DOCUMENT RESUME

ED 285 847 SP 029 263

AUTHOR Dewalt, Mark W.
TITLE Effects of Teacher Training.
PUB DATE Apr 87
NOTE 22p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, DC, April 20-24, 1987).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Research/Technical (143)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Beginning Teachers; Comparative Analysis; *Education Majors; Higher Education; Preservice Teacher Education; Program Effectiveness; Secondary School Teachers; *Teacher Background; *Teacher Effectiveness; Teacher Qualifications

ABSTRACT

A study investigated the relationship between teacher training and teacher competence. The Classroom Performance Record and the Class Context/Planning Record, two instruments constructed for use with the Virginia Beginning Teacher Assistance Program, were used to study 12 competencies of 230 beginning secondary school teachers. Teachers were observed three separate times by three different trained observers for the following competencies: academic learning time; accountability; clarity of structure; individual differences; evaluation; affective climate; learner self-concept; meaningfulness; planning; questioning skill; reinforcement; and close supervision. It was found that teachers who had teacher training scored significantly higher on the competencies of affective climate and individual differences than teachers who had no teacher training. However, teachers with no teacher training scored higher on the competencies of accountability and questioning skill. It is suggested that preservice training of potential teachers be modified to ensure that teachers get training in each of the competency areas. (CB)

Effects of Teacher Training

Mark W. Dewalt

Susquehanna University

A paper presented at the annual meeting of the American Educational Research Association, Washington, D.C., April 1987

Abstract

The purpose of this study was to investigate the relationship between teacher training and teacher competence. Measures of these competencies were obtained from actual classroom observation utilizing a low-inference instrument. The study utilized twelve dimensions of teacher competence. The sample of subjects was composed of 330 beginning teachers who were employed in 108 of Virginia's 139 school divisions and taught in grades 7 - 12. Teachers were observed three separate times by three different trained observers in the Fall of 1985.

Findings: Teachers who had had teacher training scored significantly higher on the competencies of Affective Climate and Individual Differences than teachers who had had no teacher training. However, teachers who had had no teacher training scored significantly higher on the competencies of Accountability and Questioning Skill. There were no significant differences between the two groups on the other eight competencies.

Effects of Teacher Training

Critics of the teaching profession continue to state that education majors spend too much time taking methodology courses and not enough time in subject matter courses. One of these critics, Philip Keisling (1984), states that professional education courses are not intellectually demanding and reports that teachers invariably say that the education courses they took were useless. Another critic, Harold Sugg (1986) of the Roanoke Times and World-News, finds it ludicrous that a retired physician, chemist or accountant would not be able to teach in many states until s/he took the required education courses. He argues that those who know their subject matter will figure out a way to get this information across to those who want to learn. However, many others including David Berliner (1984) argue against this notion. Berliner states that now is not the time to abolish teacher education courses because there now exists a scientific basis of research on classroom instruction. Many of these findings, which have occurred in the last ten years, show the relationship between teacher behavior and student learning. He feels that if pre-service teachers can learn how to use this knowledge in their teaching then both teacher competence and student achievement will improve.

Previous research on teacher competence has typically used either student achievement data or principals' rating of teachers as indicators of competence. Both of these types of data, how-

ever, are uncertain measures of teacher competence. The studies investigating the relationship between number of education courses and student outcomes (Popham, 1971) (Baussell & Moody, 1972) indicate little relationship between student achievement and number of hours the teacher had in professional education courses. More importantly, these studies are suspect because student outcomes are an uncertain measure of teacher competence. Medley (1982) contends that there are many intervening factors that affect pupil outcomes. Factors such as pupil and school characteristics are not under the control of the teacher.

