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AUTHOR Lane, Stacey L.; And Others
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ABSTRACT

This study focused on the interactive decision making of inexperienced preservice physical education teachers and the value of peer teaching for developing appropriate thought processes. Videotapes were made of seven undergraduate physical education majors teaching their peers and data stemming from observation of the tapes were analyzed for certain behaviors. Both roles (teacher and student) were studied. Results indicated that during interactive teaching both teachers and students focused most of their attention on the interest level and management tasks of the entire class. It is concluded that microteaching can be a valuable tool for formative teacher evaluation. (CB)

Microteaching in Physical Education: Perceptions of Decision Making Strategies

Stacey L. Lane, Janice M. Bibik, and Timothy J.L. Chandler
Syracuse University
Syracuse, New York

Introduction

Concern over the general quality of physical education programs, and more particularly over the levels of fitness of the young people who participate in such programs in our schools, has led to a call for the reappraisal of teacher education programs in physical education in attempts to improve the practice of teaching physical education (Kneer, 1987). Clinicians and practitioners have been looking for ways of improving both the academic and the practical/methodological education of teachers in general and physical education teachers specifically.

For example, Shulman (1986b) recognized a need for the development of three levels of content knowledge for teachers; subject matter content knowledge, pedagogical content knowledge, and curricular content knowledge. However, to use Shulman's terms, improving content knowledge of prospective teachers has been no easy task. Teachers of all subjects at all levels have been under attack, including, recruits to the physical education profession who taditionally have had low GPA's and low scores on national aptitude tests (Templin, Woodford, & Mulling, 1982). In order to combat low scores, two possible means of improving content knowledge have been identified, including; both academic and practical efforts. Inevitably, it has been easier to raise the standards for selection of students and stave up the quality of the "academic" elements of teacher

education programs in physical education (through additional courses and improved monitoring of outcomes through such means as the NTE exam) than it has been to improve the quality of methods courses, practica, internships, and the student teaching experience.

While research on teaching physical education, and on teacher education in physical education has been less than voluminous, pioneers in the field have outlined a number of critical areas of "practice" which need to be addressed. Locke (1984) has noted at least eight areas of weakness in the performance of physical education teachers which should be the focus of future research in the realm of teacher preparation. In particular Locke suggests that many physical educators do not: plan in advance, provide enough positive reinforcement or timely reinforcement (directly following execution of skills), provide enough time to practice skills, provide clear and appropriate demonstrations, and practice strategies which would minimize time spent on managerial tasks.

Through the use of microteaching, and concentrating on teachers' thought processes, we felt that we could most readily address the majority of the problems outlined by Locke (1984), while improving the quality of instruction and feedback in the preparation of our physical education teachers in methods courses.

Research on teacher thought processes is not a new notion. Since the summer of 1974, when Panel the National Conference on Studies in Teaching met and compiled a report on teaching as clinical information processing, research in this area has flourished (Peterson, Marx, & Clark,1978; Clark & Yinger,1979; McCutcheon,1980; Shavelson & Stern,1981). The panel's report provided both the rationale and a

framework for proposed research on teachers' thought processes. Panel 6 "was concerned with improving knowledge about the mental life of teachers which is considered important in understanding the process of teaching and how teachers behave in the classroom (Panel 6 report, p. 51). The Panel conceived of a model for clinical information processing which posited four general categories of interrelated variables. From this model the Panel generated approaches to research which included teacher perceptions, diagnostic judgment, prescription, and decision making. Research which followed the publication of the Panel 6 report has been directed at studying all of these facets of teacher cognitions (Peterson & Clark,1978; Shavelson & Stern, 1981; McNair & Joyce,1981; Morine-Dershimer & Oliver, 1986).

In general, teachers' thought processes can be categorized in two phases: preactive and interactive. The preactive phase refers to planning and the interactive phase refers to the act of classroom teaching. A variety of techniques have been employed to study the interactive phase of teacher cognitions, including thinking aloud, stimulated recall, journal keeping, and the Kelly repertory grid.

Panel 6 envisioned that the findings of research in teachers' information processing would be used to promote further research on teacher selection, teacher education, and in the design of new staffing configurations which would be sympathetic to the ways teachers think and feel. In studying the thought processes and feelings of teachers, the intent of the present research is to contribute knowledge on the value of peer teaching exercises which will ultimately aid teacher preparation programs.

The focus of this study was on the interactive decision making of inexperienced preservice physical education teachers. The value of peer teaching for developing appropriate thought processes was examined through exploring differences in the interactive thought processes between preservice teachers acting as teachers and preservice teachers acting as students in microteaching experiences. In addition, the researchers sought to discover if preservice teachers had the same perceptions regarding decision-making strategies in their dual roles of student of peer teacher and student.

