The purpose of this study was to describe the teaching behaviors of four teachers who had varying degrees of expertise in working with second grade students and to improve the teachers’ effectiveness. Four experienced teachers were asked to teach a six-lesson unit in jumping and landing skills to an intact class of their choice. Students were pre- and posttested on their ability to produce and reduce force using a force platform and a jump for distance without the platform. OSCD-PE (Rink, 1979) was used to describe the more general aspects of the teachers’ content development and managerial skills. Task presentation, nature of feedback, and appropriateness of student responses were obtained using the QMTPS (Rink & Werner, 1989). Additional information was obtained by counting practice trials and analyzing teacher written plans and approaches to content. Following the first teaching experience, the researchers gave feedback to the teachers and asked them to reteach the unit to a different class. Product and process measures were obtained in the same manner on the second teaching experience. Data were presented in a case study format. The results describe the importance of content knowledge, the ability to present information clearly, and holding students accountable for selected performance aspects.

In the article “In Pursuit of the Expert Pedagogue,” Berliner (1986) makes the point that educational researchers need to focus on microanalyses of both expert and nonexpert teachers. Continued description helps us to more fully understand the contextual nature of teaching variables and their interdependence in the teaching/learning process.

The descriptive, correlational, and experimental research base that allows the classroom researcher to identify expertise has not been established in physical education. Failure to pursue a systematic search for expertise at either a micro or macro level in physical education can probably best be attributed to practical reasons. The profile of effectiveness established in classroom research can be attributed to large and well-funded studies with two ingredients: a large number of participants and the use of rigorous research methods.
of subjects, and a clear perspective of what constituted effectiveness, with instruments available for measuring gains over a longer period of time.

Because of subject limitation, research on teaching physical education has been mostly descriptive in nature. Due to the difficulty of obtaining agreement on important program objectives and the limitations of product measurement, research on teaching physical education has largely avoided the product issue. The identification of expertise is difficult, and yet description without relating what is described to expertise makes interpretation difficult. To know what a teacher did without knowing its effects may help us to understand the nature of the gym class but it limits our ability to use that information to improve the effectiveness of instruction in physical education.

Obtaining a rich description of teaching processes in instruction in physical education requires a broad selection of variables and instrumentation believed to have some relation to teacher effectiveness. An in-depth analysis of teaching processes, when studied in conjunction with the products of instruction, can help establish a base for identifying expertise and help us understand how variables may be functioning in highly complex settings.

The purpose of this study was to describe the teaching behavior of several teachers who had varying degrees of effectiveness in teaching force reduction and force production abilities to second grade children in jumping and landing skills. A secondary purpose was to improve teachers’ effectiveness. Jumping and landing skills were selected because of their importance to the elementary school curriculum (Graham, Parker, & Holt Hale, 1987; Siedentop, Herkowitz, & Rink, 1985).

**Method**

**Subjects**

Four physical education teachers from four schools and 160 second grade students (eight intact classes) participated in the study. Classes ranged in size from 18 to 25 students. All teaching took place during regularly scheduled classes. All of the teachers, three females and one male, had a minimum of 3 years of teaching experience.

**Instrumentation**

*Force Production and Reduction.* Subjects were brought to the university for pre- and posttesting. A Kestler force platform was used to assess force reduction and production skills. Each measure was based on adjusted body weight. A jump down from a 2-ft high box placed directly beside the platform was used to assess force reduction abilities. Scores were adjusted for center of gravity differences between children of different heights as well as any upward projection of the body (Fronk, Ozguuen, & Berme, 1986).

Force production abilities were assessed with and without the platform. With the platform, students were asked to jump as high as they could using a 2-footed vertical jump while on the platform. They were also asked to jump as far as they could on a mat (standing long jump). In all instances the best of two trials were used as measures. Pre- and posttest means for each class were established.

*OSCD–PE.* The Observation System for Content Development–Physical Education (OSCD–PE) (Rink, 1979) was used to describe more generally and
comprehensively the nature of content development and the teacher’s managerial skills. The variables established by OSCD–PE are already part of an established descriptive base in the study of teaching in physical education (Masser, 1987; Rink, 1979; Rink, Werner, Hohn, Ward, & Timmermans, 1986). Aside from the management issue, only refining behaviors on the part of the teacher (Masser, 1987) have been shown in teacher effectiveness literature to have a relationship to effective teaching of motor skills. Two coders recorded all of the data taken from audiotapes of all six lessons for each unit. Observer agreement on a 10% sample of tapes averaged .80 using simple percentage of agreement. Descriptive data for OSCD–PE was converted into rate per minute for discrete behaviors or percentage of the lesson-for-time variables.

**Observed Practice Trials.** A specific accounting of the amount of practice that students actually had with the content was obtained by counting practice trials (Siedentop, Tousignant, & Parker, 1982).

