The Understanding of Teaching Games for Understanding (TGFU) Towards Learning Motivation and Motor Skills Among Physical and Health Education Students in Local University in Puncak Alam

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ABSTRACT

This study discusses the cognition of Teaching Games for Understanding (TGFU) and its connection with learning motivation and motor skills among Physical and Health Education students in a local university located in Puncak Alam. Basing their theories on constructivist learning theory and Self-Determination Theory, past research has identified that TGFU is a method that is effective as student-centered, game-based learning where students show more engagement, intrinsic motivation and application of skills compared to traditional techniquebased pedagogy. A quantitative cross sectional research design was used to collect data in structured questionnaires based on the Intrinsic Motivation Inventory (IMI) and self-reported motor skills tests. The number of undergraduates that were involved in the study was 231 and descriptive statistics and Pearson correlation were used to analyze the data. The results indicated that there were significant positive correlations between TGFUrelated learning situations and the significant aspects of intrinsic motivation including enjoyment, perceived competence, effort, perceived value, challenge, and performance satisfaction and weak or negative associations with perceived pressure. Moreover, TGFU was also strongly linked with the gains of various motor skills such as running, jumping, throwing, balance, coordination, speed and agility, which shows that cognitive and physical learning is improved by the knowledge of game tactics and in decision-making. Overall, the results demonstrate that TGFU is an effective tool to facilitate the development of meaningful learning, increased motivation, and motor skills development in physical education and may be valuable in improving the curriculum and teaching methods in higher education settings.

Keywords: Teaching Games for Understanding (TGFU), Self-Determination Theory, Intrinsic Motivation, Motor Skills, Physical Education

INTRODUCTION

Health and physical education are the sphere that underwent immense changes and the new approaches to teaching it began to gain more recognition because of the opportunities and the potential the innovative teaching method has to change the results of the learning process and engage the students. Thus, one of such pedagogical strategies applicable in teaching games is Teaching Games for Understanding (TGFU) which is based on the student-centered model in which understanding and practical implementation of the game principle is the key to knowledge rather than the mere mastery of the technical skills.

TGFU is based on constructivist learning theories that promote learning through practical works and participation. By combining learning within the framework of games and enabling students to learn more about the tactic and strategic elements, TGFU facilitates cognitive engagement and decision-making in the students.

Instead of using repetitive skills practices, TGFU allows students to learn in altered game scenarios in which they must think, make decisions, and solve problems as they play.

Research studies have shown that by teaching students to enjoy and find learning more meaningful and applicable, TGFU can significantly enhance student engagement and intrinsic motivation. Games-based learning enables students to feel more fun, more independent, and more engaged, which may make them more active in physical education classes. Besides motivational advantages, TGFU has been discovered to facilitate motor skill acquisition as it lets the students practice skills in realistic and dynamic scenarios to enable them to apply whatever they acquire to other sports and physical tasks.

The issue of student disengagement and the rise of the biological population with sedentary lifestyles are the reasons why innovative teaching methods in physical education are necessary. Conventional methods do not provide students with contextual learning opportunities to understand the strategies and principles of the games better and may cause physical education to be boring and irrelevant and decrease the level of intrinsic motivation of students to attend and be active participants.

Furthermore, the Malaysian educational background lacks an empirical basis on the effectiveness of TGFU. The majority of TGFU research has been carried out in the West, which has left a strong gap in realizing its effects on students in various cultural and educational backgrounds. This gap underscores the necessity of local studies that could ascertain whether the accrued benefits in other places also cut across to the Malaysian students.

Moreover, the question of the effectiveness of the TGFU is especially valuable, taking into consideration a local university in Puncak Alam where the backgrounds of a different type of student and the degrees of their prior experience with Physical Education are the factors that require adaptive and engaging teaching practices. This study is aimed at determining whether TGFU implementation can lead to an improved outcome in learning, that is, in terms of motivation and motor skills development among the students of the Physical and Health Education in a local university in Puncak Alam.

Overall, this research contributes to the general discussion on student-centered learning and is useful in facilitating the overall educational growth through the analysis of the direct and indirect effects of TGFU on learning motivation and motor skills.

RESEARCH METHODOLOGY

This study describes the research design employed in the study in order to determine the effectiveness of Teaching Games for Understanding (TGFU) in enhancing learning motivation and motor skills in Physical and Health Education students in local university in Puncak Alam. This paper discusses research design, population and sampling procedures, the research instruments, data collection procedures and descriptive and inferential analysis methods used to analyze the data.

