Patterns of Interactions and Behaviors: Physical Education in Korean Elementary, Middle, and High Schools

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Abstract

The purpose of this study was to compare and analyze the differences between elementary, middle, and high school physical education classes in Korea based on teacher and student behavior and teacher-student interaction patterns. The subjects who participated in this study were fifteen certified full-time physical education teachers at selected schools in Seoul. Teacher and student behavior and teacher-student interaction patterns were coded using Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS). Statistically significant differences in the teacher and student behaviors among the three school levels were analyzed using a Kruskal-Wallis ANOVA. Additional multiple comparisons using the Mann-Whitney *U* test were employed when significant differences resulted from the Kruskal-Wallis ANOVA among the three school levels. This study demonstrated that elementary school physical education classes exhibited more humanistic behaviors. In contrast, middle school classes were conducted with a great deal of teacher input and high school classes had a very structured atmosphere.

Key Words: systematic observation, descriptive data

Historically, educational trends have followed cyclical patterns reflecting the changing conditions and demands of society. As the pendulum of educational values has swung back and forth, two educational philosophies have emerged within the teaching profession, both claiming to provide the best education for students. These are the traditional philosophies and the progressive philosophies.

These two philosophies approach the educational process from different perspectives. The traditional perspective represents a top-down approach to the process of teaching and learning, with the principal role of the teacher to disseminate knowledge and control the learning process, while students are expected to acquire objective knowledge by digesting facts and concepts and searching for correct answers.

In contrast, the progressive perspective presents a bottom-up approach in which the teacher's role is primarily to encourage students to pursue their own educational objectives. In this model, students are taught to generate their own questions and answers, express their own ideas and thoughts, and seek out their own solutions to problems rather than simply receiving them from teachers.

However, in spite of their differing approaches to the educational process, traditionalists and progressivists share the same goal, namely to develop the ability of students to reach their full potential. In both cases, this goal can only be achieved with quality teaching by competent teachers. Thus, regardless of the philosophical approach, teachers play an extremely important role in helping students achieve the intended educational goals. Since students must learn in an effective manner in order to acquire knowledge, teachers must provide effective teaching in order for students to receive a quality education.

As a result, the study of teaching has become a prominent area of interest in the field of education. As our profession has progressed, some educational scholars endeavored to study the art of teaching in a more analytical way and therefore developed scientific observational techniques to validate their research (Hilberg, Waxman, & Tharp, 2004; Ornstein, 1986). The use of observational systems specifically designed to examine a wide variety of teacher and student behaviors has profoundly affected research on teaching and teacher training (Rink, 2006; Schempp, 2003; Senne, 2004). Consequently, the teaching process is no longer viewed as a nebulous, inexplicable interaction between the teacher and student, but rather a process that can be planned, systematically observed, and readily assessed.

Research employing observation techniques in the field of educational studies as a whole has greatly impacted the research approach of those specifically studying physical education (Lee, 2003; Tinning, Macdonald, Wright, & Hickey, 2001). Various systematic observation techniques which enable a more objective investigation of the teaching and learning process have been developed for the study of physical education. Continued research efforts employing systematic observation techniques are needed to pursue previously unexplored teacher behavior variables (Marco, Mancini, Wuest, & Schempp, 1996).

Since the mid-1980s, South Korean sports pedagogues have been actively engaged in the study of teaching, making use of systematic observation techniques. Their findings have made an invaluable contribution toward our improved understanding of the current state of formal physical education in South Korea. However, despite the remarkable achievements made in the field, the majority of studies to date have concentrated on examining teacher effectiveness based largely on the amount of time students spend on task while in physical education classes (e.g., Chang, 1996; Cho, 2003; Choi, 2000; Choi, 2004; Ji, 2008; Kang, 1989; Kim, Hwang, & Park, 2002; Kim, 2006; Kim, 2000; Kim, 2001; Kim & Jeong, 1994; Kim, 2005; Ko, 1988; Kwak, 2006; Lee, 2007; Paek & Lee, 2003; Park, 2007; Park, 2001; Park, 2003; Yoo, 1989; Youn, 1994).

As a result, there is an obvious need to broaden this approach by studying the complex act of teaching in physical education settings. This study aimed to expand the current body of knowledge by observing, describing, comparing, and analyzing teacher and student behaviors as well as teacher and student interaction patterns among elementary, middle, and high school physical education classes in South Korea.

Several studies investigating the differences between physical

education classes at different grade and school levels were done in the 70s, 80s and 90s. These studies employed a variety of systematic observation techniques to uncover similarities and differences across school or grade levels. However, the findings of these studies were scant, contradictory, and inconclusive. For example, the studies conducted by Stewart (1977), Morgenegg (1978), and Lombardo (1979) found that positive teacher behaviors increased as school or grade level decreased. These results were inconsistent with those of study conducted by Schempp (1986) who found that praise or encouragement from the teachers, and acceptance from the teacher increased as school or grade level increased.

