

Original Article

**Examining the validity of an extended QDITC version for assessing the physical education teacher's behavior**

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**Abstract**

The purpose of the present study was to examine the concurrent validity of E-QDITC, an extended version of the systematic observation instrument Qualitative Dimensions of Lesson Introduction, Task Presentation and Lesson Closure (QDITC; Byra, 1992), in experienced and inexperienced physical education teachers. QDITC evaluates teacher behaviors in a) lesson introduction and closure, and b) task presentation (before, during, and after task presentation). In E-QDITC, a category with nine behaviors that concern lesson schedule and organization was added. Thirty two in-service physical education teachers (n=32), 15 experienced and 17 inexperienced in using appropriately qualitative teaching aspects were observed and assessed with both versions of the instrument, in a total of four lessons each. The lessons were videotaped and then analyzed by two trained observers. Teachers' mean performance in the first and second pair of lessons constituted their first and second lesson score, respectively. Correlation analysis yielded a significant correlation between QDITC and E-QDITC performance (lessons and overall) for both groups. Similarly, regression analysis revealed that both experienced and inexperienced teachers' performance in E-QDITC highly accounted for their performance in QDITC. Paired samples t-test yielded no significant differences between QDITC and E-QDITC performance of experienced teachers whereas the result for inexperienced teachers was quite the opposite. Therefore, E-QDITC can be used for a more detailed assessment of the teaching behavior of physical education teachers, and especially of the experienced ones.

**Key Words:** qualitative teaching aspects, teacher effectiveness, systematic observation, elementary education, QDITC.

**Introduction**

Systematic observation is considered the most reliable and valid method for the assessment of teaching in physical education (Rink, 2002). However, most of the systematic observation instruments measure quantitative aspects of teaching such as time allotment rather than qualitative ones such as skill demonstration and cues' provision, whereas the latter aspects are also related to effective teaching (e.g., Ennis, 2003; Kwak, 2005). The Qualitative Measures of Teaching Performance Scale (QMTPS; Rink & Werner, 1989) is one of the few tools that assess qualitative teaching aspects in physical education. In particular, this tool assesses teacher behaviors such as clarity of task presentation, skill demonstration, number, accuracy and quality of teaching cues, student appropriate responses, and teacher's congruent feedback. Such behaviors are related to motor learning, motor skill acquisition (Ennis, 2003; Lambert, 2000; Rink, 2002; Vasiliadou, Derri, Zisi, Goudas, & Kioumourtzoglou 2004), and academic learning time (Derri, Vasiliadou, & Emmanouilidou, 2004). QMTPS has been also found effective in improving teaching, and in discriminating effective from ineffective teachers (Rink & Werner, 1989).

In an attempt to assess qualitative aspects of teaching during the entire physical education class, Byra (1992) developed the systematic observation tool Qualitative Dimensions of Lesson Introduction, Task Presentation and Lesson Closure (QDITC). Whereas QDITC retains the aspects of QMTPS (Rink & Werner, 1989), it additionally evaluates teacher behaviors during lesson initiation and closure, as well as before, during and after task presentation; behaviors that have also been proved crucial for effective teaching. Specifically, the organized lesson initiation and student acquaintance with its goals show the teacher's ability to create the appropriate environment for the achievement of the lesson goals (Whipple & Ammah, 2001). Clarity of task presentation, appropriate skill demonstration, and student concentration on the important skill cues (Kwak, 2005) are also important elements for skill learning (e.g., Ennis, 2003; Rink, 2002; Vasiliadou et al., 2004) and effective teaching (e.g., Doyle, 1986; Vasiliadou et al., 2004).

Similarly, perfect practice organization in terms of appropriate space exploitation, equipment usage, and goal setting increase the students' time on task (Simmons-Morton, Taylor, Snider, Huang, & Fulton, 1994) and their effort, persistence and concentration during task performance (Theodorakis, Goudas, & Papaionanou, 1998), respectively. Furthermore, the evaluation of the students and the provision of specific, congruent and corrective feedback enable students to understand their progress and teachers to ascertain the achievement of the lesson goals and their level of effectiveness (Siedentop, 1991; Graham, 2008).