Methodology

This study used the stimulated recall technique to study the interactive thoughts and decisions of preservice physical education teachers. Several studies have utilized stimulated recall techniques to investigate such processes (Colker, 1982; Housner & Griffey, 1985 ; Marland, 1977; McNair, 1978-79; Morine & Vallance, 1975; Peterson & Clark, 1978; and Wodlinger, 1980). Of these studies only Housner & Griffey (1985) investigated the thought processes of physical educators which occur during the interactive phase of preservice physical education teaching. A purported benefit of past research on teacher cognitions has been to identify thought processes of experienced teachers. The ultimate goal of this research is to assist inexperienced teachers in acquiring thought processes which resemble those of experienced teachers' sooner and hence make more effective instuctional decisions. A number of recent studies employing stimulated recall techniques have attempted to

distinguish differences in interactive decision making between experienced and inexperienced teachers (Berliner & Carter, 1986; Marcelo, 1986; Awua-Boateng, 1983; and Housner & Griffey, 1985).

Subjects

Seven undergraduate physical education majors at Syracuse University participated as subjects. The six men and one woman were enrolled in a professional preparation theory course in secondary methods of physical education. Each student micro-taught two lessons to the class as part of the course requirements. When one student acted as peer teacher, the remaining six acted as the students for the class. Teaching assignments were thus completed on a rotating basis. Four of the seven students were studied in their dual role of peer teacher and student, while the remaining three were studied only in their role as student. Both lessons were videotaped for each designated peer teacher and all subjects were videotaped as they participated in each lesson.

Data Collection

Immediately following each of the eight videotaped lessons, stimulated recall interviews were conducted with the peer teacher. During the interview each subject was requested to stop the videotape when he/she was aware of making a decision or noticing something about the lesson. Following this interview each of the subjects who acted as students was shown the videotape of the lesson and asked to comment during each of the

stops identified by the peer teacher. Each student was requested to address his/her remarks towards what he/she was thinking about at that point in the lesson. All stimulated recall interviews were conducted individually and were audiotaped. Transcripts of the audiotapes were made for the purposes of coding peer teacher and student comments. The audiotapes and videotapes were played simultaneously to assure that the stops on the videotape coincided with the comments on the audiotape. During this session cues from the videotape were noted and the stops were marked by recording the number on the videocounter for the purpose of analysis.

Although this method of data collection is supported by various research studies (Clark and Peterson,1981, McNair 1978-1978, Morine and Vallance 1975, and Wodlinger, 1980), potential pitfalls in the stimulated recall protoco have been noted. Clark & Peterson (1986) recognize the problem of "off-task" thoughts not being reported by the teachers interviewed as a weakness in the stimulated recall protocol used in previous research. In an attempt to overcome this hazard the subjects in this study were encouraged to report all "off-task" thoughts.

Data Analysis

An adaptation of Oliver's (1978) coding system was developed and utilized in order to classify focus during interactive teaching.* The general categories employed in the coding system were teacher action, student action and interaction. Teacher Action included

* A complete copy of this protocal can be obtained from the Syracuse University Department of Health and Physical Education upon request.

management/organization; explanation; teacher demonstration; teacher behavior; and other. Management/Organization was the time the teacher spent organizing the class, taking roll, distributing equipment, and organizing drills. This category also included transition time between parts of the lesson.

Examples from the transcripts which illustrate how this category was coded include this statement by Peer Teacher C:

"I didn't know how to set this up because of the bleachers at the side. I didn't know where to have everyone stand so I kind of messed myself up for the rest of the class..."

Student D stated:

"It probably would have been better if he had told us not to change instead of letting us do it on our own... It wasn't bad, but it was a little unorganized. He had a little problem with organization..."

Explanation was interpreted as the teacher directing the attention of the learner toward the essential aspects of the skill, giving the learner direction, and clarifying the goal of the lesson for the student. Student D noted:

"Well, earlier in the lesson when she was explaining the backhand, there were two problems that I had with the explanation..."

and again observed:

"He even mentioned footwork as a reminder to us and he threw in the ball instead of letting the student chase it and wasting time."

Demonstration entailed the teacher presenting the movement idea to the student by modeling the skill, showing a film or picture, or using an expert performer. Student B noted:

"I thought it was good that she saw someone who knew what they were doing and was willing to use them as a demonstrator, because I think he definitely had good technique. You picked up a few things just watching him."

Teacher behavior involved the teacher taking note of particular aspects of his/her behavior such as his/her mannerisms and positioning in the gymnasium. Peer Teacher A noticed:

"Right here is another problem I see as far as my teaching position is with people behind me..."

Student E also noted:

" As a teacher, I would position myself differently. In some cases during the skills he could have been more centrally located."

Other was a behavior category used as a catch-all for teacher behaviors not covered by the other behavior categories. Peer Teacher C commented:

"I didn't know what I was saying I guess I should have known this a little better (tennis footwork). I was getting confused."

