

Chapter 1

INTRODUCTION

In Japan, since 1994 researchers lead by Takahashi continuously to study PE classes in elementary school for clarifying the characteristics of PE classes that highly evaluated by their students. In the beginning steps, they constructed formative evaluation questionnaire (Takahashi et al, 1994) and its diagnostic standard scores (Hasegawa et al., 1995). In constructing the formative evaluation questionnaire, elementary school students from 291 classes were asked to consider and evaluate their PE classes soon after the class. As a result of conducting factor analysis of the results of this evaluation, four factors were extracted (product, volition and interest, way of learning, and cooperation). Based on this result, a students' formative class evaluation (FCE) method which consists of 9 items in 4 dimensions was established as shown in table 3-2 on page 23. The diagnostic standard for the questionnaire scores was as shown in table 3-3 on page 24. These four evaluation dimensions roughly agree with evaluation items designated in the Guideline for the rating of the Japanese Ministry of Education: (1) volition, interest, and attitude; (2) thought and judgment; (3) skills; and (4) understanding (Takahashi, T., 2000b).

After conducting several studies on relationship between students' FCE score and characteristics of PE process, they summarized the characteristics of effective PE classes (that highly evaluated by students) as follows: (1) "management" [M] episode was less and PE content was greater; (2) learning discipline was well established, so that off-task

behavior was rarely observed; (3) the time of engagement, ALT, and motor ALT were increased; (4) positive human relationships among students were observed more frequently; (5) positive affective behavior was expressed more among students, giving a brighter class atmosphere; (6) there was less the M behavior and "instruction" [I] behavior by teacher; (7) interaction behaviors of the teacher was more active; (8) positive and corrective feedback for individual motor skill learning was performed more frequently; (9) feedbacks evaluated from "interactive," "transmissible" and "sympathetic" viewpoints were happened more frequently; and (10) an indirect teaching style was used more frequently than a direct teaching style (Takahashi, 2000a). These findings indicated that PE classes that highly evaluated by their participated students have similar characteristics with those called effective PE classes. Siedentop et al. (1983) indicated the main ingredients of effectiveness in school PE appear to be: (1) high percentage of time devoted to academic content; (2) high rates of on-task behavior among students; (3) appropriate matching of content to student abilities (success oriented learning); (4) development of a warm, positive classroom climate; and (5) development of class structures that contribute to item 2 but do not violate item 4.

The FCE questionnaire have been continuously introduced to public and physical education teacher education (PETE) students in the University of Tsukuba via books (Takeda, 1997: p.362, and Takahashi, 2002: p.125), and used by many teachers and researchers for evaluating PE class in Japan (Takahashi, 2000b). Unfortunately, the FCE does not

measure quantity of students' PA during PE class that very important for children as basis line for building healthy and active lifestyle.

Studies conducted by World Health Organization (WHO) have shown that children around the world are becoming increasing sedentary—especially in poor urban areas (WHO, 2002b). It is estimated that nearly two-thirds of children in the world, from both develop and developing country, are insufficiently active, with serious implication for their future health (WHO, 2002c). Preliminary data from a WHO study on risk factors suggest that inactivity, or sedentarism, is one of the 10 leading global causes of death and disability (WHO, 2002d). Therefore, to benefit fitness and health, the WHO recommended that children and young people participate in at least moderate physical activity (MPA) for one hour per day. Those who currently do little activity should begin with at least half an hour per day (WHO, 2002a). Based on this recommendation, it is important to clarify how many percent of students who engage in moderate to vigorous physical activity level (MV-PAL) during PE class and to find what factors that positively related to the students' MV-PAL engagement in their PE classes.

Physical education (PE) has important role dealing with the sedentary problem in children. Kaga et al. (1997) have reported that: (1) in sedentary children, 21.9% of daily PA was performed in PE classes; (2) steps taken during daily PA increased linearly as steps in PE class increased; and (3) in general, students took 1.936 ± 653 (mean \pm SD) steps during PE class. These findings indicated that PA during PE was essential for ensuring students' daily PA, especially in sedentary students.

In addition, McKenzie indicated that by engaging children in enjoyable PA and teaching them the skills related to developing and maintenance appropriate of PA, PE can help future generations of adults avoid becoming sedentary (McKenzie, 2003). It means that for ensuring active lifestyle, during PE classes students must be engaged in not only appropriate but also enjoyable PA. Therefore, it is important to clarify the average of students' PAL during PE classes that highly evaluated by participated students.

