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RESEARCH ARTICLE

Adventure Education as a Learning Strategy to Improve Kinesthetic and Interpersonal Intelligence in Elementary School Students

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ABSTRACT

This study aimed to develop an Adventure Education learning model and assess its effectiveness in enhancing elementary school students' kinesthetic and interpersonal intelligence. In this study, 28 elementary school students were placed into two groups: an experimental group (14 students: 7 males and 7 females) and a control group (14 students: 7 males and 7 females). The experimental group followed the Adventure Education program, while the control group learned conventionally. A pretest and posttest were administered to assess kinesthetic and interpersonal intelligence. Statistical analysis was carried out with SPSS version 27.0.1.0, which included normality tests, paired t-tests, and independent two-sample t-tests. The Adventure Education program significantly enhanced elementary school students' kinesthetic and interpersonal intelligence ($p < 0.001$). The experimental group showed significant improvements in post-test results compared to the control group, both in kinesthetic and interpersonal intelligence. The Adventure Education program has been shown to improve elementary school students' kinesthetic and interpersonal intelligence significantly. This program can be incorporated into the physical education curriculum as a learning strategy to promote students' physical and social development

1. INTRODUCTION

Physical education is a fundamental component of the educational system since it not only improves physical fitness but also shapes students' character and social abilities (Opstoel et al., 2020). In the p resent period, approaches to physical education are evolving with diverse learning models that try to accommodate students' various intelligences (Quennerstedt, 2019). One comparable approach is the Adventure Education learning paradigm, which mixes physical exercise with natural difficulties and g roup collaboration (Sutherland & Legge, 2016). This model is thought to be effective in improving ele mentary school students' kinesthetic and interpersonal intelligence.

Kinesthetic intelligence refers to a person's ability to efficiently manage bodily motions and use fine a nd gross motor skills (Santoso et al., 2024; Chen & Gardner, 2018). This intelligence can be develope d in the context of physical education by engaging in activities that demand movement skills, coordin ation, balance, and body strength (Fernandes et al., 2016). Interpersonal intelligence, on the other ha

nd, refers to the capacity to communicate effectively with others, understand their emotions and inte ntions, and collaborate in groups (Goodnight, 2015). These abilities are extremely valuable in everyd ay life, particularly in social and professional settings that rely on collaboration and communication.

Although physical education in elementary schools is primarily intended to increase physical fitness, the development of kinesthetic and interpersonal intelligence is sometimes overlooked. Traditional l earning based on structured and repetitive sports activities emphasizes the competitive side over the collaborative aspect, and it concentrates on individual physical ability rather than social interactions (Choi et al., 2014). This can impede the development of students' interpersonal intelligence, which is critical in shaping students' social abilities (Bedwell et al., 2014).

Meanwhile, the Adventure Education approach, which places more emphasis on outdoor learning ex periences and includes physical and emotional obstacles that must be confronted in groups, is regard ed as capable of giving answers to the limits of traditional learning approaches (Cooley et al., 2014; M eerts-Brandsma et al., 2020; Potter & Dyment, 2016). Adventure activities expose students to a varie ty of circumstances that involve teamwork, effective communication, and shared decision-making, th ereby improving their interpersonal intelligence (Harper, 2017). Furthermore, physical activities suc h as climbing, sprinting, or negotiating natural obstacles might help pupils enhance their motor and k inesthetic skills (Schweighardt et al., 2018).

The primary challenge in elementary school physical education is effectively integrating physical and social learning into the existing curriculum (Nathan et al., 2018). The majority of current learning mo dels are mainly concerned with the physical side, putting little attention paid to the development of s tudents' interpersonal intelligence (Zeidner & Matthews, 2017). Conventional learning models that f ocus on competition often ignore the importance of cooperation and social interaction, which are at t he core of interpersonal intelligence (Sottilare et al., 2018).

Furthermore, while kinesthetic intelligence has been highlighted as one of the primary aims of physi cal education, the methods employed to cultivate it are not always effective. Repetitive and non-conte xtual physical workouts frequently deny pupils the ability to fully explore their body movement capa bilities in challenging and diverse contexts (Nyberg et al., 2020). In this situation, Adventure Educati on provides an alternative by immersing students in an environment that requires physical and ment al adaptability, as well as collaboration with other students, to overcome the challenges they experie nce.

