



Effects of Structured Games Led by Classroom Teachers on Preschool Student Fundamental Motor Skills

Gita Febria Friskawati

Department of Physical Education, Health and Recreation, STKIP Pasundan, Cimahi, Indonesia

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Abstract

Early childhood is a golden period for growth and development, including for Fundamental Motor Skill (FMS) development. However, motor learning through games is often neglected. This study was aimed to reveal the impact of playing games led directly by the class teacher on the student FMS mastery. Ex post facto research was conducted on children aged 5-7 years who had received a structured game program intervention led directly by their class teacher. A total of 30 children participated in this study, consisting of 12 boys and 18 girls. This program had been incorporated into the early childhood education curriculum at the school where the research took place. FMS was measured using TGMD-2. The independent t-test was used to reveal differences of the results of FMS of the children. The results of the study showed that there were differences in the acquisition of FMS between boys and girls, where the boys gained a higher locomotor skills compared to the girls. In contrast, the mastery of manipulative skills was higher in the girl group. This study concludes that it is important to integrate structured game programs in the early childhood education environment.

INTRODUCTION

The focus of learning in Early Childhood Education (known as PAUD) leads to the development of all aspects that children have, including their social, emotional, and motor development (Dirjen PAUD, 2022). However, motor learning, especially gross motor skills, is often overlooked in early childhood education (Famelia et al., 2018). It might cause the fundamental motor skill (FMS) of children, which should be developed at an early age, being below average (Bakhtiar et al., 2020a).

Fundamental Motor Skill (FMS) can be developed through a learning process, starting from early childhood education to the upper secondary level, to support the journey of movement (Capelle et al., 2017) and the involvement in lifelong physical activity (Lloyd et al., 2014). The promotion of FMS should be carried out at preschool and early childhood educations because it is important for developing and strengthening certain habits related to physical activity and health (A Brian & Taunton, 2018). In addition, a good FMS in early childhood is essential for physical development and the ability to participate competently in sports later in life (L C Dapp et al., 2021). Active moving children are more willing to participate in sports which leads to a higher self-esteem and confidence (Hestbaek et al., 2021). It allows children to derive greater pleasure from sport and makes it a lifelong hobby. Research has shown that low FMS is the major barrier to participate in sports and one of the main reasons children stop doing physical activity (Webster et al., 2019).

The importance to develop FMS from early childhood is not a new concept, where the reasons are often associated with the achievement of holistic child development in the future (Jones et al., 2020). Mastering FMS is not easy for children, especially in the school environment. A number of critical issues must be considered by the teacher to support the stimulating process to improve child mastery. The person with the central role of this critical issue, in the context of early childhood education, is the teacher. Most teachers in primary schools will assess FMS when they have training, but the majority of teachers, so far, lack the expertise to assess the FMS due to a lack of training (Eddy et al., 2021). As the result, these teachers are unable to develop a program to develop early childhood FMS. Meanwhile, physical activity programs designed through

structured or free games at the early childhood education level provided by class teachers, who have received training interventions from special physical education experts studying FMS, have been proven effective (A Brian & Taunton, 2018).

Play is a natural human activity for children to fulfill their daily activities. Playing is important for a child development because it contributes holistically to a child cognitive, affective, social, and emotional aspects (Bilingüe et al., 2020). Play also offers an ideal opportunity for adults (teachers) to become fully involved with children in the learning process at school. Play is categorized into structured and non-structured play (free play) viewed from the direct involvement and leadership carried out by adults, in this case, the teachers at the early childhood education level (Tortella et al., 2022). Play interventions are also able to develop early childhood FMS (E. Webster, 2021), using both structured play and non-structured play (free play) for children in early childhood education environments (Palmer, 2022; Schmutz et al., 2020). However, a study showed that the FMS result of the intervention group receiving structured play was more significant than the result of the non-structured play or free play group (Hestbaek et al., 2021).

