

The Analysis of Activities Related to Fundamental Movement Skills(FMS) in the Teacher's Guide for the 2007 Korean National Kindergarten Curriculum

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Abstract

The purpose of this study is to analyze activities related to fundamental movement skills (FMS) in the Teacher's Guide for the 2007 Korean National Kindergarten Curriculum. 96 activities regarding FMS in the Teachers Guide were analyzed. The results of this study are as follows. The first finding is that the proportion devoted to 'Health Life Area' was lower than that for the other life areas in the Teacher's Guide. The second finding is that the activities related to FMS presented in the Teacher's Guide mostly were age appropriate. The third finding is that activities included in the Teacher's Guide did not cover every possible FMS element. The last finding is that in the Teacher's Guide FMS activities were presented in the form of creative physical expression, outdoor play, and games rather than as fundamental movement activities. The Teacher's Guide needs to include abundant information about fundamental movement skills and a variety of educational experiences which are suitable for child development.

Keywords: fundamental movement skills, physical activity, physical education, the teacher's guide

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Introduction

Children grow and develop through movement. Movement is part of children's everyday life and has many manifestations. Children have a natural interest in and enthusiasm for movement (Sanders, 2006). Children use movement to express their own feelings and ideas, manipulate objects, and learn about their world. Young children derive pleasure from movement sensations and positive relationships with their bodies. The experience of movement and joy make children grow competent in movement (Sanders, 2006).

Children have movement experience of all kinds in their physical activity and play. Physical activity can provide an opportunity for self-expression and social interaction and can be enjoyable, challenging, and fun. The physical activity experiences in children's daily lives help children have good physical health, positive mental health, and constructive social relations (Price, 1995; Sanders, 2002; Yoon, 1999).

Physical activity can be a joyful as well as essential learning experience for children. Through gross motor activities such as walking, running, throwing, rolling and climbing, children develop fundamental movement skills. These fundamental movement skills (FMS) perform a basic and important function in children's lives. FMS are movements and combinations of movements that a child is neurologically ready to develop and refine during the early childhood (Poest, Williams, Witt, & Atwood, 1990). FMS includes three skill themes; locomotor, stability, and manipulative skills. The locomotor skills involve projecting the body into space in a horizontal, vertical, or diagonal plane: walking, running, jumping, hopping, galloping, and skipping (Gallahue & Ozmun, 2006). The stability skill is the fundamental aspect of learning to move, because all movement involves an element of stability: dynamic balance such as rolling and beam walking, static balance such as one-foot balancing, and axial balance such as bending, twisting, turning, and swinging. The manipulative skills are vigorous and involve applying force to objects or receiving force from objects: throwing, catching, kicking, and volleying (Gallahue & Ozmun, 2006). These are necessary to move, stabilize and control the body and develop more complex movement skills (Gallahue & Donnelly, 2003).

Children acquire physical ability and self-confidence by achieving fundamental movement skills. Because children gain physical strength by moving their bodies freely, early childhood physical education should include fundamental movement skills (NASPE, 1995; MEST, 2008) with a view to forming fundamental movement patterns (Gallahue & Ozmun, 2006).

However, children today may have fewer opportunities to move physically because of changes in modern society and environment such as a decrease in time and space for physical activities. Parents and society that have high expectations of children make them study more than before, and make them play more passive games, such as watching TV and video, and playing computer games, than active play (MEST, 2008; Park, 2002). Most children in Korea engage in physical activities for less than 1 hour, watch TV and video or play computer games for 2 to 5 hours, and take educational lessons for 1 hour per day (Kim, 2003). The guidelines for physical activity of The National Association for Sport and Physical Education (NASPE, 2009) suggest that preschoolers should conduct at least 1 hour of daily structured physical activity and should not be sedentary for more than 1 hour at a time. However, the physical activity of Korean children fell short of NASPE's recommended guidelines. Lack of physical activity relates to children's health issues such as a decrease in of physical strength and an increase in obesity (James & Barbara, 2008).

