

The Effects of Interaction Analysis Feedback on the Verbal Behavior of Student Teachers¹

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STUDENT teachers need to have opportunity to try out a variety of teaching behaviors in teaching situations. Such opportunity exists in the student teaching phase of a teacher education program when student teachers are allowed to teach children in the classroom under the supervision of a directing teacher. From the college in which the student teacher is enrolled, a university faculty member is assigned to each student teacher to assist him in his introduction into teaching.

The process of supervision on the part of the university supervisor usually involves sitting down with a student teacher from time to time to discuss a sample of his teaching behavior with particular reference to how this behavior might be improved. This approach permits a student teacher to see in objective terms the effectiveness of his teaching performance. This procedure, however, does not seem effective in practice (8). Some writers are inclined to attribute this lack of success to a failure of the university supervisor to perform the crucial function of feeding back to the student teacher accurate and comprehensive evaluative information about his verbal behavior (8; 1). Part of this failure may be attributed to lack of objective means for analyzing the teaching behavior of a student teacher. Apparently there is a need for some means of assessing the nature

of the verbal behavior of a student teacher to provide him with the information necessary for improving his teaching performance.

Recently, the process of systematic observation of classroom interaction has been developed and shows great promise as a feedback mechanism. An observational system is defined here as any systematic technique for identifying, classifying, and quantifying specific teaching activities. Of the observational systems currently available, Flanders' system of interaction analysis (2) is probably the most widely known and used. The results of research in teacher education indicate that there were significant differences between the verbal behavior of student teachers trained in interaction analysis and those not so trained (4; 3; 5; 7). The writer has attempted to extend this research in teacher education by isolating the variable of feedback and studying its effect on the verbal behavior of two groups of student teachers trained in interaction analysis. By isolating this variable, the writer hoped to demonstrate that feedback from systematic observations of classroom teaching as well as training in

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interaction analysis can aid student teachers in becoming more aware of their teaching behavior and the effect of their teaching behavior on others.

Procedures

The purpose of this study was to investigate the effects of interaction analysis feedback on the verbal behavior of student teachers. Forty subjects, an experimental group and a control group of 20 each, were randomly selected for the present study from seniors enrolled in the elementary teaching program at the University of South Florida. All subjects were apprised of the purposes of the study and were told that the data gathered would have no effect on their grade in student teaching. In addition, university supervisors, supervising teachers, and principals were informed of the purpose of the study.

All 40 subjects received 14 hours of formal training in interaction analysis from the writer during the winter quarter of the 1967-68 school year while they were enrolled as members of the EDC 401 Curriculum and Instruction class. Topics included in the training sessions were training in analyzing classroom verbal behavior and in building and interpreting matrices.

Four education students were selected as observers to assist the writer in the study. The four observers attended the training sessions given the 40 subjects in the EDC 401 Curriculum class during the winter quarter. In addition, the observers underwent further training using Flanders' training tapes and conducted practice observations in nearby elementary schools. Inter-observer and intra-observer reliability was established and maintained at 0.70 or better (as calculated by Scott's method, 1958) for the four observers throughout the study (10).

In the spring quarter following the formal training in interaction analysis all of the 40 students were assigned through the normal procedures established by the Director of Student Teaching at the University of South Florida to eight participating elementary schools in Hillsborough County, Florida.

Four of the eight schools were designated as experimental schools and four designated as control schools. Experimental and control schools were matched as nearly as possible on factors related to the socioeconomic background of students.

Beginning the second week of student teaching, data were collected by means of systematic observations (15 minutes weekly for eight weeks) of the 40 subjects. Observations were made by the four trained observers each week except the first and last week of the 10-week internship period. Each observer visited one control group and one experimental group weekly. By rotating weekly, the observers visited each of the schools twice during the eight-week observation period. Although observers were aware of certain student teachers receiving matrices weekly, they were unaware of the research design and were unaware of any designations of "experimental" or "control."