Most of the research results revealing the efficacy of structured and unstructured play interventions in improving child FMS were carried out by class teachers who had received training from previous experts for quite a long time or directly from the Physical Education experts, especially the experts of FMS (Ali Brian et al., 2017; Lindsay et al., 2020; Tsuda et al., 2020). Feedback on movement improvements from teachers mastering the knowledge and procedures for measuring FMS will be effective to stimulate early childhood FMS development (Bakhtiar et al., 2020b; Wainwright et al., 2019). Feedback provided in the movement learning process functions as a reflection to perform tasks to activate modifications of further actions to improve movements during the movement learning process (Moinuddin et al., 2021).

Both structured and non-structured or free plays require the assistance of certified adults or teachers for observing a child FMS in early childhood education to ensure the improvement of the movements shown by children during the FMS test, so that the FMS results can be well reported (Lander et al., 2017). However,

there has not been a clear report regarding structured play activities led directly by class teachers who have not received any training on FMS and the preparation of intervention programs for integrating FMS in the early childhood education curriculum to develop a child FMS even though FMS are essential for the development and growth of early childhood (Capio et al., 2021). Therefore, this research aimed to prevail these issues, especially the setting of the research location, namely in Indonesia, where the FMS development curriculum in early childhood education had not been implemented properly.

METHODS

This study is an ex post facto research. The aimed was to reveal the impact of structured play led by classroom teachers on preschool student fundamental motor skills. The reason was because the motor learning process carried out in early childhood education had only been carried out by class teachers directly without involving physical education experts who should be involved in designing, implementing, and evaluating a child fundamental motor skills (A Brian & Taunton, 2018).

Participants

This research was conducted on children aged 5-7 years, coming from early childhood education in urban areas. A total of 30 children participated in this study, consisted of 12 boys and 18 girls coming from class B. The researchers were only allowed to conduct research in that one class. The treatment was the play activity guided and directed directly by the class teacher, since it is better if the intervention is carried out directly by the teacher (Ali Brian et al., 2016).

Sampling Procedures

This research was conducted in 1 class at the early childhood education level involving 30 children selected through a total sampling. This research, which was conducted in only 1 class, had received official permission for research approval from the school principal.

Materials and Apparatus

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Procedures

The play activity is an activity included in the school curriculum to be carried out before learning activities when the class begins and important for the student motor development (Bakhtiar et al., 2020b). This activity was administered in a game form to support the student gross motor skills, such as playing cat and mouse, jumping rope, and throwing targets. The activities were carried out on the field in the school area and lasted for about 20-30 minutes. The treatment was carried out every day during school effective time, from Monday to Friday. Data collection was carried out after the 4 months or 16 meetings of intervention.

Design or Data Analysis

The research data were processed descriptively. The study also used the independent t-test to reveal differences in the FMS results of the children. Data processing employed SPSS 20.

RESULT

The research data were processed using descriptive analysis to examine differences in FMS skills, specifically the locomotor and manipulative motor skills, of each child including the boys and girls. The results revealed that the mean of locomotor score of boys was higher ($\bar{x}=29.50$) than the mean of locomotor score of girls ($\bar{x}=28.83$). Whereas, the results of the manipulative skill acquisition, the mean score of boys was $\bar{x}=27.50$, while the mean score of girls was $\bar{x}=46.61$. Based on the results of the analysis, the manipulative skill acquisition of girls was higher than boys. It can be seen at table 1.

Table 1. Descriptive Results of FMS based on Gender

FMS	Mean	Std.Dev	Min	Max	P-value
Locomotor					
Boys	29.50	5.33	22	39	.023
Girls	28.83	5.06	11	33	.466
Manipulative					
Boys	27.50	3.89	23	36	.195
Girls	46.61	9.48	23	59	.002

Further analysis revealed the p value of the locomotor and manipulative skills. The locomotor skill value of boys was $p=0.023 < p=0.05$, while the locomotor skill value of girls was $p=0.466 > p=0.05$. The manipulative skill value of girls was $p = 0.002 < p = 0.05$, while the manipulative skill value of boys was $p = 0.195 > p = 0.05$, meaning that there was a significant difference between the two FMS, namely locomotor and manipulative skills, in boys and girls. The visualization of comparison between FMS of boys and girls it can be seen at figure 1.

