The Influence of Gadget Usage Intensity and Football Training Commitment on Elementary School Students' Learning Concentration Levels

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Introduction

(Background & Empirical Phenomenon)

Understanding the conflict of interests between the high exposure to digital screen-time at home and active physical responsibilities in school extracurriculars.

01. Educational Context

Elementary school represents a crucial golden phase for cognitive growth. Successful learning acquisition during classroom hours is heavily dependent on maintaining optimal attention spans and concentration.

02. The Screen Challenge

Modern primary school children face extreme visual distractions from digital devices. High gadget usage intensity reduces active outdoor play, causing classroom passiveness and lower focus limits.

03. Extracurricular Role

Structured soccer extracurriculars serve as physical and mental balancing environments. They stimulate neurological alertness, physical fitness, and provide a healthy lifestyle counterweight.

Theory, Research Gap, & Objective

Theoretical Foundations

Neurocognitive Impact of Screen Exposure

Disrupts executive planning in the prefrontal cortex, hindering student focus and capability to filter irrelevant environmental stimuli in class.

Neurobiological Support of Physical Training

Coordination activities (like soccer play) increase oxygen flow and stimulate brain cell growth, which helps restore mental concentration and stamina.

Study Value & Goal

Identified Research Gap

Most past research evaluates gadget addiction or physical education separately. Highly limited empirical research integrates both contrasting behaviors (active vs. passive) in one model.

Primary Research Purpose

To examine the partial and simultaneous influence of high gadget usage intensity (X_1) and football training commitment (X_2) on students' learning concentration levels (Y).

Conceptual Direction: High screen attachment (X_1) is hypothesized to negatively affect concentration, while disciplined soccer commitment (X_2) acts as a powerful cognitive buffer.

Research Design & Sampling

Design & Demographics

Approach: Quantitative causal-associative using multiple linear regression design.

Context & Sample: Evaluated all active elementary soccer extracurricular participants at SDN Rancakole 04 (Census total sampling of 30 students aged 10-12 years).

Eliminating Response Bias: Utilized a 4-point Likert scale (removing the middle neutral option) to prevent central tendency behavior in young respondents.

Instrumentation & Scales

VAR	EVALUATED DOMAIN	VALIDATED TOOL	KEY MEASURES
X_1	**Gadget Intensity**	SAS-SV (Kwon)	Screen addiction, emotional attachment
X_2	**Sport Commitment**	SCMS (Scanlan)	Attendance, training discipline, persistence
Y	**Learning Focus**	CAS (Papadopoulos)	Visual & auditory classroom focus

Descriptive Stats & Model Fit

Variable Descriptive Summary

STATISTICAL VARIABLE	N	MIN	MAX	MEAN	SD
Intensitas Gadget (X_1)	30	12	39	24.97	8.684
Komitmen Sepak Bola (X_2)	30	12	40	27.30	8.691
Konsentrasi Belajar (Y)	30	14	39	27.23	7.731

Residual Normality Result:

Kolmogorov-Smirnov test statistic = 0.079 with Asymp. Sig. (2-tailed) = 0.200 ($p > 0.05$). Since residuals are normally distributed, linear regression was conducted.

Variable Descriptive Summary

R (RELATION)	R^2 (R SQUARE)	ANOVA F-VALUE	SIGNIFICANCE
0.996	0.992 (99.2%)	1772.023	0.000 ($p < 0.05$)

Residual Normality Result:

Kolmogorov-Smirnov test statistic = 0.079 with Asymp. Sig. (2-tailed) = 0.200 ($p > 0.05$). Since residuals are normally distributed, linear regression was conducted.

Regression & Interpretation

Coefficient Estimation

VARIABLE MODEL	B COEFFICIENT	STD. ERROR	BETA	T-STAT	SIG.
(Constant)	7.400	5.058	--	1.463	0.155
Intensitas Gadget (X_1)	-0.084	0.097	-0.094	-0.865	0.395
Komitmen Sepak Bola (X_2)	+0.803	0.097	0.903	8.282	0.000

$$Y = 7.400 - 0.084X_1 + 0.803X_2$$

Key Theoretical Implications

Non-Significant Negative Impact of Gadgets

X_1 shows a negative path (-0.084) but is statistically non-significant (p = 0.395). Excessive gadget use alone does not automatically collapse focus if buffered correctly.

Highly Dominant Sports Buffer Effect

X_2 shows a profoundly strong, positive, and significant impact (t = 8.282, p < 0.001). Every 1-point rise in sports commitment increases attention scores by 0.803 points.

Conclusions & Recommendations

Core Conclusions

- Gadget usage and sports training commitment simultaneously determine 99.2% of academic concentration.
- Partially, only football training commitment exerts a significant positive effect on focus.
- High commitment to physical exercises successfully offsets/neutralizes the negative cognitive effect of devices

Practical Advice

- **Collaborative Policy:** Schools and parents must collaborate to maintain structured physical routines.
- **Active Intervention:** Promote football and active sports as a too to replenish cognitive resources.
- **Digital Literacy:** Balance visual digital exposure with dynamic physical interactions on the socce field.

Study Limitations

- **Sample Size:** Strictly limited to 30 football participants in one elementary school (SDN Rancakole 04).
- **External Predictors:** Did not capture parent support, environmental variables, or coach style.
- **Future Path:** Future studies should integrate multi-center samples and psychological mediators.

References & Acknowledgements

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THANK YOU

Deep appreciation to the principal, faculty, parents, and students of **SDN Rancakole 04** for supporting this research.

Contact / Questions

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