The results of the study showed that adventure education can improve children's physical and psych ological health, such as levels of Physical Activity (Gehris et al., 2012; Li et al., 2013; Moorman et al., 2 007) motivation to learn (Gilbertson & Ewert, 2015; Moos & Honkomp, 2011; Sproule et al., 2013) so cial interaction skills (Garst et al., 2001; Sutherland et al., 2011; Sutherland & Stroot, 2010) self-estee m (Shafie & Che Mat, 2014) and psychological well-being (Zhou & Lau, 2022); in this case, there was a significant increase in motor skills in children who participated in outdoor activities compared to t he motor skills of children who did not participate in outdoor activities (Safitri et al., 2022).

At this point, the implementation of Adventure Education in Indonesian elementary schools has been severely limited owing to a lack of resources and facilities. Many schools lack open areas and the nec essary resources to facilitate safe and successful adventure activities (Hernawan, 2023). Furthermor e, many teachers are unfamiliar with this strategy, necessitating further training to ensure proper im plementation. As a result, the purpose of this study is to assess the impact of Adventure Education as a learning approach on elementary school students' kinesthetic and interpersonal intelligence.

METHODS

Participant

Furthermore, many teachers are unfamiliar with this strategy, necessitating further training to ensur e proper implementation. As a result, the purpose of this study is to assess the impact of Adventure E ducation as a learning approach on elementary school students' kinesthetic and interpersonal intelli gence.

Procedure

This research is a quantitative research using quasi-experimental methods, with two groups of participants: the experimental group and the control group, each consisting of 14 elementary school students. The experimental group engaged in an Adventure Education program aimed at improving kinesthetic and interpersonal intelligence, whereas the control group received traditional instruction. In this study, the treatment was administered 8 times, with 4 sessions for the experimental group and 4 sessions for the control group. Each treatment session was conducted for 2 x 40 minutes. The study was divided into three major stages: planning, implementation, and evaluation. The measurement of kinesthetic and interpersonal intelligence within Adventure Education learning strategies is conducted through pre-tests and post-tests using structured measurement tools. Kinesthetic intelligence is measured by adapting the Test of Gross Motor Development (TGMD), involving observation of gross motor skills such as Coordination, Speed, Strength, Agility, Balance, and Movement Control through adventure-based physical activities, with results assessed using a Likert scale based on performance and number of errors. Meanwhile, interpersonal intelligence is measured using the Interpersonal Communication Skills Inventory (ICSI) with variables of Social Sensitivity, Social Insight, and Social Communication. The use of the Likert scale allows for detailed assessment of these aspects through observation of student interactions in group activities, reflective discussions, and their contributions to resolving conflicts or shared challenges. Results analysis is performed by comparing pre-test and post-test scores to evaluate students' intelligence improvements in a measurable manner.

During the preparation stage, students were chosen based on specific criteria, followed by a pretest to assess their kinesthetic and interpersonal intelligence. Furthermore, during the implementation stage, the experimental group participated in Adventure Education activities, whilst the control group continued to learn using traditional methods. The final stage was conducting a retest (posttest) to compare the findings before and after the intervention.

Statistical Analysis

The statistical analysis in this study employed SPSS version 27.0.1.0 with a descriptive and inferential approach to determine the influence of Adventure Education on elementary school students' kinesthetic and interpersonal intelligence. First, a descriptive analysis was performed on the pretest and posttest data, including the mean and standard deviation for both groups (experimental and control). A normality test was used to check that the data were normally distributed, followed by a paired t-test to determine significant differences between the pretest and posttest in the experimental group. In addition, an independent two-sample t-test was utilized to compare the post-test outcomes of the experimental and control groups. Gender and grade level were identified using one-way ANOVA.