Observational data on actual practice trials were obtained using two videotaped lessons of the third and fifth lesson for each class. Observers recorded the content task as delivered by the teacher, selected a student to observe performing the task, and recorded the number of appropriate responses the student made to the task as presented. A different student was selected for each task. Many lessons utilized well over 15 tasks, permitting a wide sampling of different students. Discrete responses were deemed the appropriate choice for the nature of this content area. Total practice trials for each videotaped lesson were obtained for each class.

**Qualitative Measures of Teaching Performance Scale (QMTPS).** The role of task presentation skills to learning in physical education does not have a clear research tradition but can be viewed from several literature bases that allude to the importance of carefully selecting and presenting the information to the learner. Information processing, motor learning, and motor development literature have investigated the importance of demonstration and of focusing the learner on a few relevant critical aspects of the movement (Feltz & Landers, 1977; Gentile, 1972; Martins, Burwitz, & Zuckerman, 1976; Thomas, 1980; Weiss, 1982). Classroom effectiveness research has investigated the importance of teacher clarity and explicitness in communicating teacher expectations (Rosenshine, 1979). According to motor learning theory, the first stage in learning a motor skill involves primarily a cognitive emphasis (Fitts & Posner, 1967; Rink, 1985). The teacher’s ability to communicate information on performance in a way that gives the learner an accurate motor plan for performance or modifies that plan seems to be a critical aspect of teaching motor skills to young learners.

The QMTPS was developed by Rink and Werner (1989) to describe selected characteristics of task presentation, student responses, and teacher feedback. The categories and their definitions are presented in Figure 1. Two observers coded all of the tapes. Interobserver agreement for all categories of the instrument was found to be .90 or higher using simple percentage of agreement.

The videotape was stopped after the teacher had presented each task. The section of the instrument on task presentation was then coded. The tape was turned on to observe student responses to the task and turned off after student opportunity to respond ended, thus coding the student responses and teacher feedback section of the instrument. Data on the QMTPS were converted to percentages based on the number of tasks given by each teacher so that comparisons between classes could be made. A total QMTPS score for each class was obtained by adding
Task Presentation

1. Clarity
Teacher’s verbal explanation/directions communicated a clear idea of what to do and how to do it. This judgment is confirmed on the basis of student movement responses to the presentation, and is relative to the situation.
Yes: Students proceeded to work in a focused way on what the teacher asked them to do.
No: Students exhibited confusion, questions, off-task behavior, or lack of intent to deal with the specifics of the task.

2. Demonstration
Visual information modeling desired performance executed by teacher, student(s), and/or visual aids.
Yes: Full model of the desired movement.
Partial: Incomplete model of task performance exhibiting only part of the desired movement.
No: No attempt to model the movement task.

3. Appropriate Number of Cues
The degree to which the teacher presented sufficient information useful to the performance about the movement task without overloading the learner.
Appropriate: Three or fewer new learning cues related to the performance of the movement task.
Inappropriate: More than three new learning cues related to the performance of the movement, or none given when needed.
None Given: No attempt at providing learning cues was given.

4. Accuracy of Cues
The degree to which the information presented was technically correct and reflected accurate mechanical principles.
Accurate: All information presented was correct.
Inaccurate: One or more incidences of incorrect information.
None Given: No cues given.

5. Qualitative Cues Provided
Verbal information provided to the learner on the process or mechanics of movement.
Yes: Teacher’s explanation or direction included at least one aspect of the process of performance.
No: Teacher’s explanation or direction included no information on the process of performance.

Student Responses

6. Appropriate to the Focus
The degree to which student responses reflected an intent to perform the task as stated by the teacher.
(All) One—No more than two students viewed on the screen exhibited inappropriate responses.
(Partial) Two—Three or more students viewed on the screen exhibited inappropriate behavior.
(None) Three—No students exhibited appropriate behavior.

Figure 1 — Categories of the Qualitative Measures of Teaching Performance scale.
(cont.)
Teacher Feedback

7. Specific Congruent Feedback
The degree to which teacher feedback during activity was congruent (matched) the focus of the task.
Yes: More than two incidences were evident of teacher feedback being congruent with the task.
Partial: One or two incidences of congruent feedback were evident.
No: No congruent feedback given.

Figure 1 (cont.) — Categories of the Qualitative Measures of Teaching Performance scale.

and averaging all seven facets of the instrument—clarity, demonstration, number of cues, accuracy of cues, qualitative cues, appropriate student responses, and specific congruent feedback.

Procedures

Baseline data on the effectiveness of each of the four teachers was collected by asking them to select a group of second grade students and to teach a six-lesson jumping and landing unit. Teachers were told that students would be pre- and posttested on their ability to produce and reduce force in a variety of jumping and landing skills. The teachers were not told how to teach.

