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## THE EFFECTS OF PROXIMAL AND DISTAL FEEDBACK ON RATE AND TYPE OF TEACHER FEEDBACK IN A PHYSICAL EDUCATION SETTING

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**ABSTRACT:** The purpose of this study was to determine the effect of feedback given to a target student(s) from proximal sector (close by) and distal sectors (at a distance) on rate and type of feedback of two middle school physical education teachers. The design used in this investigation was a reversal A-B-A-B with two treatments, single case design across subjects. The two treatments (independent variables) were proximal (same sector) feedback and distal (opposite sector) feedback. The results indicated both teachers tended to use more skill feedback and less management feedback with their classes when using distal feedback.

**Key Words:** Feedback, teacher effectiveness, physical education

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### INTRODUCTION

A variable which has received scrutiny in teacher effectiveness literature is the amount and type of feedback that teachers give to their students [1-3]. Researchers agree that students benefit differently from certain types of feedback. Intrinsic motivation is self-driven and not directly available for the use of the teacher and it can be encouraged if the teacher will emphasize the positive through the use of feedback. Success and positive feedback are strong motivators to continue the effort necessary for improvement [4] and the teacher is the most important source of positive feedback. Feedback is also strongly associated with the motor and cognitive engagement of students in activities [5]. Positive feedback allows for the student to profit from each practice experience. More importantly, the quality, availability, and effective use of feedback directly affect the potential for high performance of a motor skill [6]. However, Rink (2005) concluded that feedback by itself is questionable as a true learning variable in impacting learning [7]. Research has provided indications of the appropriate use of feedback for learning Cloes, Premuzak, & Pieron, 1993; Silverman, 1994 [8]. Studies of learning in elementary and secondary school classrooms where the subject matter was mathematics, social studies, or language skills showed that specific, nonevaluative, task-relevant feedback is associated with increased student learning. Silverman, Tyson, and Morford (1988) found that student time spent in practice with feedback was positively related to achievement [9]. Possibly the ultimate

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teaching skill is the teachers' ability to increase the quantity and quality of practice time [10]. Van Houten (1980) has suggested that, in order for feedback to be effective in improving performance and increasing student on-task behavior, four characteristics need to be present: (a) immediate feedback, (b) precise use of feedback, (c) differential feedback, and (d) frequent feedback [11].

The use of feedback has become an important variable related to the reduction of student off- task behavior, [12-15] and academic feedback has been found to be consistently related to student achievement. A study by van der Mars (1989) investigated the effects of specific verbal praise on off-task behavior of second- grade students in a physical education setting. The results showed that specific verbal praise was effective in reducing off-task behavior of second-grade students.

Monitoring involves a number of observable teacher behaviors including visual scanning, providing feedback, proximity to students, and movement among students [16]. The behavioral components of monitoring, with-it-ness, eye contact, and scanning have also been positively correlated with student engagement [17]. Monitoring the learning environment in physical education is complicated by multiple tasks, a vast area of available space, large classes of up to 60 students, and many pieces of moveable equipment. Students in physical education are often spread throughout the teaching area practicing skills individually, in pairs, or in small groups. The complexity of the setting can complicate supervision and create problems in maintaining student work levels. The size of the class alone can prevent a high frequency and distribution of feedback to all students. In the past, substantial space has been given in professional literature suggesting high levels of teacher movement, proximity, and feedback, [18-20]. Little research however, exists to support these recommendations. To date, researchers in physical education have sparingly focused on the way physical educators' feedback is delivered.

The complexity of the physical education environment and classroom management problems and the findings from teacher effectiveness research in classrooms, strongly suggest the need to identify new feedback delivery skills for physical education. While educators know extensively about how feedback can create higher quality and quantity of practice time [21], studying the effects of proximal and distal feedback focuses on the neglected area of dynamics of feedback delivery. The delivery of distal and proximal feedback may affect the rate and type of feedback, allow prompts and feedback to be distributed more evenly to all students, active supervision (monitoring), let the students know the teacher is well aware of what is going on (with-it-ness), and may reduce classroom management and off- task behavior problems.

Despite the established importance of teachers using appropriate feedback, and that some experienced teachers may use varying levels of distal and proximal feedback, or a variation of it to enhance their effectiveness, to date modest research has attempted to focus on classroom or physical education behaviors associated with feedback delivery. Therefore, the focus of this



research effort was to examine the effect of proximal and distal feedback on the rate and type of teacher feedback in a physical education setting.

