DOCUMENT RESUME

ED 200 528 SP 017 511

AUTHOR Lombardo, Bennett J.
TITLE The Effects of Supervision Employing Interaction Analysis on the Teaching Behavior of Selected Physical Education Teachers.
PUB DATE Feb 80
NOTE 16p.: Paper presented at the Eastern District Association Convention of the American Alliance for Health, Physical Education, Recreation and Dance (Lancaster, PA, February 29, 1980).

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Attitude Change; Behavior Modification; Classroom Environment; Elementary Education; Elementary School Teachers; Feedback; *Interaction Process Analysis; Learning Processes; *Physical Education; Positive Reinforcement; Student Behavior; Student Teacher Relationship; *Teacher Behavior; Teacher Effectiveness; *Teacher Evaluation; *Teacher Supervision

ABSTRACT

A study was made to determine the effects of long-term, daily supervision which employed interaction analysis procedures on the teaching behavior and interactions of four elementary school physical education teachers. Repeated, daily, multiple observations were recorded for each subject's teaching behavior and interaction patterns in the movement class. Based on the results of this study, it was concluded that: (1) The use of interaction analysis data, employed on a daily, long-term basis, seemed to influence teaching behavior and the resulting interaction in the gymnasium; and (2) The use of interaction analysis data as a feedback mechanism provides teachers with specific information related to the teaching-learning process, which can be used to stimulate change, growth, and the improvement of pedagogical practice. Other studies using similar techniques and categories used in the analyses are presented in tabular form. (JD)

THE EFFECTS OF SUPERVISION EMPLOYING INTERACTION ANALYSIS ON THE TEACHING BEHAVIOR OF SELECTED PHYSICAL EDUCATION TEACHERS

by

Bennett J. Lombardo
Assistant Professor
Rhode Island College

Paper Presented at Eastern District
Association Convention, AAHPERD,
Lancaster, PA. February 29, 1980
Research Reporting: Teacher Behavior

Extensive research on teacher effectiveness and classroom climate in recent years has led to the development of systematic methods of observation of which interaction analysis is among the most well known. Interaction analysis is defined as "the overt (verbal and nonverbal) exchanges between and among the members of learning groups" (Bales, 1951).

Research which focused on the effects of interaction analysis on learning settings has achieved various degrees of success. As a potential supervisory technique, interaction analysis provides teachers with objective feedback for self-evaluation and possible self-monitored improvement.

Most studies employing interaction analysis procedures have used short term designs and pre-service or student teachers as subjects. Typically, a multiple group design has been employed, with at least one group receiving interaction analysis training. Then one or more observations are completed, with or without the use of interaction analysis data as the basis of the subsequent supervision.

Classroom studies by Romoser (1964), Zahn (1965), Lohman (1966), Finske (1967), Yolo (1967), Smoot (1968), Gunnison (1968), Retson (1969), Narotsky (1972) and Field (1973) all

utilized this experimental design, with results overwhelmingly favoring instruction in and/or supervision utilizing interaction analysis techniques. In other words, teachers who received interaction analysis training and/or supervision modified their teaching behavior in several significant ways (i.e., increased teacher praise, increased teacher acceptance, increased student initiated contacts, reduced lecturing behavior, and reduced teacher input), which often resulted in significant changes in the atmosphere of the classroom. (See Table 1).

A unique design among these studies was employed by Hill (1966), who used a pre-, a post-, and a delayed post-observation design. Results indicated that initial positive changes in teacher behavior noted on post observations, were not sustained in the delayed post- observations. Specifically, Hill reported that there were decreases noted for the parameters of teacher praise, teacher use of questions, teacher criticism, and an overall increase in teacher domination, when the post-and the delayed post- observations were compared.

Recently, studies of this nature have appeared in the literature focusing on teaching behavior in movement classes.