It is evident that the teacher behaviors included in QMTPS and QDITC are strongly related to student learning and effective teaching. However, teacher behaviors during the lesson are affected by their decisions before its delivery (Clark & Yinger, 1987). For this reason, lesson planning which is the linchpin between program and teaching is placed among the characteristics of the effective physical education teacher (Rink, 2002; Byra & Coulon, 1994). Research evidence indicated that lesson planning affects teacher behaviors in the learning environment (Byra & Coulon, 1994) and determines significantly the degree to which the educational goals have been achieved (Jones-Hamilton, 2001). It is also positively related to skill demonstration, teaching cues, and effective time management (Whipple & Ammah, 2001). Next to its main part, an appropriate lesson plan should include a specific lesson initiation/introduction or otherwise warm-up and a specific lesson closure (e.g., Derri, 2007; Kirchner & Fishburne, 1998; Rink, 2002). In particular, warm-up is one of the most important parts of a lesson, and related to the content of the day's lesson. Closure is necessary for the completion of the lesson, helps the teacher to review the learning outcome and check on student comprehension, and is likely to lead them to the content of the next lesson. Sometimes lesson closure is used to enable students reflect on what they have achieved in relation to a lesson's objectives (Rink, 2002).

Cognitive and emotional/social development is both part of the students' overall development and a goal of contemporary physical education. Like movement goals, the above goal is achieved through well-structured planning and teaching (Derri, 2007; Gallahue & Donnelly, 2003; Rink, 2002). Effective teachers evaluate student learning; motor, cognitive, and emotional/social, to determine the effectiveness of the curricular process (Rink, 2002). Assessment is also considered an integral part of the teaching process and a valuable tool for the enrichment of student learning. For these reasons, ongoing assessment of student progress has been recognized as a critical objective of physical education teacher preparation programs (Siedentop & Tannehill, 2000).

The degree to which the goals of the physical education lesson have been achieved is related to the progression of tasks in each lesson and among lessons. Effective teachers should use progression of tasks to lead students from beginning levels to more advanced levels of performance (Rink, 2002). Another characteristic of effective teachers concerns class management. Organizational (routines) and behavior protocols (rules) are essential ingredients in establishing good management in the physical education class (Rink, 2002). Such protocols increase student engagement (Barret, 2000; Curtner-Smith, Todorovich, Lacon, & Kerr, 1999), and contribute to lesson flow (Leinhardt & Greeno, 1986), the appropriate use of lesson time (Whipple & Ammah, 2001) and eventually the successful implementation of the lesson (Curtner-Smith et al., 1999). Research evidence also indicated that the establishment of class routines and rules was the major teaching focus of effective teachers during the first few days of school year (Brophy & Good, 1986; Fink & Siedentop, 1989).

Apparently, these additional elements should be included in the qualitative skills repertoire of effective physical education teachers which in turn serves as a framework for their evaluation. Whereas teacher standards and respective evaluation tools have been developed in other countries (e.g., National Association for Sport and Physical Education; NASPE, 2009, 2007), in Hellas the effective physical education teachers' skills are only indirectly introduced through the new elementary program studies and the respective teacher guides (Ministry of Education, Lifelong Learning and Religious Affairs, 2011a, b) while respective evaluation tools do not exist. Thereupon, the question that guided the researchers to conduct the present research was whether an extended version of QDITC (E-QDITC) with all the aforementioned qualitative elements could be a valid tool for the assessment of teachers' behaviors, regardless of their experience in applying them. Specifically, the purpose of the study was to examine the concurrent validity of E-QDITC in experienced and inexperienced physical education teachers in terms of utilizing qualitative aspects in their teaching.

The hypotheses of the study were the following: a) there would be a statistically significant correlation between QDITC and E-QDITC performance (lessons and overall) for both experienced and inexperienced teachers, b) teachers' E-QDITC performance (lessons and overall) in both groups would account for their QDITC performance, and c) there would be no statistically significant difference between each group's QDITC and E-QDITC mean performance (lessons and overall).

## **Material & methods**

### *Participants*

Two groups of elementary school physical education teachers voluntarily participated. The experienced group (n=15) received training (a two-hour lecture followed by a two-hour practicum with supervision) in using appropriately qualitative aspects of teaching a month before its evaluation while the inexperienced group received no such training. Teachers' age ranged from 29 to 44 years (M=39.03, SD=3.46), and their teaching experience from 3 to 18 years (M=10.87, SD=4.25). Each teacher was observed in a total of four lessons in first

grades. Research was conducted after obtaining permission from the Pedagogical Institute. Also, both teachers and students' parents received written information about the nature and purpose of the study, and were assured that data would be used only for scientific purposes.

