

The Effects of Early Childhood Education Student Teaching on Program Preference, Beliefs, and Behaviors

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ABSTRACT

Four theoretically-based early childhood education programs were studied to determine their effects on student teachers training in each program. Fifty-five beginning and 25 advanced level undergraduate female student teachers were assigned for their practicum to one of the four university-sponsored preschool programs. Beliefs and preferences of these student teachers were assessed at the beginning and at the completion of the practicum. Behavioral observations were made in each of the four programs during the last four weeks of the practicum. Analyses of the data suggested that preferences and behaviors did change in favor of the particular program to which the student teacher was assigned. Beliefs in the instructional implications of two of the theoretical models were also observed to change. The implications of these findings for teacher training programs are discussed.

THE INFLUENCE OF the student teaching practicum is an important concern for teacher educators. Research on the education of teachers has suggested that the practicum experience may have a marked influence not only on the student teacher's behaviors in the classroom but also on certain of his/her feelings regarding the educational process. Hoy (9) describes this influence by means of an acculturation paradigm. He suggests that the school in which the student teacher's internship is conducted comprises a sub-culture which has a strong influence on the student teacher's feelings regarding his or her classroom behaviors. Gordon and Jester (5) further suggest that a careful training program can be developed to modify teaching behaviors and used to bring desired teaching behaviors into accord with specific program goals and objectives. Results from several studies, however, suggest that the process of acculturation is a slow one which does not usually have sufficient time in the typical eight-to-ten-week student teaching practicum to modify deeply held beliefs about the educational process (7, 8, 9). While it can be argued that the definitions used to describe the word "belief" in many of the above (and similar) studies represent a considerable source of confusion (5), the general consensus regarding the impact of the practicum experience is that it has little or no effect on the most ingrained educational beliefs of student teachers.

Since it is apparent that teachers' classroom behaviors and certain aspects of their feelings about the educational process are subject to the influences of the student-teaching practicum, there is a concern among educators of professional teachers that these behaviors be logically consistent with the requirements of the instructional process. Likewise, while a program of teacher preparation should provide its students with a theoretical basis for

the kinds of activities in which the classroom teacher engages, it is also essential that that program allow potentially professional teachers to develop and/or to retain their flexibility to modify their teaching behaviors so as to achieve the changing goals of an educational system. Thus, the finding that the actual classroom behaviors of teachers strongly parallel the theoretical model to which they were exposed during their training practicum (12) could be an indication that rigidity—and not flexibility—has been the real, although perhaps undesirable, result of many teacher training programs.

The present study was designed to investigate the effects of four different models of early childhood education on the behaviors and feelings of student teachers. These models, implemented at Pennsylvania State University, were each designed to emphasize a particular theory of behavior in the design of its curriculum: a precision-positive model based on operant theory; a cognitive-developmental model based on Piagetian theory; a responsive environment based on the theories of Piaget, Montessori, and O.K. Moore as they are integrated into a variation of the New Nursery School curriculum of Nimnicht, McAfee, and Meir; and a day care model based on a whole child approach to early childhood care. The models were developed primarily to study their effects on various aspects of child development. Their use as teacher training settings was not, therefore, the initial reason for their establishment. Thus, when it was decided to use these model programs as situations for providing student-teaching practica, a decision had to be made with respect to the manner in which student teachers were to be placed in one, more than one, or all of the four distinct programs. After much deliberation, it was felt that the ten-week student-teaching practicum was too short a period

to subdivide in order to allow each student teacher to experience sufficient practical application of all four models. Therefore, student teachers were assigned to only one program for their entire practicum.

While this procedure provided a solution to the problem of scheduling, at the same time it created cause for concern in another area. The question arose whether these student teachers assigned were being jeopardized in terms of their own future flexibility by being exposed to a single program model as opposed to receiving equal exposure to all four models. Even though all student teachers received formal course work on each of the four models (in addition to other models of early childhood development and learning), it was feared that they might be overly affected by the single model exposure in their practicum experience.

Before this question could be studied, however, it was first necessary to determine if, in fact, differential effects might be found from student teaching experiences in each of the four programs with respect to teaching behaviors, beliefs, and preferences regarding the early childhood education process. For purposes of this study, only the more deeply held feelings about the early childhood education process were categorized as *beliefs*. Those feelings which were not so deeply ingrained were categorized as *preferences*. Thus, beliefs were felt to be basic to the student teacher's orientation toward preschool education. On the basis of this rationale, the following four expectations were stated for this study: (1) beliefs of student teachers should not change over the period of the practicum experience; (2) preferences for a particular program model would change in favor of the model in which the student teacher took his/her practicum; (3) student teachers' behaviors in the classroom would be consistent with the program model of the classroom; and (4) the student teachers given a more intense practicum experience would show greater changes in preferences in the direction of their assigned program model than those student teachers given less in depth experiences.