RESULT

Descriptive Analysis

The following table shows the mean and standard deviation (SD) of kinesthetic and interpersonal int elligence:

Table 1. Descriptive Analysis

Group	Gender	Variable	Pre-test (M ± SD)	Post-test (M ± SD)
Experiment	Male	Kinesthetic Intelligence	69.0 ± 5.1	81.2 ± 4.9
		Interpersonal Intelligence	70.5 ± 5.8	83.5 ± 5.1
	Female	Kinesthetic Intelligence	68.0 ± 5.3	79.3 ± 4.7
		Interpersonal Intelligence	69.8 ± 6.0	82.0 ± 5.6
Control	Male	Kinesthetic Intelligence	67.8 ± 5.5	69.8 ± 5.1
		Interpersonal Intelligence	71.0 ± 6.2	73.0 ± 5.8
	Female	Kinesthetic Intelligence	68.2 ± 5.4	70.0 ± 5.0
		Interpersonal Intelligence	70.5 ± 6.4	72.1 ± 6.2

In the experimental group, the average posttest score of kinesthetic intelligence increased in both ma les (M = 81.2) and females (M = 79.3) when compared to the pretest. In the control group, there was no significant increase in kinesthetic intelligence in either males (M = 69.8) or females (M = 70.0). M eanwhile, posttest interpersonal intelligence improved in the experimental group, with males (M = 8 3.5) and females (M = 82.0) showing a significant rise. The control group showed no significant incre ase in either males (M = 73.0) or females (M = 72.1).

Normality Test

The Kolmogorov-Smirnov test was used to see if the data was regularly distributed. The following tab le shows the normalcy test results for the pretest and posttest of kinesthetic and interpersonal intelli gence in both groups.

Table 2. Normality Test

Group	Gender	Variable	Pre-test (p)	Post-test (p)
Experiment	Male	Kinesthetic Intelligence	0.200	0.188
		Interpersonal Intelligence	0.145	0.130
	Female	Kinesthetic Intelligence	0.210	0.198
		Interpersonal Intelligence	0.152	0.122

Control	Male	Kinesthetic Intelligence	0.192	0.185
		Interpersonal Intelligence	0.200	0.170
	Female	Kinesthetic Intelligence	0.205	0.195
		Interpersonal Intelligence	0.190	0.160

The p-value for kinesthetic and interpersonal intelligence is greater than 0.05, both before and after t he test. This indicates that the data in the experimental group are normally distributed for the kinest hetic and interpersonal intelligence variables in both male and female students. In the control group, the pretest and posttest data for kinesthetic and interpersonal intelligence both had p-values > 0.05, i ndicating that the data were normally distributed in both variables.

Paired t-Test

A paired t-test was used to compare the pretest and posttest scores of kinesthetic and interpersonal i ntelligence in the experimental group, which included both male and female students. The outcomes are presented in the following table:

Table 3. Paired t-Test

Gender	Variable	t	df	p-value	Conclusion
Male	Kinesthetic Intelligence	7.24	6	< 0.001	Significant
	Interpersonal Intelligence	6.89	6	< 0.001	Significant
Female	Kinesthetic Intelligence	6.58	6	< 0.001	Significant
	Interpersonal Intelligence	6.77	6	< 0.001	Significant

For males, the t-test findings for kinesthetic intelligence demonstrate a significant difference betwee the pretest and posttest (t-value = 7.24, p-value < 0.001). This indicates that the treatment resulted i n a significant gain in kinesthetic intelligence. The t-value for interpersonal intelligence is 6.89, with a p-value <0.001, indicating a significant difference between the pretest and posttest.

The t-test results for kinesthetic intelligence in female students revealed a significant difference betw een the pretest and posttest (t-value = 6.58, p-value <0.001). For interpersonal intelligence, the t-valu e was 6.77 with a p-value <0.001, indicating a significant increase in interpersonal intelligence after t he program.

Independent sample t-Test

Table 4 displays the results of the independent sample t-test:

Table 4. Results of the Independent Sample T-test

Variable	t	df	p-value	Conclusion
Kinesthetic Intelligence	7.12	26	< 0.001	Significant
Interpersonal Intelligence	6.89	26	< 0.001	Significant

The t-value = 7.12 and p-value <0.001 show a significant difference between the two groups. This sug gests that the Adventure Education program has a greater effect on boosting kinesthetic intelligence

than the group that did not participate. For interpersonal intelligence, the t-value = 6.89 and p-value <0.001 indicate a significant difference between the two groups, indicating that the Adventure Educa tion program also has a significant effect on increasing students' interpersonal intelligence.