In other studies, Pieron and Hacourt (1979) and Schempp (1986) found that lecturing from the teachers increased as grade level increased. However, these findings were contradictory to those of Anderson and Barrette (1978), Yoon et al. (1996), Cheffers and Mancini (1978), Lombardo (1979), and Buckett (1983), which revealed that teacher contribution increased as school or grade level decreased, and student contribution increased as school or grade level increased.

Method

Participants

Eleven schools were randomly selected from the five different school districts in Seoul, South Korea. Of the eleven schools, fifteen certified full-time elementary (n=5), middle (n=5), and high (n=5) school physical education teachers volunteered to participate in the study. All subjects were male teachers, simply because a significant majority of physical education teachers in South Korea are male.

In this study, the elementary school classes consisted of one each of a third, fourth, and fifth grade, and two of sixth grade. Since physical education in the first and second grades is conducted alongside music and fine arts as an integrated subject, these grade levels were not included in the selection of elementary school physical education classes. Middle school classes were one seventh grade and two of eighth and ninth grades. High school classes were one tenth grade and two of eleventh and twelfth grades. Several activities were shown in both indoor classes and outdoor classes. For instance, there were two handball, two basketball, one track & field, one badminton, two gymnastics, one tennis, two volleyball, one jump rope, and three miscellaneous games.

Instrumentation

Cheffers' Adaptation of Flanders' Interaction Analysis System (CAFIAS) was used as an instrument to identify the dependent variables in teacher and student behavior as well as teacher-student interaction patterns. Cheffers (1972) developed CAFIAS to allow a clearer and more complete description of direct and indirect verbal and non-verbal teacher and student behavior as well as interactions between teachers and students in physical education classes. The CAFIAS was also employed to analyze class structure, teaching agencies, and student response behaviors (Cheffers, Amidon, & Rodgers, 1974). The behaviors classified by CAFIAS were recorded every three seconds, or whenever the behaviors changed.

Cheffers (1972) determined the validity of CAFIAS by comparing "blind" interpretations to "live" interpretation. He reported a Pearson Product Moment Correlation of .80, which was converted to a *t*-ration of 3.5 ($p<.05$). In addition, Kelly (1995) reported that since the development of CAFIAS in 1972, more than 180 studies have been conducted utilizing CAFIAS as an observational technique. Through these studies, CAFIAS has been proven to be reliable and valid.

The intra-and inter-observer reliability of CAFIAS coding in this study was examined using the Spearman Rank-Order Correlation Coefficient. As a result, the intra-and inter-observer reliability was established with $r = .955$ and $r = .966$ respectively for the 20 CAFIAS categories.

Procedures

In order to videotape the selected classes for this study, two professional digital video cameras (SONY DSR-250 DVCAM Camcorder and SONY DSR-300A DVCAM Camcorder) and a clip style microphone (SANKEN COS-11) were employed. The video equipment was operated by two video technicians during the teachers' regular physical education classes. One camcorder (SONY DSR - 250) with a zoom lens took close-up shots of the teachers. Teachers' verbal behavior was recorded through a clip microphone (SANKEN COS-11) whose receiver was attached to the camera. The other camcorder (SONY DSR-300A) covered the overall scene of the classes using a wide-angle lens. The camcorders were positioned to optimize data collection without interfering with class activities, controlling distortions of research results that might be caused by the Hawthorne effect (Gay, Mills, & Airasian, 2006).

After successfully videotaping 15 classes in selected schools, the videotapes from the two cameras were edited using a video editing software program (ADOBE PREMIERE version 5.1) to create a horizontally-split screen picture for visual synchronization on a television monitor. The video editing software program also incorporated an audio beeping sound every three seconds in all edited videotapes in order to facilitate precise interval coding. The edited contents were then recorded on VHS videotapes for viewing.

During the review of the fifteen videotaped lessons, variables such as teacher and student behavior as well as teacher-student interaction patterns were coded numerically into CAFIAS tally sheets using 20 CAFIAS categories in sequential order, using three second behavior intervals (Cheffers, Mancini, & Martinek, 1980). The raw scores recorded on the tally sheets during the 20 minutes for each class were entered into the CAFIAS computer program developed by Ephraty in 1988. The computer compiled the raw data into frequencies and percentages for each of the 20 CAFIAS categories, as well as ratios and percentages for each of 41 CAFIAS parameters.

