DOCUMENT RESUME

ED 109 365 CE 004 149

AUTHOR Swartz, Ned K.; Vivekananthan, Pathe S.
TITLE Teacher Characteristics and Teaching Effectiveness of Vocational Industrial Education Instructors.
PUB DATE Apr 75
NOTE 14p.; A paper presented at the Annual Meeting of the American Educational Research Association (Washington, D. C., April 2, 1975)
AVAILABLE FROM Dr. Ned Swartz, School of Education, Old Dominion University, Norfolk, Virginia 23508

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS Administrator Role; Data Analysis; Educational Assessment; Educational Research; *Effective Teaching; Sampling; *Self Evaluation; Student Attitudes; Supervisors; Tables (Data); Teacher Certification; *Teacher Characteristics; Teacher Education; *Teacher Evaluation; Teacher Qualifications; *Trade and Industrial Teachers

ABSTRACT

Previous research studies revealed that teachers' background characteristics (mainly educational trade experience, and teaching experience levels) had different effects on teaching experience. Since an examination of teaching effectiveness should be considered in the teacher certification process, the study focused on determining the effects of trade experience, teaching experience, and formal professional education on the classroom teaching performance of vocational industrial education instructors. The ratings from five sources are simultaneously analyzed. Four hundred fifty-three trade and industrial education instructors were identified from the records of full-time trade teachers in Virginia. Using a stratified random sampling technique, 72 instructors were selected and evaluated by one school administrator, one school division supervisor, two teacher-peers, one self-rating, and one class of students taught by the instructor. Of the 432 rating packets mailed, 406 (94 percent) were returned. The results are presented in tabular form. The analysis of the data indicates that years of teaching experience were not emphasized by any group of raters, while trade experience was emphasized by administrators and teachers themselves. Trade experience and professional education did not contribute to teaching effectiveness from the point of view of students, teacher-peers, nor when all five rating groups were combined. (JB)

TEACHER CHARACTERISTICS AND TEACHING EFFECTIVENESS OF VOCATIONAL INDUSTRIAL EDUCATION INSTRUCTORS

Ned K. Swartz
Old Dominion University
Pathe S. Vivekananthan
Virginia Polytechnic Institute and State University

A paper presented at the American Educational Research Association Annual Convention, Washington, D. C., April 2, 1975. Requests for copies should be sent to Dr. Ned Swartz, School of Education, Old Dominion University, Norfolk, Virginia 23508.

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The increased need for skilled and semi-skilled workers has fostered expanded recruitment and training of instructors who are capable of imparting occupational skills and technical knowledge to youth and adults seeking employment in the industrial society. Because of this demand it has become necessary to recruit instructors from sources other than teacher training institutions - often directly from industry or from the military. Although these teachers are highly skilled in a particular trade area, they lack formal, pedagogical training, particularly those professional education courses often considered essential to satisfactory teaching effectiveness.

Numerous studies have been conducted in the area of teacher effectiveness. The results of the studies are very often contradictory. From these studies it is difficult to ascertain the effects of formal education upon classroom teaching performance. While Pfahl (1971) found a positive relationship between education and performance, Croom (1972) found no relationship and Musgrove (1968) found a negative relationship between the two variables. It is also difficult to conclude the effect of trade experience on teaching performance. Musgrove (1968) found that there was a positive relationship between occupational experience and teacher effectiveness when measured on a teacher self-rating. On the other hand, no relationship was found between these two variables when teacher performance was rated by supervisors or by students. As far as the teaching experience is concerned, Croom (1972) found that "outstanding" teachers have more years of teaching experience. The result was substantiated with a study by Musgrove (1968).

There has been a controversy with regard to the source of teacher evaluation. The argument over whether or not administrators and supervisors can effectively rate teaching performance is widespread. Hedlund (1954) and Johnson and Radebaugh (1969) found that administrators could effectively evaluate and identify superior teachers. Newton (1972) pointed out that supervisors' and aministrators' evaluations are often based upon the qualities of the teacher rather than upon the learning outcomes. When teacher peer ratings are used, Morsh and Wilder (1954) found that instructors tended to evaluate their colleagues upon the amount of subject matter which they possessed rather than upon their actual teaching effectiveness. While Bolton (1973) favored self-evaluation because "threat" is removed, Turner (1971) found that teachers generally rate themselves lower than either superiors or students. Arguments both for and against the use of student ratings are in abundance. For example, Brickman (1966) opposed student evaluation while Guthrie (1954) supported the use of ratings.

