

EFFECTIVENESS OF THE OUTDOOR LEARNING MODEL CONTAINING LOCAL CULTURE ON CHILDREN'S GROSS MOTOR SKILLS

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Abstract: Outdoor learning is a model of learning conducted outside the classroom through direct utilization of the environment that provides authentic and concrete experiences for children. These experiences allow children to receive stimuli that can expand the learning environment and allow the development of various domains of child development. This study aims to examine the effectiveness of outdoor learning model with local culture on gross motor skills. The type of experimental research used in this study is quasi experimental research with the assumption that this study cannot fully control the variables that will affect the results of this study later. In this case, the sample was selected from a population that was not randomized because the subjects were already formed in class groups. The sample in this study were children aged 5-6 years with a total sample size of 42 children who were divided into two groups, namely the experimental group and the control group. Data collection instruments in the form of observation sheets. The data obtained were then analyzed statistically using an independent t-test on the SPSS.16 program to see the difference between the experimental group and the control group. The results showed that there was a difference between the experimental group using the outdoor learning model with local culture and the control group using the expository method with a value of $0.000 < 0.05$. This means that the outdoor learning model is effective in improving gross motor skills. Based on the findings, this study recommends teacher training in using outdoor learning model with local culture through new ways to improve gross motor development.

Keywords: children aged 5-6 years, gross motor skills, local culture, outdoor learning model.

INTRODUCTION

Early childhood is defined as the period from pregnancy to 6 years of age (Castaño et al., 2019). The early years period marks a critical time for children's growth and development (Vanderloo et al., 2015). As is the case, one of the main goals of early childhood education is to support the child's complete growth and development (Ozturk & Ozer, 2021). One aspect of child development that is important to optimize is the physical-motor aspect. Physical activity and motor skills have a cyclical or reciprocal relationship (Saraiva et al., 2013). Physical activity is very beneficial for the development of motor skills, especially when implemented in formal settings with opportunities for practice under guidance (Dapp et al., 2021). Physical activity and motor skills are important components of current and future health trajectories in children (Palmer et al., 2019).

Physical activity in early childhood can promote the development of motor skills (Stodden et al., 2008), (Susanto et al., 2024). Engaging in regular structured physical activity is a promising way to improve motor skills and support long-term motor development (Dapp et al., 2021), (Susanto et al., 2022). Motor skills play a fundamental role in the foundation of a lifelong active lifestyle that has not only been shown to contribute to physical health and physical development, but also substantially contribute to cognitive and social development (Lubans et al., 2010). The early development of children's motor skills depends on the interaction between environmental and biological factors. The quality and extent of movement experiences during childhood are initially strongly related to the child's chosen conditions (e.g. biological conditions at birth) and are further shaped by the variable nature of the environment and the balance of maturation processes (Saraiva et al., 2013). Motor skills in childhood are important determinants of physical activity and physical fitness later in life (Bardid et al., 2015). When a child's motor skills are impaired, this can affect school readiness, academic progress, social skills, play and independence (van der Walt et al., 2020).

Gross motor skills are very important for children's health and development (Veldman et al., 2020). This is because gross motor skills are the basis for humans to reach the optimal level needed to undergo normal development, maintain health, and achieve athletic excellence (Hussain & Cheong, 2022). Gross motor skills are the building blocks of movement consisting of locomotor skills, object manipulation, and stability. These abilities include jump-

ing, running, and kicking which are critical in the promotion and maintenance of a healthy developmental trajectory (Veldman et al., 2019). The proper development of gross motor skills in early childhood is considered an important factor for child development (Castaño et al., 2019). Motor skills that develop fully and evenly will have a significant impact on the subsequent learning of motor skills, namely in school and adulthood (Fu et al., 2022). Motor abilities also influence children's physical, social, and cognitive development (Iivonen & Sääkslahti, 2013). It is generally agreed that cognitive and language development depends on the emergence of motor abilities (Houwen et al., 2016).

