert using the Observational System for Instructional Analysis who classified the teaching behaviors of each teacher.

Findings

In analyzing the data, each individual teacher was used as the unit of analysis since other types of data were collected on each teacher for correlational purposes.

To determine the effectiveness of each teacher on the teaching performance test, the mean posttest score of the students taught by each teacher was compared with the pretest score of the comparable group of students on the same topic. A one-tailed independent sample t-test was used for this analysis. If the difference in scores was significant at the .05 level, the teachers were classified as being more effective.

Seven of the 15 industry teachers who participated in the study had significant differences between the pretest and posttest scores. Eleven of the 13 college prepared teachers who participated in the study had significant differences between the pretest and posttest scores.

A comparison of the two groups reveals that 47 percent of the entry-level industry prepared teachers had significant differences between the pretest and posttest scores while 85 percent of the college prepared teachers had significant differences. Using the two numbers as proportions and performing a t-test for proportions (\bar{z} ratio described by Guildord and Fruchter, 1973) a value of 2.24 was obtained, which is significant at the .05 level using a two-tailed test. The college prepared teachers performed significantly higher on the teaching test.

The second criterion used to determine teaching effectiveness was the rating of teacher educators. The fifteen entry-level industry prepared teachers received a mean rating of 2.58 on a four point scale. The thirteen entry-level college prepared teachers received a mean rating of 3.03 on the four point scale. Using a t-test on this data a t-value of 2.79 was obtained which is significant at the .05 level using a two-tailed test. The college prepared teachers were rated significantly higher by the teacher educators.

The third measure of teacher effectiveness was a rating instrument completed by high school students. There was no significant difference in the all around teaching ability of the two groups of teachers as perceived by students. The industry teachers received a rating of 3.02 on a four point scale while the college prepared teachers received a rating of 2.93.

The analysis of teaching behaviors revealed interesting findings in using the Observational System for Instructional Analysis the behaviors exhibited by the teacher or students are recorded at five second intervals. There are 38 distinct behaviors that are recorded. By analyzing these teaching behaviors it is possible to determine if the teacher is student-oriented or subject-oriented. A ratio is calculated by dividing the time spent asking questions, having students respond, giving positive reinforcement, clarifying student responses, etc., by

the time spent lecturing and reproving students. This is known as the indirect/direct ratio. The higher the ratio, the more student centered the teacher.

A similar ratio, the modified indirect/direct ratio was also calculated. This is basically the same as the indirect/direct ratio except certain behaviors such as questioning and answering are left out and more emphasis is placed on positive reinforcement as opposed to negative reinforcement.

The largest positive correlations were between the teacher educators' ratings of each teacher and the teacher's indirect/direct ratio ($r = .81$), the indirect/direct ratio and how well the teacher performed on the teaching performance test ($r_{pbis} = .63$), and the teacher educators' ratings and the teaching performance test results ($r_{pbis} = .47$). Teachers who were indirective were rated the highest by teacher educators and had students who learned the most as evidenced by differences in the pretest and posttest scores on the teaching performance test. The students' ratings were not significantly correlated with any of the measures.

Discussion

Overall, the entry-level industry teachers were not as effective in teaching as the entry-level college prepared teachers. This does not say all industry prepared teachers are poor teachers. Several of the industry teachers were rated high by teacher educators and performed well on the teaching performance test. However, an equal number did not perform well on the teaching performance test and were not highly rated by the teacher educators. Because of this, it is recommended that more care be taken in the selection and screening of teachers recruited from industry.

In this time of Vocational Agriculture teacher shortage, it would not be wise to completely eliminate agricultural industry as a source of teachers, but it would be equally unwise to throw open the doors of the teaching profession to anyone who desires to enter the profession from industry without a careful screening process. It is essential that people recruited from industry be provided with in-depth instruction on how to teach before they step into the actual classroom. Furthermore, they should be required to demonstrate they can teach before being certified to teach. It is absurd to expect the four year college prepared teacher to go through a rigorous competency based program and then allow a teacher from industry to teach without ever demonstrating he can teach.

This study found industry prepared teachers to be subject centered in their teaching instead of student centered. This finding is consistent with the findings of Finch (1969) and Moss (1971). If the profession continues to recruit teachers from industry, action must be taken to alter the orientation of industry teachers from worker-oriented to student-oriented. This is especially critical when it is remembered that student centered teaching correlates highly with teaching effectiveness.

Conclusion

The practice of recruiting Vocational Agriculture teachers from industry needs careful consideration. At the present time there are problems with recruiting teachers from industry that must be considered. It appears industry teachers could be a boon to the profession if more care is taken in recruiting and screening prospective teachers. They also need to receive adequate pedagogical preparation and should be required to demonstrate they can indeed teach high school students effectively.

This researcher does realize that all the evidence is not in on the subject. Additional studies need to be conducted in which industry teachers are followed for several years to see which industry teachers (effective or non-effective) are leaving teaching and why. Teaching behaviors should be re-examined after a year or two of teaching. Follow up studies of students taught by both groups of teachers should be initiated.

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