After collecting the baseline data, the researchers met with the teachers in order to discuss observations on their teaching and to help them improve their effectiveness. Three 2-hour sessions were held with each teacher to talk about her or his effectiveness in teaching the first group of students. Systematic observation data and field notes were used as a basis for intervention sessions with teachers. One session was held with the teachers as a group and two sessions were held independently with each teacher. At the group sessions the researchers shared general observations with the teachers that focused on the following needs for improvement:

1. The need to choose accurate learning cues: Teachers were given an accurate analysis of how to reduce force when landing on both feet. Viewing the movement responses of students on the tapes revealed a failure of three of the four teachers to consider the role of ankle extension and flexion in absorbing the force of landing. Many students were landing flat-footed throughout the lessons.

2. The need for clarity in task presentation: Teacher presentations were characterized by too much information, failure to help students understand how to perform, lack of demonstration, and failure to hold students accountable for incorporating cues into their movements. Teachers were encouraged to narrow the task focus, clarify their task presentations by reducing information, and hold students accountable for their task focus.

3. The need for appropriate progressions: Teacher task development tended to disregard student performance. Progressions continued in difficulty regardless of the development of skill in basic experiences (e.g., landing from great heights before competence had been developed in less difficult tasks). Teachers
were encouraged to make sure students had basic form before asking them to apply these skills in more complex situations.

4. The need for congruent feedback: Often teacher feedback was general in nature or focused on something other than what the teacher had asked the students to concentrate on in their movements. Congruent feedback matches the specific focus of the task on which students are working. Teachers were helped in recognizing the role of congruent feedback in focusing student responses and creating accountability for the task as presented.

Individual teacher problems were the focus of the two independent intervention sessions. One session was a conference that involved reviewing videotapes with the teacher at the university setting. A second conference was held either at the university or at the public school. Discussion in both sessions focused on the development of content, use of feedback, environmental arrangements for learning, effective use of demonstration, developing accountability for task focuses, and seeking quality in student responses. Individual sessions also included opportunities for teachers to view the videotaped posttests of their students and review the coded sessions with the researchers.

Following the work with teachers to improve their effectiveness, each teacher was asked to select another group of second grade students who had no previous instruction in jumping and landing, and to reteach the unit using the insights he or she had developed. All children were pre- and posttested in a manner consistent with the procedures used to collect baseline data.

The Case Studies

When intact classes are used for research purposes, ecological validity is preserved. At the same time, assumptions about group equivalence are often violated. Eight intact classes were used for this study, many of which differed from each other on force production and reduction measures at the start of instruction. Means for all the data are presented and graphed for each teacher in terms of baseline data and the second group taught (see Tables 1-4 and Figures 2–3). Comparisons of changes in effectiveness from the baseline data to the postintervention lessons are descriptive in terms of practical significance and must be interpreted in terms of initial group differences.

The results are presented in the form of case studies for each teacher and employ all of the data collected to describe what happened first in the preintervention experience and subsequently in the postintervention experience. Afterward, the discussion centers on the cases and their significance to the quest to understand teacher effectiveness.

Teacher A

Teacher A was an experienced elementary physical education teacher working in a school serving primarily upper lower-class socioeconomic status (SES) students.

Baseline Unit. Teacher A’s approach to the content was primarily one of identifying types of jumps and practicing individual skills separately (e.g., jump rope, long jump, jump down from a box). The initial selection of organizational format generally included students waiting for turns, which therefore tended to limit practice. This teacher’s learning environment could primarily be character-
ized by unfocused practice, with little concern or accountability for the quality of response.

Teacher A’s written plan focused on the activity being taught and the organization of that activity. Written objectives were not evident. OSCD–PE data (Table 1) reveal that this teacher spent a great deal of time dealing with both organizational and student conduct behaviors (41% management). Teacher A’s teaching was characterized by a high amount of informing behaviors (information giving 3.88 rate per minute [rpm] and a low amount of performance refining behaviors, .79 rpm).

When a sample of observed practice trials was taken for two baseline lessons, Teacher A had 187 trials (Table 2). This may appear to conflict with allocated time data from OSCD–PE (Table 1), which was taken over six sessions and characterized Teacher A as having limited allocated time because of management. The two-lesson sample of practice trials included one instructional lesson organized for few practice opportunities and another with no teacher intervention and ample opportunity for practice.

The QMTPS data on Teacher A identified major deviations from hypothesized characteristics of effective teaching (Rosenshine, 1987). Based on QMTPS categories, Teacher A demonstrated frequently (Table 3). Some 44% of the tasks presented by the teacher utilized demonstration, but never a full demonstration. The teacher’s use of cues in task presentation is particularly revealing. Teacher A used qualitative cues infrequently. Furthermore, the cues tended to be accurate only 16.5% of the time and were of an appropriate number only 25% of the time (Table 3). The students’ responses to this teacher’s tasks were appropriate 16.5% of the time. In addition, teacher feedback was congruent with the task focus only 15% of the time. In the baseline unit, Teacher A’s students made some improvement in force reduction abilities, a decrease in force production abilities, and a slight increase in distance in the standing long jump scores (Table 4 and Figure 2).

