The Physical Educator Vol. 72 • pp. 307–323 • 2015

TEACHER EDUCATION

Pairing Learners by Companionship: Effects on Motor Skill Performance and Comfort Levels in the Reciprocal Style of Teaching

Constantine Chatoupis

Abstract

Mosston and Ashworth's (2008) reciprocal style of teaching gives learners the opportunity to work in pairs to support each other's learning (one practices a task and the other gives feedback). The effects of pairing learners by companionship (friend and nonacquaintance) on 8-year-old children's motor skill performance and comfort levels were explored in this study. The participants (N = 52) were randomly assigned to a treatment group (n = 40) or a control group (n = 12). Prior to the study, learners in the treatment group were paired by companionship (partners who were friends and partners who were not friends). The same dribbling tasks were taught to the learners in all groups (eight 30-min sessions). A soccer dribbling test and a 7-point semantic differential scale were employed to evaluate the dribbling skill and how comfortable the learners felt giving and receiving feedback, respectively. The results show that learners paired with friends felt more comfortable in giving and receiving feedback than learners paired with nonacquaintances. Also, motor skill development was greater in learners paired with friends than learners paired with nonfriends or learners in the control goup. The study supports certain tenets set forth by Mosston and Ashworth (2008) for the reciprocal style.

Constantine Chatoupis is a research assistant, Department of Physical Education and Sport Science, University of Athens. Please send author correspondence to cchatoupis@phed.uoa.gr

The Spectrum of Teaching Styles (Mosston & Ashworth, 2008) is an organized collection of observable teaching styles that provides a framework to identify or ask more insightful research-based questions. According to Mosston and Ashworth (2008), the Spectrum of Teaching Styles consists of a continuum of 11 styles, each of which emerges as decisions shift between teacher and learner.

A teaching style that has drawn the attention of many researchers and has been used extensively by physical education (PE) teachers is the reciprocal style of teaching (Chatoupis, 2010; Cothran et al., 2005). In the reciprocal style, learners are organized in pairs with each member assigned a specific role. One learner is the doer who performs the task and the other is the observer who offers immediate and ongoing feedback to the doer using a criteria sheet designed by the teacher. At the end of the first practice, the doer and the observer switch roles (Mosston & Ashworth, 2008).

Mosston and Ashworth (2008) argued that certain strengths are realized in this style of teaching: (a) Learners learn to give feedback to a peer, which results in a higher number of correct responses by the doer because of the increased frequency of feedback provided by the observer; (b) learners learn to give and receive feedback with a peer, which results in an expansion of learner socialization skill; and (c) learners learn to perform and analyze movements by observing the performance of the doer, comparing the performance against criteria, and drawing conclusions about the accuracy of the performance.

A number of researchers employing the reciprocal style or teaching strategies that facilitate peer education practice have examined learner psychomotor and social behavior. In a series of Spectrum studies, the reciprocal style proved to enhance school children's motor performance in athletic activities including rifle shooting (Boyce, 1992), hockey (accuracy task; Goldberger, 1983; Goldberger & Gerney, 1986; Goldberger, Gerney, & Chamberlain, 1982), lacrosse (accuracy task; Goldberger, 2006), basketball performance (chest pass; Kolovelonis, Goudas, & Gerodimos, 2011), juggling (Ernst & Byra, 1998), and lower complexity climbing skills (Hennings, Wallhead, & Byra, 2010).

Two recent reviews on peer tutoring (also known as peer teaching) in PE indicate that pairing by ability or gender has some effect on motor skill development and performance (Jenkinson, Naughton, & Benson, 2014; Ward & Lee, 2005). The above findings are similar with the findings obtained for general education (Cohen, Kulik, & Kulik, 1982; Robinson, Schofield, & Steers-Wentzell, 2005).

Interesting results were yielded when the conditions for immediate feedback were examined (pairing by ability or companionship). Byra and Marks (1993) looked at the effects of two learner-pairing techniques in the reciprocal style on the frequency of the observer feedback and perceived comfort while learning the soccer juggling and dribbling skill. When elementary school children were paired by companionship (friend and no acquaintance), the observers gave specific feedback more frequently to friends than nonacquaintances, and the doers felt more comfortable receiving feedback from friends than nonacquaintances. When paired by ability level (high, low, and mixed), they reported no effect on the amount of specific feedback provided by the observer or on the doer's comfort in receiving feedback.