Because teacher competence is a characteristic of the teacher and not the class, when one uses student outcomes to infer how competent a teacher is with one set of pupils, one assumes that the teacher would get a similar score with an equivalent group of pupils. Medley (1983), however, reports that a number of studies found this method to be unreliable. In these studies when a teacher's competence with one class was compared with his/her competence with another class the reliability between these scores was between .3 and .4. The second problem, a philosophical one, is that professionals cannot guarantee results, but they can be held accountable for using the most widely accepted available methods. Teachers, as professionals, must deal with problems that have no known solutions. They cannot suggest, as the repairman can, that one throw-out the problem. Thus, teacher competence should not be measured by student achievement gains (Medley, 1982).

Studies investigating the relationship between number of education courses and principals' ratings of teachers usually

found a higher rating for teachers who had more education courses. But rating scales may be notoriously unreliable. For example, research by Medley and Mitzel (1958) found that a teacher getting a low rating is just as likely to be as competent as a teacher getting a high rating. Furthermore, Brandt (1981) indicates that there are several problems with rating scales. The first is the ambiguity of the trait being measured. For example, what one rater considers generosity another does not. The second concerns the bias of the rater or the halo effect. If a rater is generally favorable toward a person, he/she will rate the individual high on all positive attributes. If, on the other hand, an evaluator is generally unfavorable toward a person, he/she will give the individual lower ratings. Another source of rater bias is the tendency of some people to be consistently too severe or too lenient in their judgments. Some might argue that most principals rate their own teachers consistently too high while rating teachers of other schools too low.

The argument for and against education courses will continue in the future unless accurate measures of the effects of education courses can be obtained. The question of interest in this study, Does teacher training relate to the competence of beginning teachers? was formulated for this reason. To avoid the problems associated with teacher evaluation using rating scales or student achievement, this study employed a low-inference instrument to measure professional knowledge of beginning secondary teachers.

Furthermore, this study employed actual classroom observa-

tions instead of a test because professional knowledge differs from subject matter knowledge in its content and accessibility to measurement. Professional knowledge is functional knowledge, knowledge that is manifested in teaching behavior. Unlike subject matter knowledge, it cannot be demonstrated on any known paper and pencil test. It can only be demonstrated in actual teaching performance in the classroom (Bureau of Educational Research [BER], 1984).

Definition of Terms

Three terms in this study have particular meanings. Beginning teacher means "a first-time applicant for initial certification in the state of Virginia."

Low inference instrument means "a structured observation instrument that contains a list of items, each of which defines a specific teaching behavior."

BTAP means the "Virginia Beginning Teacher Assistance Program."

Virginia Beginning Teacher Assistance Program

The Virginia Beginning Teacher Assistance Program or BTAP -- the program that served as the source of data for this study -- emerged in 1982. In February of that year, the Board of Education adopted a resolution concerning the certification of Virginia's teachers. There were four major elements to the Board's resolution. 1) Beginning July 1, 1985 first-time applicants for initial certification would be granted a two-year nonrenewable teaching certificate. 2) To gain the Collegiate Professional Certificate, a five-year renewable certificate, the teacher must demonstrate knowledge of the selected indicators of competence through satis-

factory performance in the classroom. 3) The goals of the program are to provide assurance that every teacher who obtains the Collegiate Professional Certificate has demonstrated the possession of selected competencies and provide assistance to beginning teachers in the development and use of these competencies. 4) Satisfactory demonstrations of the competencies in the program comprise only one of several requirements needed to obtain the Collegiate Professional Certificate. (Viginia State Department of Education, 1985)

One step in the development of the Virginia Beginning Teacher Assistance Program was to base the assessment and assistance components of the BTAP program upon the best available research and the current recommended practices of effective teacher behavior. Another step in the BTAP program was the development of a list of fourteen competencies that should be part of the professional knowledge of every beginning teacher in the state of Virginia.

The Competencies

This study focused on twelve of the competencies in the BTAP program. The twelve competencies are: (1) Academic Learning Time, (2) Accountability, (3) Clarity of Structure, (4) Individual Differences, (5) Evaluation, (6) Affective Climate, (7) Learner Self-concept, (8) Meaningfulness, (9) Planning, (10) Questioning Skill, (11) Reinforcement, and (12) Close Supervision. These competencies and their definitions are listed in Table 1.