**Intervention.** In addition to the general concerns shared with all teachers, individual work focused on effective ways to organize and manage the physical education environment. No attempt was made to assist Teacher A in reconceptualizing content or program objectives.

**Reteach Unit.** In the second group of students taught the same skills, Teacher A made several important changes in OSCD–PE data (Table 1). Management time decreased (41–31%). Allocated practice time based on OSCD–PE data from videotapes increased from 39.3 to 61.9%, which amounts to about 6 minutes per lesson. Information-giving decreased (3.88–3.44 rpm) while the focus on refining performance increased (.79–2.55 rpm). Practice trials decreased from 187 to 121 for the two-lesson sample (Table 2). This can be attributed to more teacher intervention focusing the student on quality of performance. QMTPS data reflect a great deal of change from preintervention to postintervention lessons (Table 3 and Figure 3). Teacher A’s use of demonstration moved from predominantly partial to full demonstrations (0–55%). Dramatic increases in the use of qualitative cues were also demonstrated (33–75%), as well as the use of an appropriate number of cues (25–90%) and more accurate cues (16.5–62.5%). Appropriate student responses and the use of congruent feedback, though not high for this teacher, doubled from baseline to the reteach experience (16.5–32.5% and 15–27%).
<table>
<thead>
<tr>
<th></th>
<th>Teacher A</th>
<th>Teacher B</th>
<th>Teacher C</th>
<th>Teacher D</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>interventions</td>
<td>interventions</td>
<td>interventions</td>
<td>interventions</td>
</tr>
<tr>
<td></td>
<td>Baseline</td>
<td>Reteach</td>
<td>Baseline</td>
<td>Reteach</td>
</tr>
<tr>
<td>Total information giving (-1)**</td>
<td>3.88</td>
<td>2.44</td>
<td>1.52</td>
<td>2.0</td>
</tr>
<tr>
<td>Total extending (-3)**</td>
<td>.38</td>
<td>.36</td>
<td>.78</td>
<td>.35</td>
</tr>
<tr>
<td>Total refining (-2)**</td>
<td>.79</td>
<td>2.55</td>
<td>2.52</td>
<td>2.7</td>
</tr>
<tr>
<td>Total management (-6)**</td>
<td>1.37</td>
<td>1.03</td>
<td>1.23</td>
<td>.90</td>
</tr>
<tr>
<td>Total appraisal (-4)**</td>
<td>1.55</td>
<td>1.96</td>
<td>1.22</td>
<td>1.59</td>
</tr>
<tr>
<td>Corrective feedback (12)**</td>
<td>.47</td>
<td>1.41</td>
<td>1.02</td>
<td>1.05</td>
</tr>
<tr>
<td>Refining information (32)**</td>
<td>.19</td>
<td>.60</td>
<td>.68</td>
<td>.91</td>
</tr>
<tr>
<td>Appraisal refining (42)**</td>
<td>.09</td>
<td>.45</td>
<td>.65</td>
<td>.59</td>
</tr>
<tr>
<td>Appraisal general (41)**</td>
<td>.57</td>
<td>.54</td>
<td>.19</td>
<td>.49</td>
</tr>
<tr>
<td>Solicit conduct (15)**</td>
<td>1.07</td>
<td>.60</td>
<td>.28</td>
<td>.18</td>
</tr>
<tr>
<td>Solicit organization (16)**</td>
<td>2.49</td>
<td>2.16</td>
<td>1.37</td>
<td>1.53</td>
</tr>
<tr>
<td>Total management time***</td>
<td>41.0</td>
<td>31.0</td>
<td>36.8</td>
<td>27.0</td>
</tr>
<tr>
<td>Allocated activity time***</td>
<td>39.3</td>
<td>61.9</td>
<td>46.6</td>
<td>44.3</td>
</tr>
<tr>
<td>Transition time between tasks**</td>
<td>1.12</td>
<td>1.32</td>
<td>1.02</td>
<td>1.16</td>
</tr>
<tr>
<td>Demonstration during activity**</td>
<td>.36</td>
<td>.60</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Demonstration during transition**</td>
<td>.30</td>
<td>.72</td>
<td>.71</td>
<td>.96</td>
</tr>
<tr>
<td>Total behaviors**</td>
<td>28.16</td>
<td>29.98</td>
<td>22.98</td>
<td>24.97</td>
</tr>
</tbody>
</table>

*Audiotapes of six lessons for each unit; **rate per minute; ***percentage of total lesson time.
Student performance in the second class taught showed regression in force production from pre- to posttest, a great deal of improvement in force reduction, and slight improvement in the long jump for distance (Table 4 and Figure 2). The trend was toward an increase in force reduction abilities compared to the baseline period. Less regression in force production abilities was made in the reteach period compared to the baseline. Both the baseline and reteach groups made about the same progress in the standing broad jump.