In a similar study by Ernst and Byra (1998), no significant effects of pairing by ability level on skill performance (juggling) or on learner perceived comfort giving and receiving feedback from a partner were detected. However, the mean scores indicated favorable learner perception toward comfort and value related to giving and receiving feedback.

Research on the effects of friendship on learner processes and outcomes conducted in classroom settings has revealed that "likeableness" (the observer's liking of the doer) was significantly related to academic success (Little & Walker, 1968) or was predictive of observer–doer interaction (Ehly, 1980; Ehly & Larsen, 1976).

In summary, teaching literature indicates that pairing by companionship or ability seems to have a significant effect on learner process and outcome variables.

Purpose of the Study

To date, the effectiveness of pairing by companionship (friend or nonacquaintance) on motor skill performance and on learner perceived comfort in giving and receiving feedback in elementary PE school settings has not been thoroughly investigated. Although there is little to say about how best to group learners (Ward & Lee, 2005), pairing by friends warrants further investigation (Jenkinson et al., 2014).

The main purpose of this study was to investigate if pairing Greek children by companionship (friend and nonacquaintance) in the reciprocal style of teaching can promote certain learning outcomes. Based on the previously discussed research, and given that usually learners are more successful and experience more enjoy-

ment when working with someone they know and like (Mosston & Ashworth, 2008; Siedentop, 1991), it was hypothesized that working with friends would be more effective in terms of motor skill development and comfort levels than working with nonfriends within the framework of the reciprocal style of teaching.

Method

Participants

Fifty-two Greek children, 25 boys and 27 girls, participated in the study. The mean age of the children was 8.13 years (*SD* = 0.15). The participants were Caucasian with similar socioeconomic (middle class), ethnic, and religious backgrounds. Children were chosen based on the following criteria: (a) They had experience with working in pairs and giving and receiving feedback from their peers, (b) they exhibited few behavioral problems, and (c) they had little experience in the dribbling skill. Children did not know whether they were in the treatment group or in the control group.

The children were taught by the same male instructor who had 5 years of teaching experience in elementary PE settings. As a postgraduate student and later as an in-service teacher, the instructor was trained in the appropriate use of the Spectrum of Teaching Styles. In addition, in the most recent years of teaching, the instructor had taught using many of Mosston and Ashworth's (2008) teaching styles, including the reciprocal style of teaching, with elementary-aged school children. The participants in this study did not previously know the instructor. Having one instructor provide all instruction helped to control for unplanned variability in the instructor factor.

Setting

The study lasted 2 weeks. Physical activity instruction was provided four times a week, 30 min per session, thus giving eight sessions for each group. Instruction took place outside the curriculum time in a gymnasium used by the students during their regular PE lessons. The gymnasium could comfortably hold up to 25 children at one time. The children received an orientation to the instruction prior to the first session. This included an introduction to the expectations of the teaching style and familiarization with the instructor, the playground, and the equipment. Special emphasis was given to the observer's role in offering feedback to the doer and communicating with the instructor. The parents of the children signed consent forms for their child's participation in the study.

Learner Pairing

Before the study began, learners classified their classmates as "best friends," "friends," "know the students name," or "don't know the students name." Learners identified as "best friends" or "friends" were categorized as friends. Learners identified as "know the students name" or "don't know the students name" were categorized as nonacquaintances. After 12 learners were randomly assigned to the control group, the remaining 40 learners were randomly assigned to two intervention groups as follows: Twenty friends in the friend group and 20 nonacquaintances in the nonacquaintance group. All pairs were of the same gender as learners had been in the habit of working with partners of the same gender in their regular PE classes.

Session Content

The content of each session was based on the skill theme development approaches as described by Graham, Holt/Hale, and Parker (2010). In particular, the tasks included traveling in pathways and dribbling around stationary obstacles. For example, each learner has a ball and dribbles the ball around the outside of the cones in his or her own personal space. Also, learners dribble their soccer ball around the activity area following a certain path with curves drawn on the ground.

The design and the selection of the tasks were based on information provided in Mosston and Ashworth's (2008) and Graham et al.'s (2010) textbooks. The tasks were the same for the children in the treatment and control groups.