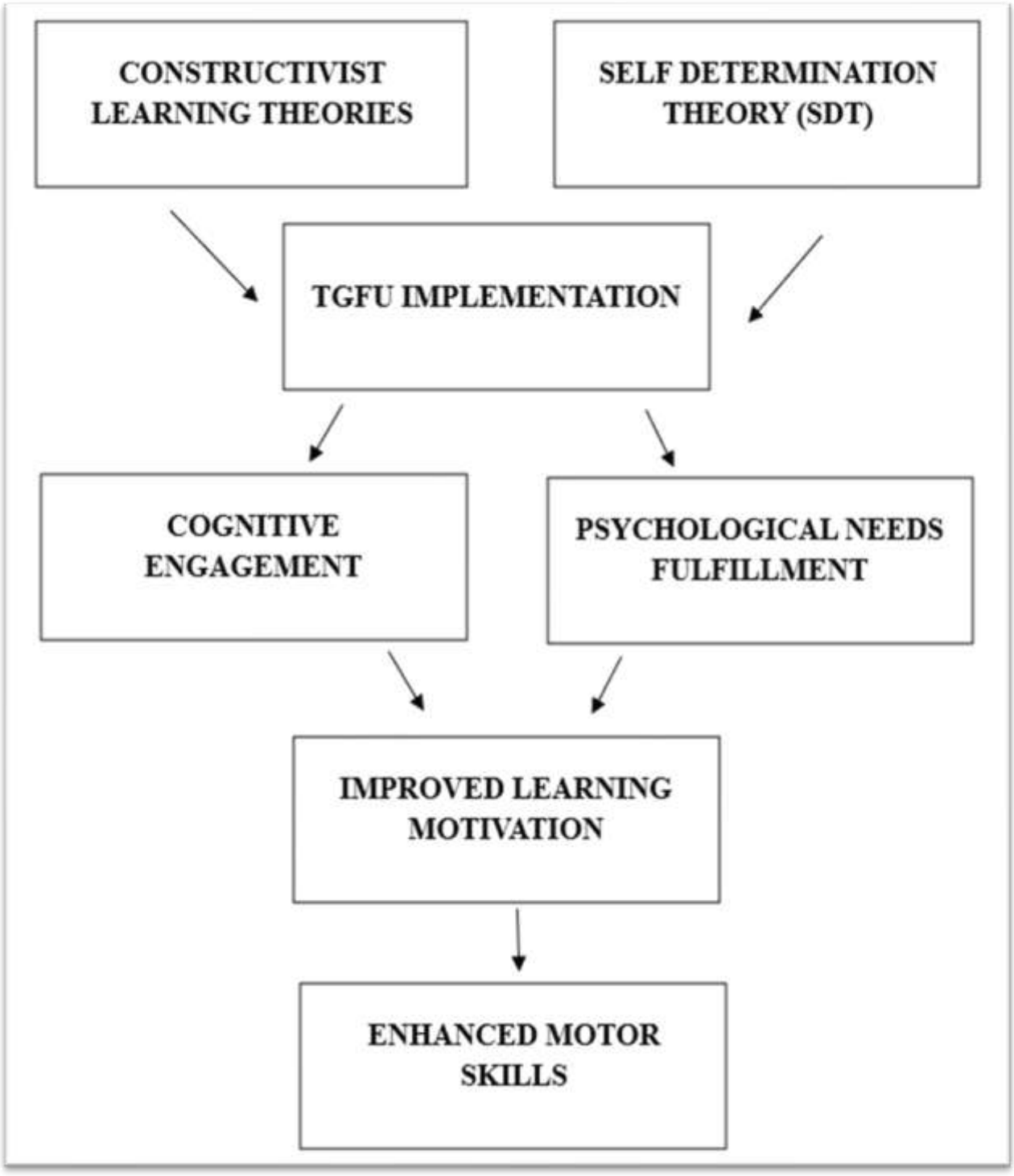
Research Design

The research design utilized in this study is a quantitative research design because it aims to measure the effect of TGFU on the motivation to learn and motor skill. Particularly, the present study takes a quantitative crosssectional survey to collect information at a single time by using a structured questionnaire. This method allows perceiving the perceptions and experiences of participants in receiving TGFU easier without any long-term or experimental measures.

Such quantitative cross-sectional research designs have been effective in the past in researching the motivation, perceived need satisfaction, engagement, and learning outcomes of students in physical education. Despite the fact that it is impossible to deduce causal relations to use in this type of design, the results can provide significant empirical data that can be used in the future in longitudinal or experimental studies on TGFU implementation.