**Teacher B**

Teacher B was an experienced elementary school physical education teacher working in a school serving primarily upper lower-class students.

**Baseline Unit.** Teacher B's approach to the content was to try to be consistent with a conceptual design using movement analysis as a framework (Bain, 1978). This teacher planned with a format involving a major focus, objectives, and learning experiences. The majority of objectives were management oriented, utilized the verb "understand," and were broad rather than specific in orientation. For example, tasks were those related to using different step-like weight transfers to move into, out of, and over hoops. Scattered throughout the lessons were specific tasks such as jumping for height over a rope and working on the standing long jump. In most areas, Teacher B was a good manager who paid specific attention to conduct behaviors and organization. However, little attempt was made to hold students accountable for the quality of their performance, and tasks often changed quickly before they had had enough practice time. Only 45 practice trials were observed for the two-lesson sample for this teacher (Table 2). The frequent number of transitions between tasks (Table 1) may have detracted from allocated practice time.

OSCD–PE data (Table 1) during the baseline unit of the study did not help to describe this teacher's problems because OSCD–PE is based almost exclusively on the quantity of teacher behavior. Teacher B exhibited desirable behaviors but they were not appropriate. A much more significant picture of this teacher is reflected in QMTPS data (Table 3). Only 50% of the tasks this teacher presented were clear. The use of cues was particularly inadequate, as 50% of the tasks were presented without cues, with too few cues, or with inaccurate ones. Teacher B never demonstrated fully. Student responses were appropriate in only 25% of
Table 3
Qualitative Measures of Teaching Performance Scale Percent Responses in Most Desirable Categories

<table>
<thead>
<tr>
<th>QMTPS construct</th>
<th>Teacher A Baseline</th>
<th>Teacher A Reteach</th>
<th>Teacher B Baseline</th>
<th>Teacher B Reteach</th>
<th>Teacher C Baseline</th>
<th>Teacher C Reteach</th>
<th>Teacher D Baseline</th>
<th>Teacher D Reteach</th>
</tr>
</thead>
<tbody>
<tr>
<td>Clarity of task presentation</td>
<td>91.7</td>
<td>50.0</td>
<td>50.0</td>
<td>85.0</td>
<td>50.0</td>
<td>100.0</td>
<td>88.0</td>
<td>96.4</td>
</tr>
<tr>
<td>Use of demonstration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Full</td>
<td>0</td>
<td>55.0</td>
<td>0</td>
<td>29.0</td>
<td>11.0</td>
<td>36.5</td>
<td>10.0</td>
<td>22.0</td>
</tr>
<tr>
<td>Partial</td>
<td>44.0</td>
<td>0</td>
<td>37.5</td>
<td>16.0</td>
<td>0</td>
<td>7.6</td>
<td>17.0</td>
<td>12.0</td>
</tr>
<tr>
<td>None</td>
<td>56.0</td>
<td>45.0</td>
<td>62.5</td>
<td>52.0</td>
<td>89.0</td>
<td>59.0</td>
<td>73.0</td>
<td>66.0</td>
</tr>
<tr>
<td>Appropriate no. of cues (yes)</td>
<td>25.0</td>
<td>90.0</td>
<td>50.0</td>
<td>52.2</td>
<td>49.0</td>
<td>100</td>
<td>85.9</td>
<td>71.4</td>
</tr>
<tr>
<td>Accuracy of cues (yes)</td>
<td>16.5</td>
<td>62.5</td>
<td>50.0</td>
<td>95.0</td>
<td>100</td>
<td>100</td>
<td>94.2</td>
<td>91.4</td>
</tr>
<tr>
<td>Use of qualitative cues (yes)</td>
<td>33.0</td>
<td>75.0</td>
<td>50.0</td>
<td>95.0</td>
<td>77.0</td>
<td>67.6</td>
<td>71.2</td>
<td>68.3</td>
</tr>
<tr>
<td>Appropriate student responses (all)</td>
<td>16.5</td>
<td>32.5</td>
<td>25.0</td>
<td>72.2</td>
<td>29.0</td>
<td>72.8</td>
<td>79.6</td>
<td>91.4</td>
</tr>
<tr>
<td>Use of specific congruent feedback (yes)</td>
<td>15.0</td>
<td>27.0</td>
<td>75.0</td>
<td>53.7</td>
<td>22.0</td>
<td>65.7</td>
<td>83.7</td>
<td>79.9</td>
</tr>
<tr>
<td>Total QMTPS score</td>
<td>32.0</td>
<td>53.3</td>
<td>34.6</td>
<td>63.6</td>
<td>23.5</td>
<td>47.0</td>
<td>62.0</td>
<td>73.1</td>
</tr>
</tbody>
</table>
Table 4