Kielty (1975), at Boston University, Hendrickson (1975), Rochester (1976), and Voegl (1976) at Ithaca College, and Cheffers and Mancini (1979), all examined the effects of interaction in the gymnasium (See Table 2).

The above-cited investigations, all of which contributed much to the study of the teaching behavior of movement educators, however, also used short-term experimental designs. The present, pilot investigation attempted to continue this line of research with several modifications:

1. The subjects of this investigation were experienced teachers.
2. A modified case study design was employed.
3. Repeated, daily, multiple observations were recorded for each subject's teaching behavior and interaction patterns in the movement class.

The purpose of this pilot study was to determine the effects of long-term, daily supervision which employed interaction analysis procedures on the teaching behavior and interaction of four elementary school physical education teachers.

Each subject was an experienced and qualified teacher of physical education. Each teacher was observed twice per day (AM and PM) for a period of twenty consecutive teaching days,

resulting in forty observations per subject. The researcher met with each teacher once per day in order to discuss the lessons observed. These conferences, which were 10-20 minutes in length, took place during the close of the school day. Two of the four teachers (one male and one female) received conventional supervision, without discussing the interaction analysis data. In the latter case the researcher restricted his comments to the general elements of the observed lessons (e.g., discipline problems, lesson plans, etc.).

The instrument used was The Cheffers Adaptation of Flanders Interaction Analysis System (hereafter referred to as CAFIAS), which describes interaction patters and teaching behavior during instructional sessions (See Table 3). CAFIAS was selected for use because of its unique capabilities, specifically:

1. CAFIAS describes both verbal and nonverbal teacher and student behaviors.

2. CAFIAS is designed to describe class structure (i.e., class in one large group, class working in small groups, or the class structured without teacher influence).

3. CAFIAS describes the teaching agency, based on the view that whenever learning takes place teaching has occurred (i.e., the teacher as teacher, the student as teacher, the environment as teacher).

For a complete explanation of CAFIAS, including assumptions, procedures for use, ground rules, and sample episodes, refer to Cheffers, Amidon, and Rodgers (1974).

Using the program developed by Rodgers (Cheffers et al, 1974) to facilitate the data analysis and compute the required ratios and interaction matrices, the data were presented in three major categories:

1) Use of CAFIAS categories (See Table 3).

2) Thirty-one major CAFIAS parameters (See Table 4).

3) Patterns of Interaction between teacher and students as well as among students.

A Kruskal-Wallis one-way ANOVA revealed the following:

1. Movement classes of teachers who received feedback including CAFIAS interaction analysis data recorded significantly higher values for:

   a) Teacher contribution, verbal and total
   b) Teacher acceptance and praise, verbal, nonverbal and total
   c) Pupil initiation, verbal, teacher suggested
   d) The use of other students as teachers
   e) Class structured in groups or as individuals
   f) Teacher praise, verbal and nonverbal

2. Movement classes of teachers who did not receive CAFIAS data as feedback in the supervisory process were significantly higher in:

a) Silence and/or confusion
b) Teacher use of questioning, verbal, nonverbal and total
c) Teacher emphasis on subject matter (i.e., content emphasis)
d) Class structured as one unit
e) Teacher acceptance, verbal and nonverbal
f) Teacher directions, verbal and nonverbal
g) Teacher nonverbal criticism
h) Student predictable response, verbal

3. The observed interaction was similar for both supervisory groups, with the following differences: Teachers receiving conventional supervisory feedback (i.e., without CAFIAS data) utilized more questions, while those teachers in the CAFIAS feedback group employed more praise and encouragement (See Table 5).

Based on the results of this study it can be concluded that:

1. The use of interaction analysis data (i.e., CAFIAS), employed on a daily, long-term basis, seemed to influence teaching behavior and the resulting interaction in the gymnasium.
2. The use of CAFIAS as a feedback mechanism provides teachers and supervisory personnel with much specific information related to the teaching-learning process, which can be used to stimulate change, growth, and the improvement of pedagogical practice.