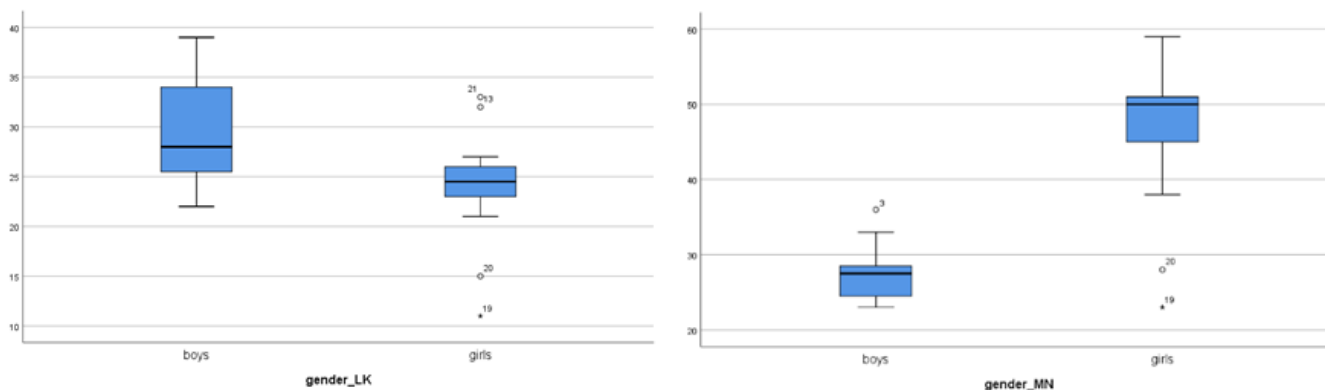


Figure 1. Visualization of Comparison between FMS of Boys and Girls

Figure 1 shows a visualization of the overall FMS results. The result was different for both groups, the boy group and the girl group. It is clear that the result of manipulative skills (MN) of girls was higher than the boys. Meanwhile, the locomotor skill (LK) result of boys was higher than girls.

DISCUSSION

The purpose of this study was to reveal the differences of FMS from the implementation of structured games carried out in the field of the school led and guided directly by the class teacher. The results revealed that the FMS acquisition displayed by male and female students was different. The result is in line with previous research revealing that motor activity integrated in playing had a significant effect on the dynamic motor skill (balance), speed, and motor strength of boys, but did not have a significant effect on girls (Laura C Dapp et al., 2021). Gender differences associated with FMS resulted from the manipulative and locomotor skill program interventions were found when clear instructions were given; the teacher was able to describe the different FMS results of each child, but it

was not significantly different between manipulative skills of girls and boys (J. D. Goodway & Robinson, 2015). Gender becomes a significant predictor in determining FMS of each child (Santos et al., 2017), while the school environment becomes the supporting factor (Monti et al., 2019).

The results of the study reported that the interaction between boys and girls when administering motor interventions became a predictor of the success of FMS compared to the control group that had not any interac-

tion between the two (K L Mulvey et al., 2018). Girl opportunities to improve their FMS may be limited if there is no interaction with boys and clear instructions from the teacher (Bautista et al., 2020). In accordance with the results of this study, the acquisition score of the locomotor skill of boys was higher than the girls. Meanwhile, the manipulative skill of girls was higher. It might widen the gender gap of FMS scores in children. The differences between girls and boys could help describe gender differences in manipulative skills, where the boys were superior to girls (Hulteen et al., 2017). Other studies carrying out interventions on early childhood education to support the improvement of their FMS competencies also revealed differences of the object control (manipulative) skills in early childhood (J. Goodway et al., 2019). The difference might be related to the clarity of the instruction delivery carried out by the teacher and the fact that boys were more involved in physical activities, both in locomotor-related games and object control games during structured or unstructured play compared to girls (Bardid et al., 2019).