In summary, the previous research studies showed that teachers' background characteristics, namely educational level, trade experience level and teaching experience level had different effects on teaching experience. The evaluators, depending upon the position they held, put different emphases on teaching effectiveness. A main purpose of the present study was to determine the effects of trade experience, teaching experience, and formal professional education on the classroom teaching performance of vocational industrial education instructors, when the ratings from five sources namely a) school administrator (director, principal, assistant director, or assistant principal), b) one supervisor (local school division director or supervisor of vocational education, general supervisor, or secondary supervisor), c) teacher-peer, d) one self-rating, and e) students, are simultaneously analyzed.

METHOD

Instruments: Four instruments were developed, one instrument to be used by administrators (Group 1) and supervisors (Group 2), one by teacher-peers (Group 3), one by teachers themselves (Group 4), and the fourth by students (Group 5). A committee of state and national experts in the field of vocational education provided assistance in constructing the instruments. The instruments used by the first groups contained seventeen items and the instruments used by the students contained sixteen items. Each item was rated 1 to 5 on the Likert type scale. A pilot study was conducted to determine test - retest reliability of the instruments. The correlation coefficients are given in Table 1.

Subjects

A 2 x 2 x 2 design was used in the study. This design represented two levels (low and high) of trade experience, two levels (low and high) of teaching experience, and two levels (low and high) of semester hours of professional education. Low trade experience and low teaching experience was operationally defined as 0-5 years, while high trade experience and high teaching experience was defined as 6 or more years. Low professional education was established as 0-12 semester hours and high professional education was set at 13 or more semester hours.

A total of 453 trade and industrial education instructors were identified from among the records of full-time trade teachers in Virginia. Using a stratified random sampling technique, 72 instructors (nine in each cell of the design) were selected. Each instructor was evaluated by one school administrator (Group 1), one school division supervisor (Group 2), two teacher-peers (Group 3), one self-rating (Group 4), and by one class of students taught by the instructor (Group 5). Ratings were obtained from all five groups on 62 instructors. Of the 432 rating packets mailed, 406 (94%) were returned and used in the data analyses.

Analysis

A mean total score of each group of raters was computed for each instructor. Each instructor then had five measures of his classroom teaching performance as received from (1) a school administrator, (2) a supervisor, (3) teacher-peers, (4) a self-rating and (5) students.

Data from each of the five groups were analyzed using univariate analysis of variance (ANOVA). Data from all five sources were simultaneously analyzed using multivariate analysis of variance (MANOVA).

RESULTS

The means and standard deviations of groups of raters by teachers' characteristics are given in Table 2.

Analysis of variance (ANOVA) was used to assess the effects of trade experience (T), teaching experience (E), and professional education (H) on classroom teaching performance, when rated by individual groups of raters.

A significance of level of .05 ($\alpha = .05$) was selected *a priori* to test the null hypotheses of equal mean performance ratings between teacher characteristics. Table 3 presents the results of ANOVA of administrators' ratings.

The F value of 5.678 for trade experience was significant ($\alpha = .05$). Therefore the null hypothesis of no difference in the mean ratings between those instructors who have high levels of trade experience was rejected. The findings indicated that school administrators rate differently those instructors who have low trade experience and those instructors who have high trade experience.

Table 4 presents the results of ANOVA to test differences in the mean performance ratings given by supervisors.

When rated by supervisors, the interaction effects of trade experience (T) and professional education (H) is significant at the .05 level. Table 5 presents the results of ANOVA to test differences in the mean performance ratings of teacher-peers.

When rated by teacher-peers, the differences in the mean performance ratings of vocational industrial education instructors were not statistically significant for any source ($\alpha = .05$).

Table 6 presents the results of ANOVA to test the differences in the mean performance ratings of vocational industrial education instructors using a self-rating.

The differences in the mean performance ratings for those vocational industrial education instructors who have low trade experience and those instructors who have high trade experience are statistically significant when rated by instructors on a self-rating at the .05 level.

In addition, the differences in mean performance ratings for those instructors who have a low level of professional education and those who have a high level of professional education are statistically significant when rated by instructors on a self-rating instrument at the .05 level.

Differences in the mean performance ratings assigned by students were not statistically significant at the .05 level. The analysis of variance for students is presented in Table 7.

When the ratings from the five groups were analyzed simultaneously, the results of MANOVA showed that none of the effects were significant. MANOVA indicated that when the total profile of teaching effectiveness was obtained from all sources, there were no significant differences among the instructors. Table 8 shows the results of MANOVA.

