

The Effect Of Implementing Physical Education Class Management Archery Material

To Improve Concentration Elementary School Students

El efecto de la implementación de material de tiro con arco de gestión de clases de educación física para mejorar la concentración de los estudiantes de primaria

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Abstract. Concentration is needed for students at the stage of physical and psychological growth and development to support successful learning achievement. This research was quantitative research. The research design employed a pre-experimental one-group pretest-post-test design. The research sample was 14 students taken using a purposive sampling method. The concentration data collection technique used a GTC test before and after intervention. The data analysis techniques used were paired sample t-test and n-gain score. The results of the descriptive statistical test show a pretest score of 51.79 and post-test 63.00, meaning there is no increase in the average descriptive score. The results of the paired sample t-test show a significance value of $0.067 > 0.05$, meaning there is no significant difference between the pre-test and post-test. The effectiveness test results on applying PE archery material obtain an average value of 0.23, included in the low effectiveness category. The conclusion is that the implementation of descriptive archery material PE class management is able to increase elementary school students' concentration, but there is no significant increase. The implementation of PE material on archery with more specific movement activities will encourage training to focus the mind and eyesight. The research results also provide findings that archery can also be used as a means of PE and physical fitness and as a health therapy to focus the eye's gaze in paying attention to an object to increase concentration power in learning various important things.

Keywords: Class management, Physical Education, Archery, Concentration, Elementary School

Resumen. Se necesita concentración para los estudiantes en la etapa de crecimiento y desarrollo físico y psicológico para apoyar el logro exitoso del aprendizaje. Esta investigación fue una investigación cuantitativa. El diseño de la investigación empleó un diseño preexperimental de preprueba y posprueba de un solo grupo. La muestra de la investigación fue de 14 estudiantes tomados mediante un método de muestreo intencional. La técnica de recolección de datos de concentración utilizó una prueba GTC antes y después de la intervención. Las técnicas de análisis de datos utilizadas fueron la prueba t de muestras pareadas y la puntuación de ganancia n. Los resultados de la prueba estadística descriptiva arrojan un puntaje pretest de 51,79 y posttest 63,00, es decir, no hay incremento en el puntaje descriptivo promedio. Los resultados de la prueba t para muestras pareadas muestran un valor de significancia de $0,067 > 0,05$, lo que significa que no hay diferencia significativa entre la prueba previa y posterior. Los resultados del test de eficacia de la aplicación de material de tiro con arco de PE obtienen un valor medio de 0,23, incluido en la categoría de baja eficacia. La conclusión es que la implementación del material descriptivo de tiro con arco en la gestión de la clase de educación física es capaz de aumentar la concentración de los estudiantes de primaria, pero no hay un aumento significativo. La implementación de material de EF en tiro con arco con actividades de movimiento más específicas favorecerá el entrenamiento para enfocar la mente y la vista. Los resultados de la investigación también proporcionan hallazgos de que el tiro con arco también se puede utilizar como un medio de educación física y aptitud física y como una terapia de salud para enfocar la mirada al prestar atención a un objeto para aumentar el poder de concentración en el aprendizaje de varias cosas importantes.

Palabras clave: Gestión de clase, Educación Física, Tiro con arco, Concentración, Escuela Primaria.

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Introduction

In today's digital age, children are increasingly exposed to various forms of technology, such as smartphones, tablets, and computers, often engaging in activities like gaming, which can lead to shorter attention spans and a decreased ability to concentrate on educational tasks. This pervasive technology use, without proper guidance and moderation, can contribute to a range of attention-related issues, making it challenging for students to focus during academic activities. It is therefore necessary to introduce sports in the Physical Education (PE) curriculum as a preventive measure against these problems. However, sport activities in PE learning also need to be selected and adapted

to the needs of improving student concentration, such as archery which tends to use eye focus to aim at the target. Archery requires concentration, accuracy, consistency of movement, and discipline that can indirectly help restore the concentration of students who have been exposed to excessive use of games and technology. Various problems in the educational sector have been linked to learning difficulties for students. Some related research has been conducted on the analysis of learning difficulties, including research (Yunarti, 2021); (Alfiyah et al., 2021); (Putri et al., 2021); (Monalisa et al., 2023) who concluded that learning difficulties are due to concentration problems. Concentration is urgently needed for students to support the success of their learning achievements and help them easily accept the