Method

Subjects

Fifty-five beginning (primarily sophomore) and 25 advanced (primarily senior) undergraduate women students at Pennsylvania State University were randomly assigned to one of four models of early childhood education programs maintained by the university in the college of human development. These students were enrolled in programs leading to degrees in early childhood education, home economics education, or elementary education. Their mean grade point average was 3.05 on a scale of 4 points (A = 4, F = 0).

Subjects in the sample were involved in either a beginning or an advanced practicum experience in student teaching. The practicum experience for the beginning students consisted of one class seminar and two-and-one-half hours of classroom experience each week for ten weeks. During this time they functioned in the capacity of a teacher's aide. The advanced students received one class seminar and approximately ten hours of supervised student teaching experience each week for ten weeks. Dur-

ing that time they were required to assume the full range of planning and teaching responsibilities of a regular teacher, while at the same time completing an intensive study of the theoretical model underlying the program to which they had been assigned.

The seminar and classroom experiences occurred within one of the four ongoing early childhood education programs within the college of human development at the university. Both the student teachers and the preschool children in each of the four early childhood programs were randomly assigned to a specific program. These four programs are described below.

Cognitive-Developmental. The Cognitive-Development (CD) program is based upon Piaget's ideas of intellectual and social development. A process approach to acquisition of knowledge is implemented and teachers emphasize skills such as classification, seriation, numeration, and measurement. Social learning, self-concept, and empathy are also stressed. The program is characterized by a balance of both structured and unstructured activities. Teachers use a problem or game format during cognitively oriented activities, and they encourage inquisitive problem solving behavior.

Precision Positive. The Precision Positive (PP) classroom uses operant learning theory as a philosophical and methodological base. The main features of the program are (a) a systematic, prepared environment, (b) emphasis on intellectual, social, emotional, and physical progress through a prepared environment, and (c) precise evaluation of individual progress. Teachers in the Precision Positive classroom "engineer" environments that systematically reinforce productive performance and discourage undesirable behavior in children. Individual progress is evaluated in several learning centers where children participate in planned, programmed learning episodes.

Responsive Environment. The Responsive Environment (RE) classroom represents a variation of the New Nursery School curriculum developed by Glen Nimnicht, Oralie McAfee, and John Meier. The philosophy of the Responsive Environment is eclectic; the ideas of Piaget, Montessori and O.K. Moore are integrated in this approach. The program focuses on the value of intrinsic motivation in learning, the need for developing self-paced and autotelic materials and learning episodes, and the equal importance of intellectual and social-emotional development. Children freely select activities that are designed to enhance self-concept and to encourage the use of certain concepts such as color, shape, size, number, and specific intellectual processes such as classification.

Day Care. The Day Care (DC) program represents a whole-child approach to child care. The program includes lunch and snack times, a rest or nap period, story time, group activities, and free play. The program focuses upon providing a secure and attractive environment for the child in which he may freely socialize or pursue his own interests.

The head teachers in each of the programs were felt to be capable, enthusiastic, and pleasant. They were viewed by the authors as similar in teaching styles, in teaching expertise, and in their attitudes toward their program.

Table 1.—Summary of Analysis of Variance on Preferences

Source	df	Sum of Squares	Mean Squares	F
<i>Levels of Practicum</i>				
Experience (A)	1	2.81	2.81	1.21
Program Assignment (B)	3	1.03	.34	< 1.00
A x B	3	13.71	4.57	1.97
error	72	166.75	2.32	
<i>Replications (C)</i>				
A x C	1	4.80	4.80	3.44
B x C	1	1.40	1.40	1.00
A x B x C	3	5.92	1.97	1.42
A x B x C	3	6.34	2.11	1.51
error	72	100.45	1.40	
<i>Scales (D)</i>				
A x D	3	214.34	71.45	36.15*
B x D	3	54.09	18.03	9.12*
B x D	9	74.25	8.25	4.17**
A x B x D	9	26.55	2.95	1.49
error	216	426.87	1.98	
C x D	3	6.17	2.06	2.14
B x C x D	9	24.90	2.77	2.89***
A x C x D	3	4.95	1.65	1.72
A x B x C x D	9	21.72	2.41	2.52***
error	216	206.97	.96	

* $p [F_{(3,72)} \geq 2.74] < .05$

** $p [F_{(3,216)} \geq 2.60] < .05$

*** $p [F_{(9,216)} \geq 1.88] < .05$

Measures

Each student teacher in the sample was administered a battery of measures during the first class session, prior to his/her practicum assignment to any particular program. The same battery of measures was readministered during the last week of the term, after the completion of all student teaching practicum and attendant responsibilities. The measures used in the present study are described below.