1.1. Statement of the Problem

The objectives of this study were two-fold:

- (1) To clarify the relationship among students' physical activity level (PAL) during physical education classes, students' learning behaviors (LB) during motor learning episodes, and students' formative class evaluation (FCE) score toward their classes.
- (2) To clarify factor that important for improving students' PAL during PE classes.

There were five specific questions that this research attempt to answer through analyzing teacher and students behaviors during elementary school PE classes.

- (1) What did the means proportion of students engagement in MV-PAL during each of class context?
- (2) In PE classes that scored higher by students, did more students engaged in MV-PAL?

- (3) Did the length of motor learning (A2) episode positively related to the quantity of the students' MV-PAL engagement during the episodes?
- (4) Did the quantity of motor learning engagement during motor learning (A2) episodes of the PE classes positively related to the quantity of students' MV-PAL engagement during the episodes?
- (5) Were there any factors inside motor learning (A2) episodes that differentiated the quantity of the students' MV-PAL engagement during the episodes?

1.2. Assumptions of the Study

The following were assumed to be true and pertinent to the study:

- (1) The teacher and students behaviors in this study were observable and measurable, and that the trained observers who recoded those behaviors did so in accordance to the behavioral definitions given to them.
- (2) Teacher and student reactivity was reduced so that the observed behaviors are representative of behavior on those days not observed.
- (3) The teachers and students observed in this study constitute a representative sample of human behavior within the settings of physical education classes in the public schools from the area within which the sample was drawn.
- (4) The interval recording techniques (GTS and ALT recording systems) employed in the study constitutes a representative sample of student behavior to be found in continues observation of behavior.

1.3. Limitations of the Study

The study was limited by the following factors:

- (1) The study was limited to the 98 selected physical education classes from 20 elementary schools in Kanto area Japan. Of these classes, 74 classes were 5th and 6th grades, 18 classes were 2nd grade, and 6 classes were 3rd grade. All of the classes were videotaped either with GTS or ALT recording system.
- (2) In each class, the observation were limited to either in very short time (12 seconds) with all students to be targets (each students observed in a moment of time) or in small number targeted students (4 selected students, each observed in 6 second-interval).
- (3) The observations were of specific and precisely teacher and student behaviors.
- (4) The observations were limited to a minimum of one and a maximum of seven observations of each PE class.

1.4. Definition of Special Terms

These terms to be used in the study are:

Class context – the time allocation category that consisted of 4 sub-categories (management, instruction, motor learning, and cognitive learning).

Cognitive learning (A1) – the part of PE time devoted for students to make discussion and taking notes related to learning tasks.

Formative class evaluation (FCE) – the evaluation conducted by student toward her/his physical education class. The FCE questionnaire consisted 9 items from 4 dimensions (product, volition, method, cooperation).

Instruction (I) episode – the part of PE time devoted for teacher to instructs, explains, and demonstrates to the entire students of the class.

Management (M) episode – the part of PE time devoted for activities which are not directly related to learning products, such as moving from one motor learning station to other motor learning station, moving from motor learning place to teacher place, grouping, and preparing learning instruments.

Maximum involvement rate (MIR) – the maximum proportion of students who have chance to engage directly to the motor learning task (at the same time).

Moderate to vigorous physical activity level (MV-PAL) – the physical activity level that included the level 4 and 5 (walking level + very active level).

Momentum – the quantity of learning engagement during motor learning (A2) episodes.

Motor learning (A2) episode – the part of PE time devoted for students to do: fitness activities, skill practices, and playing games.

Movement force factor (MFF) – the factor that should be use by each student to target the quantity of his/her movement (e.g. rhythm of music).

Physical activity level (PAL) – the physical activity categories that consist of 5 levels (level 1= lying down, level 2= sitting, level 3=

standing, level 4= walking/ active, and level 5= very active/ more active than ordinary walking).

1.5. Summary

In this chapter the conceptual basis for clarifying the relationship between students' PAL during physical education classes and their formative class evaluation (FCE) score was established. A brief development history of the beginning use of the FCE questionnaire was presented, along with a rationale for developing the diagnosis standard score of the FCE.

The purpose of the study and the specific research questions to be answered in the study were stated. The limitations, assumptions and definitions of specific term were also presented.

The next chapter will review the available literature pertinent to the development of effective and active PE classes. The review of literature will focus upon these specific topics:

- (1) Current worldwide problems in children
- (2) Children's physical activity
- (3) The role of PE classes for children
- (4) Characteristic of Effective/good PE classes
- (5) Improving quality of PE classes