Class Means for Product Measures

<table>
<thead>
<tr>
<th>Task</th>
<th>Teacher A</th>
<th>Teacher B</th>
<th>Teacher C</th>
<th>Teacher D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vertical jump (force production)*</td>
<td>2.670</td>
<td>2.526</td>
<td>2.577</td>
<td>2.685</td>
</tr>
<tr>
<td></td>
<td>2.290</td>
<td>2.637</td>
<td>2.277</td>
<td>2.492</td>
</tr>
<tr>
<td>Reteach</td>
<td>2.614</td>
<td>2.859</td>
<td>2.600</td>
<td>2.592</td>
</tr>
<tr>
<td></td>
<td>2.536</td>
<td>2.629</td>
<td>2.589</td>
<td>2.477</td>
</tr>
<tr>
<td>Jump down from box (force reduction)**</td>
<td>6.635</td>
<td>7.758</td>
<td>6.477</td>
<td>6.523</td>
</tr>
<tr>
<td></td>
<td>6.110</td>
<td>7.589</td>
<td>7.215</td>
<td>5.823</td>
</tr>
<tr>
<td>Reteach</td>
<td>8.123</td>
<td>8.282</td>
<td>8.794</td>
<td>9.031</td>
</tr>
<tr>
<td></td>
<td>7.427</td>
<td>6.257</td>
<td>7.706</td>
<td>6.738</td>
</tr>
<tr>
<td>Standing long jump (force production)*</td>
<td>113.09</td>
<td>113.03</td>
<td>119.25</td>
<td>119.98</td>
</tr>
<tr>
<td></td>
<td>117.50</td>
<td>115.95</td>
<td>123.44</td>
<td>131.04</td>
</tr>
<tr>
<td>Reteach</td>
<td>115.34</td>
<td>118.44</td>
<td>95.38</td>
<td>131.19</td>
</tr>
<tr>
<td></td>
<td>119.23</td>
<td>130.20</td>
<td>107.04</td>
<td>138.50</td>
</tr>
</tbody>
</table>

*Higher scores indicate better performance in force production; **lower scores indicate better performance in force reduction.

The tasks. This teacher used a high level of specific congruent feedback (75%) without matching the feedback to student responses. In the baseline lessons Teacher B’s class improved in force production abilities and improved slightly in force reduction and the standing long jump (Table 4 and Figure 2).

Intervention. Individual work with this teacher focused primarily on narrowing the focus of tasks and creating accountability for that focus. The use of refining tasks in content development was also a major focus.

Reteach Unit. As with Teacher A, the changes in Teacher B’s behavior in the reteach unit of this study are not reflected in OSCD-PE data (Table 1). Because they are more qualitative in nature, they are more adequately reflected in QMTPS data (Table 3). Teacher B’s task delivery became more clear (50-85%). Although there was little change in the number of cues given to students (50-52% appropriate), the cues became more accurate (50-95%) and were more qualitative in nature (50-95%). Students apparently were held more accountable for their performance, as evidenced by the number of tasks for which appropriate student responses were obtained (25-72.2%).

Because a great deal of specific congruent feedback during the baseline unit was delivered without a conscious awareness of student responses, the actual use of specific congruent feedback during the reteach unit of the study went down (75-53.7%). However, informal observation and analysis indicates that the quality of the feedback improved because it was based on observed needs of students. The number of observed practice trials improved from 45 to 121 for the two-
Figure 2 — Pretest and posttest group means, baseline and reteach.
Figure 3 — QMTPS scores, baseline and reteach: a, clarity; b, demonstration; c, appropriate no. of cues; d, accuracy of cues; e, qualitative cues; f, appropriate student responses; g, congruent feedback.
lesson sample (Table 2). Scores on student product measures for the second class taught by Teacher B showed a significant change in force reduction abilities and in jumping for distance. Students regressed in force production measures on the force platform.

Teacher C

Teacher C was an experienced physical education teacher working in a school serving primarily upper lower-class rural students.

Baseline Unit. Teacher C’s approach to content development utilized primarily a movement analysis framework that involved an elaborate planning system based on what the teacher definitely wanted to cover as well as alternatives based on time and student abilities. Also included were elaborate plans for what to observe. Characteristic of this teacher was a reluctance to give students information on how to perform; little direct teaching was done. For example, although Teacher C frequently asked students to land softly, they did not and this teacher never taught them how. A great deal of time was spent in organizational detail both prior to and during activity. For example, Teacher C taught the students how to move large equipment onto the floor. This teacher had the lowest percentage of student behavior problems of the four teachers in the study and rarely had to speak to students above a normal conversational tone.