Program preferences questionnaire. On this form, one-paragraph descriptions of each of the four early education programs were provided. The students were asked to rate their preferences for each program on a seven-point scale from strongly desired to strongly opposed. This procedure yielded four program preference scores.

Teacher belief rating scale. The scale consists of 24 Likert-type items derived from both Piagetian developmental theory (12 items) and Operant learning theory (12 items). The scale, which yields one score for each of the two theories, is designed to assess the degree of agreement with two of the major theories relevant to early childhood education. Prior research has demonstrated its content and concurrent validity and its reliability (11, 12).

There were no comparable instruments available for assessing agreement with the Responsive Environment or Day Care Programs.

Teacher behavior observation. Additionally, during the ten-week student teaching experience, Verma's (11) procedure was used for observing the student-teacher interactions with the children in the early childhood edu-

cation programs. Verma's Teacher Behavior Observation Form has 12 categories of behavior, each of which has a Piagetian, an operant, and a not-observed alternative. Since several student teachers were usually working simultaneously within a given program, no effort was made to gather information on each of the student teachers separately. Rather, the classrooms were divided into three observational sectors. The observer observed one student teacher within a sector for 15 seconds, recorded the behaviors observed, moved on to the next sector, observed and recorded the observation, and then moved on to the last sector. After the third observation the sequence was repeated. The observations were made during six randomly selected half-hour segments of each program during the last four weeks of the ten-week student-teaching practicum. Approximately 20 observations were completed in each half-hour period for a total of 120 observations within each program.

Analysis

The preference and the belief data were analyzed separately using analysis of variance models corrected for unequal cell frequencies. Each model contained two repeated measures in a 2 x 4 design.¹ The two factors for both of these analyses were the two levels of student teaching experience (beginning and advanced) and the four different program assignments (RE, CD, PP, and DC). The two repeated measures were replications (pre-practicum assessment and post-practicum assessment) and scales (the four preference scores or the two belief scores). Comparisons were made among cell means of significant main effects

Table 2.—Summary of Analysis of Variance on Beliefs

Source	df	Sum of Squares	Mean Squares	F
<i>Levels of Practicum</i>				
Experience (A)	1	33.05	33.05	1.19
Program Assignment (B)	3	37.26	12.42	< 1.00
A x B	3	70.64	23.55	< 1.00
error	72	2006.05	27.86	
<i>Replication (C)</i>				
A x C	1	29211.00	29211.00	267.33*
B x C	3	.31	.31	< 1.00
A x B x C	3	202.03	67.34	< 1.00
A x B x C	3	34.13	11.38	< 1.00
error	72	7867.53	109.27	
<i>Scales (D)</i>				
A x D	1	1684.00	1684.00	50.85*
B x D	3	105.64	35.21	3.19
B x D	3	14.35	4.84	< 1.00
A x B x D	3	107.37	35.79	1.08
error	72	2384.46	33.12	
C x D	1	3973.20	3973.20	91.80*
B x C x D	3	91.61	30.54	< 1.00
A x C x D	1	179.80	179.80	4.15*
A x B x C x D	3	119.99	40.00	< 1.00
error	72	3116.39	43.28	

* $[F(1, 72) \geq 3.98] < .05$

and interactions using the Tukey WSD (3) and the unequal cell frequencies version of the Tukey WSD (4).² The observation data on student-teacher interactions with children in the program models were analyzed for the 2 x 4 table of frequencies using a χ^2 ($df = 3$).

Results

Results are presented first for preferences and then for beliefs. The results of the χ^2 analysis of the student-teachers' behaviors in the classroom are presented last.