Due to the similarity between the 20 categories and 41 parameters, 12 CAFIAS parameters were chosen from among the 41 CAFIAS parameters. The selected parameters that were not represented in the 20 CAFIAS categories included three teacher contribution parameters, three student contribution parameters, three parameters examining different teaching agencies, and three parameters examining different class structures.

The CAFIAS computer program assembled interaction patterns between teachers and students into a basic 20X20 matrix. The

top cells for the interaction patterns between teachers and students for each lesson were extracted from the basic 20X20 matrix in the computer program. Those cells with the highest percentages indicated primary interaction patterns.

Data Analysis

Statistically significant differences in the teacher and student behavior between three school levels were analyzed using a Kruskal-Wallis one-way ANOVA test, at the .05 level of significance. Additional multiple comparisons using the Mann-Whitney *U* test were employed when significant differences resulted from the Kruskal-Wallis one-way ANOVA test between the three school levels. The Bonferroni adjusted level of significance (p<.05/3=.017) was applied to each of the Mann-Whitney *U* Tests. The statistical computation was performed using the Statistical Package for the Social Sciences (SPSS) 15.0 for Windows.

In order to analyze the interaction patterns at each school level, Batchelder's method (1975) was used. The interaction patterns for each school level were determined by comparing the top 5 cells of the basic 20X20 matrices generated by the CAFIAS computer program.

Results

Based on Kruskal-Wallis ANOVA tests, the results showed that there were statistically significant differences among elementary, middle, and high school physical education levels with regard to one CAFIAS category and two CAFIAS parameters.

They were as follows: student analytical nonverbal response (category 18\), $H(2) = 6.80$, p<.05; teacher acting as the teaching agency (parameter 7), $H(2) = 8.24$, p<.05; and other students acting as teaching agency (parameter 8), $H(2) = 8.23$, p<.05. The one CAFIAS category and two CAFIAS parameters, as well as the location of the differences as determined by the follow-up multiple comparison using Mann-Whitney *U* test, are presented in Table 1 and Table 2.

In addition, comparisons of the descriptive statistics indicated some differences in mean scores among the three school levels (see Table 1 & 2). The descriptive data about teacher behavior showed that teachers at the elementary school level had higher mean scores for verbal and nonverbal praise (category 2 & 12), verbal and nonverbal acceptance (category 3 & category 13), verbal and nonverbal questioning (category 4 & 14), total teacher acting as the teaching agency (parameter 7), a unified class structure (parameter 10), and no teacher influence as class structure (parameter 12) than teachers at the middle and high school levels.

Meanwhile, teachers at the middle school level exhibited higher mean scores for verbal and nonverbal lecture (category 5 & 15), verbal and nonverbal direction (category 6 & 16), nonverbal criticism (category 17), teacher verbal and nonverbal contribution (parameter 1 & 2), total teacher contribution (parameter 3), other students acting as teaching agency (parameter 8), and groups of individuals as class structure (parameter 11) than teachers at the elementary and high school levels. Also, teachers at the high school level had higher mean scores for verbal criticism (category

Table 1. ***Summary of the Kruskal-Wallis one-way ANOVA Test and the Mann-Whitney U Test as Multiple Comparisons for the Differentiation among the Three School Levels According to 20 CAFIAS Categories***

	20 CAFIAS Categories	E		M		H			
		M	*SD*	*M*	*SD*	*M*	*SD*	*H*	*P*
2	Teacher Use of Praise -Verbal	22.4	9.69	18.20	6.14	13.40	7.36	1.91	.38
12	Teacher Use of Praise -Nonverbal	6.60	6.07	6.40	2.19	3.40	1.95	2.81	.24
3	Teacher Acceptance -Verbal	5.80	5.40	.40	.89	.80	.84	5.31	.07
13	Teacher Acceptance -Nonverbal	2.20	4.92	.40	.55	.80	.84	1.01	.60
4	Teacher Question -Verbal	9.60	7.23	5.40	3.44	5.80	3.35	1.25	.53
14	Teacher Question -Nonverbal	1.80	1.48	1.00	1.73	1.20	1.10	1.25	.53
5	Teacher Lecture -Verbal	84.80	33.81	111.00	32.32	81.80	40.88	1.86	.39
15	Teacher Lecture -Nonverbal	74.60	33.35	90.00	27.38	67.40	38.53	1.26	.53
6	Teacher Direction -Verbal	81.20	18.97	86.80	10.06	81.60	18.35	.06	.96
16	Teacher Direction -Nonverbal	56.40	29.95	64.80	27.90	59.40	34.20	.26	.87
7	Teacher Criticism -Verbal	10.00	8.89	19.60	5.55	21.00	9.27	5.09	.07
17	Teacher Criticism -Nonverbal	3.80	5.50	5.40	4.34	5.00	2.24	.86	.65
8	Student Predictable Response -Verbal	118.60	75.04	74.00	31.22	70.60	54.47	1.21	.54
18	Student Predictable Response -Nonverbal	233.60	35.93	227.60	55.51	214.40	62.16	.86	.64
8\	Student Analytical Response -Verbal	18.40	9.37	8.60	6.31	7.60	2.70	4.72	.09
18\	Student Analytical Response -Nonverbal*	7.40_{a}	3.13	2.40_{b}	.89	$3.60_{a,b}$	2.41	6.80	.03
9	Student -Initiated Behavior -Verbal1	14.80	14.77	2.40	1.82	10.00	9.82	2.61	.27
19	Student -Initiated Behavior -Nonverbal	10.40	12.52	6.60	5.37	9.80	6.69	.39	.82
10	Confusion, Disorder, Noise	15.20	9.47	6.80	1.79	9.60	6.8	2.06	.35
20	Silence	.80	1.10	1.60	.55	1.00	1.41	1.62	.44