Student A noted:

"I think at this point I was confused about where to go and what to do. He didn't do a very good job telling us where to go."

Student demonstration, information processing, and "no comment"

comprised Student Action. Student demonstration defined the movement idea which was presented to students in the class by a class member, skilled or non-skilled. Peer Teacher C mentioned:

"I don't know if I should have put the pressure on ____ at that moment, because for a secondary class, some people don't want to be recognized. Well, some people do but maybe ____didn't."

Student B commented:

"I thought it was good that she (peer teacher C) saw someone who knew what they were doing and was willing to use them as a demonstrator. Because, I think ____ definitely had the good technique. You picked up a few things just watching him. It was a good move."

Information processing occurred when the student was attending to instructions given by the teacher who was explaining or demonstrating a skill and focused on the execution of the skills they were practicing. Student B provided an example of information processing:

"Here I was just performing the task. I really wasn't paying much attention to anything she (peer teacher C) was saying. I was just trying to concentrate on what she told us during the instruction period."

"No comment" was utilized by the students when, for whatever reasons, they had no reaction to the action on the videotape.

Finally, Interaction encompassed feedback, promoting practice, individual instruction, and student behavior. Feedback defined teacher verbal or non-verbal reactions to errors or successful attributes in the student's performance.

Peer teacher A stated:

"The whole time I was going back and forth, like when the group was doing it, I really didn't know what to actually say as far as comments...usually, a lot of times, in those situations you're looking for something to be critical of in order to tell them, like, maybe you're doing it wrong..."

Student E noted:

"She (peer teacher C) seems to be making sure she goes around and at least says something to everybody ..."

When the teacher directed or guided the student through trials of the skill and set up learning tasks related to the skill, or the student referred to this action, it was categorized as promoting practice. Student A noted:

"I would say that he is doing a pretty good progression as far as introducing the skill. I thought the last drill was pretty good for getting people to concentrate on the motion and now he's actually bringing the moving ball into the skill..."

Student E related:

"I started to wonder about why he hasn't got us volleying. Why did we just serve only?"

Individual instruction was the category response recognized when reference was made to the teacher working in a one-to-one teaching situation with a student.

Student E noted:

"I didn't realize that all of the class was going on but she is sp nding alot of time with him and at some point she has to decide if the amount of time she is spending with him is sacrificing the other students..."

When the teacher or other students in the class took note of particular student behavior including questions, disruptive behavior, and students assisting other students this was grouped as student behavior. For example, Peer Teacher D observed:

"...Everyone pretty much had enough and it was starting to take away from the game; people started getting tired and started walking..."

Peer Teacher C observed:

"I don't know if I should have stopped them so soon after just telling them about the two lines on the wall, but they looked like they didn't know how to play..."

Peer Teacher A realized that:

"It took quite a while and I thought people on the end were just standing there pretty much. And I know that's something we don't want them to do..."

"When people weren't participating to maybe mention to them that they should be watching everyone else's performance. Maybe that's a way I could have kept them involved..."

The transcripts were analyzed by two trained coders according to the coding system. Inter-coder agreement reached 95%. The mean percentage of occurance of each behavior category was calculated for all stops of the videotape which were made by the peer teacher. Tables 1 and 2 represent the percentages of category occurrence for the peer teachers as a group and for the students as a group.

Insert Tables 1 and 2 about here

General trends of the peer teachers' and students' focus during interactive teaching are presented in terms of the major categories of teacher action, student action, and interaction (See Table 3). Additionally, each individual element within the main categories was calculated (See Table 4). Based on the mean percentages correlations were performed to determine whether there was a significant relationship between the focus of the students and the focus of the peer teachers during interactive teaching.

Insert Tables 3 and 4 about here

Additionally, the mean percentage of stops were analyzed to determine congruencies of focus during interactive teaching of those subjects selected to be studied as peer teacher in their role of peer teacher and student (See Table 5).

Insert Table 5 about here

Results and Discussion

Using Pearson Product Moment Correlations, the relationship of focus during interactive teaching between the peer teacher and students was $r=.5629$, $p \leq .05$. For ease of comparison a graphic representation of the mean percentage of focus during interactive teaching was designed (See figures 1 and 2). Both groups focused primarily on teacher action, although the peer teachers did so more than the students (68.3% and 56.9% respectively). Within the general category of teacher

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Insert Figures 1 and 2 about here

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action the primary focus was on management/organization (peer teacher, 34.9%; student, 29.3%). This supports findings of other studies in the cognitive domain (Awua-Boateng,1983; Beyerbach, 1983) and in the psychomotor domain (Housner & Griffey, 1985).