The decline in children's motor skills is a global issue that is largely influenced by increasing sedentary behavior and decreasing physical activity (Bardid et al., 2015). Children with low motor skills are generally less physically active and have an increased risk of obesity and cardiorespiratory disease (Saraiva et al., 2013), as well as peer victimization (Øksendal et al., 2022). Obesity in children is a serious health problem. Overweight and obesity in children and adolescents are not only associated with poor performance in gross motor coordination activities but also with greater physical health risks (Barros et al., 2022). Apart from these problems, there is a common misconception that children naturally develop basic motor skills through a maturation process, when in reality children also need practice and instruction to learn and develop basic motor skills (Bardid et al., 2016; Escolano-Pérez et al., 2021; Honrubia-Montesinos et al., 2021; Su et al., 2022).

Delaying intervention regarding gross motor delays due to lack of instruction, experience, feedback, and opportunities creates a negative impact on children's academic performance, physical activity, and health-related fitness later in life (Liu et al., 2017). Researchers from various countries have reported lower-than-expected levels of development of children's motor skills (Bardid et al., 2015; Su et al., 2022). This reflects the critical situation regarding the low physical development of children in various countries which raises concerns.

Research in Norway showed the highest prevalence of developmental delays among children who were developing, namely gross motor skills at 6.1% at 12 months of age compared to communication, problem-solving, and fine motor skills. During the first year of life, delays most often occur in the gross motor area (Valla et al., 2015). In addition, a study conducted in China reported that 18.5% of children aged 1-35 months experienced gross motor delays (Wei et al., 2015). Three studies in Iran conducted on children in the age range of 4-60 months showed a prevalence of delays in gross motor development of 2.2% (Yaghini et al., 2015), at the ages of 20 and 22 months showed a prevalence of delays in gross motor development of 4.04% (Sajedi et al., 2014), at the age of 36-60 months showed a prevalence of delays of 3.1% (Ghazavi et al., 2013). Furthermore, research in Colombia on children aged 1-5 years around 15% of 240 children who had been assessed had a risk of 10.8% or gross motor skill development problems of 3.8% (Castaño et al., 2019). Research in Japan shows that around 6-13% of all children aged 5-13 years have poor motor coordination (Katagiri et al., 2021). In 2018, the World Health Organization (WHO) reported that child growth and development problems were increasing, the incidence rate in the United States ranged from 12-16%, Argentina 22%, Thailand 37.1%, and Indonesia between 13-18%. A ten-year longitudinal study observing children from 5/6 years old to 15/16 years old by Haugen & Johansen (2018), reported that children with poor motor skills would not be able to catch up with their peers and had motor difficulties. persist into young adolescence.

Therefore, there is a need for a good understanding of the determinants of developing effective strategies to promote physical activity throughout life (Aoyama et al., 2023). The development of gross motor skills requires the use of various learning models and psycho-pedagogical interventions to strengthen the basics of body position and balance related to posture and mobility (Calero-Morales et al., 2023). Motor development in early childhood will be more optimal if the environment in which children grow and develop supports them to move freely. One learning model that provides this environment is the outdoor learning model. The model provides a unique learning opportunity with many advantages for studying affective, psychomotor, and implicit knowledge. Outdoor play is also in line with the United Nations Convention on Children's Rights because it allows children to play, experience nature, and in the long-term help alleviate global sustainability problems (Yew et al. 2022).

Experiences through outdoor activities have been proven to benefit children's health and development in many ways (Martin et al., 2023), such as increasing physical activity which has several health effects, better cognitive and social competence (Sandseter et al., 2019). The outdoor learning model can be enriched in ways that are interesting to children, thereby creating fun alternative games. One way to transform this learning model is by integrating local cultural content into the environment around the child. This indirectly has a positive impact on children in getting to know and preserving the culture around them.