Time devoted to organization prevented a high number of student practice trials (57 for the two-lesson sample) (Table 2). The OSCD–PE data (Table 1) characterizes Teacher C in the middle range on almost all constructs of the instrument.

QMTPS data (Table 3) give a more accurate description of some problems encountered by Teacher C. Only 50% of the tasks were delivered with clarity, and 89% were presented without a full demonstration. Although the cues were accurate (100%) and generally qualitative in nature (77%), they were of an inappropriate number 49% of the time. In contrast to the other teachers studied, this teacher spent little time giving information, which may have contributed to student responses being appropriate only 29% of the time. In the baseline unit students actually regressed in their ability to reduce force and produce force. They improved their ability in the standing long jump slightly (Table 4 and Figure 2).

Intervention. Individual work to improve Teacher C’s effectiveness focused on the need to redefine content to give students specific information on how to perform when needed. The use of congruent feedback and skill progressions that moved on in difficulty only when students had succeeded at easier tasks were also the focus of the intervention sessions.

Reteach Unit. Following the baseline unit, Teacher C decreased information giving (2.05–1.08 rpm) (Table 1). The number of practice trials increased from 57 in the first class taught to 145 in the second class (Table 2) for the two-lesson sample. Dramatic improvement was shown on several of the QMTPS constructs (Table 3) during the reteach unit. Areas showing the most improvement were task clarity (50–100%), appropriate number of cues (49–100%), appropriate student responses (29–72.8%), and the use of specific congruent feedback (22–65.7%). Some improvement was made in the use of full demonstration (11–36%) but a slight decrease was shown for the use of qualitative cues (76–67.6%).
Students in the second class improved their ability to reduce force as well as their standing long jump scores. There was little change in their ability to produce force. Compared to the scores in the baseline unit, the reteach group demonstrated no regression in force production using the platform and demonstrated considerable improvement in force reduction and in the standing long jump (Table 4).

Teacher D

Teacher D was an experienced elementary school physical education teacher in an upper middle-class private school.

Baseline Unit. Teacher D’s approach to the content was primarily developmental in nature, with some attempt to vary the task after it was introduced and developed at less complex stages. This teacher tended to (a) teach the fundamental pattern, such as a jump from 2 feet to 2 feet until student form and ability to produce and reduce force were developed, and then to (b) expand the number of ways students experienced 2-to-2-footed jumps and landings from 2 feet to 2 feet.

Teacher D planned using primarily specific psychomotor objectives as well as cognitive ones. Progressions were laid out chronologically with what was to be refined in each aspect of the progression. As indicated in the OSCD–PE data (Table 1), Teacher D was an effective manager in terms of student conduct and aspects of lesson organization. Little time was devoted to off-task behavior. Over 50% of class time was devoted to activity, with short transitions between tasks. A total of 256 practice trials were recorded for this teacher in the baseline two-lesson sample (Table 2). Teacher D used a high rate of refining behaviors in the development of content.

The quality of this teacher’s work is best reflected in the QMTPS data (Table 3). Some 88% of the tasks were delivered clearly. Cues were appropriate in number 85.9% of the time and accurate 94.2% of the time. Qualitative cues were used 71.3% of the time. Student responses to the task were appropriate 79.6% of the time and the use of specific congruent feedback during activity was also very high (83.7%). This teacher’s weakness in the QMTPS data concerned the use of demonstration. Only 27% of the tasks were delivered with a full or partial demonstration. In the baseline unit, students improved in their ability to reduce force and to perform the standing broad jump. Force production scores showed a regression in students’ ability to produce force (Table 4 and Figure 2).

Intervention. Individual work with this teacher to improve effectiveness primarily reinforced Teacher D’s approach to the content and to specific teaching behaviors. Attention was given to the use of demonstration while teaching and the need to focus on force production abilities in content development.

Reteach Unit. During the reteach unit, refining behaviors as recorded in OSCD–PE increased over the baseline unit, as did the use of specific appraisals (.72–2.21 rpm) in the postintervention lessons (Table 1). Management time increased because of a problem with a specific student. QMTPS data (Table 3) as well as the number of practice trials (Table 2) remained stable from pre- to postintervention lessons, with a slight increase in the use of demonstration. Student performance in the second class increased considerably in force reduction and distance jumped (Table 4 and Figure 2). Student performance in force production decreased slightly.
Discussion

An important question that a researcher studying teacher effectiveness has to ask regarding these case studies is whether teachers actually improved in their ability to increase the performance scores of students from the baseline unit to the reteach unit. There was a definite trend for force reduction abilities to improve from the first teaching experience to the second one for at least three of the four teachers. There was a similar trend for the scores on the standing broad jump. Force production scores for both parts of the study showed little change or regression.