Interventions

Treatment group. Each session began with the instructor stating the reasons for using the reciprocal style and explaining the role of the instructor, the learner who gives feedback (observer), and the learner who practices the task (doer). Then he described and demonstrated the dribbling task to be executed and explained the criteria sheet (see Figure 1). The criteria sheet included instructions on how to complete the task, space for recording results, and examples of positive specific and corrective performance. If learners did not have questions for clarification, they began by selecting their peer, picking up criteria sheets, and settling down to the performance of their roles. The observers offered continuous feedback to the doers while they were practicing the task. The instructor moved from one observer to the other, heard the interaction, and acknowledged the

observer. When task execution was over, the learners switched roles and repeated the task. During session closure, the instructor offered feedback to the entire class, addressing the role of the observer.

Instruction to the learner:

To the doer:

Task 1. Dribble the soccer ball around the end cone and back. Go as quickly as you can while keeping the ball under control. Stop and rest after each trial while the observer provides feedback. Complete five trials.

Task 2. Dribble the soccer ball through the three-cone course. Go as quickly as you can while keeping the ball under control. Stop and rest after each trial while the observer provides feedback. Complete five trials.

To the observer:

Analyze the doer's form by comparing the performance with the criteria listed below. Offer feedback about what is done well and what needs to be corrected. Check the criteria listed below. Switch roles after both tasks have been completed.

Task criteria	Correct	Needs work
1. Ball close to feet, within 1 foot?		
2. Body under control?		
3. Head up, looking ahead?		
4. Using instep of foot?		
5. Using both feet?		

Examples of feedback:

1. The ball was close to your feet on that trial. Good job!
2. The ball was too far from your feet on that trial. Try slowing down.
3. I like how you used the instep of your foot while you were dribbling.

Figure 1. Reciprocal teaching style criteria sheet for soccer dribbling.

Control group. The children assigned to the control group received instruction under the canopy (umbrella) of the practice style. Each session included a short demonstration of the content and a description of the logistical parameters (e.g., quantity, time limits, equipment, materials). Then the participants practiced the tasks individually and privately. During practice, the instructor circulated and provided private feedback for organization/managerial and discipline purposes. At the end of each session, the instructor assembled

the children and offered feedback to them about their participation in the tasks.

Instrumentation

The soccer dribbling skill test (Keith, 1980) was administered to assess learners' dribbling skill. Six cones were set up 2 yd apart over a distance of 10 yd. Each learner was instructed to begin with the ball at her or his feet at the first cone and dribble in and out of the cones in a zigzag fashion around the end cone and back to the starting point. Time was measured (to the nearest tenth of a second) from the moment the learner made contact with ball (player-initiated test) until both learner and ball crossed the finish line. Each learner performed two timed trials, with the lowest (fastest) timed trial being recorded. Time represents the participants' skill outcome score.

A questionnaire was employed to measure how the learners perceived working with a partner (see Byra & Marks, 1993, and Figure 2). A 7-point semantic differential scale was employed to answer each statement. The scale consisted of three positive, three negative, and one neutral point. A semantic differential scale involves the rating of concepts using bipolar adjectives. These adjectives represent opposite meanings with scales anchored at two extremes (Ernst & Byra, 1998). A score of 1 indicates the highest perceived comfort and a score of 7 indicates the lowest perceived comfort.

Pairing Learners by Companionship								
1.	In today's lesson, I felt comfortable giving feedback to my partner.							
	Comfortable	1	2	3	4	5	6	7 Uncomfortable
2.	In today's lesson, I felt comfortable receiving feedback from my partner.							
	Comfortable	1	2	3	4	5	6	7 Uncomfortable

Figure 2. Perceived comfort questionnaire form.

The initial administration of the questionnaire (pretest) was given just before the study started, and the second administration of the questionnaire (posttest) was given right after the completion of the study. One session was used to administer the questionnaire to the learners. Prior to completion of the questionnaire, instructions were given to the learners on how they should complete it. It took learners approximately 10 min to complete the questionnaire.

Two weeks before the study, the questionnaire was translated into Greek and was administered to the same learners on two occasions to estimate its reliability. Seven days were scheduled between the two administrations. Intraclass correlation coefficients were calculated for each of the two statements: $R = .81$, $R = .79$. Both values indicate high reliability.

Teaching Style Verification

Fidelity between the instructor's behavior and the style-specific behaviors were ascertained using the style analysis checklist for the reciprocal style (Sherman, 1982). The checklist requires a coder to determine whether the teacher or the learner exhibited the behavior in each statement. The reciprocal style checklist contains 33 possible behaviors (Figure 3).