The observational system used in this study to observe and classify student teacher verbal behavior is the 13-category modification of the Flanders system of interaction analysis (see Figure 1). Procedures followed in making classroom observation were the same as those used in the studies in which Flanders' 10-category system of interaction analysis was employed. The observer sat at the rear of the classroom where she could hear students and teacher alike. At the end of a three-second interval she decided which of the 13 categories represented the communication of verbal behaviors just completed. The verbal behavior just completed was written down while simultaneous assessment of the communication of the next three-second interval was being made. Verbal behaviors occurring more rapidly than once every three seconds were recorded as they were heard by the observer. The recording of category numbers continued at the rate of 20 to 25 recordings per minute for the entire 15-minute observation period. Numbers were recorded on special IBM 1230 recording sheets for key punching IBM cards. The cards were then submitted to an IBM 1410 computer which provided a weekly printout sheet. There was no attempt to control ob-

ervation schedules except for the days of the week (Monday and Tuesday). Student teachers knew they could expect an observer on one of these two days but did not know at what hour to expect an observer. Classes observed could be classified as slow, average, and accelerated, with equal representation in the experimental and control groups. All eight elementary schools that participated had been used frequently for placement of observers, aides, and student teachers; therefore, a visitor in the classroom was not an uncommon occurrence. Any "Hawthorne effect" present must be assumed to have operated equally in both groups of student teachers.

Following each observation of a student teacher, a matrix and an information sheet were constructed by observers and presented to each of the 20 student teachers in the experimental group. Matrices and information sheets were also constructed for members of the control group, but those student teachers did not receive copies of them. Thus, feedback in the form of matrices and information sheets was given only to teachers in the experimental group. As the writer wished to disrupt the regular student teaching routine as little as possible, feedback in the form of matrices and information sheets was given to the 20 student teachers in the experimental group on Thursday afternoons immediately following their weekly seminar meetings on campus.

Feedback sessions included presenting computer printout sheets and information sheets indicating verbal performance to 20 student teachers in the experimental group weekly and letting them compare their performance with performances from previous weeks. Each of the 13 categories was examined for total use by the student teachers and the indirect-direct ratio and student-teacher ratio were studied in detail. No attempt was made to classify performances as "good" or "bad." Group discussions centered around the value of the feedback students were receiving. In addition, the four trained observers worked with the students they had observed during the particular week, helping them relate verbal performances to types of lessons taught. The writer answered any

questions posed by the 20 students in the experimental group that could not be answered by the four observers and was available in his office after the hour-long sessions for further help to students.

Students in the control group met regularly with the writer to discuss observation schedules and student teaching experiences. The control group knew that similar meetings were being held with the other group of student teachers (experimental group) but did not know that the other group was receiving weekly feedback in the form of printed matrices and information sheets.

A great deal of rapport had been built up between the writer, the four observers, and the 40 subjects in the study. Student teachers in both the control group and experimental group had worked with the four observers and the writer in training sessions the previous term. Observations were made with little or no trouble in all cases.

Measuring Instrument

The 13-category modification of the Flanders system of interaction analysis (6) was incorporated in the present study. The 13-category modification of the Flanders system was developed by Hough *et al.* to give more detail and discrimination. The modified system includes nine categories under teacher talk, three for student talk, and one category for silence or confusion (Figure 1). The first five categories constitute a larger section called indirect influence and categories six through nine make up direct influence. Student talk is classified according to whether it is initiated by the teacher or by the student.

Using the system, the observer records the number of the category fitting the behavior going on during each three-second interval in the classroom. This procedure yields a list of category numbers representing the verbal behavior. Data are summarized in a 13 x 13 matrix which exhibits the sequence of adjacent numbers.

Results may be interpreted in terms of numbers of sequential pairs of statements, of the total percentage of statements in each of the 13 categories, or in terms of the ratio

of indirect and direct behaviors. Some ratios as the "student-teacher—S/T" and the "indirect-direct—I/D" can be computed by counting the number of tallies in one group and comparing it to those in another group. Despite the simplicity of the recording system, a fairly objective picture of the processes operating in the classroom may be obtained with this system.

The development procedures of application and validation of interaction analysis systems as an observational tool are reported in detail by Flanders in *The Role of the Teacher in the Classroom* (Amidon and Flanders,

1961) and in *Teacher Influence, Pupil Attitudes, and Achievement* (Flanders, 1960).