## **METHODS**

Participants were two teachers and their students in four coeducational physical education classes at a middle school in Northwest Florida. All participants signed an informed consent form prior to the collection of data. The racial makeup of the school is approximately 65% Caucasians. The remaining students were of African-American, Asian, and Hispanic descent. The experimental design used in this investigation was a reversal A-B-A-B with two treatments, single case design across subjects [22]. In this design, the dependent variable (rate and type of feedback) was repeatedly measured throughout the phases of experimentation. The Teacher Monitoring Analysis System (TMAS) [23] was used to measure teacher location. The location of the teacher (independent variable) was identified by using the numbered location chart (see Figure 1). The A phases involved the teacher giving proximal feedback to student(s) within the same sector and rate and type of feedback were recorded. In the B phases the treatment variable of distal feedback to opposite sectors was introduced and changes in rate and type of feedback were noted. Opposite was defined as having one sector between the target student(s) and the teacher. Each teacher was instructed to ensure that 50% of all verbal feedback provided would be directed to those students in opposite sectors. Teachers could give students feedback contrary to the treatment variable in needed management situations. To reduce the possibility of the activity influencing the results, the activities of basketball and volleyball were never changed by the teacher during the introduction of an intervention.

The activity area was divided into nine sectors by placing large yellow cones around the perimeter, in such a way that they divide each side of the activity area into equal thirds. Teachers wore a wireless microphone to record verbal behavior onto the videotape. Prior to the beginning of each class, teachers were informed which intervention was to be implemented and reminded them to which sectors to deliver feedback. To ensure that the teachers gave a specific frequency of feedback, prerecorded audio-cues were provided to the teacher by way of a micro-cassette recorder. Each teacher only gave feedback after hearing the cue. Feedback was only given at other locations in the need for student safety or other instructional concerns. The cues served as a reminder for the teachers to stay at their baseline rate of feedback established prior to the start of the interventions. The baseline rate was determined by recording feedback of both teachers during prior classes and combining feedback frequency means.

Verbal feedback data were collected using event recording. For the purpose of this study, skill, management, and social behavior feedback were coded. It was determined that feedback would be classified as (1) skill feedback - having to do with the motor skills being taught, (2) behavior feedback - feedback given to monitor or modify the behavior of the students, and (3) management feedback - having to do with the organization and equipment of the class. The variable of feedback produced a combined observer reliability range from 81% to 100% with a mean of 87%. The intraobserver agreement percentage for feedback produced a combined range from 71% to 100% with a combined mean of 84%.



Visual analysis of the graphically plotted data was used to analyze the functional relationships between the independent and dependent variables. At the completion of the interventions, the data were evaluated via the A-B-A-B design to determine relative effectiveness of the feedback delivery interventions. With this design, according to Barlow & Herson (1984), differences in the behavior (rate and type of feedback) can be attributed to the treatment, allowing a direct comparison between two or more treatments (proximal and distal feedback).

## RESULTS

Prior to the start of the interventions, baseline data on each teacher were collected on the frequency of feedback per minute (how often they gave feedback). A baseline for each teacher was then established for each teacher to use throughout all interventions by combining feedback frequency means from their two classes. Teacher 1 displayed a mean increase in the use of feedback from 2.90 per minute to 3.20 per minute. Teacher 2 increase of 2.61 to 2.72 per minute indicates a smaller increase in the use of feedback.

The occurrence of teacher rate and type of feedback was thought to be affected by the location of target student(s) to whom the feedback was directed. The rate of feedback varied throughout all interventions by both teachers. Teacher 1 rate of feedback consistently increased during opposite sector feedback for both classes and decreased during same sector feedback while the rate of feedback for Teacher 2 consistently decreased during opposite sector feedback and increased during same sector feedback. Statistical analysis revealed no significant differences when means were compared.

The mean percentages by session of type of feedback for teachers 1 & 2, periods 1, 2, 5, and 6 across experimental conditions are presented in Figure 2. The mean frequency of type of feedback under the replications of same sector feedback and opposite sector feedback clearly shows a decrease in management feedback and an increase in the use of skill feedback when the teacher is targeting feedback to students in opposite sectors.

Examining the data by individual class provided a chronological class average of rate and type of feedback under the replications of same sector and opposite sector feedback given by the teacher. The trends that emerge are consistent with the group means and individual class group means. The graphs of each class period presented information on the variability from session to session of mean rate and type of feedback but support the overall pattern of reduction management feedback and the increase of skill feedback under the conditions of opposite sector feedback. The effectiveness of the interventions can be found in the changes in the level between same sector interventions and opposite sector interventions. However, the finding also show that there is no significant difference between the means of skill and management feedback ( $t(6) = 1.78; p < .05$ ).