#### *Measure/Instruments*

Teacher behavior was evaluated through a) QDITC (Byra, 1992) and b) its extended version (E-QDITC) which is described below. QDITC evaluates teacher behavior a) in lesson introduction (ways of lesson initiation, informing students about the goal of the lesson, control for student safety, and warm-up), b) in pre-task presentation (teacher positions in space in relation to students, students' attention, and arrangement of task environment), task presentation (teacher clarity, demonstration, and number, accuracy and quality of task cues) and post-task presentation (appropriateness of student response, organization of students, teacher congruent feedback, student motivational goal), and c) lesson closure (the way the lesson ends, teacher feedback upon students' performance and behavior, equipment collection, and student motor and emotional assessment).

E-QDITC which was created for the purpose of the present study includes all three categories of QDITC and an additional one named 'lesson schedule and organization'. This fourth category consists of the following nine elements: 1) the existence/use of a daily lesson plan, 2) the separation of the lesson in three parts: a) introduction which includes the students' gathering and information about the lesson goals, and warm-up, b) main lesson part, and c) cool-down (task for reducing student tension, lesson synopsis, and student/lesson evaluation), 3) the existence/application of specific warm-up, according to the main part of the lesson, 4) the use of organizational protocols or routines with regard to task initiation, pause and termination, formation of groups, and distribution of the equipment), 5) the use/application of behavior protocols or rules, 6) the progression of tasks, 7) the emotional/social evaluation of the students, independently from their motor evaluation, 8) the cognitive evaluation of the students, and 9) the existence/application of a specific cool-down.

#### *Procedure*

A total of 128 lessons were observed and recorded. Each teacher taught four 40-min lessons, on manipulative skills. The equipment used for data collection was a digital video camera and a journalist's tape recorder along with a microscopic lapel microphone. Two trained observers evaluated the lessons. Their training consisted of three phases. In phase 1, the observers learned the categories of QDITC and E-QDITC. In phase 2, they were trained in using both tools' forms. In phase 3 they practiced using videotaped lessons, other than those in the present study, until intra-observer reliability was greater than .90 and inter-observer reliability more than .85 in all categories of both instruments. Then, one observer analyzed all 128 lessons, based on the protocols of the QDITC and E-QDITC, while the second one assessed a random sample of 40 lessons, following the procedure proposed by Byra and Coulon (1994). The observers watched the videotaped lessons, listening simultaneously, where necessary, to the respective audio tapes. The timer started in the beginning of the class. Every activity in the lesson formed a unit of analysis.

The screening of the lesson stopped periodically in order to facilitate the recording, and when necessary, it was repeated for a most complete evaluation of teacher behavior. According to the QDITC protocol, desirable behavior was coded as -1-, partially desirable as -2-, and complete absence of such behavior as -3-. In cases where there was no option 'partially desirable' (ten variables) teacher behavior was either desirable and was coded as -1- or completely absent and was coded as -2-. The additional nine behavioral aspects of E-QDITC were also coded according to the latter way. After the completion of a lesson evaluation, the scores that teachers achieved in every category (the number of desirable behaviors) were converted into percentages in relation to the total number of activities presented in the lesson. For instance, if there was a full demonstration three times in the ten activities of the lesson, the teacher's score in the category demonstration would be 30%. The average of all categories of an instrument was the total percentile score the teacher achieved in each lesson.

The teachers' mean performance in the first and the second lesson constituted their first lesson score while that in the third and the fourth lesson formed their second lesson score. This procedure was followed because the two lesson average score was considered a better measure of the teaching ability than the single lesson score.

#### *Statistical analysis*

Pearson Correlation was conducted to examine any possible correlation between QDITC and E-QDITC (lessons and overall score) for both experienced and inexperienced teachers. Regression analysis was then performed to examine whether teachers' performance in E-QDITC (lessons and overall score) accounts for their performance in QDITC. Finally, a paired t-test was utilized to identify any possible differences between each group's QDITC and E-QDITC mean performance (lessons and overall).

#### **Results**

Means (%) and standard deviations of teachers' QDITC and E-QDITC behavior in each pair and in all four lessons are depicted in Table 1.