Variables

The independent variables in the present study were (a) the feedback provided for the experimental group, and (b) the lack of feedback in the control group. The dependent variables (the criteria by which change was examined) were selected observed verbal behaviors of student teachers generated by them during their student teaching experience. The specific dependent variables (as meas-

		Category Number	Description of Verbal Behavior
T E A C H E R	I N D I R E C T	1.	Accepts Feeling: Accepts and clarifies the feeling tone of students in a friendly manner. Student feelings may be of a positive or negative nature. Predicting and recalling students' feelings are also included.
		2.	Praises or Encourages: Praises or encourages student action, behavior, recitation, comments, ideas, etc. Jokes that release tension not at the expense of another individual. Teacher nodding head or saying "uh-huh" or "go on" are included.
		3.	Accepts or Uses Ideas of Students: Clarifying, building on, developing, and accepting the action, behavior, and ideas of the student.
		4.	Asks Questions: Asking a question about the content (subject matter) or procedure with the intent that the student should answer.
		5.	Answers Student Questions (Student-initiated Teacher Talk): Giving direct answers to student questions regarding content or procedures.
T A L K	D I R E C T	6.	Lectures (Teacher-initiated Teacher Talk): Giving facts, information, or opinions about content or procedure. Teacher expressing his own ideas. Asking rhetorical questions (not intended to be answered).
		7.	Gives Directions: Directions, commands, or orders to which the student is expected to comply.
		8.	Corrective Feedback: Telling a student that his answer is wrong when the correctness of his answer can be established by other than opinions (i.e., empirical validation, definition, or custom).
		9.	Criticizes Student(s) or Justifies Authority: Statements intended to change student behavior from a non-acceptable to an acceptable pattern; bawling out someone; stating why the teacher is doing what he is doing so as to gain or maintain control; rejecting or criticizing a student's opinion or judgment.
S T U D E N T	T A L K	10.	Teacher-initiated Student Talk: Talk by students in response to requests or narrow teacher questions. The teacher initiates the contact or solicits students' statements.
		11.	Student Questions: Student questions concerning content or procedure that are directed to the teacher.
		12.	Student-initiated Student Talk: Talk by students in response to broad teacher questions which require judgment or opinion. Voluntary declarative statements offered by the student but not called for by the teacher.
		13.	Silence or Confusion: Pauses, short periods of silence, and periods of confusion in which communication cannot be understood by an observer.
Indirect-Direct Ratio =		$\frac{\text{categories 1, 2, 3, 4, 5}}{\text{categories 6, 7, 8, 9}}$	Student-Teacher Ratio = $\frac{\text{categories 10, 11, 12}}{\text{categories 1, 2, 3, 4, 5, 6, 7, 8, 9}}$
Flexibility Factor = Total Number of Occupied Cells			

Figure 1. Description of Categories for the 13-Category Modification of the Flanders System of Interaction Analysis

ured by a 13-category modification of the Flanders system of interaction analysis) were:

1. Total use of category 2 *
2. Total use of category 3 *
3. Total use of category 4 *
4. Total use of category 5 *
5. Total use of category 6 *
6. Total use of category 7 *
7. Total use of category 8 *
8. Total use of category 9 *
9. Total use of category 10 *
10. Total use of category 11 *
11. Total use of category 12 *
12. I/D Ratio **
13. S/T Ratio **
14. Flexibility Factor **

Specific verbal patterns (sequences by certain matrix cells) including the following:

15. Extended indirect teacher talk as measured by the 2-2 cell loading (Area "A" of Figure 2)
16. Extended indirect teacher talk as measured by the 3-3 cell loading (Area "B" of Figure 2)
17. Positive affective teacher talk as measured by the 1, 2, 3 block (Area "C" of Figure 2)
18. Negative affective teacher talk as measured by the 7, 8, 9 block (Area "D" of Figure 2)
19. Teacher's acceptance of student ideas

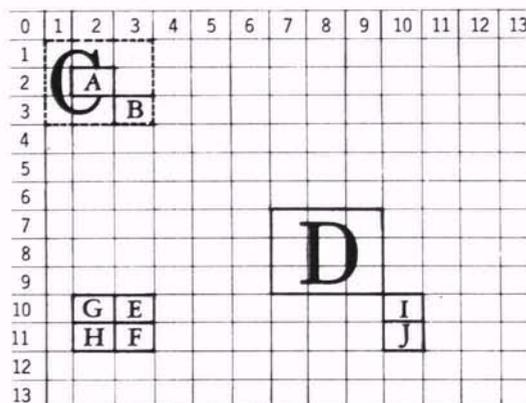


Figure 2. Matrix for the 13-Category Modification of the Flanders System of Interaction Analysis Showing Areas Used To Measure Several Dependent Variables Considered in This Study

* See Figure 1 for description of categories.