Note . E = elementary school classes (n =5); M = middle school classes (n=5); H = high school classes (n=5); *M* = mean; *SD* = standard deviation. Means with different subscripts differ significantly at the Bonferroni adjusted level of significance, p <.017 (.05/3), by the Mann-Whitney *U* Test. *p <.05.

Table 2. ***Summary of the Kruskal-Wallis one-way ANOVA Test and the Mann-Whitney U Test as Multiple Comparisons for the Differentiation among the Three School Levels According to 12 CAFIAS Parameters***

	12 CAFIAS Parameters	E		M		H			
		M	*SD*	*M*	*SD*	*M*	*SD*	*H*	*P*
1	Teacher Contribution, Verbal	27.82	7.89	32.87	7.11	31.11	7.65	1.04	.59
2	Teacher Contribution, Nonverbal	18.98	7.52	22.63	4.70	20.98	7.54	1.04	.59
3	Total Teacher Contribution	46.81	15.04	55.50	9.16	52.09	14.48	.86	.65
4	Student Contribution, Verbal	19.02	11.25	11.38	3.62	12.61	7.99	1.52	.46
5	Student Contribution, Nonverbal	32.17	4.82	31.97	6.25	33.73	6.30	.62	.73
6	Total Student Contribution	51.18	14.05	43.35	9.17	46.34	14.01	1.04	.59
7	Teacher as Teacher*	100.00_{a}	.00	$95.14_{a,b}$	3.62	96.49_{b}	3.25	8.24	.01
8	Other Student as Teacher*	$.00_{a}$	.00	$4.86_{a,b}$	3.62	3.51_{b}	3.25	8.23	.01
9	The Environment as Teacher	.00	.00	.00	.00	.00	.00	.00	1.00
10	Class Structure as One Unit	70.20	40.73	51.30	45.34	68.10	34.35	.40	.81
11	Class Structure as Group or as Individual	29.70	40.82	48.65	45.28	31.90	34.35	.68	.70
12	Class Structure with No Teacher Influence	.10	.22	.05	.11	.00	.00	1.08	.58

Note . E = elementary school classes (*n* =5); M = middle school classes (*n* =5); H = high school classes (*n* =5); *M* = mean; *SD* = standard deviation. Means with different subscripts differ significantly at the Bonferroni adjusted level of significance, *p* <.017 (.05/3), by the Mann-Whitney *U* Test. **p* <.05.

7) than teachers at the elementary and middle school levels.

The descriptive data about student behavior demonstrated that students at the elementary school level had higher mean scores for predictable verbal and nonverbal response (category 8 & 18), analytical verbal and nonverbal response (category 8\ & 18\), initiated verbal and nonverbal behavior (category 9 & 19), confusion (category 10), student verbal contribution (parameter 4), and total student contribution (parameter 6) than students at the middle and high school levels.

Meanwhile, students at the middle school level had a higher mean score on silence (category 20) than students at the elementary and high school levels. Also, students at the high school level exhibited higher mean scores for student nonverbal contribution (parameter 5) than students at the elementary and middle school levels.

As shown in Table 3, the interaction patterns for each school level were determined by comparing the top five cells of the basic 20X20 matrices generated by the CAFIAS computer program. The teacher and student interaction patterns at the elementary school level were described as 18-18-18-8-8-18-8-8-16-18, which reflected extended predictable student nonverbal responses followed by extended predictable student verbal responses, predictable student nonverbal responses, extended predictable student verbal responses, teacher nonverbal direction, and then predictable student nonverbal responses. The patterns for the middle school level were described as 18-18-6-18-5-5-16-18-18-6, which reflected extended predictable student nonverbal responses followed by teacher verbal direction, predictable student nonverbal responses, extended verbal information from the teacher, teacher nonverbal direction, extended predictable student nonverbal responses, and then teacher verbal direction. The patterns for the high school level were described as 18-18-6-18-16-18-18-6-5-5, which implied extended predictable student nonverbal responses followed by teacher verbal direction, predictable student nonverbal responses, teacher nonverbal direction, extended predictable student nonverbal responses, teacher verbal direction, and then extended verbal information from the teacher.