A secondary focus within teacher action was that of teacher behavior. Both peer teachers and students emphasized this area (14%). Given that this study was conducted in a secondary physical education methods class, it would not seem unusual to see such a heavy emphasis on teacher behavior. Also,within the teacher action category both groups revealed a focus on the category of explanation, 7.5% and 9.6% for peer teachers and students respectively. Peer teachers had a higher focus on interaction (31.7%), specifically student behavior (19.9%). In terms of student behavior, the specific focus of the peer teacher was on the behavior of the class as a whole as opposed to individual behavior. Students had a higher focus on student action (24.3%), specifically the "no comment" category

(20.2%). Perhaps this category was high because the students were thinking as students and thus had nothing to add in terms of interaction or teacher action during those particular stops on the videotape. It is also possible to speculate that students were thinking about "off-task" subjects and were reluctant to report this thinking even though they were encouraged to report such thoughts.

Within the general category of Interaction both peer teachers (9.7%) and students (8.1%) focused on promoting practice. This category included choice and execution of drills. Once again, this is a likely result of utilizing subjects who are enrolled in a secondary physical education methods class where the emphasis is on designing and implementing appropriate methods of practice.

In a separate comparison of peer teacher with that same individual as a student, the overall picture was much the same (See Figure 3). It was

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Insert Figure 3 about here

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interesting to note that Student B focused above the mean on teacher action when performing the role of peer teacher and above the mean on student action while acting as a student -the implication being that this individual's focus of attention is internal (Nideffer, 1976). Further research is warranted before specific implications or conclusions can be drawn regarding internal focus. However, generally speaking , it is possible to speculate that such an individual will be less effective as a teacher until confidence and maturity have developed. Pre-service

teachers in methods of teaching classes are asked to change from the role of student about which they have well formulated schemata, beliefs, and theories, to the role of teacher where such aspects are comparatively ill-formulated. This is a difficult task. One of the functions of microteaching lessons is to break down the tendency to focus inwardly and to refocus on student learning (Frager,1985). This can be facilitated by encouraging teachers to concentrate on giving feedback and offering ample opportunity for practice time.

To become a "good" physical education teacher subject matter knowledge is a necessary but not a sufficient prerequisite. To highlight this fact, one of the subjects in this study had the highest GPA of the seven subjects (3.0) and yet did not have the ability to look outside himself either as student or teacher in this interactive environment. The task of teaching well requires much more than subject matter knowledge. It requires the conception of a plan, the implementation of that plan, interaction based on that plan, and then appraisal and evaluation based on the outcomes. For the novice teacher lesson planning is more a means of creating a "lesson image" (Morine-Dershimer, 1977) than it is of fulfilling any of the functions identified by Clark & Yinger (1979). University supervisors have used lesson plans as a means of helping students reduce anxiety without fully realizing the importance to novice teachers of lesson plans as a means of creating the "lesson images". Too often students only get the chance to "try out" the whole process during student teaching where, inevitably, the environment or milieu (Schwab, 1973) is often less than relenting. We, as teacher educators, are looking to increase our students' experience and thus their store of "mental images",

theories, and schemata, while giving them an opportunity to test the validity of their beliefs with regard to gymnasium practice. Such experiences, we hope will, in turn, affect teacher actions and thus, by extension, student behavior and achievement. Peer microteaching experiences can be invaluable in allowing students to explore the teaching process in a somewhat "safe" environment. When we videotaped these peer teaching experiences we then added a valuable diagnostic dimension to teaching which is not always possible with the traditional forms of feedback. In this study the instructor attempted to monitor the steps of the teaching process. Specifically, lesson plans were asked for in advance and the execution of that plan, during a secondary methods class at Syracuse University, was videotaped. The student-teacher and the peer-students were given the opportunity to appraise the execution of the plan before evaluation and feedback was given by the class instructor. The evaluative process was completed prior to the student executing a second lesson plan in the same microteaching environment. This evaluative process allowed the student in his/her second teaching experience, to try out suggestions made by the instructor and fellow students regarding the lesson and to make improvements in areas he/she felt were weak.

Implications

1. During microteaching both peer teacher and students focused primarily on teacher action. These results are similar to those in other subject areas conducted by Awua-Boateng (1983) and Beyerbach (1983). This study, then would substantiate that physical education pre-service

teachers focus on or attend to similar aspects of teaching as teacher's in other subject matter area's. Traditionally physical educators are thought to be a separate entity in the world of education (as one of a group of "specials" along with art, music, etc...), and perhaps, this should not be the case, at least in terms of teachers cognitions. The consistancy of results in this study with studies in other subject matter areas would seem to indicate that physical educators should be placed with other future educators in teacher education courses. Essentially, there is no need for physical educators to "reinvent the wheel". The time and efforts of physical educators could be better spent supplementing the research and teacher preparation training that is provided by colleagues in general education.