Conceptual Framework

Figure 1: Conceptual Framework



The independent variable is Teaching Games for Understanding (TGFU), whereas the learning motivation and motor skills are the dependent variables. The framework assumes that the introduction of TGFU has a positive effect on the learning motivation and motor skills proficiency of students in relation to the use of traditional ways of physical education.

This correlation is mediated by important psychological processes, which are based on Self-Determination Theory, namely autonomy, competence, and relatedness, which play a capital role in developing intrinsic motivation and significant involvement in the learning process. Game-based and student-centered learning experiences of TGFU help to engage students in active involvement of decision-making, application of tactical and strategic thinking, and cognition of game scenarios.

Population and Sample

This study will be based on a population comprised of Physical and Health Education students in one of the local universities in Puncak Alam. The respondents would be generally in the age bracket of early adulthood aged between 18 years and below 30 years old. The sample consists of both male and female students.

Table 1: Population and Sample Size

Population Size (N)	Sample Size (S)
360	186

Table 2: Krejcie and Morgan (1970)

N	*S*	*N*	*S*	*N*	*S*
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	1000000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

In this research, the non-probability purposive sampling design has been used to sample respondents who were most appropriate in the objectives of the research. Considering that the total population of 360 Physical and Health Education students is ample, a sample size of 186 respondents was considered sufficient to attain adequate representation and statistical reliability based on Krejcie and Morgan (1970).