**Table 1.** Means (%) and standard deviations of teachers' behavior in QDITC and E-QDITC.

	1st-2nd lesson		3rd-4th lesson		1st-4th lesson	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
<i>Experienced teachers</i>						
QDITC	74.86	4.05	70.18	6.08	72.52	4.86
E-QDITC	75.06	5.01	70.20	6.03	72.63	4.91
<i>Inexperienced teachers</i>						
QDITC	44.83	6.57	43.94	5.08	44.39	4.46
E-QDITC	44.04	6.56	42.98	5.10	43.51	4.44

Pearson correlation yielded an identical statistically significant correlation between QDITC and E-QDITC in the first pair of lessons,  $r = .99, p < .001$ , the second,  $r = .99, p < .001$ , and the total score,  $r = .99, p < .001$ , of both experienced and inexperienced teachers. Regression analysis revealed that E-QDITC performance of experienced teachers highly accounted for their QDITC performance in the first pair of lessons,  $R^2 = .99$ , Beta = .99,  $F(1,14) = 2784.49, p < .001$ , and the second,  $R^2 = .99$ , Beta = .99,  $F(1,14) = 1771, p < .001$ , as well as for their total QDITC score,  $R^2 = .99$ , Beta = .99,  $F(1,14) = 2145, p < .001$ . Similarly, inexperienced teachers' E-QDITC performance highly accounted for their QDITC performance in the first pair of lessons,  $R^2 = .99$ , Beta = .99,  $F(1,15) = 2235.15, p < .001$ , and the second,  $R^2 = .99$ , Beta = .99,  $F(1,15) = 1654.96, p < .001$ , as well as for their total QDITC score,  $R^2 = .99$ , Beta = .99,  $F(1,15) = 1617, p < .001$ .

Furthermore, means comparison showed no statistically significant differences between experienced teachers' QDITC and E-QDITC performance in the first pair of lessons,  $t(14) = 2.06, p > .05$ , the second,  $t(14) = .10, p > .05$ , or their total scores,  $t(14) = 1.08, p > .05$ . In contrast, statistically significant were the differences between inexperienced teachers' QDITC and E-QDITC performance in the first pair of lessons,  $t(16) = 6.06, p < .001$ , the second,  $t(16) = 8.12, p < .001$ , and in total,  $t(16) = 8.39, p < .001$ .

## Discussion

The purpose of the present study was to examine the concurrent validity of E-QDITC, an extended version of the systematic observation instrument QDITC (Byra, 1992), in experienced and inexperienced physical education teachers with regard to the use of qualitative aspects in their teaching. The mean scores of the two teacher groups revealed that performance of experienced teachers was extremely higher than that of the inexperienced ones. However, the relation between QDITC and E-QDITC performance in each pair of lessons and in all four lessons was high for both groups. Respectively, both groups' E-QDITC performance highly accounted for their performance in QDITC. These findings verify the first and second hypothesis of this study for both groups of teachers.

Although experienced teachers presented a slightly better performance in E-QDITC in comparison to QDITC, the absence of significant differences between their scores strengthens the above results and at the same time verifies the third hypothesis of the study for this teacher group. In contrast, teachers in the inexperienced group presented a significantly lower E-QDITC performance as compared to their QDITC performance. This finding, in conjunction with the low performance of this teacher group in QDITC, clearly shows the need to receive specific training on qualitative aspects of teaching, and especially on daily lesson planning, specific warm-up and cool-down, routines and rules, progression of tasks, and overall student assessment; aspects that were added in E-QDITC. The absence of formal teacher standards and respective evaluation tools in Hellas might reflect inexperienced teachers' low performance.

Despite the significant differences that were revealed between the QDITC and E-QDITC performance of teachers in the inexperienced group, the high relation between their QDITC and E-QDITC performance suggests that E-QDITC is suitable for their evaluation, and even more suitable for the evaluation of experienced teachers. It seems that the elements added in the E-QDITC are highly related to those of QDITC, and also contribute to a better application of its existing elements as described below. Therefore, both versions of the instrument measure similar characteristics of teacher effectiveness.

As it has already been mentioned, the elements added in E-QDITC are related to the characteristics of the effective teacher in physical education. Specifically, with regard to lesson initiation and closure, the additional elements convert a series of aimless movement activities without structure in a complete teaching unit and contribute to effective teaching. As Jones-Hamilton (2001) suggested teachers' decisions before the delivery of the lesson determine to a high degree what will be achieved during its implementation. Therefore, teachers' ability to create and use daily lesson plans should be evaluated. Besides, lesson planning seems to relate to other qualitative aspects of teaching that are evaluated through the existing tools, and specifically to the better allotment of lesson time, the provision of appropriate skill demonstration and teaching cues to students (Whipple & Ammah, 2001), and ultimately to the achievement of educational goals (Jones-Hamilton, 2001).