The characteristics of the outdoor learning model used are certainly different from the previous learning model which was limited to traditional games only. The difference in this model lies in the creative games in which there is a cooperative approach by integrating several local cultural elements that exist around the child such as Javanese traditional clothing (*surjan* and *kebaya*), art instruments (*ceng-ceng*, *gamelan*, and *gong*), traditional games in the form of *bakiak*, and the *Pandawa Lima* puppet characters and their characters as symbols to build children's interest and attraction in doing physical activities in a new and fun way through game design, so that it can have a positive impact on the overall development of the child.

METHOD

The type of research used in this study is quasi-experimental research with the assumption that this study cannot fully control the variables that will affect the results of this study later. In this case a sample is selected from a population that is not held randomization because the subjects are already formed in the class group. The research design used in this study was a non-equivalent control group design. This design is similar to the pretest-posttest in a true experiment but there is no random sample selection. The design in this research is presented in the following table.

Table 1. Research Design

Group	Pretest	Treatment	Posttest
Experimental	O ₁	X ₁	O ₃
Control	O ₂	-	O ₄

In this research there are two variables, namely the outdoor learning model containing local culture as the independent variable and gross motor skills as the dependent variable. The sample in this study was children aged 5-6 years with a total sample of 42 children who were divided into two groups, namely the experimental group and the control group. The experimental group is the group that will be given treatment using an outdoor learning model containing local culture, while the control group is the group that is not given treatment in the research but still applies the methods usually used in learning.

The elements of motor learning that are the criteria for assessing children's gross motor skills include strength, speed, agility, balance, and coordination. The element of speed, the activity to be carried out is related to sprinting. The element of agility, the activity to be carried out is related to passing through traffic cone obstacles at the first post. The element of strength, the activity to be carried out is related to hurdles at the first post and hoop jumping using one and two feet alternately at the second post. The element of balance, the activity of passing through the obstacle of the bridge at the third post. The element of coordination, the activity is carried out by playing *bakiak* which trains eye, hand, and foot coordination at the fourth post. The flow of research implementation using an outdoor learning model containing local culture is presented in the following image:

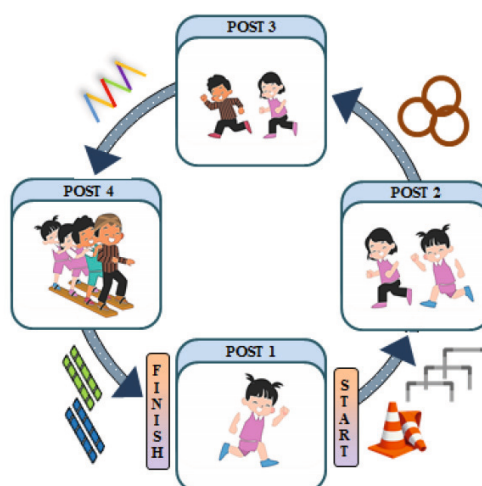


Figure 1. Outdoor Learning Model Containing Local Culture

1. At the first post, the first child sounds the 'ceng-ceng' art instrument and immediately runs zigzag through traffic on the condition that he does not drop it. Then the child jumps over three small hurdles in succession with a height of 20cm, 25cm, and 30cm with a width of 40cm.
2. At the second post, the children at the second post immediately put on the traditional trousers provided in the 'male/female' selection box, then hit the 'gong' art instrument and start jumping over the zigzag hoops with one and two feet alternately according to the color instructions of the hoops with a distance of 30cm between each hoop.
3. At the third post, the third child continues to wear the trousers given by the child at the second post and at the same time wears the traditional clothes that have been provided in the 'male/female' choice box, after finishing wearing them the child immediately hits the 'gamelan' art instrument then passes over a zig-zag bridge with a length of 15m.
4. At the fourth post, the fourth child continues to wear the trousers and traditional clothes of the child at the third post, then wears the 'blankon/headband' that has been provided in the 'male/female' selection box and when finished, goes straight to the front or first order of clogs followed by friends from the first to third posts behind him to go to the finish line.
5. The data obtained through the motor skills observation sheet will be analyzed using the SPSS program to determine whether the use of the local cultural outdoor learning model is effective for gross motor skills. In general, the research flow is described in the following scheme.