Owing to these changes in children's lives, curricula which focus on physical movements have become necessary, and fundamental movement skills are emphasized in 'Health Life Area' of the 2007 Korean National Kindergarten Curriculum (MEST, 2008). The curriculum involving fundamental movement skills is offered through using activities specified in The Teacher's Guides, in order to effectively implement physical activities. The Teacher's Guides are developed for teachers to deliver the contents of the national curriculum, which was published in 2007, effectively to children (MEST, 2009). The Teacher's Guides help teachers to plan and implement lessons, These are composed of educational activities chosen from 11 selected themes such as 'Kindergarten and Friends', 'My Family and I', 'Our Village', 'Animals, Plants, and Nature', 'Health and Safety', 'Life Materials', 'Vehicles', 'Our Country', 'World', 'Environment and Life', and 'Spring, Summer, Fall, Winter'.

Most kindergarten teachers make use of these guides to plan and carry out their lessons. The guides provide examples of activities that can be offered directly to children (Lee, Lee, & Jo, 2000; Park, Jung, & Kim, 1997). Hence the activities shown in The Teacher's Guides could be considered as a sample of kindergartens' physical activities, so by analyzing them, the appropriateness of activities related to fundamental movement skills in children's education can be examined.

The purpose of this study is to analyze activities related to fundamental movement skills in 'the Teacher's Guide for the 2007 Korean Kindergarten National Curriculum'. There are four research questions in this study:

- 1) Is the proportion of activities related to fundamental movement skills in the Teacher's Guides evenly distributed across the five areas of the Kindergarten National Curriculum?
- 2) Is the level of activities related to fundamental movement skills in the Teacher's Guides age appropriate?
- 3) Is every movement pattern related to fundamental movement skills included in the activities of the Teacher's Guide?
- 4) Are the types of activities related to fundamental movement skills in the Teacher's Guide varied and appropriate for kindergarten children?

Methods

Procedure

The 2007 Korean National kindergarten curriculum consists of 5 areas and the Teacher's Guide based on the curriculum contains 11 themes. The 2007 Korean National kindergarten curriculum structure is shown in Table 1.

Table 1. *Structure of the 2007 Korean National Kindergarten Curriculum*

Curriculum Area	Teacher's Guide Theme
- Health Life	- Kindergarten and Friends
- Social Life	- My Family and I
- Expression Life	- Our village
- Language Life	- Animals, Plants, and Nature
- Exploration Life	- Health and Safety
	- Life materials
	- Vehicles
	- Our country
	- World
	- Environment and Life
	- Spring, Summer, Fall, Winter

The total activities in the Teacher's Guides are 3,347 and the activities shown as the 'Health Life Area' are 484. Out of these 484 activities, the activities containing FMS in their content or educational objectives were selected for analysis. 96 activities were analyzed for the study.

Data Analysis

The data analysis method used in this study is as follows. First, for the analysis of the question 1, frequency and percentage were used to deal with the priority of fundamental movement skills-related activities according to theme. Second, for the analysis of question 2, frequency and percentage were used. The age appropriateness of the activities was evaluated by 'Sequence of emergence of selected FMS abilities' (Gallahue & Ozmun, 2006).

This includes the emergence sequence of fundamental locomotors (Table 2), stability (Table 3), and manipulative (Table 4) abilities. Each table provides a visual representation of sequential progression from one stage to the next one. There are walking, running, jumping, hopping, galloping, and skipping in locomotors ability's movement pattern; dynamic balance, static balance, axial balance in stability's movement pattern; catching, collecting, kicking, striking in manipulative ability's move-

ment pattern (Gallahue & Ozmun, 2006).