Table 1

Interaction Analysis Studies: Interaction Analysis

Instruction as the Independent Variable

Investigator	Year	Instrument	Results/Conclusions
Romoser	1964	Flanders Interaction Analysis System (i.e., FIAS)	Changed attitudes of teachers
Lohman	1966	FIAS	Fias trained teachers were most indirect lectured less, reduced teacher commands, accepted and clarified student ideas, increased student talk, and increased spontaneous student talk.
Zahn	1965	FIAS	Instruction and supervision of student teachers using interaction analysis appeared to be related to a positive change in teaching attitudes.
Hill	1966	FIAS	Inservice teachers studies, Pre-, post-, and delayed post observation design. Increased teacher acceptance. Teachers were more indirect; Six changes significant at .05 level from pre- to delayed post-observation. Initial increases for parameters of teacher praise, teacher use of questions, teacher criticism, and teacher dominance were not sustained through delayed observations.
Winske	1967	FIAS	Studied student teachers. More flexible at beginning and end of clinical experience. More extended indirect influence, elicited more pupil-initiated talk.

Table 1 (continued)

Investigator	Year	Instrument	Results/Conclusions
Yolo	1967	FIAS	Reported that greatest value of interaction analysis is its ability to focus attention on specific aspects of teacher-student interaction.
Smoot	1968	Laboratory Observation Schedule and Record (LOScAR)	Studied the effect of interaction analysis and feedback on verbal aspects of teaching. Secondary student teachers employed. Those receiving training exhibited different teaching behavior from those who did not (significant differences on 5 of 22 variables)
Gunnison	1968	FIAS	Studied student teachers. Teachers trained. reduced emphasis on content, were more indirect, lectured less, employed less teacher criticism, increased use of praise acceptance and teacher questions.
Retson	1969	FIAS	Studied student teachers. Experimental group received FIAS training. Reported improved I/D and i/d ratios (i.e., teachers became more indirect). The amount of pupil initiated talk increased.
Narotsky	1972	FIAS	Individuals trained in FIAS exhibited positive trends in 4 of 6 variables.
Field	1973	FIAS	Student teachers who received FIAS training, instruction, and practice differed significantly at the .05 level on several variables. Interaction analysis changed attitudes of the teachers. More of FIAS trained teachers received high ratings of teaching ability by supervisors.

Table 2

The Cheffers Adaptation of Flanders Interaction

Analysis System (CAFIAS) EMPLOYED IN MOVEMENT SETTINGS AND THE CLASSROOM

Study	Year	Results
Cheffers & Mancini	1978	(One week) Short term effects of CAFIAS feedback with classroom teachers. All six teachers benefited by descriptive feedback of behaviors and interaction patterns.
Kielty	1975 Boston University	Pupils perceived pre-service physical educators with CAFIAS training as more indirect and accepting of their behavior than non-trained pre-service student teachers.
Hendrickson	1975 Ithaca College	Subject employed were pre-service physical educators Significant differences on 7 variables at .05 level reported between trained and untrained teachers.
Voegl	1976 Ithaca College	Subject employed were physical education student teachers. Experimental group received CAFIAS instruction. Significant group differences at the .05 level revealed between trained and untrained teachers.
Rochester	1976 Ithaca College	Employed pre-service teachers. Each subject received instruction and supervision with CAFIAS. Micro-peer lessons utilized. Training and supervision found beneficial in the preparation of pre-service teachers.