Table 3. ***Summary of the 10 Predominant Interaction Cells, Frequencies, and Percentages by Three School Levels***

	E			M			H	
Cell	*f*	%	Cell	*f*	%	Cell	*f*	%
18-18	437	11.23	18-18	433	11.73	18-18	378	11.31
18-8	220	5.65	6-18	248	6.72	6-18	242	7.24
8-18	209	5.37	5-5	227	6.15	16-18	205	6.14
8-8	181	4.65	16-18	197	5.34	18-6	191	5.72
16-18	180	4.62	18-6	193	5.23	5-5	165	4.94
6-10	173	4.45	5-15	173	4.69	18-16	139	4.16
18-6	144	3.70	15-5	171	4.63	5-15	137	4.10
5-5	138	3.55	18-16	126	3.41	18-8	133	3.98
5-15	123	3.16	18-8	124	3.36	15-5	127	3.80
15-5	122	3.13	8-18	118	3.22	15-15	119	3.56

Note . E = Elementary School PE classes (*n* =5) ;
M = Middle School PE Classes (*n* =5) ;
H = High School PE Classes (n=5).
f = frequency of occurrence.

Discussion

Analysis of the CAFIAS indicated that teachers at the three school levels demonstrated more verbal than nonverbal contribution because they were primarily involved in giving information and directions, questioning, and critiquing in their teaching behaviors rather than silently observing students practicing. In particular, teachers at the middle school level displayed a higher total teacher contribution than teachers at the high school level, followed by teachers at the elementary school level. The contribution displayed by middle school teachers was primarily comprised of verbal and nonverbal lecturing, giving verbal and nonverbal direction, and

verbal criticism. This suggests high teacher contribution at the middle school level, meaning that teachers did not allow students ample time to practice skills in class. Thus, Korean middle school students seemed to have few opportunities to participate in skills practice due to increased information giving and direction from the teacher.

This finding was very similar to the results from study by Schempp (1986), which found that lecturing from the teachers increased as grade level increased. Similarly, a study by Pieron and Hacourt (1979) showed that teacher speech increased with school level, and student speech increased as school level decreased. However, this finding did not concur with those of Anderson and Barrette (1978) and Yoon et al. (1996), where teachers at the elementary school level spent more time instructing and less time observing than teachers at the secondary school level. Studies by Cheffers and Mancini (1978), Lombardo (1979), and Buckett (1983) also presented results contradictory to those of the current study, indicating that teacher contribution increased as school or grade level decreased, and student contribution increased as school or grade level increased.

Additionally, these Korean elementary school teachers fostered a humanistic approach emphasizing praise, acceptance of student's ideas, and encouragement of student questions. The contribution exhibited by teachers at the elementary school level included verbal and nonverbal praising, verbal and nonverbal accepting, and verbal and nonverbal questioning. The finding is consistent with previous studies by Stewart (1977), Morgenegg (1978), and Lombardo (1979), which revealed that positive teacher behaviors increased as school or grade level decreased. This data contradicts the findings of Schempp (1986), which showed that praise or encouragement from the teachers, and acceptance by the teacher increased as school or grade level increased.

The descriptive data indicated that teacher criticism was expressed more at the secondary school level. For example, verbal criticism occurred more often at the high school level while nonverbal criticism was observed more at the middle school level. It is assumed that teachers at the Korean middle and high school levels frequently used verbal and nonverbal criticism in order to punish and control students. This assumption is supported by conclusions reached by Kang (1994), who reported that teachers at the middle school level were more often required to discipline deviant student behaviors than teachers at the elementary school level in South Korea.

Students at each school level seemed to be more engaged in nonverbal than verbal contribution. As a general rule, Korean school students tended to exhibit nonverbal involvement in physical education classes. Specifically, students at the elementary school level showed higher total student contribution than students at the middle school level, followed by students at the high school level. The contribution displayed by elementary school students consisted of predictable verbal and nonverbal responses, analytical verbal and nonverbal responses, initiated verbal and nonverbal responses, and confusion. This suggests that the elementary school teachers allowed students more time to practice skills during lessons.

Notably, students at all school levels generally exhibited a low level of analytical response in the classes. However, students at the elementary school level showed higher analytical verbal and nonverbal responses than students at the middle and high school levels. According to Cheffers, student analytical responses frequently occur during game-playing. Many lessons conducted at the Korean elementary school level consisted of game-playing, which provided opportunities to experience "broad individual interpretation leading to much wider cognitive activity, with individual creativity still remaining within the scope of prediction" (Corbett, Cheffers, & Sullivan, 2001, p. 383).