Table 2. *Emergence of Locomotors Skills*

movement pattern	Emergence of locomotors skills					
walking	2	3	4	5	6	7
	Walks upstairs alone-follow step Walks downstairs alone-follow step					
	Walks upstairs alone-alternation					
	Walks downstairs alone-alternation					
running	2	3	4	5	6	7
	First true run(nonsupport phase)					
	Efficient and refined run Speed of run increase, mature run					
jumping	2	3	4	5	6	7
	Jump off floor with both feet					
	Jumps for distance(about 1m) Jumps for height(30cm)					
	Mature jumping pattern					
hopping	2	3	4	5	6	7
	Hops up to three times on preferred foot					
	Hops from 4 to 6 times on same foot					
	Hops from 8 to 10 times on same foot Hops distance of 15m in about 11 seconds					
	Hops skillfully with rhythmical alteration mature pattern					
galloping	2	3	4	5	6	7
	basic but inefficient gallop					
	Gallops skillfully, mature patterns					
skipping	2	3	4	5	6	7
	One-footed skip					
	Skillfully skipping(about 20 percents) Skillfully skipping for most					

* The numerals in Table 2 mean children's age.

Source: Gallaughe, D. L. & Ozmun, J.C. (2006). *Understanding motor development: Infant, children, adolescents, adults(6th ed)*. New York: McGraw-Hill.

Table 3. *Emergence of Stability Skills*

movement pattern	Emergence of locomotors skills					
	2	3	4	5	6	7
Dynamic Balance	Stands on low balance beam Walks on 2.5cm straight line					
	Walks on 2.5cm circular line					
	Walks on 10cm wide beam for a short distance Walks on 5 ~ 7.5 cm beam					
	Walks on 10cm wide beam, alternating feet					
	performs basic forward roll					
	performs mature forward roll					
Static Balance	2	3	4	5	6	7
	Balances on one foot 3-5 seconds					
	Supports body in basic 3-point inverted					
Axial Movement	2	3	4	5	6	7
	Bends the body					
	Turns the direction					
	Axial movement abilities begin to develop early in infancy and are progressively fined to a point where they are included in the emerging manipulative patterns of throwing, catching, kicking, striking, trapping, and other activities.					

* The numerals in Table 3 mean children's age.

Source: Gallaughe, D. L. & Ozmun, J.C. (2006). *Understanding motor development: Infant, children, adolescents, adults(6th ed)*. New York: McGraw-Hill.

Table 4. *Emergence of Manipulative Skills*

movement pattern	Emergence of locomotors skills					
	2	3	4	5	6	7
Reach, Grasp, Release						
	Controlled grasp and release(ago 18 months)					
throwing	2	3	4	5	6	7
	Body faces target, feet remain stationary ball thrown with forearm extension only					
	Same as above but with body rotation added					
	Steps forward with leg on same side as the throwing arm					
catching	2	3	4	5	6	7
	Responds to aerial ball with delayed arm movements Needs to be told how to position arms					
	Basket catch using the body					
	Catching using the hands only with a small ball					
	Mature catching pattern					
kicking	2	3	4	5	6	7
	Kicks with leg straight and little body movement(kicks at the ball)					
	Flexes lower leg on backward lift					
	Greater backward and forward swing with definite arm opposition					
	Mature pattern(kick through the ball)					
striking	2	3	4	5	6	7
	Swing in a horizontal plane and Mature horizontal pattern with stationary ball stands to the side of the object Rotates the trunk and hips and shifts body weight forward					

* The numerals in Table 4 mean children's age.

Source: Gallaughe, D. L. & Ozmun, J.C. (2006). *Understanding motor development: Infant, children, adolescents, adults(6th ed)*. New York: McGraw-Hill.

According to the appearing time of movement skills, when suggested activity skills did not appear, the level of activity was considered to be high; when the children are old enough to perform a higher level skill than the suggested activity skills, the level of activity was judged as low.

Third, for question 3, frequency was used to handle the content of activities

related to FMS by movement skill theme classification. Finally, for analysis of question 4 a frequency and percentage of the kind of FMS activities by movement skill theme classification was used.

Results

The Proportion of Activities Related to FMS

The proportion of activities focusing on FMS in the Teacher's Guide is summarized in Table 5.