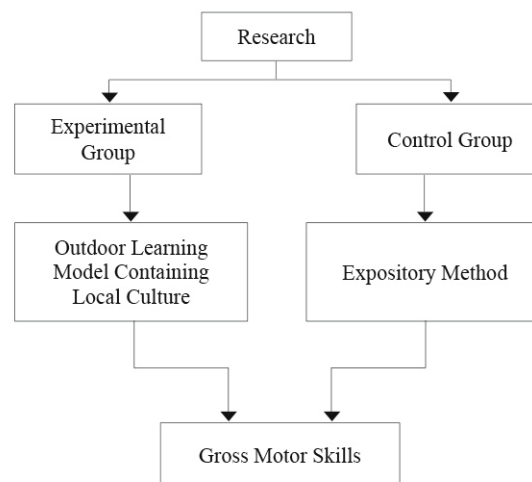


Figure 2. Research Scheme

RESULTS

Before data analysis is carried out, a data requirements test is first carried out, namely the normality of data distribution test and the homogeneity of variance test. Normality tests and homogeneity tests are carried out as a condition for carrying out effectiveness tests with the t-test. The data for the normality test of data distribution were obtained from the pretest and posttest of gross motor skills in the experimental group and control group. The results of the normality test for data distribution were tested using the SPSS program. The test results obtained by the Kolmogorov-Smirnov p-value can indicate whether the data is normally distributed or not. The condition for data to be normally distributed is if the p-value obtained from the calculation is greater than 5% significance (0.05). The results of the normality test for the distribution of pretest and posttest data on gross motor skills of the experimental group and control group are presented in the following table.

Table 2. Normality test results

Data	p	Description
Experimental group pretest	0.121	Normal
Experimental group posttest	0.170	Normal
Control group pretest	0.114	Normal
Control group posttest	0.153	Normal

Based on the results of calculating the normality of the distribution of pretest and posttest data on the gross motor skills of the experimental group and the control group, it can be seen that the p-value is greater than 5% significance, which means that the data collected from the pretest and posttest in children's gross motor learning shows a normal distribution.

Apart from testing the normality of data distribution, the data requirements test also carried out a homogeneity of variance test. With the help of the SPSS program, scores were obtained that showed homogeneous variance. The condition for a variant to be said to be homogeneous is if its significance is greater than 5% significance (0.05). The results of the homogeneity test calculation of pretest and posttest data variants are presented in the following table.

Table 3. Homogeneity test results

Data	p	Description
Experimental and control group pretest	0.608	Homogeneous
Experimental and control group posttest	0.266	Homogeneous

Based on the table above, the results of the homogeneity test calculation during the pretest and posttest of gross motor skills in the experimental group and control group can be seen in the p-values is 0.608 and 0.266. Thus, the pretest and posttest data on gross motor skills in the experimental and control groups in the research had homogeneous variance.

After the prerequisites were met, the free t-test pretest and posttest gross motor skills in the experimental and control groups were tested using the SPSS program. The results of the pretest and posttest independent t-tests of gross motor skills in the experimental and control groups are presented in the following table.

Table 4. Independent t-test results

Data	t_{count}	p	Description
Experimental and control group pretest	0.113	0.910	Not significant
Experimental and control group posttest	10.447	0.000	Significant

Based on the table above, the calculation of the independent t-test results of the pretest scores on gross motor skills for both groups shows that the p-value is 0.910 which is greater than the significance value of 0.05 and the t value is 0.113 which is smaller than the t table of 2.021. Thus, it can be interpreted that there is no difference between the gross motor skills of children in the experimental group and the control group during the pretest. Meanwhile, the posttest independent t-test of gross motor skills for both groups showed that the p-value was 0.000 which was smaller than the significance value of 0.05 and the t_{count} value was 10.447 which was greater than the t_{table} of 2.021. This means that there is a difference between the gross motor skills of children in the experimental group and the control group at the posttest. Thus, it can be concluded that the use of an outdoor learning model containing local culture has proven effective in improving children's gross motor skills.