IMPLICATIONS

The results of this study indicated that years of teaching experience was not emphasized by any group of raters. The variable which had the greater effect on the ratings given by the five groups was trade experience, as expressed by administrators and teachers themselves. Professional education was emphasized by teachers on a self-rating. Students failed to emphasize any one particular variable. Most of the students might not have been familiar with the qualifications of trade instructors, consequently, their evaluations were most likely based on "true" teaching effectiveness. As the results indicate, the background characteristics of instructors did not make a difference in the ratings given by students. Teacher-peer ratings also indicated that the variables of trade experience, teaching experience and professional education do not significantly influence the ratings of fellow teachers. Multivariate analyses further substantiated this observation.

Teacher certification requirements for vocational industrial education instructors requires both trade experience and professional education. This study shows that trade experience and professional education do not contribute to teaching effectiveness from the point of view of students, teacher-peers, and when all five rating groups were combined. This finding should be taken into consideration in the teacher certification process of vocational industrial education instructors.

Table 1

Pearson Product Moment Correlation Coefficients for Reliability of Rating Instruments

Type of Form	Number of Raters	Reliability
Administrator*	n-10	r=.925
Supervisor*	n=10	r=.932
Teacher-Peer	n=11	r=.828
Self-Rating	n=11	r=.919
Student	n=60	r=.701

*Same form

Table 2

Means and Standard Deviations for Groups of Raters on Trade Experience, Teaching Experience, and Professional Education

Variable		Number of Observations	School Administrators		Supervisors		Teacher Peers		Self-Rating		Students	
			Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Trade Experience (T)	Low	n=31	3.82	.538	3.88	.529	3.92	.592	3.76	.404	4.18	.351
	High	n=31	4.13	.498	4.08	.567	4.12	.437	4.07	.523	4.27	.268
Teaching Experience (E)	Low	n=31	3.97	.495	3.95	.560	4.07	.611	3.89	.453	4.30	.260
	High	n=31	3.97	.585	4.01	.554	3.97	.430	3.94	.526	4.15	.346
Total Hours of Education (H)	Low	n=30	4.04	.520	4.08	.550	4.00	.521	3.78	.464	4.24	.290
	High	n=32	3.91	.554	3.89	.548	4.03	.539	4.04	.484	4.21	.337

Table 3

Analysis of Variance of Ratings by Administrators

Source	df	MS	F
T	1	1.519	5.678*
E	1	.002	.008
H	1	.259	.968
TE	1	.232	.866
TH	1	.255	.952
EH	1	.276	1.030
TEH	1	.646	2.416
ERROR	54	.267	
TOTAL	61		

*Significant at .05 level

Table 4

Analysis of Variance of Ratings by Supervisors

Source	df	MS	F
T	1	.615	2.144
E	1	.059	.205
H	1	.586	2.041
TE	1	.004	.013
TH	1	1.301	4.530*
EH	1	.585	2.039
TEH	1	.017	.060
ERROR	54	.287	
TOTAL	61		

*Significant at .05 level

Table 5

Analysis of Variance of Ratings by Teacher-Peers

Source	df	MS	F
T	1	.633	2.195
E	1	.146	.506
H	1	.008	.028
TE	1	.019	.065
TH	1	.347	1.205
EH	1	.137	.476
TEH	1	.038	.132
ERROR	54	.288	
TOTAL	61		

Table 6

Analysis of Variance of Self-Ratings

Source	df	MS	F
T	1	1.411	6.500*
E	1	.065	.300
H	1	1.001	4.614*
TE	1	.082	.378
TH	1	.013	.060
EH	1	.216	.997
TEH	1	.010	.048
ERROR	54	.217	.048
TOTAL	61		

*Significant at .05 level

Table 7

Analysis of Variance of Ratings by Students

Source	df	MS	F
T	1	.125	1.349
E	1	.344	3.711
H	1	.010	.112
TE	1	.227	2.447
TH	1	.166	1.788
EH	1	.045	.483
TEH	1	.050	.537
ERROR	54	.093	.537
TOTAL	61		

Table 8

Multivariate Tests of Significance for Simultaneous Group Ratings

Source	df	F
T	(5,50)	2.215
E	(5,50)	1.172
H	(5,50)	1.506
TE	(5,50)	.896
TH	(5,50)	1.348
EH	(5,50)	.886
TEH	(5,50)	.810

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