Preferences

The analysis of variance results on preferences are summarized in Table 1. Preferences were found to change from the beginning to the end of the practicum period in all four programs. Preferences for particular program models likewise differed significantly, $F(3, 216) = 36.15, p < .05$. Of the four models, the Precision Positive (PP) model was the least preferred, while the Responsive (RE) and the Cognitive Developmental (CD) were the most preferred. In addition, a significant interaction between level of practicum and preference for a particular program (A x D) was observed, $F(3, 216) = 9.12, p < .05$. Preferences for the beginning students were higher for the PP model than those for the advanced students. Preferences differed, furthermore, depending upon the program in which the practicum was taken, $F(9, 216) = 4.17, p < .05$. Again, the PP model was the least preferred, while the RE and the CD were the most preferred. Of interest, however, was the finding that not all student teachers most preferred the program model to which they had been assigned. Student teachers in both the PP and the Day Care (DC) programs preferred the DC and the PP models less than the CD model. Although only those student teachers in the DC model showed a higher preference for the DC model than for the PP model, the

reverse was found for student teachers in the PP model.

A significant three-way interaction was found between program assignment, replications (pre-practicum and post-practicum assessments), and program preferences, $F(9, 216) = 2.89, p < .05$. In each case, pre-practicum preferences were significantly lower than post-practicum preferences. In addition, all student teachers indicated least preference for the PP and the DC models on the pre-practicum assessment. On the post-practicum assessment, all student teachers preferred the PP model least, while students in three of the four programs preferred the DC model less than the two remaining models.³

Beliefs

The results of the analysis of variance on beliefs are summarized in Table 2. Beliefs were measured for only two of the four program models in which student teachers were placed: the Cognitive-Developmental (CD) and the Precision Positive (PP) models. These beliefs were assessed however, on all student teachers assigned to each of the four programs.

Overall, student teachers showed stronger beliefs in the CD model than in the PP model. A significant main effect indicated that beliefs in both models which were expressed after the practicum were less than those expressed before the practicum, $F(1, 72) = 267.33, p < .05$. This finding was contrary to the hypothesis that no change would occur on beliefs. Beliefs in a particular program model (either the CD or the PP models) and replications (pre-practicum and post-practicum assessment) interacted significantly, $F(1, 72) = 97.80, p < .05$. CD beliefs were found to be lower on the pre-practicum assessment but higher on the post-practicum assessment than for the PP model. The increases from pre- to post-practicum were significant for beliefs in both models. Finally, a significant three-way

interaction between student teaching level (beginning and advanced), replications, and belief in a model, $F(1, 72) = 4.15, p < .05$, indicated that beliefs were higher for the CD model than for the PP model for both beginning and advanced student teachers.

Behaviors

The frequencies of Piagetian and Operant behaviors observed in the four programs are presented in Table 3. In general, more behaviors which were consistent with Piagetian theory were observed. However, the differences between the behaviors observed in the PP program and those observed in the other three programs were significant.

Discussion

The expectations regarding the changes in preferences and in teaching behaviors were generally supported. However, the changes observed in beliefs regarding the instructional process were counter to the stated rationale.

It was expected that student teachers would change their preferences for particular program models in the direction of the program model to which they were assigned. In the cases of the CD and RE programs, this was found to be the case. However, the PP model was least preferred by all students, including those students who were assigned to that program. This striking rejection of the PP program would suggest that it does not readily appeal to student teachers, even to those who are assigned to a full-time practicum experience in the program (*i.e.*, the advanced students). The lack of preference for the PP model may have occurred for several reasons. Characteristic of an operant model program, the PP model was highly structured and required the teachers to engage in a series of fairly mechanical procedures such as counting of responses and giving of tokens to the children. Since these procedures do operate as if the child were a rather empty organism, they may simply not have been very appealing to the student teachers. Another reason might be that the preference for a program which consists of highly structured activities may require greater familiarity with the program. It may be, in fact, that the low preference for the PP model is an indication that a ten-week practicum experience is too short a time to fully experience and appreciate the complexities and intricacies of a program such as the PP model describes. This length of time, in other words, may be detrimental to preferences toward such a program because student teachers have too little time to learn the reasons for and

to appreciate the outcomes of this kind of program.