teacher's lesson material. On the other hand, students with low learning concentration struggle to receive and understand the lesson material. Many of them experience various learning concentration problems, especially in elementary school. This problem may exist from improper use of gadgets, such as playing games excessively, watching useless videos excessively, etc. In the learning activities context, if students feel bored, it will also cause them to be unmotivated, tired easily, and lose concentration. Several studies have reported loss or decreased concentration and decreased motivation levels due to fatigue (Picariello et al., 2017); (Rimes et al., 2016); (Schakel et al., 2019); (Sorkkila et al., 2017). This problem of impaired concentration is an obstacle for schools and teachers in achieving educational goals in general and learning goals for various subjects in elementary school.

Previous research on efforts to increase students' concentration was carried out by (Donnelly et al., 2016) (Cecep et al., 2022); (Khotimah et al., 2020); (Nurhayati & Homdijah, 2020). A study by Nurunnabilah et al. (2022) concluded that manipulative movement games are an appropriate effort to increase students' learning concentration. There is a significant relationship between sports intensity and students' ability to concentrate on learning (Nusufi, 2016). There is a relationship between exercise and learning concentration, and there is also a relationship between learning motivation and learning concentration (Sandayanti et al., 2021). A method used to overcome the decline in learning concentration is learning through play method, where the teacher invites students to learn within the framework of a game; there is competition, rules, and a reward system prepared. Methods and classroom management can also increase learning concentration because of the pleasant atmosphere during learning. It shows that students' concentration abilities can be improved through various exercises packaged in PE learning in elementary school. In addition, the benefits of physical activity or sports packaged in PE at school are: 1) PE has an effect on increasing academic achievement, non-cognitive skills, motor skills, and physical activity; 2) students' involvement in PE has a positive relationship with functional body shape; 3) activeness or discipline in carrying out PE activities has a protective effect on mental health (Knaus et al., 2020); (Allen et al., 2019); (Madeira et al., 2019)

Learning at school, including physical activity exercises and games, is PE. Through PE subjects, various forms of sports training can be implemented, which provide various psychological and physical benefits, including student concentration. Class management is also required in implementing PE learning according to the material and form of physical activity or sports game chosen. The existence of a conducive learning environment will contribute to increasing student learning concentration (Pemba et al., 2022). Classroom strategies that need to be implemented are to condition students to be ready to learn in class, learn to concentrate, use appropriate and varied methods, interact educationally and communicatively, and use media according

to the material presented. (Nugraha, 2018). Teachers and class managers have a significant role in creating an effective class (Hidayat et al., 2020). It will encourage the achievement of the objectives of each PE learning material taught at school. Games and sports that can be applied in PE include archery target games. Archery is a sport requiring concentration in movement techniques to aim at a target. The following summary is basic techniques in sports archery, including (1) basic standing, (2) basic grip, (3) basic hooking, (4) basic setup, (5) basic drawing (half & full draw), (6) basic anchoring, (7) basic aiming, (8) basic extending, (9) basic release, and (10) basic follow-through (Setyawan et al., 2023). These ten basic archery techniques will produce accurate archery skills if it is done correctly. Teachers or lecturers are expected to be serious about conveying knowledge, providing motivation, and using appropriate teaching methods or techniques to realize this goal (Mukarromah et al., 2021). Success in sports is every athlete's dream. Therefore, optimal coaching and approaches or methods are needed (Nur & Kamaruddin, 2021). Thus, PE class management based on games and archery sports can be implemented in learning to benefit students directly and indirectly. These benefits include increased concentration, improved archery skills or achievements, and maintained fitness and physical health.