Methodology

Measures of the twelve competencies were obtained from the Classroom Performance Record (CPR) and the Class Context/Planning

Record constructed for the Virginia Beginning Teacher Assistance Program.

The Classroom Performance Record contained over 100 teaching behaviors to be coded in a classroom situation. Observers trained by the State Department of Education coded the behaviors displayed by a teacher in three minute segments. Each teacher was observed for three class periods by three different observers. Seven CPR's were marked during each class period. Thus, a total of 21 CPR's were completed for each teacher.

The CPR is a sign system. A sign system consists of a list of specific classroom behaviors or events called signs; the observer indicates which of the signs he or she observes during a three minute period, but not how often. As such, the CPR is a low-inference measure of teacher observation; the observers do not judge behavior to be appropriate or inappropriate, but simply record the behaviors the teacher exhibits. Because of this the CPR does not have the problems associated with rating scales and other high-inference measures of teacher competence.

The CPR, which is opscan readable, consists of two sides. The front side is composed of seven sections, which the observer codes interactively. The reverse side of the instrument is composed of ten sections, which are coded retrospectively.

In addition to the CPR the BTAP Class Context/Planning Record is completed by the observer after each observation. The data for this form is obtained from an information form and lesson plan description completed by the teacher for the lesson to be observed. The lesson plan description asks teachers to

respond to nine questions such as: What are the objectives of this lesson? The observer then codes this information onto the BTAP Class Context/Planning Record, which is opscan readable. Demographic information on the beginning teachers was collected on the Beginning Teacher Information Form. This form was filled out by the teacher at the first beginning teacher orientation session held in September of 1985.

Sample

The sample of teachers selected for this study was composed of 230 beginning secondary teachers who were hired after July 1, 1985 and who began teaching at the beginning of the 1985-86 school year. These teachers were employed in 108 of Virginia's 139 school divisions and taught in grades 7 - 12. All academic subject areas taught in the secondary schools in Virginia were represented. Fifty-six percent of the teachers were female and 44% were males. Minority teachers comprised 11% of the sample.

Data Analysis

The scores for each of the twelve competencies were computed using a combination of items from the CPR and the Class Context/Planning Form developed by the State Department of Education. First scores were computed for each item. Next, each item score was standardized using the means and standard deviations of the teachers in this study to insure that each item has an equal weight in the final competency score. These standardized item scores were combined to produce a competency score. Finally, each of the competency scores were standardized so that each would have a mean of 0 and a standard deviation of 1.

The question of interest in this study was: Does teacher

training increase the competency of classroom teachers? To address this question, two groups of teachers were selected from the sample. Group 1 (N=57) was comprised of those teachers who had had neither course work in education nor student teaching. Group 2 (N=173) was comprised of those teachers who had had twelve or more hours of education courses plus student teaching. Demographic characteristics of these groups are presented in Table 2. These two groups were compared on the twelve competencies by a multivariate analysis of variance procedure. In the case of a signficant multivariate F ($p<.05$), univariate F tests were performed to check for differences between the two groups on each competency.

Results

Means and standard deviations were calculated for the two groups on each of the twelve competencies. These means and standard deviations are presented in Table 3. A multivariate analysis of variance procedure resulted in a Wilks Lambda of .862 that was significant at the .001 level. On the basis of the significance of this test, univariate F-tests were performed to isolate differences between the two groups. The results of each of these univariate F-tests are presented in Table 4.

These comparisons resulted in an F-probability <.05 for these groups on the competencies of Accountability, Affective Climate, Individual Differences and Questioning Skill. The comparison of these two groups on the competency of Accountability resulted in an F of 7.906 with a probability of .005. The mean score for group 1 was .318 and for group 2 was -.105. Thus Group

1 (those teachers who had had no education courses nor student teaching) scored significantly higher on the competency of Accountability than Group 2 (those teachers with twelve or more hours of education courses plus student teaching).