2. All of the other research cited within this study investigated the thought processes of novice teachers or preservice student teachers in a "natural" teaching environment. The fact that the results of this study were consistant with the results in those studies, would seem to validate the use of microteaching in methods classes. If, during microteaching, the students focus on the same thought processes as during student teaching, then why not expand the use microteaching as a tool for improving teachers' thought processing and/or developing thought processes more like experienced teachers during methods classes, instead of waiting until teachers go out and face the "students" in the student teaching experience. More research in this area is warranted.

3. Microteaching can be a valuable tool for formative evaluation in teacher

education, at least in terms of developing teacher cognitions. In utilizing microteaching and stimulated recall, followed up by an evaluation by the instructor, students in teacher education programs can work toward developing cognitions more like experienced teachers. In striving toward becoming more like experienced teachers, we believe that this protocol can be used to assess the student's progress if used as an ongoing instrument of formative evaluation. Due to the limited sample size and length of the study, more research in this area is recommended.

Conclusions

This study lends support to the findings of other studies on classroom processes and teacher and student cognitions (Awua-Boateng, 1983; Berliner & Carter, 1986; Beyerbach, 1983; Housner & Griffey, 1985; Marcelo, 1986; Morine-Dershimer & Oliver, 1986; Shulman, 1986a). That is, during interactive teaching both teachers and students focused most of their attention on the interest level and management tasks of the entire class. These findings enhance our understanding of teacher and student thought processes during interactive teaching in physical education. Due to the limited sample size, it is not possible to generalize, with any degree of certainty, the results of this study. However, it is intended that this study stimulate further research with a larger sample. In order for a study of this type to be more meaningful it is recommended that a longitudinal approach be employed. Much of the body of knowledge on teachers' thought processes has been gleaned from experienced teachers. Little is known of the development of teachers' thought processes and of

the interventions necessary to help these processes develop (Clark & Peterson (1986, p. 292). Therefore, the intent of the researchers is to follow the subjects through the remainder of their preservice teaching and into their first few years of practice.

Through the use of the techniques described above, we can assess and then set about encouraging the use of and improvement of interactive thought, including such elements as how and when to give feedback, and creating a positive learning environment. Undoubtedly the teacher behavior factors are necessary pre-conditions for interactive thought processes, as is subject-matter knowledge, but ultimately what distinguishes the experienced and able teacher from the inexperienced and less able is the general quality of interation which connects learning to teaching.

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Table 1

Peer Teacher: Focus of Interactive Thinking
(Percentage of Stops)

	A		B		C		D		
Teacher Action	1	2	1	2	1	2	1	2	Composite
Managerial/Organization	22.7	30.6	31.6	50	37.5	31.3	50	35.7	34.9
Explanation	4.5	13.9	7.9	8.3	4.2	-	12.5	-	7 5
Teacher Demonstration	9.1	5.6	7.9	-	-	-	-	-	3.8
Teacher Behavior	18.2	11.1	23.7	-	20.8	6.3	4.2	14.3	14
Other	4.5	8.3	13.2	16.7	12.5	6.3	-	-	8 1
Student Action									
Student Demonstration	0	0	0	0	4.2	0	0	0	.5
Information Processing	-	-	-	-	-	-	-	-	-
No Comment	-	-	-	-	-	-	-	-	-
Interaction									
Feedback	4 5	-	2 6	8 3	-	-	-	-	1 6
Promoting Practice	18 2	16 7	5 3	-	-	6 3	12 5	21 4	9 7
Individual Instruction	-	-	-	8 3	-	-	-	-	5
Student Behavior	18 2	13 9	7 9	8 3	20 8	-	20 8	28 6	19 9
Teacher Action	59 1	69 4	84 2	75	75	43 8	66 7	50	68 3
Student Action	0	0	0	0	4 2	0	0	0	5
Interaction	40.9	30.6	15.8	25	20 8	6 3	33 3	50	31.7

Table 2

Students: Focus During Interactive Teaching (Percentage of Stops)

Teacher Action	A	B	C	D	E	F	G	Composite
Managerial/Organization	33.8	20.2	32.7	23	24	20.6	26 1	25 3
Explanation	10.3	7.7	3.8	13 5	8.4	11.9	7.2	9.6
Teacher Demonstration	1.5	3.8	-	2	2 4	8.8	4.3	3.2
Teacher Behavior	16.2	10.6	17 3	12.8	19.2	11.8	5.8	14
Other	2 2	2.9	7 7	6 1	4.8	1	13	4 8
Student Action								
Student Demonstration	.7	1	-	-	1.2	2	-	.8
Information Processing	2 9	15 4	-	1.4	1 2	-	2 9	3 3
No Comment	10.3	25	25	18 2	25 1	15 7	27 5	20.2
Interaction								
Feedback	2.2	3 8	1 9	4 1	1 8	16 7	1 4	4 5
Promoting Practice	11 8	5 8	7 7	10 1	6	7 8	5 8	8 1
Individual Instruction	4 4	1	1 9	3 4	1 8	1	-	2 2
Student Behavior	3.7	2 9	1 9	5 4	4 2	1 5	5 8	4
Teacher Action	64	45 2	61 5	57 4	58 7	53 9	56 5	56 9
Student Action	14	41 3	25	19 6	27 5	17 6	30	24 3
Interaction	22.1	13.5	13.5	23	13 8	28 4	8 7	18.8