Through archery sport activities will encourage students to practice concentrating on a single task of aiming at shooting targets for a long time and repeatedly. this will be able to help improve their ability to concentrate highly. Although research related to archery has been conducted by several researchers, including: (Barrera et al., 2020); (Roldan et al., 2021); (Wibowo et al., 2024); (Setyawan et al., 2024); (Yachsie et al., 2024). However, there has not been any research that discusses PE management using archery materials to encourage student concentration. This research is expected to explore how archery sport activities with its various benefits can be a means of useful activities to reduce the adverse effects of low student concentration due to the abuse of gadget technology and the like. In addition, this research is also expected to spur students' level of learning concentration which will also be able to improve students' cognitive development and learning achievement. Therefore, this study aims to determine and test the effectiveness of the application of physical education class management based on target games (archery) to improve student concentration in elementary schools.

Methods

This research was quantitative research. The research design employed a pre-experimental one-group pretest-posttest design, namely an experimental research design characterized by no randomization. It was carried out in one group without a comparison group. This stage's one-group experimental research design is described as follows (Table 1).

Information:

O1: Pretest Results

X: Implementation of PE Class Management Archery Sports Material

O2: Posttest Results

This research was carried out at the Elementary School of Muhammadiyah Jogokaryan Yogyakarta. The population in this study were all students in grades IV - V in the Elementary School of Muhammadiyah Jogokaryan. The sample for this research consisted of 14 students using a purposive sampling method and selected by meeting the following criteria: 1) students are not archery athletes; 2) students do not have special needs; 3) students do not have eye problems (plus or minus); 4) students fall into the category of upper elementary school students; and 5) students are willing to become research samples.

The research instrument used to measure concentration was Dorothy's grid concentration exercise test. The concentration data collection technique was carried out by giving a grid concentration test before and after implementing PE based on archery. Concentration test using an instrument Grid Concentration Test (CGT), as shown in (Table 2) was carried out with the following explanation: a) this test instrument has 10 x 10 boxes, each box contains two digit numbers from 00 to 99; b) how to do this test, namely connect the numbers with lines starting with the numbers 00 to 99 for 1 minute; c) the concentration ability score is obtained by calculating the highest score minus the errors made.

Table 1.
Pre-experimental design (one-group pretest-posttest design)

Pretest	Treatment	Posttest
O1	X	O2

Table 2.
Grid Concentration Test (CGT) Instrument

84	27	51	78	59	52	13	85	61	55
28	60	92	04	97	90	31	57	29	33
32	96	65	39	80	77	49	86	18	70
76	87	71	95	98	81	01	46	88	00
48	82	89	47	35	17	10	42	62	34
44	67	93	11	07	43	72	94	69	56
53	79	05	22	54	74	58	14	91	02
06	68	99	75	26	15	41	66	20	40
50	09	64	08	38	30	36	45	83	24
03	73	21	23	16	37	25	19	12	63

Furthermore, the values obtained are categorized into several concentration level categories, as shown in (Table 3) below.

Table 3.
Grid Concentration Test Criteria

No	Criteria	Information
1	>21	Excellent Concentration
2	16-20	Good Concentration
3	11-15	Medium Concentration
4	6-10	Low Concentration
5	<5	Very Low Concentration

The first stage of the data analysis technique in this research used a parametric paired sample t-test statistical test, provided that the prerequisite test (normality) has been fulfilled. The paired sample t-test was used to determine the

difference or increase in the average value of students' concentration scores before and after implementing PE material on archery. Then, calculations were carried out using SPSS Version 25.0.

The second stage of the data analysis technique in this research was conducted using the N-gain Score Test to determine the level of effectiveness of the implementation of archery sports material and the results of students' concentration scores. Analysis of the N-gain Score Test at this stage adopts the following formula:

$$g = \frac{Sf - Si}{Smax - Si}$$

Information

g = gain

Sf = Post-test average value

Si = Average pre-test score

Smax = Maximum value

The effectiveness level criteria use criteria according to (Hake, 1998) as shown in (Table 4) below.