Table 5. *The Proportion of Activities Related to FMS*

Themes	Total number of activities focusing on FMS	Total number of activities in 'Health Life Area'	Total number of activities in The Teacher's Guide
Kindergarten and Friends	3	29	268
My Family and I	8	24	284
Our village	13	28	269
Animals, Plants, and Nature	8	39	297
Health and Safety	7	122	370
Life materials	9	39	293
Vehicles	9	41	260
Our country	12	46	331
World	6	26	319
Environment and Life	8	41	294
Spring, Summer, Fall, Winter	13	49	352
Total (%)	96(2.9%)	484(14.5%)	3,347(100%)

As Table 5 shows, activities in the Teacher's Guide were 3,347(100%) in total. 484 activities were categorized into the 'Health Life Area' (14.5%). Out of these 484 activities, only 96(2.9%) activities focused on fundamental movement skills. The 2007 Korean National Kindergarten Curriculum consists of 5 life area and hence the proportion of each life section should be around 20%. However, the result shows that the Health Life Area occupies only 14.5%. This means that the 2007 Korean National Kindergarten Curriculum emphasized the 'Health Life Area' less than other life areas. The number of activities including FMS is not sufficient.

According to the themes, ‘Our village’ has 13 FMS activities, which is the largest, but ‘Kindergarten and Friends’ has only 3 FMS activities, which is the smallest. Also, in the FMS activities, ‘Spring · Summer · Fall · Winter’ (13) is followed by our country (12), ‘Life materials’ · ‘Vehicle’ (9), ‘My Family and I’ · ‘Animals, Plants, and Nature’ · ‘Environment and life’ (8), ‘Health and Safety’ (7), and ‘World’ (6). This result shows that the FMS activities are not provided evenly based on themes.

The Age Appropriateness of Activities Related to FMS

Analyzed data from FMS activities in the Teacher’s Guide are summarized in Table 6.

This data was about the age appropriateness of FMS activities.

Table 6. *The Age Appropriateness of Activities Related to FMS*

Movement pattern		FMS activities								
		age of 3			age of 4			age of 5		
		Low	Appropriate	High	Low	Appropriate	High	Low	Appropriate	High
Locomotors	walking	0	3	1	1	5	0	0	3	0
	running	0	3	1	1	5	0	0	5	0
	jumping	0	6	1	0	6	0	0	5	0
	hopping	0	0	0	0	1	0	0	3	0
	skipping	0	0	0	0	0	0	0	1	0
	Sub total	0	12	3	2	17	0	0	17	0
Stability	dynamic balance	0	9	1	0	3	0	2	0	0
Skills	axial balance	0	8	1	1	7	0	0	9	0
	Sub total	0	17	2	1	10	0	2	9	0
Manipulative	throwing	0	4	1	0	2	0	0	2	0
Skills	collecting	0	0	1	0	0	0	0	1	0
	kicking	0	0	0	0	0	0	0	2	0
	striking	0	0	0	0	2	0	0	1	0
	Sub total	0	4	2	0	4	0	0	6	0
Total(%)			33(4)	7	3	31(2)	0	2	32(6)	0
		0%	82.5%	17.5%	8.8%	91.2%	0%	5.9%	94.1%	0%

* The numerals in the parentheses () mean overlapped activities.

As Table 6 shows, there were 7 high level activities in the FMS activities for the age of 3 (17.5%). There were 3 high level activities of locomotor skills, 2 high level activities of stability skills, and 2 high level activities of manipulative skills. In activities for the age of 4, there were 3 low level activities (8.8%). Of those activities 2 were for locomotor skills, and 1 activity came under stability skills. In activities for the age of 5, there were 2 low level activities (5.9%). Those activities were related to stability skills. The number of inappropriate FMS activities was small compared to the total of FMS activities. This result means that most FMS activities in the Teachers Guide generally fit with child development except in a few cases.

The Movement Pattern of Activities Related to FMS

Analyzed data on the content of the FMS activities in the Teacher's Guide are shown in Table 7. This data was investigated according to the movement pattern.