Table 3

Focus During Interactive Teaching Comparison By Role
General Trends
(Mean Percentages)

	Teacher Action	Student Action	Interaction
Peer Teacher	68 3	5	31 7
Student	56 9	24 3	18 8

Table 4

Focus During Interactive Teaching Comparison By Role
(Mean Percentages)

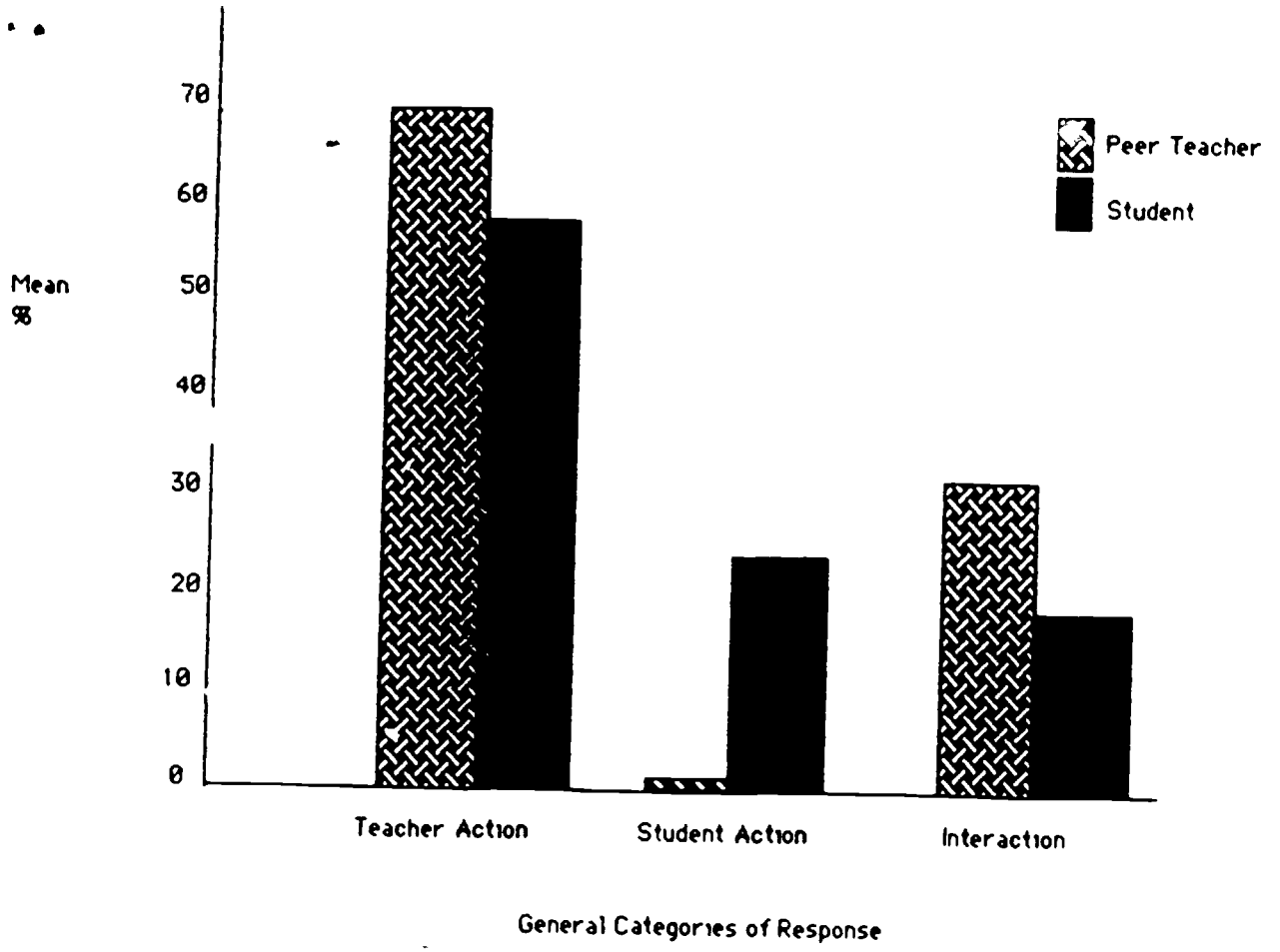
	Mgt/Org	Explain	Tch Demo	Tch Behav	Other	Stud Demo	Info Process	No Comment	Feed Back	Promote Practice	Indiv Instr	Stud Behav
Peer Teacher	34 9	7 5	3 8	14	8 1	5	-	-	1 6	9 7	5	19 9
Student	25 3	9 6	3 2	14	4 8	8	3 3	20 2	4 5	8 1	2 2	4