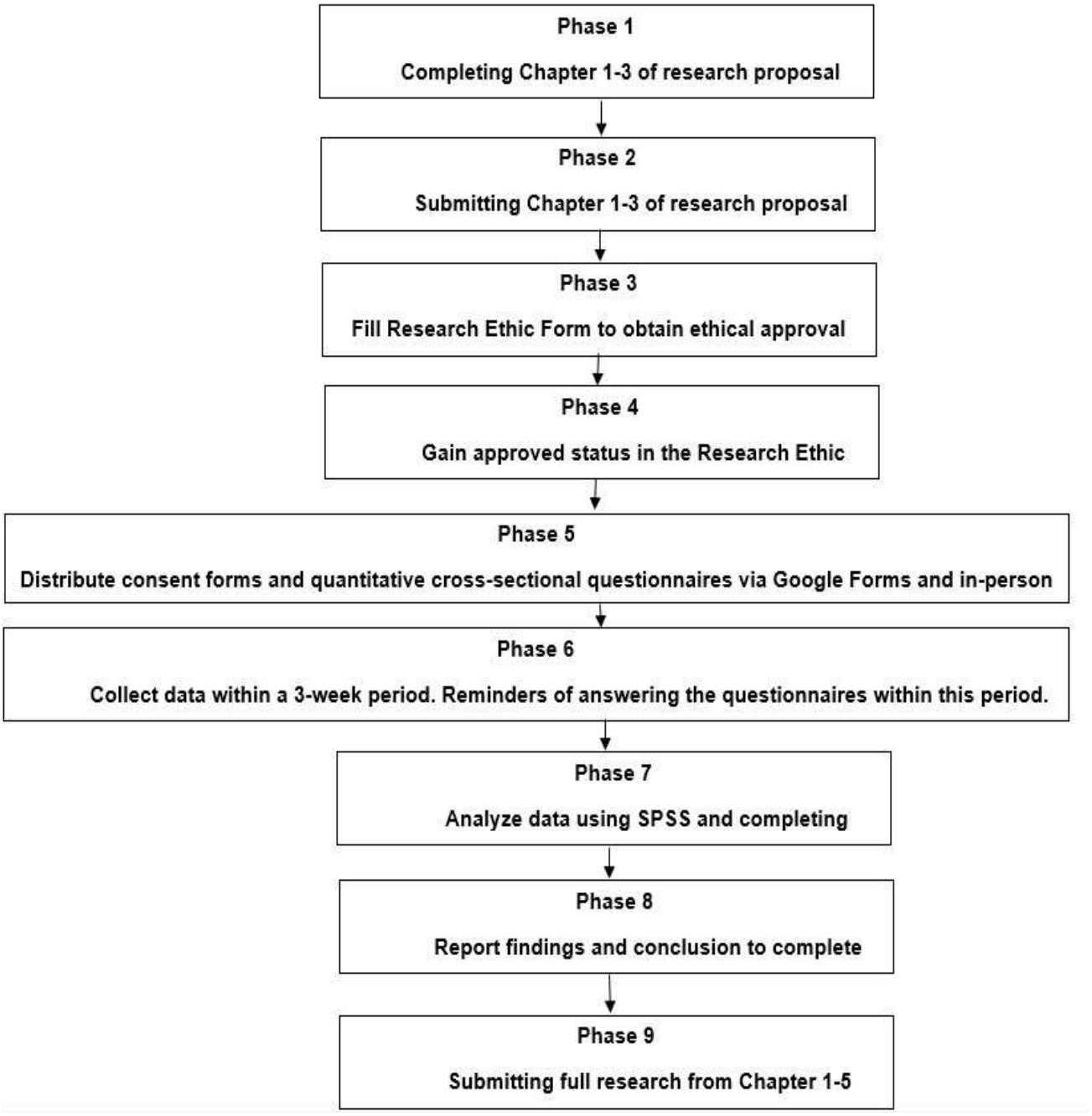
Data Collection Instrument

The questionnaire is divided into five sections consisting of demographic information, learning motivation, motor skills assessment, perception of TGFU method, and comparison with traditional method.

The Intrinsic Motivation Inventory (IMI) is an instrument that has been proven to be a strong instrument in educational and psychological studies to find motivation levels in students under various dimensions. Motor skills assessment is a self-report-based study in which the respondents assess their perceived ability of motor skills on a scale of 1 to 5.

Data Collection Procedures

Figure 2: Data Collection Procedures



Consent forms and structured questionnaires will be circulated on paper and through Google Form during the data collection stage to make them accessible to all respondents. This will be followed by three weeks of data collection to give time to the participants to fill in the forms. Regular follow-ups and reminders will be done to spur up the high response rate.

Once data has been collected, data will be summarized by the researcher in one data set so that data collected in printed forms is properly entered with data sent through the computer. The cleaning of data will also entail the confirmation of missing or conflicting responses.

Data Analysis

Descriptive statistics were used to summarize the data collected, including measures of central tendency and dispersion to obtain a comprehensive outlook of the learning motivation levels and the level of motor skills of the participants.

To address the research objectives, the researcher employed Pearson Correlation data analysis to test the direction and strength of the linear relationship between students' understanding of Teaching Games for Understanding (TGFU) approach and learning motivation, as well as between the TGFU approach and motor skills.

RESULTS AND DISCUSSION

Results

This chapter highlights the findings of the data analysis performed in order to respond to the objectives of the study. Data was analysed through SPSS also known as Statistical Package of the Social Sciences. These are the reliability analysis, the descriptive and inferential analysis. The consistency of the research instruments was determined by conducting a reliability analysis.

Table 3: Respondents' Demographic Data

Age	**Frequency**	**Percentage (%)**
18-20	48	20.8
21-23	115	49.8
24-26	61	26.4
27 and above	7	3.0
Gender		
Male	65	28.1
Female	166	71.9
Year of Study		
Year 1	14	6.1
Year 2	81	35.1
Year 3	56	24.2
Year 4	80	34.6
Previous Experience with Physical Education		

None	19	8.2
Less than 1 year	30	13.0
1-2 years	71	30.7
More than 2 years	111	48.1

A total of N=231 respondents participated in the study. The respondents were categorized into four categories of age groups which are 18–20 years old, 21–23 years old, 24–26 years old and 27 years old above. Majority of the respondents were within 21–23 years old. In terms of gender, the gender distribution represents from both male and female students. 28.1% were male and 71.9% were female. Regarding the year of study, respondents were primarily from Year 2 followed by Year 4, Year 3 and Year 1.

Table 4: Reliability Statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
.913	16

The reliability statistics showed a Cronbach's Alpha value of .913 for 16 items, indicating a high level of internal consistency of the research instrument.

Table 5: Pearson Correlation between Physical Education and Learning Motivation

Correlations

		I enjoy participating in Physical Education classes.	I feel competent when performing activities in Physical Education.	I put a lot of effort into Physical Education activities.	I feel pressured while participating in Physical Education activities	I value the benefits of Physical Education.	I find Physical Education activities challenging and exciting.	I feel relaxed when engaging in Physical Education activities.	I am satisfied with my performance in Physical Education
I enjoy participating in Physical Education classes.	Pearson Correlation	1	.259**	.360**	-0.105	.285**	.561**	0.024	.254**
	Sig. (2-tailed)		0	0	0.154	0	0	0.745	0
	N	185	185	185	185	185	185	185	185
I feel competent when performing activities in Physical Education.	Pearson Correlation	.259**	1	.175*	.196**	.780**	.373**	.498**	.698**
	Sig. (2-tailed)	0		0.017	0.007	0	0	0	0
	N	185	185	185	185	185	185	185	185