Table 7. *The Movement Pattern of Activities Related to FMS*

Movement pattern		Activities			
		age of 3	age of 4	age of 5	total
Locomotors Skills	walking	4	6	3	13
	running	4	6	5	15
	jumping	7	6	5	18
	hopping	0	1	3	4
	galloping	0	0	0	0
	skipping	0	0	1	1
	Sub total	15	19(2)	17(2)	51(4)
Stability Skills	dynamic balance	10	3	2	14
	static balance	0	0	0	0
	axial balance	9	8	9	27
	Sub total	19(3)	11	11(3)	41(6)
Manipulative Skills	catching	0	0	0	0
	throwing	5	2	2	9
	collecting	1	0	1	2
	kicking	0	0	2	2
	striking	0	2	1	3
	Sub total	6(1)	4	6(1)	16(2)
Total		40(4)	34(2)	34(6)	108(12)

* The numerals in the parentheses () mean overlapped activities.

As Table 7 shows, there was a small difference among the FMS activities by age: 40 activities for the age of 3, 34 for the age of 4, and 34 for the age of 5. The FMS activities for the age of 3 are stability skills (19), followed by locomotor skills (15), and manipulative skills (6). The FMS activities for the age of 4 are locomotor skills (19), followed by stability skills (11), and manipulative skills (4). Finally, in the FMS activities for the age of 5, there were 17 in locomotor skills, 11 in stability skills, and 6 in manipulative skills. This result means that although there are a few differences among the activities by age, FMS activities of each age, by and large, focus more on locomotor skills and stability skills than manipulative skills in the Teacher's Guide.

However, neither hopping, which is appropriate at the age of 3, nor galloping, appropriate at the age of 4 and 5, was presented. Likewise, no static balance and catching, which are appropriate to all age groups of children, were introduced in the Teacher's Guide. This result shows the Teacher's Guide did not include every possible FMS.

The Types of Activities Related to FMS

Analyzed data on the types of activities related to FMS presented in the Teacher's Guide is on table 8. This data was investigated according to the movement pattern.

Table 8. *The Types of Activities Related to FMS*

Movement pattern		The types of activities				Total
		Fundamental movement activity	Creative physical expression	Games	Outdoor play	
Locomotor Skills	walking	2	9	1	1	13
	running	1	2	9	3	15
	jumping	4	8	2	4	18
	hopping	1	2	1	0	4
	galloping	0	0	0	0	0
	skipping	1	0	0	0	1
	Sub total	9	21	13	8	51
Stability Skills	dynamic balance	3	2	3	6	14
	static balance	0	0	0	0	0
	axial balance	3	22	1	1	27
	Sub total	6	24	4	7	41

Movement pattern		The types of activities				
		Fundamental movement activity	Creative physical expression	Games	Outdoor play	Total
Manipulative Skills	catching	0	0	0	0	0
	throwing	0	1	3	5	9
	collecting	0	1	0	1	2
	kicking	0	0	0	2	2
	striking	0	1	1	1	3
	Sub total	0	3	4	9	16
Total		15(2)	48(2)	19(2)	24(6)	108(12)
		63(4)				
		13.9%	44.4%	17.6%	22.2%	100%

* The numerals in the parentheses () mean overlapped activities.

As Table 8 shows, the activities related to FMS were presented in the form of creative physical expression (44.4%), outdoor play (22.2%), games (17.6%), and fundamental movement activity (13.9%). In detail, both walking (9) and jumping (8) in the locomotor skills and axial balance (22) in the stability skills were all presented as creative physical expression. Dynamic balance (6) in the stability skills was shown as outdoor play. This result means that the FMS activities are indicated mostly within the form of creative physical expression, outdoor play and games.

Conclusions

The purpose of this study is to analyze activities related to FMS in the Teacher's Guide for the 2007 Korean National Kindergarten Curriculum. The implications of this study are as follows. The first finding is that the proportion devoted to 'Health Life Area' was lower than that of the other life areas in the Teacher's Guide. Moreover, the number of FMS activities was different according to the themes. This means that the FMS activities might be neither enough nor constant throughout the Teacher's Guide. To ensure that children gain the fundamental movement skills they need, the kindergarten teacher should plan in plenty of movement experiences and structural physical activities that introduce a range of movement skills (Epstein, 2007). Also, the teacher should perform lessons constantly throughout the year (Galluhue &

Donnelly, 2003). Early childhood is critical for the development of FMS and this forms the basis of success in sport skills during childhood and adolescence. It is necessary for teachers to understand that developmentally appropriate FMS activities need to be provided to children more repeatedly and frequently. When children repeat those activities, they improve the skills related to FMS. Children should be provided with a continuous repetition of FMS development experiences throughout the year (Sanders, 2002). Children enjoy learning FMS and once learned, these learning experiences last for their lifetime (Galluhue & Donnelly, 2003; Graham, 1991; Sayre & Gallaher, 2001). Therefore the Teacher's Guide needs to include more FMS activities and these should appear in every theme.