There were significant changes in student-teachers' beliefs which were not initially hypothesized but which were parallel to the changes observed on preferences. Beliefs in the PP model, although initially higher than those in the CD model, decreased by the end of the practicum. That these beliefs changed at all was disconcerting in view of the rationale given at the beginning of the study. Previous research has shown student teachers to have strongly held personal beliefs regarding an educational philosophy which do not change over the period of the student's practicum (7, 8, 9). The changes observed in the present study might be interpreted to mean that contrary to previous findings, it is possible to alter deeply held beliefs of a student teacher regarding the educational process. However, a more plausible explanation would be that student teachers' beliefs in specific instructional theories (such as those based on Skinner's or Piaget's theories of learning) are not as deeply held as was inferred from earlier research on teachers' beliefs. It may be, in other words, that beliefs in an overall educational philosophy are different than beliefs in particular instructional models. Beliefs in either of the two models measured in this study, furthermore, do not seem to be fostered by a four-year teacher training program (such as that the advanced students in the sample were completing). The problem then becomes one of deciding how much they can (or even should) be changed, and what effect will result. If such theoretically based models of instruction continue to be used to train future early childhood educators, certainly there must be an awareness of the impact which the practicum experience is likely to have upon beliefs regarding such instruction. The important question remains whether these beliefs change enough to decrease the teacher's flexibility to respond by changing his or her instructional behaviors in order to achieve the changing goals and objectives of our educational system. In terms of such flexibility, it may be encouraging that, even after such a training program, prospective teachers have not developed strong, unchangeable beliefs in only one instructional model.

One unexpected result of this study was the relative lack of significant differences between beginning and advanced student teachers. The only such difference found indicated the beginning student teachers preferred the PP model more than did the advanced. Since this effect did not occur over the course of the practicum, it is unlikely the practicum experience was at all related to it. Taken in the context of the other findings of this study, the beginning students may have shown greater preference because of their lack of familiarity with the PP model compared to the advanced student. In general, however, the level of

Table 3.—Observed Frequency of Piaget and Operant Behavior In Four Programs

Behavior	PROGRAM			
	Precision Positive	Cognitive Developmental	Responsive Environmental	Day Care
Piaget Behavior	68	472	433	361
Operant Behavior	619	96	161	206

intensity of the practicum did not seem to have the kind of influence initially hypothesized. It is probable, from these results, that the effects of the practicum experience on student teachers' preferences and beliefs are the same for both the beginning and the advanced levels.

Finally, the behaviors of the student teachers in the PP and CD programs were found to be consistent with the theoretical rationale underlying each program. These results may initially seem of little import, since the student teacher would be expected to behave according to the way he or she was asked to behave, if only because this was a university course. However, it is important to note that the more behaviors exhibited in each program which are consistent with the model for that program, the greater is the validity of the application of that model. In other words, these frequencies of behaviors indicate both how well student teachers were able to exhibit the instructional behaviors consistent with the particular model and, consequently, how well the program itself replicated the model. From this reasoning it might be inferred that the more alike teaching behaviors are among different programs, the greater the similarity of the program models. Inspection of the frequencies of behaviors in the CD and RE programs would suggest that these programs are more like one another than they are like the PP program. This is also evident from the descriptions of these three programs (given above). Viewed in this way, the behavioral observations provide partial validating evidence that the four programs were implemented in a manner consistent with their respective theoretical bases.

In summary, there is evidence that both preferences and beliefs of student teachers can be altered by the influence of a student teaching practicum. Contrary to the expected result of no change in beliefs, however, the findings suggest that care must be taken in teacher training programs to be certain that beliefs which are subject to change do not change in such a way as to decrease the flexibility of the teacher to modify his or her behaviors in future teaching situations. To investigate this problem more fully, a follow-up study is needed on student teachers who have gone through the kind of practicum described in this paper. This kind of information would provide important evidence regarding the influence of the student teaching practicum on future teaching behaviors.

The matter of the effect of the length of time of the practicum on changing the preferences and beliefs has not yet been resolved. Since this is an important concern for teacher educators, it would seem necessary to compare practica of different lengths of time for their effects on preferences and beliefs of student teachers. Finally, the kinds of changes which were found to have occurred in this study have yet to be fully studied under controlled conditions with respect to their long-term effect on teachers. It is evident that there is a vital need to determine how stable these changes are over time and in different situations as well as how much they actually do affect teachers once they begin their careers.

NOTES

1. The analyses of variance were done using split-split plot models as described by Winer (15).
2. The Tukey WSD is used to determine the significance of differences between means following the *F* test. This test allows the testing of differences between all means at a level which is no larger than the level of significance used for the *F* test itself.
3. The four-way interaction was not interpreted, because post hoc analyses of the cell means did not indicate anything beyond that which had already been noted from the analyses of the lower order interaction.

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