Relationship Between Peer Teacher and Students Significant at p< 05

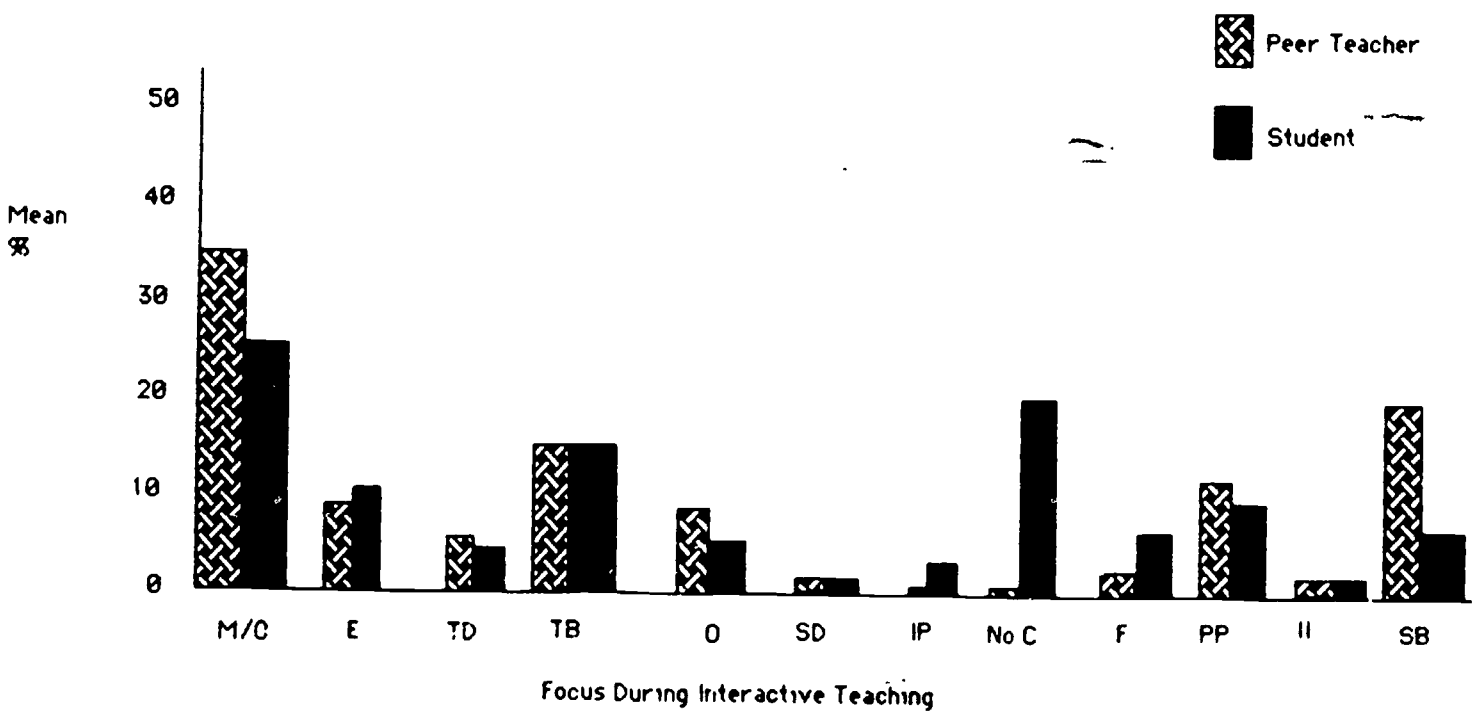
Table 5

Comparison of Focus During Interactive Teaching By Individual According to Role (Mean Percentages)