Particularly, student confusion occurred more often at the elementary school level than at the middle and high school levels, while student silence occurred more at the middle and high school levels. This was largely due to the fact that Korean elementary school classes were conducted in a more permissive atmosphere, and as a result, the students were somewhat more disorderly. On the other hand, the middle and high school classes were presented in a more teacher-dominated climate, with the students typically more passive.

Furthermore, this study revealed that Korean physical education classes represented a poor educational environment in which a single teacher was responsible for an average of thirty-eight students. Because of the large class size, teachers had difficulty encouraging students to be active in class. At the elementary school level, teachers more frequently acted as the teaching agency for the whole class. These findings were identical to the findings of studies conducted by Cheffers and Mancini (1978), Lombardo (1979), and Jung (1998) where instruction of the whole class was found to increase as school or grade level decreased. It is assumed that teacher instruction of the whole class is more effective for controlling a large class containing some mischievous elementary school students, since if games were performed in small groups, the teacher might be too busy to maintain control of the class.

In contrast, teachers at the Korean middle and high school classes displayed greater use of other students acting as the teaching agency in small groups. Students in secondary school are more mature than elementary school students, making it more appropriate for skills to be developed in a small group arrangement. Lombardo's (1979) study also made this observation by indicating that the use of other students acting as the teaching agency increased as grade level increased. This behavior was attributed to the fact that students commonly led preparatory exercises in the beginning of the class at the Korean middle and high school levels. Moreover, the students who could perform well were asked to demonstrate skills, while the teacher provided concurrent commentary.

Meanwhile, some teachers at the elementary and middle school levels showed no teacher influence on the class structure in this study. This might be attributed to the fact that one elementary school teacher forgot to turn off his cellular phone before teaching, and appeared perplexed while handling the abrupt ringing of his cellular phone. Later, the teacher received a suddenly delivered document, and read and signed the document during the class. It is common for teachers to deal with urgently delivered documents and notifications even during class periods in South Korea. Furthermore, one middle school teacher had his lesson interrupted by a colleague, who asked him to lend him some badminton feather shuttlecocks. These episodes indicated that teachers did have significant influence on their classes due to their incautious behaviors, careless preparation of equipment, and responsibilities

dealing with suddenly delivered documents. These episodes seemed to interfere with the continuity of instruction and led to ineffective teaching and learning processes. Therefore, school administrators and teachers need to pay attention to creating an environment in which teachers are more fully engaged in classes.

The most common teacher and student interaction patterns at the three school levels predominately involved teachers giving direction and information, while students were primarily in a listening and obedient responding mode. Specifically, the teacher and student interaction patterns at the elementary school level exhibited dominant student predictable verbal and nonverbal responses. The middle and high school levels exhibited a similar command style of interaction. The interaction displayed by the middle school level combined extended teacher direction, lecture, and student predictable nonverbal responses, while the high school level demonstrated a similar pattern as the middle school level, but required fewer lectures.

In a nutshell, the findings supported the aforementioned results that students at the Korean elementary school level had more opportunities to be involved in activities than Korean students at the middle and high school levels. In contrast, teachers at the Korean middle and high school levels used more direct teacher input than teachers at the elementary school level.

Conclusion

The analytic information in the study defined some important implications nested in the attributes or causes that underlie the behavior observed at all levels of Korean physical education classes. Namely, the traditional teaching mode was employed in classes at all levels and consisted of the teacher distributing information and giving directions, followed by predictable student responses, or game-paying activities. Though the traditional mode of teaching seems to be more effective for classroom control, safety, and organization, it is less than ideal for students because it makes them more passive in the learning process, and therefore leads students to become dependent on the teacher for directions. As a result, the traditional teaching mode observed prevalently in Korean physical education classes appears insufficient for the development of students' creative and cognitive dimensions.

Moreover, teachers were typically viewed as authority figures in Korean physical education classes. The role of the teacher was to command, and the student's role was to obey respectfully, with corporal punishment frequently used as an effective means of discipline. This traditional value is deeply rooted in Korea's Confucian culture.

In addition, it was observed that students spent relatively long periods of time waiting for their turn to practice and participate because of large class sizes, resulting in wasted time and ineffective learning.

The analytic data in the study also lead to the following suggestions related to the aforementioned implications. First, Korean physical education teachers need to consider how to provide a more open, friendly, and reciprocal environment, rather than a hierarchical and military climate, in order to enhance learning and motivate students. Such an approach will also help to develop student's cognitive functions as they participate in physical activities. Second, a reduction in class size and high teacher-to-student ratio is needed in Korean physical education classes in order to promote effective teaching. In this way, teachers may more easily support students in being active in class and can be less rigid in their approach to students.