Similar results were obtained for the competency of Questioning Skill. The performace of the univariate F-test resulted in an F of 10.411 with a probability of .001. The mean score for teachers in Group 1 was .363, and the average score for Group 2 was -.120. This indicated that teachers who had had neither education courses nor student teaching scored significantly higher on the competency of Questioning Skill than teachers who had had twelve or more hours of education courses plus student teaching.

In contrast to the above findings, Group 2 (teachers who had had twelve or more hours of education courses plus student teaching) scored significantly higher than Group 1 (teachers who had no education courses or student teaching) on the competencies of Individual Differences and Affective Climate. On the competency of Individual Differences, Group 1 had a mean score of -.278, and Group 2 had a mean score of .092. The obtained F was 5.987 with a probability of .015. Group 2 also scored significantly higher than Group 1 on the competency of Affective Climate. The test resulted in an F of 5.649 with a significance of .018. The average score for Group 1 was -.270, and the mean score for Group 2 was .089.

Each of the comparisons of these groups on the remaining eight competencies did not result in a F-probability of <.05. Therefore there was no significant differences between these

groups on teacher scores on the following competencies: Academic Learning Time, Clarity of Structure, Evaluation, Learner Self-concept, Meaningfulness, Reinforcement, Close Supervision, and Planning.

Discussion

The results of the analyses addressing the question of interest indicate a mixed relationship between teacher training and the competence of beginning teachers. This study found that teachers who had had twelve or more hours of education courses plus student teaching (Group 2) scored higher on the competencies of Affective Climate and Individual Differences than teachers who had had no education courses or student teaching (Group 1). These findings concur with that of Lupone (1961) and Copley (1974). In the research conducted by Lupone, it was found that provisionally certified teachers did less well than regularly certified teachers in the area of pupil relations. In addition, Copley found that education graduates scored higher than arts and sciences graduates in the area of consideration of pupils.

However, teachers in Group 2 scored significantly higher than teachers in Group 1 on the competencies of Accountability and Questioning Skill. This result seems to be similar to that of Hoffman and Roper (1984) who found that beginning teachers felt they were deficient in 33 teaching skills. One of these was the ability to keep students on task which approximates the competency of Accountability in this study. Of the eight remaining characteristics, no differences were found between Group 1 and Group 2 on each of the competencies. These results do not support the notion that teacher training increases the competence

of beginning secondary teachers as measured by ten of the twelve competencies in this study. This result then, suggests that pre-service teachers should be introduced to the research on teaching. If pre-service teachers are not exposed to this research, it may explain why there were no differences between Groups 1 and 2 on eight of the competencies because some of the competencies in this study are based on a review of research on teacher behavior and student achievement.

There are several implications of this study. The first is that schools of education might well incorporate the use of low-inference instruments to assess the minimal competence of student teachers. The reason for this is that low-inference instuments are more sensitive to individual competencies and they do not suffer from the deficiencies of rating scales. Thus, the use of these instruments will allow teacher educators to measure specific teaching skills in a more valid and reliable manner. The observations using these instrument should occur during student teaching and the appropriate follow-up training should be incorporated into the post student teaching curriculum.

The second implication of this study is that the pre-service education of secondary teachers may need to be modified. This might take two forms. First, schools of education may want to evaluate each of the required courses in terms of usefulness to the beginning teacher. Second, schools of education should include as part of their curriculum the current research that describes the relationship between student achievement and teacher behavior. This is a very important addition to the curriculum

because research by Anderson, Evertson, and Brophy (1970) contends that teachers who implement research findings into their teaching behavior become more effective.

Lasley and Applegate (1982) have also indicated that the education of secondary teachers should be changed. They state that the training of secondary teachers operates under three false assumptions: (1) secondary teachers must be content specialists, (2) secondary teachers teach best by telling, and (3) all students are the same. The second and third assumptions have been verified by the research of von Eschenbach and Ley (1984). They state that elementary teachers are more likely than secondary teachers to accept and implement individual instruction, student-centered activities, and vary the instructional mode. Essentially, they found that secondary teachers rely on the lecturing technique of instruction. Thus, institutions preparing secondary teachers need to be aware of the above research in evaluating the curriculum of required courses.