DISCUSSION

The outdoor learning model containing local culture was declared effective through field trials. This is supported by research by Yıldırım & Akamca (2017), showing that psychomotor skills scores differ significantly between pre-

test and post-test. This means that children's motor skills improve significantly after outdoor learning activities. Meanwhile, teachers who carry out outdoor education have an average subjective well-being score that is much higher than their colleagues. This means that outdoor education is positively related to teachers' subjective well-being and has the potential to provide benefits for teachers and students (Deschamps et al., 2022).

Participating in an outdoor education program will have positive results on the psycho-physical well-being, connectedness with nature, and pro-social behavior of students in the intervention group compared to the control group (Pirchio et al., 2021). There is a definite trend that outdoor education programs based on the regular curriculum enable students to develop socially, academically, physically, and psychologically (Becker et al., 2017).

Outdoor play has been associated with important developmental advances, and a growing body of research confirms that the physical environment of a play space significantly influences the value and quality of play. Understanding the environmental features and conditions of play spaces that can encourage and create high-quality play experiences can help inform the redesign of play spaces that stimulate and promote health for children. (Loebach & Cox, 2022).

The number of outdoor games and facilities available plays a very important role in children's motor development. This means that the more outdoor play, the better the child's motor skills will be. Therefore, challenging outdoor environments can be viewed as optimal motor learning environments for children (Sääkslahti & Niemistö, 2021). By giving children more time in outdoor green spaces, nature-based early childhood learning and care can become a key approach to supporting children's physical, social, and emotional development (Traynor et al., 2022). Outdoor playtime was highly correlated with moderate to vigorous intensity physical activity and was also associated with decreased sitting time. Overall, children have the potential to be very active during outdoor play sessions in childcare centers (Truelove et al., 2018). Types of outdoor risky play opportunities fall into the categories of supporting motor skills, supporting free environmental exploration, and supporting risk assessment (McFarland & Laird, 2018).

Nature-based early childhood education will provide higher intensity physical activity and risky play will be able to improve several domains of motor competence (Johnstone et al., 2022). Apart from that, outdoor learning activities also greatly contribute to the cognitive, linguistic, and social-emotional development of preschool children. It can be recommended that the outdoor activities provided within the framework of the program should be increased in the preschool years. Teachers should be provided with information about outdoor education through teacher training programs before and during their tenure, and outdoor education should also be included in the teacher education curriculum (Yıldırım & Akamca, 2017).

Therefore, all parties must focus attention on the important pedagogical and educational role of adults who have the responsibility to design educational actions aimed at increasing children's physical and motor activity in sports participation. This outdoor education approach has a greater impact on children because it has the potential to promote not only motor skills and competencies but also children's cognitive, social, relational and affective development. Educational actions designed by adults must be oriented to the child's needs and can be carried out with structured or unstructured activities (Tortella et al., 2021).

CONCLUSION

Based on the research results, it can be concluded that the outdoor learning model containing local culture is effective for gross motor skills. This is proven by the differences in gross motor skills learning outcomes between the experimental group which used an outdoor learning model containing local culture and the control group which used the expository method. The use of an outdoor learning model containing local culture in learning is very beneficial for children's gross motor skills, where they become more active and responsible, collaborate with their friends, and indirectly also participate in preserving local culture.

Related to the research results, early childhood teachers can use outdoor learning models with local cultural content as a variation of learning models to improve various abilities in children, especially gross motor skills. Therefore, teachers must always increase knowledge, develop creativity, and use games in the learning process.

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