Table 4.
Effectiveness Level Criteria

Value g	Criteria
$G \geq 0.7$	High
$0.3 \leq G < 0.7$	Currently
$G < 0.3$	Low

Implementing PE based on archery in increasing students' concentration in elementary school involves four aspects of management functions, including 1) planning, 2) organizing, 3) implementation, and 4) evaluation/assessment. In addition, the implementation of PE based on archery is carried out in several stages. In archery learning activities, students practice archery at a distance of 4-8 meters by shooting six arrows in each session, carried out in 12 sessions. The procedure for carrying out archery training is carried out with the following explanation:

1. students stand on the shooting line to shoot six arrows each session. In this arrow shooting activity/exercise, the students' gaze must focus or concentrate on the shooting target.
2. Students have finished shooting arrows, and then the appointed referee and the students calculate their respective scores.
3. scores are determined based on the results of arrow shots that stick into the target's face object with a yellow score of 10 - 9, red 8 - 7, and blue 6 - 5.
4. once completed, all the shot scores obtained are added and converted into a numerical value on a scale of 1-100.

Results

The following is a presentation of the quantitative analysis of students' pre-test and post-test concentration scores on implementing PE class management on archery material at the Elementary School of Muhammadiyah Jogokaryan Yogyakarta. The results of the quantitative analysis, as shown in

(Table 5), show that the descriptive statistics pre-test data has a minimum value of 18, a maximum value of 100, a mean value of 51.79, and a standard deviation of 22.770. As for the post-test results, it is known that the minimum value is 35, the maximum value is 100, the mean value is 63.30, and the standard deviation value is 19.635.

The results of the normality test, as shown in (Table 6), show that the output test of normality value for all pre-test and post-test concentration data, both in the Kolmogorov-Smirnov test and the Shapiro-Wilk test, has a significance

value (sig.) > 0.05, it can be concluded that the research data is normally distributed.

Table 5.
Descriptive Statistics

	Descriptive Statistics				
	N	Min	Max	Mean	Std. Dev
Concentration Pre-Test	14	18	100	51.79	22,770
Post-Test Concentration	14	35	100	63.00	19,635
Valid N (listwise)	14				

Table 6.
Tests of Normality

Class		Tests of Normality						
		Kolmogorov-Smirnova			Shapiro-Wilk			
Statistics	df	Sig.	Statistics	df	Sig.			
Concentration Test	Concentration Pre-Test	.124	14	,200*	,965	14	,809	
Results	Post-Test Concentration	,195	14	,157	,948	14	,536	

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

The results of the paired samples statistics test, as shown in (Table 7) show that the experimental pre-test value is 51.79 while the experimental post-test is 63.00, so there is a descriptive increase from the pre-test value to the post-test value. Thus, it can be concluded that implementing descriptive PE class management on archery material can improve students' concentration scores.

The results of the paired samples t-test on the implementation of PE on archery material, as shown in (Table 8) show that the output of the paired samples test obtained a sig. (2-tailed) is 0.067 > 0.05, so it can be concluded that

there is no difference in the average results of concentration scores on the pre-test and post-test of students after being given the application of PE material on archery

Table 7.
Paired Samples Statistics

		Paired Samples Statistics			
		Mean	N	Std. Deviation	Std. Error Mean
Pair 1	Concentration Pre-Test	51.79	14	22,770	6,086
	Post-Test Concentration	63.00	14	19,635	5,248

Table 8.
Paired Samples Test

		Paired Samples Test							
		Mean		Paired Differences		t	df	Sig.	
				Std. Error	95% CI of the Difference				
Mean	Std. Dev.	Mean	Lower	Upper					
Pair 1	Pre-Test Concentration - Post-Test Concentration	-11,214	20,977	5,606	-23,326	,897	-2,000	13	,067

The effectiveness of implementing PE classroom management on archery material in increasing students' concentration can be determined using the N-Gain Score Test analysis. The N-Gain Score Test analysis is designed to determine the effectiveness of applying a particular model or method to the results. Based on the results of the N-Gain Score Test

calculation, as shown in (Table 9), it is known that the average N-Gain score is 0.23, so it is included in the low effectiveness category. The minimum N-Gain value is -0.80, and the highest is 1.00. Thus, the effectiveness of implementing archery material PE class management in increasing concentration is included in the low effectiveness category.