The results of the opposite sector interventions for all periods are clearly shown with the consistent reduction in management feedback and an increase in skill feedback. Furthermore, these findings were consistent regardless if the activity changed from a non-invasive game (volleyball) to a possession/invasion game (basketball) or the opposite. Regardless, both teachers focused their lesson on skill development after the activity change.



## DISCUSSION

The purpose of this study was to determine the effect on the rate and type of teacher feedback when feedback is given to target middle school physical education students from proximal (same sector) and distal (opposite sectors) locations. Feedback types coded in the present study were limited to skill, behavior, and management. The results indicated the increase in the use of skill feedback during distal feedback by the teachers during all 4 periods. This data conflicts with a study by Sariscsany, Darst, & van der Mars, (1995) in which skill feedback decreased as distal feedback increased [24]. Experienced teachers, similar to the teachers in this study were used by Cusimano (1987) and the results indicated they tended to use more skill feedback. The lowest use of feedback in the current study was behavior feedback [23]. Research by van der Mars, Darst, Volger, & Cusimano (1994) also noted that of all of the categories of feedback, behavior feedback was the least used [25].

Across all interventions, feedback frequencies of both teachers were higher than the frequencies set prior to the beginning of the study. The teachers desire to give extra feedback due to a management, behavior, or safety problems may have influenced the feedback rate.

The type of feedback used by the teachers may have also affected the off-task behavior of the class. While the mean percent of each type of feedback remained stable during opposite sector interventions, both teachers tended to use more skill feedback and less management feedback with their classes. These findings show that opposite sector feedback may allow more scanning of the class, thus allow more opportunities to observe performance, give appropriate feedback, and keep activity management problems to a minimum. The results support the findings of earlier research [26-28] which suggest the use of feedback in reducing off-task behavior. Verbal feedback typically occurs when the teacher is near the student. Further, students are more likely to be on-task when the teacher is in close proximity to them, even if the teacher is not verbally interacting with them. Once the teacher moves away from the student and is not engaging them verbally, students often become off-task. Patterson and van Der Mars (2008) study concluded that when teachers provide verbal promotion of physical activity across the gymnasium to distal students, a greater percentage of students were engaged in moderate to vigorous physical activity (MVPA) [17]. These findings are also supported by Sariscsany, et al., (1995) who suggests that when students receive feedback from different locations, the on-task behavior rates were higher also supporting the results produced by Fisher Berliner, Filby, Marliave, Cahen, & Dishaw (1981) [24, 28]. A study Ryan and Yerg (2001) on the effects of distal feedback coined “crossgroup feedback” suggests that distal feedback by the teacher may reduce student off-task behavior [13].

The effect of teacher location to students in a physical education setting has not been studied extensively. Throughout the interventions, regardless of proximal or distal feedback, the percentage of feedback to the target area averaged over 60%. Sariscsany, et al., (1995) reached the same levels in a similar study using different distances of feedback [24]. This supports the notion that consistently providing distal feedback can be learned in a physical education setting. Also, because of the inability of the teacher to remain proximal to all students



all of the time, distal feedback may be a strategy to increase the amount of skill feedback to more students.

At the completion of the interventions, both teachers were asked their perceptions regarding the use of feedback from different distances. The effort of both veteran teachers to control the direction and distance of their feedback proved to be a great personal challenge to each teacher. It was apparent that the sole use of proximal (same sector) feedback throughout the intervention made social behavior feedback difficult when needed in other sectors. Also, the teachers stated that continuous distal (opposite sector) feedback was stressful. Not only did the teachers have to ignore the student closest to them, but their voices were strained due to the great distances they were required to project their feedback. The strain on teacher's voices due to overuse has been a great concern on the health and ability of teacher for many years [29-30] Regardless, both teachers were successful in displaying the ability to control the distance and direction of their feedback.

Limitation of this study included limited activity time for the observation of the variables. It is possible that a longer observation period may have produced varying results. Recommendations for future research where teacher feedback is controlled with respect to proximity, teacher location, and student location in different settings is needed to further analyze the relationship of student behavior and proximal and distal feedback. Future efforts to examine the effects proximal and distal feedback in the area of skill acquisition may provide added insight to effective teaching components.