Twenty-one of the possible behaviors are behaviors the teacher should exhibit for pure style implementation. The learner should exhibit the remaining behaviors. Behaviors that are not exhibited or exhibited by the incorrect party (teacher or student) are not circled (Ernst & Byra, 1998). To verify that the instructor was exhibiting behaviors specific to the canopy of the practice style in the control group, the practice style checklist was used (Figure 4).

In the current study, scores of 25 (75%) and 26 (76%) were obtained from the two trained coders. Fidelity between the instructor's behaviors and the style-specific behaviors was, therefore, ascertained.

Coder Reliability

The two coders were trained by the author to use the reciprocal style and the practice style checklists. Training lasted approximately 5 hr. Initially, the coders learned to analyze reciprocal and practice style teaching episodes by coding eight episodes under the supervision of the researcher. Following, the coders analyzed eight more reciprocal and practice style episodes independently. Each style analysis checklist was then compared to the researcher's results. Practice continued until interobserver and intraobserver agreement, estimated with Scott's coefficient (van der Mars, 1989), exceeded 0.75. An 87% intraobserver and 91% interobserver agreement level were obtained.

Directions: Identify who makes the specific decision by circling T (teacher) or L (learner).

PHASE 1: SETTING THE SCENE/ROLE IDENTIFICATION
T L 1. Locates and positions learners.
T L 2. Names the teaching style.
T L 3. States the objectives of the teaching style.
T L 4. Describes the learner's role, the "shift" in nine decisions.
T L 5. Shifts posture decision to learners.
T L 6. Repositions learners.
T L 7. Describes the teacher's role.
T L 8. Asks questions for role clarification.
T L 9. Answers questions for role clarification.

PHASE 2: SETTING THE SCENE/SUBJECT MATTER IDENTIFICATION
T L 10. Announces the general subject matter.
T L 11. Announces the specific task(s).
T L 12. Delivers the task(s) to the learners ("show and tell").
T L 13. Establishes quantity and quality of task performance.
T L 14. Establishes order of task performance if not random.
T L 15. Establishes parameters and logistics for the nine decisions.
T L 16. Solicits and answers questions for task clarification.
T L 17. Shifts starting time decision to learners: "You may begin when you are ready."

PHASE 3: PERFORMANCE OF THE TASK
T L 18. Performs the task(s).
T L 19. Makes the nine impact decisions, within designated parameters: posture, location, order, starting time, pace and rhythm, stopping time, interval, attire and appearance, and questions for clarification.

PHASE 4: EVALUATION AND FEEDBACK
T L 20. Moves around classroom, monitors task and role performance of individual learners.
T L 21. Evaluates learners, offers individual and private feedback to learners about task and roles.
T L 22. When deemed necessary, adjusts episode at critical moments.

PHASE 5: END-OF-LESSON CEREMONY ("CLOSURE")
T L 23. Locates learners.
T L 24. Summarizes main points of lesson.
T L 25. Offers feedback to learners for role performance.
T L 26. Answers learner-initiated questions for clarification.
T L 27. Announces coming events.
T L 28. Closes the episode (i.e., collects equipment and materials, rearranges classroom, bids farewell to learners, dismisses the class).

Figure 3. Reciprocal style analysis checklist.

Directions: Identify who makes the specific decision by circling T (teacher), L (learner), or O (observer).

PHASE 1: SETTING THE SCENE/ROLE IDENTIFICATION
T L 1. Locates and positions learners.
T L 2. Names the teaching style.
T L 3. States the objectives of the teaching style.
T L 4. Identifies the triad, describes its structure and function.
T L 5. Describes the roles of the doer, observer, and teacher

PHASE 2: SETTING THE SCENE/SUBJECT MATTER IDENTIFICATION
T L 6. Announces the general subject matter.
T L 7. Announces the specific task(s).
T L 8. Delivers the task(s) to the learners ("show and tell").
T L 9. Establishes quantity and quality of task performance.
T L 10. Establishes order of task performance if not random.
T L 11. Delivers the criteria (explains what a criterion is and how to use it).
T L 12. Establishes parameters and logistics for the nine decisions.
T L 13. Solicits and answers questions for task clarification.
T L 14. Announces, "Select a partner. Decide who will first be doer and observer, and then begin."