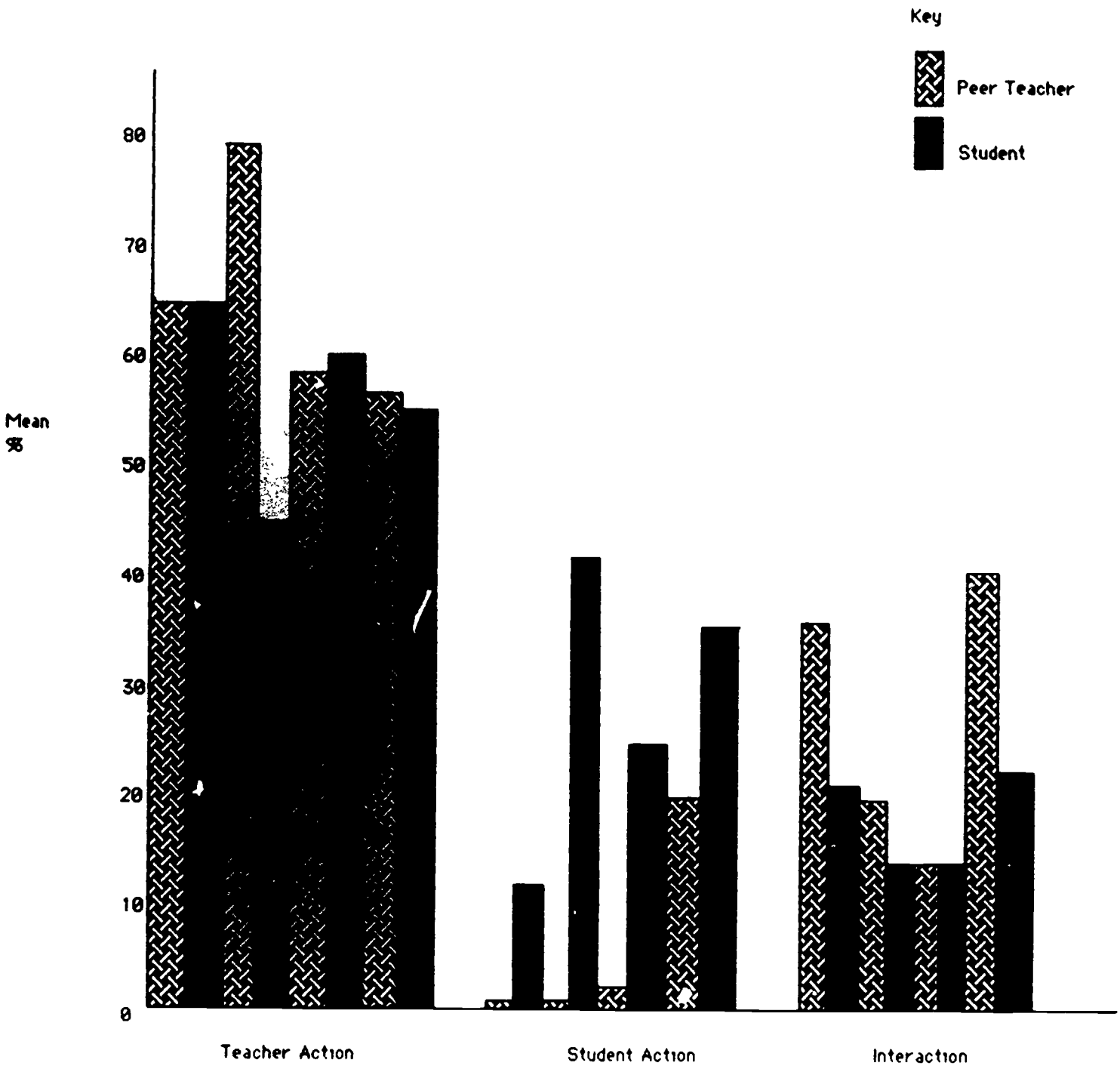
	A		B		C		D	
	Peer Teacher	Student	Peer Teacher	Student	Peer Teacher	Student	Peer Teacher	Student
Managerial/Organization	26.7	33.8	40.8	20.2	34.4	32.7	42.9	23
Explanation	9.2	10.3	8.1	7.7	2.1	3.8	6 3	13 5
Teacher Demonstration	7.4	1.5	4	3.8	-	-	-	4
Teacher Behavior	14.7	16.2	11.9	10.6	13 6	17.3	9.3	12 8
Other	6.4	2.2	15	2.9	9.4	7 7	-	6 1
Student Demonstration	-	7	-	.1	2.1	-	-	-
Information Processing	-	2 9	-	15 4	-	-	-	1 4
No Comment	-	10.3	-	25	-	25	-	18.2
Feedback	2.3	2 2	5 5	3 8	-	1 9	-	4 1
Promoting Practice	17 5	11 8	2 7	5 8	3 2	7 7	17	10 1
Individual Instruction	-	4 4	4 2	1	-	1 9	-	3 4
Student behavior	16 1	3 7	8 1	2 9	10 4	1 9	24 7	5 4
Teacher Action	64 3	64	79 6	45 2	59 4	61 5	58 4	57 4
Student Action	-	14	-	41 3	2 1	25	19 6	35 8
Interaction	35 8	22.1	20.4	13 5	13 6	13 5	41 7	23



Graphic Representation of General Categories of Response
Figure 1



Graphic Representation of Focus During Interactive Teaching
Figure 2



Graphic Representation: Comparison According to Individual Role

Figure 3