Table 9.
N-Gain Score Test Results

No	Name	Pretest	Conversion	Archery Training Intervention 1-12												Posttest	Conversion	N-Gain
				1	2	3	4	5	6	7	8	9	10	11	12			
1	M.F.A	4	24	46	40	48	47	49	32	51	50	42	53	53	57	7	41	0.23
2	RCF	10	59	47	45	41	49	49	52	47	48	55	46	46	55	16	94	0.86
3	FN	10	59	48	43	29	34	36	45	47	44	36	28	29	36	12	71	0.29
4	NA	17	100	48	45	53	46	57	51	57	50	53	57	53	49	13	76	0.00
5	MZA	6	35	25	16	37	35	37	35	48	28	36	48	40	35	6	35	0.00
6	DAD	13	76	32	43	43	40	50	44	55	38	46	52	41	45	14	82	0.25
7	RKS	10	59	32	26	13	36	23	18	47	46	41	42	34	22	9	53	-0.14
8	MKA	11	65	23	40	27	23	28	33	51	55	49	31	40	23	17	100	1.00
9	RFA	7	41	37	37	26	43	41	50	39	40	43	32	39	38	9	53	0.20
10	APS	8	47	49	47	55	55	46	51	40	37	48	58	58	57	8	47	0.00
11	MIAR	8	47	56	47	54	55	49	57	54	55	52	53	51	54	11	65	0.33
12	AR	12	71	52	53	52	53	49	47	38	47	43	46	36	39	8	47	-0.80
13	AW	4	24	40	40	47	35	37	38	50	45	39	30	38	47	11	65	0.54
14	AYN	3	18	38	44	49	44	42	53	50	39	27	41	37	34	9	53	0.43

Average N-Gain	0.23
Minimum N-Gain	-0.80
Maximum N-Gain	1.00

Discussion

Based on the results of the paired samples statistics test in the experimental class group, the average pre-test score is 51.79, and the post-test score is 63.00, meaning there is a descriptive increase in the average students' concentration score. The results of the paired sample t-test on the implementation of PE in archery material obtain a value of Sig. (2-tailed) amounted to $0.067 > 0.05$, meaning that there is no significant increase in students' concentration scores between the pre-test and post-test after being given PE intervention with archery material. These results indicate that the intervention implementing PE class management with descriptive archery material is able to increase students' concentration. On the other hand, there is no significant increase between the pretest and posttest scores in the experimental class group. The increased concentration among students in the experimental class group is indicated by PE class management intervention regarding archery sports material. This is because there is a significant relationship between sports intensity and students' learning concentration power (Santoso & Anandaputra, 2017). Physical exercise has a relationship or influence with learning concentration (Sandayanti et al., 2021); (Cendana, 2020). Regarding the results of increasing concentration, which is not yet significant, this is in line with research (Fadhilah, 2022) & (Sadikin, 2019) that the relationship between exercise and the level of focus is low and there is no significant relationship between regular exercise and student learning concentration. However, the results of increasing students' concentration after receiving PE intervention with archery sports material are strengthened by research (Reigal et al., 2020), which shows a significant relationship between the level of physical fitness, attention, and concentration. There is a relationship between exercise and learning concentration, and there is also a relationship between learning motivation and learning concentration (Sandayanti et al., 2021).

It is also important to know that for the application of sports models, methods, and techniques in PE learning at school to run well, good classroom management (theory and practice) is also needed. The required role of lecturers, teachers, or trainers in managing classes includes planning, organizing, implementing, and evaluating/assessing in the field of educational sports or professional sports (Setyawan et al., 2023). Teachers must be able to carry out classroom management with preventive and corrective actions (Pasikha, 2017). An important role for teachers is needed in classroom management, including activities for organizing classes, arranging students' places, and arranging learning media (Asmara & Nindianti, 2019). A study (Rohiyatun & Mulyani, 2017) found a relationship between classroom management procedures and the smoothness of the teaching and learning process. Classroom management