PHASE 3: PERFORMANCE OF THE TASK
T L 15. Selects a partner.
T L 16. Decides who is first doer and observer.
T L O 17. Makes the nine impact decisions, within designated parameters: posture, location, order, starting time, pace and rhythm, stopping time, interval, attire and appearance, and questions for clarification.
T L O 18. Performs the task.
T L 19. Switches roles of doer and observer.

PHASE 4: EVALUATION AND FEEDBACK
T L O 20. Has the criteria sheet.
T L O 21. Monitors the performance.
T L O 22. Compares and contrasts task performance against criteria.
T L O 23. Draws conclusions about accuracy of task performance.
T L O 24. Offers task-related feedback to doer.
T L O 25. Initiates communication with the teacher if necessary.
T L O 26. Moves around classroom, visiting each pair of learners.
T L O 27. Responds to communication initiated by the learner.
T L O 28. Reminds learners about details of task and roles if necessary.
T L O 29. Offers role-related feedback to observer and doer.
T L O 30. Makes episode adjustments when necessary.

PHASE 5: END-OF-LESSON CEREMONY ("CLOSURE")
T L 31. Locates learners.
T L 32. Summarizes main points of lesson.
T L 33. Offers role-related feedback to learners based on objectives of the reciprocal style.

Figure 4. Practice style analysis checklist.

Sessions taught to the treatment group were audio–videotaped every other day. Sessions taught to the control group were audio–videotaped once a week. The video camera, which was positioned to capture the movements of all learners and the teacher, was located in a discreet place to reduce the participants' reactivity to it.

Data Analysis

Mean and standard deviation scores were calculated for the dependent variables for each group. Eta-squared was also computed to assess effect size in an effort to determine the degree to which the intervention impacted dribbling skill as well as perceptions about working with a peer. To examine changes in the children's dribbling skill scores, a 3 × 2 (Group × Test) repeated measures analysis of variance was employed. Changes in perceptions about working with a peer from pretest to posttest were tested with a 2 × 2 (Group × Test) repeated measures analysis of variance. The 0.05 level of significance was employed for all analyses.

Results

Skill Performance

A 3 × 2 (Group × Test) repeated measures analysis of variance showed a significant interaction between groups and test, $F(2, 49) = 61.877$, $p = 0.0001$, $\eta^2 = 0.72$. Post hoc analysis for the dribbling scores revealed a significant improvement from pretest to posttest for the friend group, but not for the nonacquaintance and control groups. The pretest and posttest mean and standard deviation scores for dribbling performance are presented in Table 1.

Table 1
Means and Standard Deviations for the Dribbling Skill Scores by Groups

Friend *n* = 20		**Nonacquaintance** *n* = 20		**Control** *n* = 12	
Pretest *M* (*SD*)	**Posttest** *M* (*SD*)	**Pretest** *M* (*SD*)	**Posttest** *M* (*SD*)	**Pretest** *M* (*SD*)	**Posttest** *M* (*SD*)
25.19 (1.78)	22.58 (1.91)	24.60 (1.68)	24.56 (1.68)	24.51 (1.63)	24.35 (1.73)

Perceived Comfort Giving Feedback

A 2 × 2 (Group × Test) repeated measures analysis of variance showed a significant interaction between groups and test, $F(1, 38) = 94.79$, $p = 0.0001$, $\eta^2 = 0.71$. Post hoc analysis for the questionnaire scores revealed a significant decrease of the perceived comfort giving feedback scores from pretest to posttest for the friend group, indicating favorable perception, and a significant increase for the nonacquaintance group, indicating an unfavorable perception. Means and standard deviations for observer perceived comfort giving feedback are reported in Table 2.

Table 2
Means and Standard Deviations for Perceived Comfort Giving Feedback

Test administration	Friend *M* (*SD*)	Nonacquaintance *M* (*SD*)
Pretest	1.80 (0.77)	2.00 (1.02)
Posttest	1.35 (0.59)	5.60 (1.04)

Perceived Comfort Receiving Feedback

A 2 × 2 (Group × Test) repeated measures analysis of variance showed a significant interaction between groups and test, $F(1, 38) = 154.87$, $p = 0.0001$, $\eta^2 = 0.80$. Post hoc analysis for the questionnaire scores revealed a significant decrease of the perceived comfort receiving feedback scores from pretest to posttest for the friend group, indicating favorable perception, and a significant increase for the nonacquaintance group, indicating an unfavorable perception. Means and standard deviations for observer perceived comfort receiving feedback are reported in Table 3.