** See Figure 1 for definitions.

as measured by the 10-3 cell loading (Area "E" of Figure 2)

20. Teacher's acceptance of student ideas as measured by the 11-3 cell loading (Area "F" of Figure 2)

21. Teacher's use of positive reinforcement as measured by the 10-2 cell loading (Area "G" of Figure 2)

22. Teacher's use of positive reinforcement as measured by the 11-2 cell loading (Area "H" of Figure 2)

23. Extended student talk as measured by the 10-10 cell loading (Area "I" of Figure 2)

24. Extended student talk as measured by the 11-11 cell loading (Area "J" of Figure 2).

Treatment of Data. Data were analyzed by means of a Lindquist Type I Analysis of Variance (9). This analysis tested the statistical hypotheses that the means of the experimental and control groups differed in all weeks combined. This procedure was completed for each of the 24 dependent variables.

Results and Discussion

Significant F-Ratios for group means difference were obtained in 15 of the 24 analyses of the study.

The results of this study clearly show that those student teachers who received interaction analysis feedback differed significantly from those student teachers who did not receive such feedback, in their use of the following teacher verbal behaviors: (a) they used more praise; (b) they accepted and clarified student ideas more; (c) they used more indirect teacher talk as opposed to direct teacher talk; (d) they used more extended praise; (e) they had more extended use of student ideas; (f) they used more positive affective talk; (g) they accepted student ideas more after teacher-initiated student talk; (h) they used more positive reinforcement after teacher-initiated student talk; (i) they used less corrective feedback; (j) they criticized students less; (k) they asked more questions; (l) they used less lecturing; (m) they gave less directions. In addition, there was significantly less teacher-initiated talk and significantly more student-initiated student talk in the student teacher group receiving feedback.

The foregoing results should have direct implications for practitioners, especially those engaged in supervision. Interaction analysis is an effective feedback mechanism and student teachers should have an opportunity to utilize feedback from systematic observations made of their own verbal behavior. We in teacher education must teach students to "read behavior itself" instead of just reading about behavior on the printed page. Student teachers trained in the skills of interaction

analysis can become active participants in the evaluation of their teaching performances and move towards a means of providing continual self-improvement.

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Dependent Variables	Feedback Group (N = 20)		Non-feedback Group (N = 20)		$\bar{X}_1 - \bar{X}_2$	F Ratio
	\bar{X}_1	S.D.	\bar{X}_2	S.D.		
Category						
2	7.19	2.29	4.12	1.48	3.07	24.16*
3	9.53	2.49	4.78	1.91	4.75	43.40*
4	16.96	2.50	12.54	2.75	4.42	26.81*
5	2.13	1.28	2.90	1.34	-0.77	3.21
6	8.92	2.89	13.25	4.87	-4.32	11.11*
7	6.25	2.04	8.86	2.72	-2.61	11.21*
8	1.12	0.57	2.12	1.10	-1.00	12.39*
9	0.23	0.22	1.18	0.84	-0.95	22.41*
10	1.93	1.04	4.32	1.74	-2.39	26.39*
11	2.41	1.63	3.37	1.67	-0.96	3.21
12	21.73	4.75	14.88	4.35	6.85	21.46*
I/D Ratio	3.16	1.86	1.18	0.33	1.98	20.84*
S/T Ratio	0.83	0.21	0.73	0.20	0.10	2.20
Flexibility Factor (Number of Occupied Cells)						
2-2 Cell	16.73	1.66	17.19	1.21	-0.46	0.94
3-3 Cell	0.63	0.33	0.23	0.21	0.40	20.15*
1,2,3 Cell Block	1.86	0.77	0.76	0.57	1.10	25.04*
7,8,9 Cell Block	5.98	2.02	2.50	1.29	3.48	40.29*
10-3 Cell	14.64	3.04	15.20	4.58	-0.56	0.20
11-3 Cell	2.73	0.96	1.68	0.81	1.05	13.23*
10-2 Cell	0.22	0.04	0.22	0.04	0.00	0.00
11-2 Cell	2.27	0.98	1.52	0.65	0.76	7.75*
10-10 Cell	0.02	0.03	0.02	0.03	0.00	0.25
11-11 Cell	5.38	2.19	7.02	3.43	-1.64	3.08
	0.63	0.67	0.69	0.68	-0.06	0.08

* Significant at the .05 level of confidence
F .95 = 4.10 for 1 and 38 degrees of freedom

Table 1. Results of F-tests for Group Means Difference of the Feedback and Non-feedback Group

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