The second finding is that the activities related to FMS shown in the Teacher's Guide mostly were age appropriate. Developmentally appropriate physical activity has an effect on changing capacities to move and promotes such changes. Developmentally suitable physical movements are the ones that are developmentally and educationally proper to improve the child's changing abilities (COPEC, 2000; Sanders, 2006).

Also, these activities include a variety of characteristics of the individual child, such as developmental status, previous movement experiences, movement skill levels, body size, and age (Sanders, 2002). When developmentally appropriate physical activities are offered to children, they may sustain physical activities for a long period of time and have fun while doing physical activities (NASPE, 1995). In addition, developmentally appropriate physical activities can positively affect FMS (Zachopoulou, Tsapakidou, & Derri, 2004). They also help children to achieve and develop movement skills, make children go further to acquire more advanced movement skills, and, consequently, have a positive effect on the child's capacity for locomotion. Accordingly, teachers need to provide children with educationally fitting movements based on the exact knowledge about children's movement abilities and individual traits.

The third finding is that FMS activities in the Teacher's Guide focus more on locomotor skills and stability skills than on manipulative skills. Also, there were no such activities in the guide as hopping (age of 3), galloping (age of 4 and 5), static

balance (age of 3, 4, and 5), and catching (age of 3, 4, and 5). Movement and stability skills need more time to spare than manipulation and are more fundamental (Sanders, 2002). However, all fields of movement skills should be continually provided agreeable to developmental procedure because children with well-static balance can do running well and well-running children can do galloping and skipping well (You & Park, 2005). For that reason, a full range of movement skills should be presented in the Teacher's Guide to help teachers plan and execute physical activities with various helpful motor skills. The Teacher's Guide needs to include hopping, galloping, static balancing (e.g. balancing on one foot or balancing on a beam for 10 seconds), catching, kicking, dribbling, and striking with rackets or long-handled instruments.

The last finding is that in the Teacher's Guide the FMS activities focus more on creative physical expression, outdoor play, and games than fundamental movement activity. The games and outdoor play provide children with the opportunity to practice movement skills in a variety of contexts, but those alone will not suffice to help children develop their physical skills (No, 2003; Sanders, 2002). Even though creative physical expression includes elements of FMS, the main purpose of the activity is for children to express their own thoughts and to discover what a dance is (Kim, 2004). Consequently, structured physical activities are necessary to help children make use of their movement skills. Developmentally appropriate physical activities for children should be designed to integrate structured fundamental movement skills into practice (Christine, Betty, & Debra, 2009). The National Association for Sport and Physical Education (NASPE, 2009) suggests that preschoolers participate in structured physical activity for at least 60 minutes each day. Also, structured physical activities should include both movement skills and movement concepts. Therefore, the Teacher's Guide needs to contain structured physical activities emphasizing all areas of motor skill development.

Physical activities based on FMS are the basis of a child's development, and are also very helpful factors not only for sound body and mind after childhood but also for healthy social life. Therefore, teachers need to recognize the importance of physical self and physical movement in a child's development (You, 2001). The Teacher's Guides should include abundant information about fundamental movement skills and

a variety of educational experiences which are suitable for child development to help teachers do their roles properly.

Finally, this study did not analyze elements of movement concepts or relationships between activities for different ages. More study is needed in this area. Movement is a way for children to understand themselves and to learn about the world around them. Therefore, it is important for teachers to provide children with sufficient opportunities for movement in order to maximize children's success in learning and development. FMS which are the basic physical activities would be a good first step. It is essential that sufficient, varied, and regular physical activities based on FMS should be included in the Teacher's Guide.

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