Table 3
Means and Standard Deviations for Perceived Comfort Receiving Feedback

Test administration	Friend *M* (*SD*)	Nonacquaintance *M* (*SD*)
Pretest	1.80 (0.76)	2.00 (1.02)
Posttest	1.10 (0.45)	6.00 (0.86)

Discussion

Skill Performance

Pairing by companionship had differential effects on motor skill performance. Learners paired with a friend showed significant improvement from pretest to posttest, whereas learners paired with a nonacquaintance or in the control group did not. This result seems to corroborate previous research findings that tutor's liking of the tutee was significantly correlated with academic achievement (Little & Walker, 1968). It is plausible to suggest that pairing learners with friends fosters a class climate in which peers are at ease with one another, thus leading to greater skill learning. When learners select their partners, the episode begins more swiftly and continues more productively (Mosston & Ashworth, 2008).

The almost stagnant performance over time (pretest to posttest) of those paired with a nonacquaintance may be because of the short duration of the study. It makes sense to suggest that with a longer intervention period, learners in that group might develop more tolerance, patience, and empathy toward their peers, and that, in turn, might lead to greater gains in learning.

The above results suggest that when learners are instructed with the reciprocal style of teaching, they can achieve considerable gains in skill learning, particularly learners who are paired with friends. These results support previous research (e.g., Ernst & Byra, 1998; Goldberger et al., 1982; Goldberger & Gerney, 1986; Hennings et al., 2010; Kolovelonis et al., 2011) as well as Mosston and Ashworth's (2008) claim that learners learn motor skills in the reciprocal style of teaching by observing the performance, comparing the performance against criteria, and giving appropriate feedback. It seems that increases in learner achievement are related to the increase of opportunities to respond and provision of specific feedback (Jackson & Dorgo, 2002; Maheady, 1998), which are conditions fostered in the reciprocal style.

Comfort Levels

Significant differences were revealed for the two treatment groups across the two questionnaire administrations for any of the two questionnaire statements. Unlike the nonacquaintance group, the friend group had a favorable perception related to giving and receiving feedback. The mean scores of the friend group decreased over time, showing a favorable perception, whereas the mean scores

of the nonacquaintance group increased, showing an unfavorable one. It seems that when learners give feedback to or receive feedback from a friend, they feel more comfortable in their role.

These results indicate that pairing learners by companionship has a significant effect on comfort levels, thus supporting previous similar findings (Byra & Marks, 1993; Ehly, 1980; Ehly & Larsen, 1976). In addition, the present study supports Mosston and Ashworth's (2008) tenet that usually people enjoy working with someone they know and like and it is more comfortable to give and receive feedback with a person one likes and trusts.

Conclusions and Recommendations

The results of this study support Mosston and Ashworth's (2008) contentions about the reciprocal style of teaching. Within the limitations of the study (i.e., 52 children, aged 8, performing dribbling tasks), children paired with a friend in the framework of the reciprocal style not only improved motor skill performance but also felt that working with a peer was a positive experience. This information suggests that PE teachers who value outcomes related to social relationships and conditions for immediate feedback need to employ not only the reciprocal style but also the appropriate pairing technique.

In particular, if teachers are to encourage learners to give and receive feedback, they should allow learners to choose the partner they want and consider as tolerant, patient, and supportive. In addition, if the goal is to succeed in motor skill performance, the pairing technique that seems to accommodate the above goal is learner selection (learners select each other).

More replication studies as well as further research conducted with different age groups, sports skills, and other teaching styles are needed. In addition, it would be interesting to examine the following topics through the use of quantitative or qualitative research methods: (a) What effects do other pairing techniques have on the same or other product outcomes? (b) How does changing the pairing techniques within a series of lessons affect social tolerance and communication among members of a class? (c) Can learners develop patience and tolerance in dealing with their peers who are not friends? These are some of the many questions concerning the reciprocal style of teaching that need to be investigated.

References

Boyce, B. A. (1992). The effects of three styles of teaching on university students' motor performance. *Journal of Teaching in Physical Education*, *11*(4), 389–401.

Byra, M., & Marks, M. (1993). The effect of two pairing techniques on specific feedback and comfort levels of learners in the reciprocal style of teaching. *Journal of Teaching in Physical Education*, *12*, 286–300.

Chatoupis, C. (2010). An analysis of spectrum research on teaching. *The Physical Educator, 67*, 188–197.