The findings would indicate that distal feedback is an effective teaching strategy that is successful in reducing teacher managerial feedback while increasing the use of skill specific feedback. The high frequency of feedback to target area suggests that distal feedback is a teaching behavior that can be induced in a physical education setting.

Over the past four decades, vast amounts of educational research have been conducted to create and add more effective teaching strategies. Advances in this area are numerous and the results have been beneficial to both teachers and students. Teachers concerned with providing appropriate rate and type of feedback will always search for new and better ways to be more effective. While no one teaching strategy will solve teacher concerns, how the teacher delivers feedback may add to teacher effectiveness.

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Figure 1. Configuration of Sector Layout

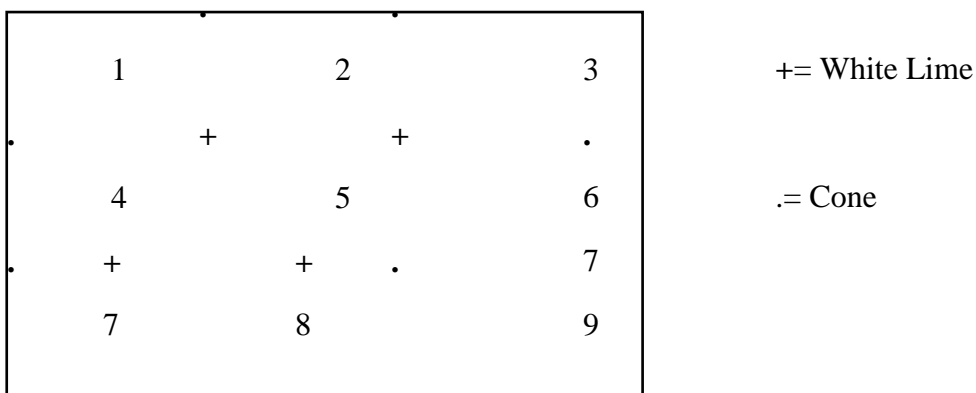
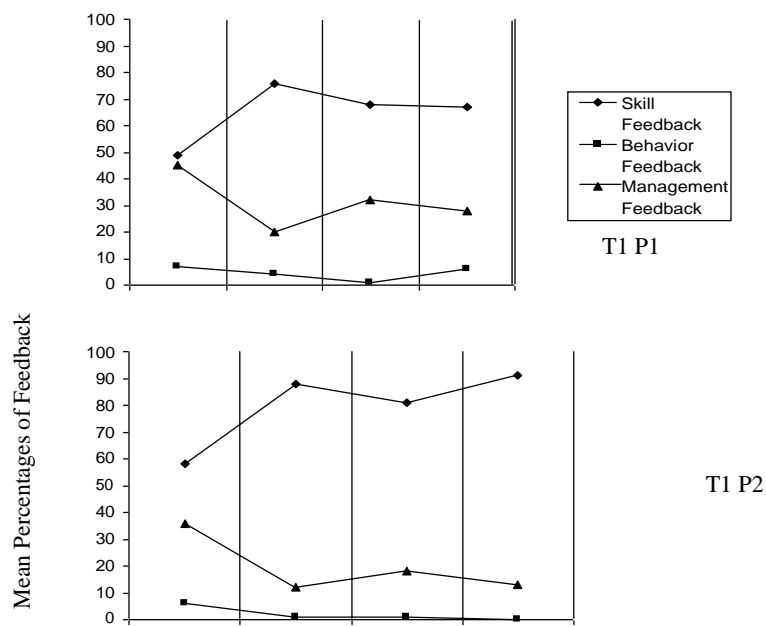
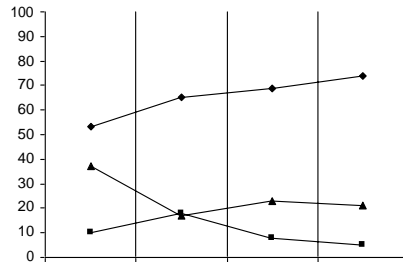


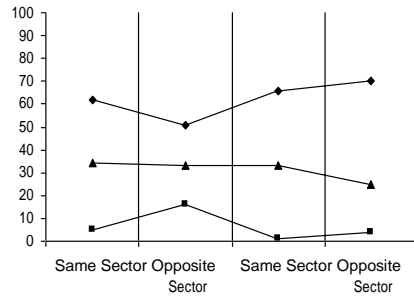
Figure 2

Mean percentages of types of feedback for teachers 1 & 2, periods 1, 2, 5, and 6 across experimental conditions





T2 P5



T2 P6

Experimental Conditions