

# Student and Teacher Interaction Analysis: A Comparison of Activities, Age Groups and Sex of the Students in Physical Education

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In the context of the classroom, the complexity of interactions between and among students, teachers, and curriculum has become a well discussed, debated and researched topic. Analysis techniques range in construction from result, or product testing, to a moment-by-moment accounting for the process interpretation of the observable behavior episodes and patterns registered in the classroom proceedings. Clearly, both types of studies are valuable and necessary if a more lucid understanding is to be established in the direction of a more effective learning environment.

According to Locke (1977), physical educators have treated the gymnasium as a "black box" where students, teachers and curricula have been placed in the gym for a period of time. In short, effective teaching is measured by student accomplishment. (i.e., the end justifies the means). This black box phenomenon makes no attempt to describe the process in learning. Locke concluded that the field of physical education must open this box and scrutinize the contents.

In the quest to more clearly understand the physical education class, Cheffers (1977) suggested that the process must be understood if physical education is "to be dragged from the mire of myth and egocentric dramatization" (p. 26). Cheffers indicated

that through process instrumentation or systematic observation, scientific theories will eventually evolve which will lead to valid assumptions about teaching and learning.

Withal (1949) and Flanders (1960) produced the most widely recognized and frequently used systems for describing and analyzing the teacher/learner interaction pattern. Amidon and Simon (1965), Dougherty (1970, 1971) then Amidon et al. (1976), added categories of expected episodes of meaningful nonverbal behavior. This nonverbal category of interaction was a major breakthrough for the physical educator because activities in the gym, like developmental exercises, motor skill practice, and even creative movements, could be quantified as productive on-task behaviors. Dougherty, on behalf of the physical education research community, questioned Flander's assumption that the verbal behavior of an individual is an adequate sample of the individual's total behavior.

Physical educators and physical education students demonstrate interesting and unique patterns of interactions, as noted by Anderson (1975). It was observed that the interchange seemed to allow students little time to give the teacher verbal feedback. "Teacher-talk, student-listen, student-

move, and teacher-watch" appeared to be the general sequence, or pattern of interaction recognized in the gym (p. 34). The regular classroom setting seemed to follow a pattern of "teacher-talk, student-listen, followed by student-talk, and teacher-listen" (p. 34). Anderson concluded that interaction behaviors were different in physical education than regular classroom activity.

Previous research has shown that a clear difference exists between the regular classroom and the gymnasium interaction patterns of students and their teachers. The purpose of the present study was to investigate interaction of teachers and learners in physical education at an elementary school age level. The study examined the variables of age level of the student groups, sex of the student groups and the activity.

Cheffers expanded Flander's instrument to 20 interaction categories so it could be appropriate for use in the physical education setting (1972). It was later published by Cheffers, Amidon and Rodgers (1974) entitled Cheffers' Adaptation of Flander's Interaction Analysis System (CAFIAS). The instrument contained 14 categories of teacher interaction and six categories of student interaction. Research by Cheffers, Mancini and Martinek (1980) concluded that few differences existed between elementary and secondary level classes or sex of the teacher when usage of the categories, interaction parameters, and patterns of interactions were observed. Teachers seemed to use lecture and direction as predominant style of contacting the students. Specific categories that yielded significant results were: student initiated nonverbal responses--very few noted; punishment/correction of students--low frequency; teacher's acceptance of student ideas--low frequency; and teacher's praise--low frequency.

Rankin (1975) modified CAFIAS for use in classroom situations and developed a system for observing the interaction patterns of elementary school physical education classes that included ten categories of in-

teraction behavior (five verbal and five non verbal behaviors). The instrument was validated by collapsing the CAFIAS categories which related directly to the Rankin Interaction Analysis System (RIAS). Rankin's criterion reference validity coefficients of  $r_1 = .72$ ,  $r_2 = .61$  and  $r_3 = .62$  were accepted as recommended by Dayton (1970). These coefficients represent inter-rater agreement using the interval-by-interval (I-I) system.

Rankin concluded after 42 observations that male and female instructors differed in their use of one nonverbal behavior namely, teacher gestures. Between primary level children and intermediate level subjects observations, more students displayed frowning and displeasure for the physical education sessions at the intermediate level (grades 4-6) than at the primary level (K-3). Rankin alluded to but made no attempt to study relationships among the curricular areas of physical education. Rankin suggested that the type of activity in the lesson may be important to consider in the interpretation of the interaction data. In a follow-up study by Twa (1979), activity was again mentioned but no attempt was made to control this variable; however, it was recommended that further study with control of activity and sameness of lesson is warranted.

In summary, more diverse projects with better attention to confounding variables (e.g., experience of teacher, length of class, activity, skill level, environment, and many others) should be instituted to investigate verbal and nonverbal interaction.

## Instrumentation

The Rankin Interaction Analysis System (RIAS) was selected as a suitable tool for this study. The RIAS (1975, 1978) is an adaptation of the systems proposed by Flanders (1960), which dealt with teacher and student interaction in the elementary school classroom, and Cheffers (1972) who developed a system of analysis to include