The researchers interpret the regression scores for force production as being due to the way in which the force platform was used to collect data. Force production scores were obtained by asking students to jump as high as they could from a stationary 2-footed position on the force platform and to land on the force platform. Because a balanced and still landing was such a problem for this age group, students learned to satisfy the requirements of the landing by not jumping as high. In other words, what was learned was not how to jump higher on the platform but how to meet the requirements for landing. The consistent results for this measure across both phases of the study serve to support this position. It is also interesting that the scores for the second teaching experience show far less regression from pretest to posttest, which may mean that students were actually learning how to control the more forceful jump.

All of the teachers improved their teaching in many areas measured by the instrumentation used in this study. One advantage of using several sources of data to establish profiles of these teachers is that it allows the multifaceted nature of the process to be better represented.

Although each teacher was unique in his/her approach to the content, all shared several characteristics that seem common to practicing teachers. One such characteristic was a failure to identify specifically what was important in the skills they were teaching and to teach specifically for those skills. When lesson plans reflected what was important, this information was rarely communicated to students in a way that students could be held accountable for during performance. The following profile describes the instructional characteristics of classes in which greater performance gains appeared:

1. Although a statistical relationship was not established, constructs related to task presentation such as the use of qualitative cues, an appropriate number of cues, and the use of visual demonstration coupled with verbal explanation seemed to improve effectiveness. The total score on the QMTPS is probably most indicative of the differences between the teachers in this study and may be better interpreted as describing task presentation characteristics because of its holistic nature. Teachers A, B, and C improved a great deal from the baseline unit to the reteach unit (32–53.3, 34.6–63.6, and 23–547.0%, respectively). All three remained within the middle range of the instrument. Teacher D was strong in all categories of the instrument except the use of demonstration throughout both units of the study, and was consistently effective.

2. More effective teaching identified very specifically the process characteristics of good performance. Inaccurate information and general global statements by teachers were not helpful to students and often resulted in inappropriate student responses. The categories of the QMTPS instrument describing the teacher’s use of cues are probably most indicative of the selection of process
characteristics communicated to students. Although accuracy of cues was a major problem for only one teacher initially, giving qualitative information on how to perform was not standard practice for any of the teachers and was infrequent for two of them. One teacher did not give students enough information initially and another consistently bombarded them with too many cues.

3. Based on the descriptive data for both QMTPS and OSCD–PE, effective teaching created an accountability system for good performance through the use of specific feedback and feedback that was congruent with the cues given the learner as a focus. Teacher D refined the students’ performance a great deal more than other teachers did, both in the baseline unit and the reteach unit. The use of congruent feedback was not characteristic of three of the teachers during the baseline unit; only one of them was able to show any real gain in congruent feedback in the reteach unit. Identifying a limited focus, making it explicit, and holding students accountable was difficult for these teachers.

4. Effectiveness was related to the number of practice trials, but not directly. Generally speaking, more effective teaching was characterized by more practice trials. Teacher D far exceeded the other teachers in the number of practice trials given students in both units and showed consistent effectiveness in producing student learning. Teacher A actually decreased practice trials from the baseline unit to the reteach unit but improved effectiveness as the student responses became more appropriate (increase in appropriate student responses from 16.5 to 32.5%).

5. Management skills alone were not sufficient indicators of effectiveness. Teacher C rarely spoke above a whisper to direct students, and learning experiences were organized for maximum activity. Teacher A was just the opposite. Yet, because of other problems, both scored low in the appropriateness of student responses and little difference can be noted in their effectiveness.

6. The results of this study suggest that inservice training can be effective in helping teachers enhance their teaching when motor skill acquisition is the objective. The inservice work with the teachers in this study focused specifically with one content area and was individualized for at least 50% of the time.

The results of this study must be interpreted carefully in terms of design limitations. First, the small number of subjects and the case study approach limit generalizations beyond the context of this study. Second, student gain in the dependent variables was not large for any group in either phase of the study. This may be a function of the developmental nature of the skills used in this study with second grade children. Statistically significant changes in children’s performance of basic skills may take more time than allotted in the instructional phase of this study. Although from a curricular perspective all four teachers initially said they did not feel there was enough content for six lessons, they later felt they did not have enough time to teach the content. An alternative explanation to failure to see large gains in skill may be that learning such skills is accompanied by regression in performance as students integrate new process characteristics.

The profile of effective teaching described in this study is consistent with classroom research documenting the need for focusing learners rather specifically on learning tasks, clarity of instruction (particularly in task presentation), and the need for implementing some system of accountability. In addition, quantity of practice and the teacher’s management skills are reinforced as necessary but are not sufficient conditions for effectiveness. The importance of teacher content knowledge and the teacher’s ability to give students quality practice opportunities is also reinforced by the results of this study.
References


Siedentop, D., Tousignant, M., & Parker, M. (1982). Academic Learning Time–Physical Education. The Ohio State University, School of HPER.