This study points out the need for additional research. First, researchers need to determine why there were no significant differences between Groups 1 and 2 on eight of the twelve competencies. Do education courses not address these competencies? If not, what is the source of the teaching behavior of teachers who score well on these competencies?

Second, the research concerning the relationship between teacher behavior and student achievement should be continued. In addition, the results of this research should be disseminated to schools of education throughout the nation so that findings of this research can be incorporated into preserive and in-service

education. As Gage indicated in 1978, the research on teacher training and the research on the effects of teacher behaviors have progressed independently of each other. It is important for the one arm of education to know what the other is doing.

Table 1

Definitions of the Competencies of the Virginia Beginning Teacher Assistance Program (Virginia State Department of Education, 1984)

1. **Academic Learning Time:** The competent teacher knows that learning is directly related to the amount of time learners are actively engaged in planned activities.

2. **Accountability:** The competent teacher knows the importance of holding learners responsible for completing assigned tasks.

3. **Clarity of Structure:** The competent teacher knows that learning is facilitated if the lesson is presented in a clear systematic sequence consistent with the objectives of instruction.

4. **Individual Differences:** The competent teacher knows that learners progress at different speeds, learn in different ways, and respond to different kinds of motivation.

5. **Evaluation:** The competent teacher knows that learner progress is facilitated by instructional objectives which are known to the learners and which coincide with the objectives of evaluation.

6. **Affective Climate:** The competent teacher knows that learning occurs more readily in a classroom environment which is nonpunitive and accepting.

7. **Learner Self-Concept:** The competent teacher knows that a learner's achievement may be enhanced by improving his self-concept, and that his self-concept is enhanced in the teacher's expectations are high and if the teacher shows appreciation of the learner's personal worth.

8. **Meaningfulness:** The competent teacher knows that learning is facilitated when content is related to learner's interests, common experiences, or to information with which they are familiar.

9. **Planning:** The competent teacher knows the importance of deliberate and varied planning activities.

10. **Questioning Skill:** The competent teacher knows how to phrase convergent, divergent and probing questions and to use them to develop learner's academic knowledge.

11. **Reinforcement:** The competent teacher denotes awareness that the skillful use of reinforcement is an effective means of encouraging and discouraging particular behaviors.

12. **Close Supervision:** The competent teacher knows that more is learned during individual, small and whole group activities if the learners are monitored.

Table 2

Demographic Data on Secondary Teachers in Groups 1 and 2

	Group 1		Group 2	
	N = 57	Percentage	N = 173	Percentage
Sex				
Male	21	37	82	47
Female	36	63	91	53
Race				
Minority	9	16	10	6
White	48	84	163	94

Group 1 is composed of teachers who have had no education courses and no student teaching experience.

Group 2 is composed of teachers who have had 12 or more hours of education courses and student teaching experience.

Table 3

Means and Standard Deviations for Groups 1 and 2 on Each of the Twelve Teacher Competencies

	Group 1 N=57		Group 2 N=173	
Competency	Mean	Standard Deviation	Mean	Standard Deviation
Academic Learning Time	-.070	1.140	.023	.951
Accountability	.318	1.133	-.105	.932
Clarity of Structure	-.071	.857	.023	1.044
Individual Differences	-.278	.661	.092	1.075
Evaluation	.196	.942	-.063	1.013
Affective Climate	-.270	1.018	.089	.981
Learner Self Concept	-.107	.654	.035	1.090
Meaningfulness	-.116	1.021	.038	.993
Reinforcement	-.016	.876	.005	1.040
Questioning	.363	1.126	-.120	.927
Close Supervision	.089	.988	-.029	1.005
Planning	.007	1.026	-.002	.994

Group 1 is composed of teachers who have had no education courses and no student teaching experience.

Group 2 is composed of teachers who have had 12 or more hours of education courses and student teaching experience.