DISCUSSION

The primary hypothesis of this study is that Adventure Education will have a major positive impact o n elementary school students' kinesthetic and interpersonal intelligence. Specifically, students who c omplete the program (experimental group) are predicted to exhibit significant improvements in both types of intelligence when compared to the control group that was not given the intervention. This h ypothesis is predicated on the premise that Adventure Education learning activities can enhance phy sical, cognitive, and social skills through active learning and direct experience.

The study's findings are consistent with earlier research on the impact of experiential and adventure -based learning on student development. Outdoor Education Programs can benefit pupils in terms of social, academic, physical, and psychological development (Becker et al., 2017). In line with (Houge M ackenzie & Hodge, 2020) research, the major findings of this study indicate that adventure recreation promotes the eudaimonic aspect of subjective well-being (SWB) by addressing four key psychologica l needs: autonomy, competence, connectivity, and generosity. In addition, contact with nature is regar ded as a significant aspect of promoting well-being.

Other studies have found that the nature-activities education program has a significant positive effec t on the development of multiple intelligences in children aged 8 to 12 years. A comparison of pretest and posttest results revealed a significant increase in all areas of intelligence, including linguistic, vis ual, mathematical, kinesthetic, social, intrapersonal, naturalistic, and musical intelligence (Merve, 20 18). The adventure education learning model demonstrates that kinesthetic intelligence has a major i mpact on Physical Education learning (Yuliana, 2024).

Koszałka-Silska et al. (2021) found that the Adventure Education program significantly improved ma le adolescents' social competency. Findings include prioritizing traits that are considered more domi nant in men, such as physical strength and toughness, the presence of linguistic sexism, the assumpti on that outdoor identities and careers are better suited to men, and less gender-sensitive teaching an d facilitation methods (Warren et al., 2019). Another study discovered that the Team Building Throug h Physical Challenges (TBPC) program continued to benefit female students in gender-segregated ph ysical education classes, even though the overall results indicated that the program benefited both m ale and female students (Gibbons & Ebbeck, 2011).

The results of this study are significant because they provide factual support for Adventure Educatio n programs as learning opportunities for kids' overall growth. Increasing kinesthetic intelligence can increase physical coordination, motor abilities, and body awareness, all of which are essential for chil dhood development (Hernawan, 2023). Interpersonal intelligence is crucial for effective social intera ction, teamwork, and conflict resolution in physical education settings (Núñez et al., 2018). By demo nstrating that Adventure Education may foster multiple types of intelligence, this study underlines th e possibility of incorporating such programs into formal education to address both the physical and s ocial elements of student development. The conclusions of this study have practical consequences fo r educators and policymakers. Significant increases in kinesthetic and interpersonal intelligence indi cate that Adventure Education programs can be successfully adopted in elementary schools to boost student engagement, social skills, and physical development. Schools can incorporate adventure-bas ed activities into their physical education or extracurricular programs to improve these components of intelligence. Furthermore, the findings of this study underline the need to use a variety of educatio nal approaches that accommodate different learning modalities, acknowledging that typical classroo

m instruction may not adequately cover all aspects of intelligence. Further research might look into p otential moderating factors, such as the impact of individual characteristics (e.g., personality traits, p ast experience with physical activity) on adventure-based learning outcomes. Further research might look into the usefulness of Adventure Education in different age groups, cultural contexts, and educat ional systems.

CONCLUSION

The purpose of this study is to examine how Adventure Education affects the kinesthetic and interpersonal intelligence of elementary school students. The study found that the program significantly boosted kinesthetic intelligence, as seen by an increase in physical abilities and body awareness in the experimental group compared to the control group. Furthermore, interpersonal intelligence has greatly risen, assisting in the development of social and communication skills. The program was shown to be beneficial in both male and female pupils, with paired t-test findings indicating a rise in both intelligences. Independent two-sample t-test results revealed that the experimental group scored higher on kinesthetic and interpersonal intelligence posttests than the control group. These findings strongly support the incorporation of Adventure Education into the elementary education curriculum as a tool for students' physical and social development.

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