Apart from gender, school setting becomes the most appropriate location to stimulate a child FMS

compared to home or motor therapy centers. A widely available and complete access is believed to provide enormous opportunities to develop a child motor skills compared to a home that cannot provide a complete access as the school environment (Kirk A. & Rhodes E., 2011). In a school environment, teachers play an important role in helping children to achieve FMS optimally according to their level of growth, development, and gender (Nobre et al., 2020). The intervention carried out by the teacher focuses on development that is appropriate to the child condition in obtaining FMS (Ali Brian & Taunton, 2018). Adjustments to intervention sessions are also provided in the best way for children to learn and process information to have the expected results (Pica, 2014).

The learning experience provided by the teacher in a structured game is aimed to provide the widest opportunity for children to practice every skill they can (Bakhtiar et al., 2020b). In theory of motion, skills and tasks are taught as a block plan in a whole in the ongoing intervention process. It starts from the easiest, moderate, to the most difficult cycles to provide complex movement experiences to children in stimulating FMS through structured games guided by the teacher (Kokstejn & Musalek, 2019). Structured games given by class teachers in early childhood education reflect the role of leaders in organizing children to carry out the movement tasks and the role of evaluators in improving the movements displayed by children (Hastie, 2017). Psychological aspects also appear when the structured game process is given to children, such as providing feedback and motivation to carry out every instruction given by the teacher to stimulate the FMS of the children (Ma et al., 2020).

The FMS learning process in children is a dynamic process characterized by continuous interaction between tasks and the environment of children (Mendoza-Muñoz et al., 2022). The time spent to engage in a movement task in a structured game, that is relevant with instructions from the teacher, and led directly by the teacher, including duration, frequency, and the child understanding of the movement task, is a good predictor for the development of a child FMS (Mota et al., 2020). Thus, the learning process/intervention led directly by the teacher can influence the development of FMS competencies in children regardless of gender differences (de Bruijn et al., 2019). There is some evi-

dence that structured physical activity programs are more effective for smoothly increasing a child FMS at the early childhood education level compared to non-structured physical activity (Bilingüe et al., 2020; Parker et al., 2018; Sato et al., 2020). This study had not revealed the predictors of differences of FMS outcomes, specifically in the locomotor and manipulative categories, based on gender in early childhood. Predictors that might arise from differences of the FMS results according to the child gender are the environment, parental support, and the child motor perceptions to improve FMS (Kelly Lynn Mulvey et al., 2020). Further research is expected to reveal the role of predictors of gender differences in FMS attainment in early childhood. Further research is also expected to formulate appropriate intervention programs for children, not only by delivering instructions led directly by class teachers in early childhood education environments, but also providing the role and support of parents to understand the importance of stimulating a child FMS in the home environment. If this happens, the child will have a good motor perception so that it will be easier to give interventions to achieve the optimal FMS according to the level of growth and development of their age (Famelia et al., 2018).

CONCLUSION

The differences of the acquisition of FMS scores displayed by preschool children on locomotor and manipulative skills, as the result of interventions through structured games, are clearly visible. The structured game intervention was carried out directly by the class teacher. Boys were superior in locomotor skills, whereas girls were superior in manipulative skills. A movement learning process led directly by the class teacher would be dynamic when there is an interaction in movement assignments. The supportive play area and the continuous movement tasks carried out by children will stimulate the development of early childhood FMS. Inserting a structured active play activity program into an early childhood education school curriculum will also support the FMS development of children. The results of this study recommend that each early childhood education unit inserts a curriculum providing an implementation of structured games guided directly by the class teacher for improving FMS of the children.

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