Table 4

Results of the Univariate F-Tests Which Compared Group 1 and Group 2 on Each Teacher Competency

Competency	SS	MS	F	F-Probability
Academic Learning Time	228.62	1.003	.370	.544
Accountability	221.33	.971	7.906	.005
Clarity of Structure	228.62	1.003	.384	.536
Individual Differences	223.13	.980	5.987	.015
Evaluation	226.21	.992	2.835	.094
Affective Climate	223.46	.980	5.649	.018
Learner Self Concept	228.12	1.001	.871	.352
Meaningfulness	227.97	1.000	1.018	.314
Reinforcement	128.98	1.004	.020	.888
Questioning	219.00	.961	10.411	.001
Close Supervision	228.41	1.002	.601	.439
Planning	228.45	1.004	.004	.949

Group 1 is composed of teachers who have had no education courses and no student teaching experience.

Group 2 is composed of teachers who have had 12 or more hours of education courses and student teaching experience.

References

Anderson, L., Evertson, C., & Brophy, J. (1979). An experimental study of effective teaching in first grade reading groups. Elementary School Journal, 79, 193-223.

Bausell, R. B., & Moody, W. B. (1972). Are teacher preparatory institutions necessary? Phi Delta Kappan, 54, 298.

Berlinor, D. (1984). Making the right changes in preservice teacher education.Phi Delta Kappan, 66, 94-96.

Brandt, R. M. (1981). Studying behavior in natural settings. New York: Holt, Rinehart and Winston.

Bureau of Educational Research. (1984). Beginning teacher assistance program phase II final report. Charlottesville, VA: Author.

_____. (1983). Program design for the beginning teacher assistance program. Charlottesville, VA: Author.

Copely, P. (1974). A study of the effects of professional education courses in beginning teachers. Springfield: Southwest Missouri State University. (ERIC Document Reproduction Service No. ED 098 147)

Cox, J., & Burnham, R. (1967). Comparison between selected characteristics and performance of provisionally certified beginning teachers in Georgia. Athens, Georgia: University of Georgia. (ERIC Document Reproduction Service No. ED 015 553)

Evertson, C., Hawley, W., & Zlotnik M. (1985). Making a difference in educational quality through teacher education. Journal of Teacher Education, 36, 2-11.

Gage, N. L. (1978) The scientific basis of the art of teaching. New York: Teachers College Press.

Hoffman, David E., & Roper, Susan R. (1980, April) How valuable is teacher training to beginning teachers? An analysis of graduate feedback from a rural teacher training program. Paper presented at the annual meeting of the American Educationl Research Association, Chicago, Illinois. (ERIC Document Reproduction Service No. ED 258 967)

Keisling, P. (1984). How not to teach teachers. Principal, 64, 18-20.

Lasley, Thomas J., & Applegate, Jane H. (1982). The education of secondary teachers: Rhetoric or reform. Journal of Teacher Education, 33, 1-2.

LuPone, O. J. (1961). A comparison of provisionally certified and permanently certified elementary school teachers and their cooperating teachers (Doctoral dissertation, Stanford University). Dissertation Abstracts International, 28, 144A.

Medley, Don M. (1982). Teacher competency testing and teacher education. Charlottesville: Bureau of Educational Research, University of Virginia.

_____, & Mitzel, H. (1958). A technique for measuring classroom behavior. Journal of Educational Psychology, 49, 86-92.

_____, Coker, H. & Soar R. (1984). Measurement-based evaluation of teacher performance. New York: Longman.

Popham, J. W. (1971). Teaching skill under scrutiny. Phi Delta Kappan, 52, 599-602.

Sugg, H. (1986, January 13). The liberal arts for school teachers. Roanoke Times and World News. pp. 4.

Virginia State Department of Education. (1985). Beginning Teacher Assistance Program. Richmond, VA: Author.

von Eschenbach J., & Ley, T. (1984). Differences between elementary and secondary teachers' perceptions of insructional practices. The High School Journal, 68, 31-36.