References

Anderson, W. G., & Barrette, G. T. (1978). Teacher behavior. In W. G. Anderson & G. T. Barrette (Eds.), *What's going on in gym: Descriptive studies of physical education classes* (pp. 25-38). Newtown, CT: Motor Skills: Theory into Practice.

Batchelder, A. S. (1975). *Process objectives, observed behaviors, and teaching patterns in elementary math, English, and physical education classes.* Unpublished doctoral dissertation, Boston University.

Buckett, B. J. (1983). *A descriptive analysis of teacher behavior and interaction patterns of selected elementary physical education specialists*. Unpublished doctoral dissertation, Middle Tennessee State University.

Chang, E. S. (1996). The effects of three disparate learning subgroup on academic learning time in elementary physical education classes. *The Journal of Institute of School Health & Physical Education, 3*(1), 53-68.

Cheffers, J. (1972). *The validation of an instruction design to expand the Flanders system of interaction analysis to describe nonverbal interaction, different varieties of teacher behavior and pupil responses*. Unpublished doctoral dissertation, Temple University.

Cheffers, J., Amidon, E., & Rodgers, K. (1974). *Interaction analysis: An application to nonverbal activity*. St. Paul, MN: Paul S. Amidon & Associates, Inc.

Cheffers, J., & Mancini, V. H. (1978). Teacher-student interaction. In W. G. Anderson & G. T. Barrette (Eds), *What's going on in gym: Descriptive studies of physical education classes* (pp. 39-50). Newtown, CT: Motor Skills: Theory into Practice.

Cheffers, J., Mancini, V., & Martinek, T. (1980). *Interaction analysis: An application to nonverbal activity* (2nd ed.). St. Paul, MN: Paul S. Amidon & Associates, Inc.

Cho, K. R. (2003). *A study on the relationship between academic learning time and swimming level*. Unpublished master's thesis, Myongji University, Seoul, Korea.

Choi, J. M. (2000). A comparison on academic learning time in secondary physical education class taught by teachers and student teachers. *Journal of Educational Science. 14*(2), 183-195.

Choi, J.S. (2004). A study on the teachers' behavior and ALT-PE in physical class. Unpublished master's thesis, Kongju National University, Kongju, Chungnam, Korea.

Corbett, D., Cheffers, J., & Sullivan, E. C. (Eds.). (2001). *Unique games and sports around the world*. Westport, CT: Greenwood Press.

Ephraty, N. (1988). *CAFIAS computer program kit*. [A manual of running the program] Israel: The Zinman College of Physical Education at the Wingate Institute.

Gay, L. R., Mills, G. E., & Airasian, P. (2006). *Educational research: Competencies for analysis and applications* (8th ed.). Upper Saddle River, NJ: Pearson Merrill Prentice Hall.

Hilberg, R.S., Waxman, H. C., & Tharp, R.G. (2004). Introduction: Purposes and perspectives on classroom observation research. In H.C. Waxman, R.G. Tharp, & R.S. Hilberg (Eds.), *Observational research in U.S. classrooms: New approaches for understanding cultural and linguistic diversity* (pp. 1-20). Cambridge, UK : Cambridge University Press.

Ji, H. G. (2008). *The effects of station instruction on academic learning time in physical education and activity with regard to long jump class*. Unpublished master's thesis, Daegu National University of Education, Daegu, Korea.

Jung, M. Y. (1998). *A comparative of P.E. teaching behavior between elementary and teachers and middle school teachers*. Unpublished master's thesis, University of Ulsan, Ulsan, Korea.

Kang, S. B. (1989). An analysis of academic learning time on elementary physical education classes. *The Korean Journal of Physical Education,*