Cohen, P. A., Kulik, J. A., & Kulik, C. C. (1982). Educational outcomes of tutoring: A meta-analysis of findings. *American Educational Research Journal, 19*(2), 237–248.

Cothran, D. J., Kulinna, P. H., Banville, D., Choi, E., Amade-Escot, C., MacPhail, A., . . . Kirk, D. (2005). A cross-cultural investigation of the use of teaching styles. *Research Quarterly for Exercise and Sport, 76*(2), 193–201.

Ehly, S. W. (1980, April). *Experimental analysis of some process variables in peer tutorial learning.* Paper presented at the Annual Convention of the National Association of School Psychologist, Washington, DC.

Ehly, S., & Larsen, S. (1976). Tutor and tutee characteristics as predictors of tutorial outcomes. *Psychology in the Schools, 13*(3), 348–349.

Ernst, M., & Byra, M. (1998). What does the reciprocal style of teaching hold for junior high school learners? *The Physical Educator, 55*, 24–37.

Goldberger, M. (1983). Direct styles of teaching and psychomotor performance. In T. J. Templin & J. K. Olson (Eds.), *Teaching in physical education* (pp. 211–223). Champaign, IL: Human Kinetics.

Goldberger, M. (2006, October). *Effects of reciprocal teaching on skill acquisition, cooperation, and ability to analyze in fifth grade children*. Paper presented at the fourth annual CISAT Faculty Research Day, James Madison University, VA.

Goldberger, M., & Gerney, P. (1986). The effects of direct teaching styles on motor skill acquisition of fifth grade children. *Research Quarterly for Exercise and Sport*, *57*(3), 215–219.

Goldberger, M., Gerney, P., & Chamberlain, J. (1982). The effects of three styles of teaching on the psychomotor performance of fifth grade children. *Research Quarterly for Exercise and Sport*, *53*(2), 116–124.

Graham, G., Holt/Hale, S. A., & Parker, M. (2010). *Children moving: A reflective approach to teaching physical education*. New York, NY: McGraw-Hill.

Hennings, T., Wallhead, T., & Byra, M. (2010). A didactic analysis of student content learning during the reciprocal style of teaching. *Journal of Teaching in Physical Education, 29*, 227–244.

Jackson, J. A., & Dorgo, S. (2002). Maximizing learning through the reciprocal style of teaching. *Teaching Elementary Physical Education, 13*(2), 15–18.

Jenkinson, K. A., Naughton, G., & Benson, A. C. (2014). Peer-assisted learning in school physical education, sport, and physical activity programmes: A systematic review. *Physical Education and Sport Pedagogy, 19*(3), 253–277.

Keith, D. (1980). *Soccer handbook*. Vancouver, Canada: Hancock House.

Kolovelonis, A., Goudas, M., & Gerodimos, V. (2011). The effects of the reciprocal and the self-check styles on pupils' performance in primary physical education. *European Physical Education Review, 17*(1), 35–50.

Little, D., & Walker, B. (1968). Tutor–pupil relationship and academic progress. *Personnel and Guidance Journal, 47*, 324–328.

Maheady, L. (1998). Advantages and disadvantages of peer-assisted learning strategies. In K. Topping & S. Ehly (Eds.), *Peer assisted learning* (pp. 45–65). Mahwah, NJ: Erlbaum.

Mosston, M., & Ashworth, S. (2008). *Teaching physical education* (1st online ed.). Retrieved September 10, 2010, from http://www.spectrumofteachingstyles.org/ebook

Robinson, D. R., Schofield, J. W., & Steers-Wentzell, K. L. (2005). Peer and cross-age tutoring in math: Outcomes and their design implications. *Educational Psychology Review, 17*(4), 327–362.

Sherman, M. A. (1982). *Style analysis checklists for Mosston's Spectrum of Teaching Styles*. Unpublished manuscript, University of Pittsburgh, Pennsylvania.

Siedentop, D. (1991). *Developing teaching skills in physical education.* Mountain View, CA: Mayfield.

van der Mars, H. (1989). Systematic observation: An introduction. In P. W. Darst, D. B. Zakrajsek, & V. H. Mancini (Eds.), *Analyzing physical education and sport instruction* (pp. 3–17). Champaign, IL: Human Kinetics.

Ward, P., & Lee, M. (2005). Peer-assisted learning in physical education: A review of theory and research. *Journal of Teaching in Physical Education, 24*, 205–225.