Although physical education shares many of the rules established by the teachers and administration of a school, its unique nature requires additional ones that concern student behavior, safety, and cooperation (e.g., take care of equipment, cooperate, share) as well as routines (e.g., forming groups, lesson initiation and warm-up, lesson closure) in order to make the time spent in class a positive, safe, and successful learning experience (Curtner-Smith et al., 1999; Rink, 2002; Whipple & Ammah, 2001). Specifically, the necessity to evaluate teachers' skill to create and apply class routines and rules relies on the fact that these aspects contribute to a better class management, increase students' practice time (Curtner-Smith et al., 1999) and improve their behaviors (Fink & Siedentop, 1989), and determine to some degree the effectiveness of the lesson (Behets, 1997).

Based on the contemporary physical education model, three types of participation contribute to students' overall development and learning; motor, cognitive and social (Derri, 2007; Gallahue & Donnelly, 2003; Ministry of Education, Lifelong Learning and Religious Affairs, 2011a). Therefore, teachers should be evaluated with regard to their skill to include all types of goals in their lesson throughout the school year, and to provide students with respective teaching and evaluation experiences.

In line with the above perspective, teachers' skill to develop lesson content, that is to lead students from beginning levels to more advanced levels of performance through a carefully designed task sequence, should be included in their evaluation. According to Rink (2002), after the initial task that is the informing task, the teacher should increase gradually task difficulty and complexity (extension task), then focus on quality of student performance (refinement task) while afterwards concentrate on how students should use or assess the movement. Game practice is not considered sufficient for student learning.

In short, teachers need to enable students become physically educated through effective teaching practices (Hickson, 2003). These practices create the frame for the evaluation of the effective teacher. The present study showed that the elements added in the initial version of QDITC are directly related to its content, and assist in a more complete evaluation of the effective physical education teacher with regard to the qualitative elements of the lesson. Furthermore, the results support the utilization of E-QDITC, especially in Hellas or in countries where standards reflecting the skills of the effective physical education teacher and respective evaluation tools are absent. E-QDITC, like other relative instruments, could be of crucial importance in designing and implementing teachers' training and evaluation processes, in order to support their professional development and the successful implementation of the lesson.

## Conclusion

The findings of the present study revealed that E-QDITC is a valid instrument for the assessment of qualitative teaching aspects in inexperienced and especially experienced physical education teachers. Therefore, E-QDITC could be used either for teachers' self-evaluation or their evaluation by external evaluators such as school counselors and colleagues when a more detailed evaluation of qualitative aspects of teaching is required. In parallel, the cognitive understanding and appropriate application of the instrument's elements could form the content of teacher educational or training programs. Furthermore, the utilization of the instrument by teachers could assist them in further understanding the teaching-learning process, the improvement of their teaching behavior, and students' learning. Future studies could apply the E-QDITC in order to examine the behaviors of physical education teachers at the beginning and at the end of their enrollment in respective professional development programs.

## References

- Barret, T. M. (2000). Effects of two cooperative learning strategies on academic learning time, student performance, and social behavior of sixth grade physical education students. *Dissertation abstracts international section a: Humanities and Social Sciences*, 61(5 A).
- Behets, D. (1997). Comparison of more and less effective teaching behaviors in secondary physical education. *Teaching and Teacher Education*, 13(2), 215-224.
- Brophy, L. & Good, T. (1986). Teacher behavior and student achievement. In M. Wittrock (Ed.), *Handbook of research on teaching*. New York: Macmillan.
- Byra, M. (1992). Measuring qualitative aspects of teaching in physical education. *Journal of Physical Education Recreation and Dance, March*, 83-89.
- Byra, M., & Coulon, S. C. (1994). The effect of planning on the instructional behaviors of pre-service teachers. *Journal of Teaching in Physical Education*, 13, 123-139.
- Clark, C. M., & Yinger, R. (1987). Teacher planning. In J. Calderhead (Ed.), *Exploring teachers' thinking* (pp.84-103). London: Mckay of Chatham.
- Curtner-Smith, M. D., Todorovich, J. R., Lacon, S. A., & Kerr, I. G. (1999). Teachers' rules, routines and expectations prior to end following the implementation of the national curriculum for physical education. *European Journal of Physical Education*, 4, 17-30.