28(1), 139-152.
Kang, S. B. (1994). An analysis on the instructional time of physical education at selected elementary and secondary schools. *The Korean Journal of Physical Education, 33*(1), 13-28.
Kelly, P. W. (1995). *The validation of an instrument measuring cognitive and emotional involvement*. Unpublished doctoral dissertation, Boston University.
Kim, D. H., Hwang, Y.S., & Park, J. S. (2002). A study on the academic learning time. *The Journal of the Research Institute of Physical Education & Sport Science, 18.* 37-49.
Kim, I. H. (2006). *An analytic study on teaching and learning behaviors in secondary physical education classes*. Unpublished master's thesis, Kongju National University, Kongju, Chungnam, Korea.
Kim, S. D. (2000). A study on the actual learning hours among the practical skill class of physical training in the high school. *Journal of Natural Science, 9*(2), 113-124.
Kim, S. J. (2001). A comparison of academic learning time in physical education and physical activity level during physical education classes in Korea and Japan. *The Korean Journal of Physical Education, 40(*4), 307-318.
Kim, S. K., & Jeong, J. S. (1994). Teaching method analysis on physical education class by teachers and teacher-assistants in the elementary school. *Konju Kyodae Nonchong, 31*(2). 33-52.
Kim, T. H. (2005). *The effects of teaching behaviors on academic learning time in high school physical education classes.* Unpublished master's thesis, Sejong University. Seoul, Korea.
Ko, B. K. (1988). Differences in academic learning time in physical education (ALT-PE) among three sport patterns. *Proceeding of 1988 Seoul Olympic Scientific Congress, Sport Scientific Institute of Dankook University, Cheonan, Choongnam, korea,* 264-270.
Kwak, H. K. (2006). *The effects of cooperative learning on academic learning time in physical education.* Unpublished master's thesis, Gyeongin National University of Education, Incheon, Korea.
Lee, A.M. (2003). How the field evolved. In S. J. Silverman & C. D. Ennis (Eds.), *Student learning in physical education: Applying research to enhance instruction* (pp. 9-25), Champaign, IL: Human Kinetics.
Lee, Y. S. (2007). Redesigning time-lined structure diagram analysis and active learning time diagram analysis for the consulting and self-analysis of teaching. *The Journal of Yeolin Education, 15*(2), 21-49.
Lombardo, B. J. (1979). *The observation and description of the teaching behavior and interaction of selected physical education teachers*. Unpublished doctoral dissertation, Boston University.
Marco, G. M., Mancini, V. H., Wuest, D. A., & Schempp, P. G. (1996). Becoming reacquainted with a once familiar and skill valuable tool: Systematic observation methodology revisited. *International Journal of Physical Education, 32*(1), 17-26.
Morgenegg, B. L. (1978). Descriptive analytic research in physical education. In C. B. Corbin (Ed.), *AAHPER Research Consortium Symposium Papers: Vol. 1. Teaching behavior and sport history* (pp. 34-38). Washington, DC: AAHPER Publications.
Ornstein, A. C. (1986). Teacher effectiveness research: Some ideas and issues. *Education and Urban Society, 18*(2), 168-175.
Paek, B. J., & Lee, W. K. (2003). The academic learning time research on physical education teachers at a middle school. *The Yongin University Journal, 21*, 195-221.
Park, J. S. (2007). *An analysis study on the teaching behavior of taekwondo instructor.* Unpublished master's thesis, Pusan National University, Pusan, Korea.
Park, Y. S. (2001). A descriptive-analytic study on academic learning time in college physical education classes. *Journal of physical education and sport & leisure studies, 8*(1), 85-95.
Park, Y.Y. (2003). An analysis of class of physical education's management and real ALT-PE of learner. *The Journal of Elementary Education Research, 14*(1), 181-193.
Pieron, M., & Hacourt, J. (1979). Teaching behaviours at different levels of physical education teaching. *FIEP Bulletin, 49*(2), 33-41.
Rink, J. E. (2006). *Teaching physical education for learning* (5th ed.). Boston, MA: McGraw-Hill Companies, Inc.
Schempp, P. G. (1986). Interaction change as a function of grade level in physical education. In M. Pieron & G. Graham (Eds.), *Sport Pedagogy* (pp. 85-89). Champaign, IL: Human Kinetics Publishers, Inc.
Schempp, P.G. (2003). *Teaching sport and physical activity: Insights on the road to excellence*. Champaign, IL: Human Kinetics.
Senne, T. A. (2004). *On your mark, get set, go!: A guide for beginning physical education teachers*. Reston, VA: National Association for Sport and Physical Education.
Stewart, M. J. (1977). *A descriptive analysis of teaching behavior and its relationship to presage and context variables*. Unpublished doctoral dissertation, Ohio State University.
Tinning, R., Macdonald, D., Wright, J., & Hickey, C. (2001). *Becoming a physical education teacher: Contemporary and enduring issues*. Frenchs Forest NSW, Australia: Pearson Education Australia Pty Limited.
Yoo, S. S. (1989). *The modification of teacher behavior and its effect on student academic learning time in elementary school*. Unpublished doctoral dissertation, University of Southern Mississippi.
Yoon, M. H., Kim, J. W., Yhe, J. E., Ju, M. D., Lee, C. H., & Cho, S. M. (1996). A descriptive-analytic study on teaching behaviors and motor engagement time in physical education classes. *The Korean Journal of Physical Education, 35*(4), 321-335.
Youn, M. H. (1994). A descriptive-analytic study on academic learning time in elementary time in physical education classes. *Faculty Forum, 10*(2), 343-356. ■