activities are intended to create and maintain an effective and efficient classroom atmosphere and conditions (Wahid et al., 2018). The class manager has a significant role in creating an effective class (Hidayat et al., 2020). Teaching various types of sports also requires good and measurable class management and training management. It is because many factors can influence sports performance (for example, archery), including training management, teaching, application of methods and techniques, and physical, tactical, and mental aspects. (Setyawan, et al., 2023). Thus, it can be concluded that in general, physical activity, whether in the form of archery or other sports which is packaged with class management in PE practice and carried out regularly and measurably by students during childhood and adolescence, will be able to encourage improvements in their health and physical fitness which indirectly This will also directly improve your learning concentration as well.

Moreover, based on the results of the effectiveness test on the application of PE material for archery sports using the N-gain Score, an average value of 0.23 is obtained, including in the low effectiveness category with a minimum N-gain score of -0.80 and a maximum of 1.00. It contradicts previous research, which states that a significant relationship exists between physical fitness, attention, and concentration (Reigal et al., 2020). However, the effectiveness of implementing PE material in archery sports in increasing concentration is only in the low-level category, which is possible due to other unknown factors. However, the quantitative results of this application or intervention have increased students' concentration scores, as proven by the N-Gain value of 0.23. This research's findings align with the study (Fadhilah, 2022) and (Sadikin, 2019) that the relationship between physical activity or exercise and the level of focus is low correlated. There is a moderate or sufficient influence between archery on the concentration of elementary school students (Haryani, 2019). However, other research has also supported the results of this study, stating that there is an increase in concentration through various types of sports training and various methods. A study (Elzas, 2021) that also used the Grid Concentration Test instrument found a significant increase in the concentration of children aged 11-13 years through the physical activity of swimming. A study (Mulyadi et al., 2021) found that the life kinetic training method can increase the concentration of soccer athletes. There is a significant relationship between sports intensity and students' ability to concentrate on learning (Nusufi, 2016). More specifically, research (Susanti & Suryaningsih, 2019) and (Haryani, 2019) concluded that archery influences training or increasing concentration. This is because archery activities rely more on or involve elements of focused eye vision. In archery sports activities, players/athletes' minds are required to concentrate highly with a calm state of mind (not anxious), be able to control emotions, and their eyes must focus on aiming at the yellow

static target point. Those supposed activities are done regularly and repeatedly. In that case, they will train the eyes to focus and also train a person's mind to easily concentrate or focus on an object, goal, or a specific thing, ultimately encouraging the concentration of the mind. This is like research (Gündüz et al., 2017) (Ustun & Tasgin, 2020) (Wada & Takeda, 2020) that archery activities will have a positive impact on increasing concentration and stability of visual balance. Thus, it can be concluded that the implementation of Physical Education (PE) class management on archery sports material with more specific movement activities that encourage training to focus the mind and eyesight on a particular object will be able to increase elementary school students' concentration at the stage of physical and psychological growth and development. Although the increase in concentration is only at the low effectiveness category level, it may have been caused by unknown external factors.

Conclusion

The conclusion is that the descriptive implementation of Physical Education (PE) class management in archery sports material is able to increase the concentration of elementary school (SD) students. Moreover, there is no significant increase between the pretest and post-test scores in the groups or classes of students given this intervention. The increase in students' concentration is indicated due to the PE intervention with archery sports material. Implementing PE material on archery with more specific movement activities will encourage training to focus the mind and eyesight on a particular object to increase elementary school students' concentration at the physical and psychological growth and development stage. This is also reinforced by previous research, which stated that there is an influence of archery in training or increasing concentration. Other research has also strengthened these results that a significant relationship exists between exercise intensity and students' learning concentration. However, although the implementation of PE material on archery sports is able to increase students' concentration, it is only included in the low effectiveness category. Unknown factors can cause it, so further research needs to be conducted. The research results also provide findings that archery can be used as a means of physical education and physical fitness and as a health therapy to focus the eye's gaze in paying attention to an object to increase concentration power in learning various important things.

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Conflicts of interest

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