- Derri, V. (2007). *Physical education in the beginning of the 21st century. Standards, goals and objectives in primary education* (in Greek). Thessaloniki: Christodoulidi Publications.
- Derri, V., Vasiliadou, O., & Emmanouilidou, K. (2004). *Relation between qualitative aspects of teaching and academic learning time in physical education*. Proceedings 2004 Pre-Olympic Congress, 321. 6-14 August, Thessaloniki.
- Doyle, W. (1986). Classroom management and organization. In M. Wittrock (Ed.), *Handbook of research on teaching* (3<sup>rd</sup> ed). Pp 392-431.
- Ennis, C.D. (2003). What works in physical education: designing and implementing a quality educational program. *Educational Horizons*, 81(2), 77-82.
- Fink, J. & Siedentop, D. (1989). The development of routines, rules, and expectations at the start of the school year. *Journal of Teaching in Physical Education*, 8(3), 198-212.
- Gallahue, D., & Donnelly, F. C. (2003). *Developmental Physical Education for All Children* (4<sup>th</sup> ed.). Champaign, IL: Human Kinetics.
- Graham, G. (2008). *Teaching Children Physical Education: Becoming a Master Teacher*. (3rd Ed.). Champaign, IL: Human Kinetics.
- Hickson, C.N. (2003). Putting education back into P.E. *International Journal of Learning*, 10, 401-409.
- Jones-Hamilton, L. (2001). *Measuring effective teaching*. Available at <http://www.uncw.edu/cte/et/Resnotes/Jones-Hamilton>
- Kirchner, G. & Fishburne, G. (1998). *Physical education for elementary school children*. USA: MacGraw-Hill Companies, Inc.
- Kwak, E. (2005). The immediate effects of various task presentation types on middle school student's skill learning. *International Journal of Applied Sports Sciences*, 17(1), 7-17.
- Lambert, L. T. (2000). The new physical education. *Educational Leadership*, 57(6), 34-38.
- Leinhardt, G., & Greeno, J. (1986). The cognitive skill of teaching. *Journal of Educational Psychology*, 78(2), 75-95.
- Ministry of Education, Lifelong Learning and Religious Affairs (2011a). Program Studies for elementary school physical education (in Greek). Available at <http://digitalschool.minedu.gov.gr/info/newps.php>
- Ministry of Education, Lifelong Learning and Religious Affairs (2011b). *The elementary physical educator's manual* (in Greek). Available at <http://digitalschool.minedu.gov.gr/info/newps.php>
- National Association for Sport and Physical Education (NASPE) (2009). *National standards and guidelines for physical education teacher education* (3<sup>rd</sup> ed). Reston, VA: Author.
- National Association for Sport and Physical Education (2007). *Physical Education Teacher Evaluation Tool [Guidance document]*. Reston: VA: Author.
- Rink, J. E. (2002). *Teaching physical education for learning*. NY: McGraw-Hill.
- Rink, J. E., & Werner, P. (1989). Qualitative measures of teaching performance scale (QMTPS). In P. Darst, D. Zakrajsek, & V. Mancini (Eds.), *Analyzing physical education and sport instruction* (pp 269-275). Champaign, IL: Human Kinetics.
- Siedentop, D. (1991). *Developing teaching skills in physical education* (3<sup>rd</sup> ed). CA: Mayfield.
- Siedentop, D. & Tannehill, D. (2000). *Developing Teaching Skills in Physical Education* (4th ed.). USA: McGraw-Hill.
- Simmons-Morton, B., Taylor, W., Snider, S., Huang, I., & Fulton, J. (1994). Observed levels of elementary and middle school children's physical activity during physical education classes. *Preventive Medicine*, 23, 437-441.
- Theodorakis, Y., Goudas, M., & Papaioannou, A. (1998). *Psychological excellence in sport* (in Greek). Thessaloniki: Christodoulidi.
- Vasiliadou, O., Derri, V., Zisi, V., Goudas, M., & Kioumourtzoglou, E. (2004). Qualitative aspects of teaching and manipulative skill enhancement: is there any relationship? *Journal of Human Movement Studies*, 46, 259-273.
- Whipple, C., & Ammah, J. (2001). Managerial and instructional competencies. *Teaching Elementary Physical Education*, 12(2), 10-11.