Table 3

The Categories of CAFIAS

Categories	Examples of Specific Behaviors
2 Teacher Use of Praise -- Verbal (A Positive value assessment)	Praises, commends, jokes, encourages.
12 Teacher Use of Praise -- Nonverbal	Claps hands, pats on back, smiles, laughs, winks, shakes student hand.
3 Teacher Acceptance -- Verbal (No value implied)	Accepts, clarifies, uses, and develops suggestions and feelings by learner.
13 Teacher Acceptance -- Nonverbal (Elevates student performance onto a par with teacher performance)	Nods without smiling, catches object thrown by student, plays with student,
4 Teacher Question -- Verbal	Asks questions requiring student answer.
14 Teacher Question -- Nonverbal	Wrinkles brow, scratches head, cups hand to ear.
5 Teacher Lecture -- Verbal	Information giving, gives facts.
15 Teacher lecture -- Nonverbal	Demonstrates, writes, draws, etc.
6 Teacher Direction -- Verbal	Gives directions or orders which result in immediate observable student response.
16 Teacher Direction -- Nonverbal	Points, blows whistle, pushes student.
7 Teacher Criticism -- Verbal (A negative value assessment)	Criticizes, expresses anger, or distrust, extreme self-reference.
17 Teacher Criticim -- Nonverbal	Growls, frowns, shakes head, hits.
8 Student Predictable Response -- Verbal	Student Response that is entirely predictable, such as obedience to orders and responses not requiring thinking.
18 Student Predictable Response -- Nonverbal	Robot-like movement responses, mechanical responses with minimal nervous activity.
8\ Student Interpretive Response -- Verbal	Student responses requiring some measure of evaluation, synthesis, and interpretation, although within the province of predictability.
18\ Student Interpretive Response -- Nonverbal	Interprets movement, all game playing, test taking.
9 Student Initiated Behavior -- Verbal	Pupil talk that is the result of their own initiative and which could not be predicted.
19 Student Initiated Behavior -- Nonverbal	Interrupting sounds, raises hand to ask question, begins creative movement, makes up own game.
10 Confusion, Disorder, Noise	Chaos, noise, and confusion.
20 Silence	Children sitting quietly, awaiting teacher just prior to entry, etc.

Table 4

Major CAFIAS Parameters

Major Parameters of CAFIAS	Statistic	Major Parameters of CAFIAS	Statistic
Teacher contribution, verbal	%	Pupil initiation, verbal (student suggestion)	Ratio
Teacher contribution, nonverbal	%	Pupil initiation, nonverbal (Student suggestion)	Ratio
Total teacher contribution	%	Total pupil initiation (student suggestion)	Ratio
Student contribution, verbal	%	Content emphasis (teacher input)	Ratio
Student contribution, nonverbal	%	Teacher as teacher	%
Total student contribution	%	Other students as teacher	%
Silence	%	The environment as teacher	%
Confusion	%	Verbal emphasis	%
Total silence and/or confusion	%	Nonverbal emphasis	%
Teacher use of questioning, verbal	Ratio	Class structure (as one unit)	%
Teacher use of questioning, nonverbal	Ratio	Class structure (group or individual)	%
Total teacher use of questioning	Ratio	Class structure (no teacher influence)	%
Teacher acceptance and praise, verbal	Ratio	Teacher empathy to student emotions	Freq. count
Teacher acceptance and praise, nonverbal	Ratio		
Total teacher acceptance and praise	Ratio		
Pupil initiation, verbal (teacher suggestion)	Ratio		
Pupil initiation, nonverbal (teacher suggestion)	Ratio		
Total pupil initiation (teacher suggestion)	Ratio		

Table 5

Patterns of Interaction	
CAFIAS SUPERVISION	TRADITIONAL SUPERVISION
1. 5-5-6-18-6	1. 5-5-6-18-6
2. 18 - 2	2. 18 - 18
	3. 4 - 18

What Do These Patterns Mean?	
1. Extended teacher information giving, followed by teacher directions, leading to student nonverbal, predictable behavior, followed by another teacher direction.	1. Extended teacher information giving, followed by teacher directions, leading to student nonverbal, predictable behavior, followed, by another teacher direction.
2. Student nonverbal, predictable behavior, followed by teacher praise.	2. Extended student, nonverbal, predictable behavior.
	3. Teacher question, followed by student nonverbal, predictable behavior.

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