I put a lot of effort into Physical Education activities.	Pearson Correlation	.360**	.175*	1	-.220**	0.139	.546**	0.102	0.12
	Sig. (2-tailed)	0	0.017		0.003	0.06	0	0.168	0.102
	N	185	185	185	185	185	185	185	185
I feel pressured while participating in Physical Education activities	Pearson Correlation	-0.105	.196**	-.220**	1	.189*	-.179*	.239**	.193**
	Sig. (2-tailed)	0.154	0.007	0.003		0.01	0.015	0.001	0.008
	N	185	185	185	185	185	185	185	185
I value the benefits of Physical Education.	Pearson Correlation	.285**	.780**	0.139	.189*	1	.329**	.655**	.726**
	Sig. (2-tailed)	0	0	0.06	0.01		0	0	0
	N	185	185	185	185	185	185	185	185
I find Physical Education activities challenging and exciting.	Pearson Correlation	.561**	.373**	.546**	-.179*	.329**	1	0.019	.206**
	Sig. (2-tailed)	0	0	0	0.015	0		0.798	0.005
	N	185	185	185	185	185	185	185	185
I feel relaxed when engaging in Physical Education activities.	Pearson Correlation	0.024	.498**	0.102	.239**	.655**	0.019	1	.481**
	Sig. (2-tailed)	0.745	0	0.168	0.001	0	0.798		0
	N	185	185	185	185	185	185	185	185
I am satisfied with my performance in Physical Education	Pearson Correlation	.254**	.698**	0.12	.193**	.726**	.206**	.481**	1
	Sig. (2-tailed)	0	0	0.102	0.008	0	0.005	0	
	N	185	185	185	185	185	185	185	185

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Results pertaining to Research Objective 1 displayed significant positive correlation between most of the elements of intrinsic motivation of Physical Education such enjoyment, perceived competence, effort, perceived

value, challenge and excitement, relaxation and satisfaction with performance. Competence, effort, perceived value and challenge and excitement had significant relationships with enjoyment. Perceived pressure was however loosely coupled with a number of motivation variables where greater pressure was coupled with lesser intrinsic motivation.

Table 6: Pearson Correlation between motor skills and perception of the TGFU approach

Motor skill: **Running**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.571***	0.125	.519**	.586**	.464**	.154*	.546**	.514**
Sig. (2-tailed)	0	0.09	0	0	0	0.037	0	0
N	185	185	185	185	185	185	185	185
Motor skill: Jumping	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.253**	.626**	.145*	.208**	0.044	.579**	0.1	.150*
Sig. (2tailed)	0.001	0	0.048	0.004	0.556	0	0.175	0.042
N	185	185	185	185	185	185	185	185
Motor skill: **Throwing**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.589**	-0.065	.719**	.326**	0.597**	.391**	.375**	.697**
Sig. (2tailed)	0	0.377	0	0	0	0	0	0
N	185	185	185	185	185	185	185	185
Motor skill: **Catching**	Traditional	TGFU → Engagement	TGFU → Game	TGFU → Enjoyment	Traditional	TGFU → Motor skill	TGFU → Confidence	Overall preference →

	methods → Technical skills		strategies understanding		methods → Motivation	development		TGFU
Pearson Correlation	.562**	.236**	.474**	.454**	0.281**	.154**	.661**	.419**
Sig. (2tailed)	0	0.001	0	0	0	0.037	0	0
N	185	185	185	185	185	185	185	185
Motor skill: **Kicking**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.562**	.236**	.474**	.454**	0.281**	.154**	.661**	.419**
Sig. (2tailed)	0	0.001	0	0	0	0.037	0	0
N	185	185	185	185	185	185	185	185
Motor skill: **Balance and coordination**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.443**	-0.061	.782**	.446**	.576**	.437**	.452**	.701**
Sig. (2tailed)	0	0.408	0	0	0	0	0	0
N	185	185	185	185	185	185	185	185
Motor skill: **Speed and agility**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.535**	0.005**	.748**	.462**	.620**	.426**	.387**	.705**
Sig. (2tailed)	0	0.408	0	0	0	0	0	0
N	185	185	185	185	185	185	185	185

Traditional methods: **Technical skills**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	1	0.136	0.435**	.343**	0.543**	.155*	.358**	0.432**
Sig. (2tailed)	0	0.064	0	0	0	0.036	0	0
N	185	185	185	185	185	185	185	185
TGFU: **Engagement**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.136**	1	0.053	.273**	0.056	.543**	.169*	0.117
Sig. (2tailed)	0.064		0.476	0	0.446	0	0.021	0.113*
N	185	185	185	185	185	185	185	185
TGFU: **Game strategies understanding**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.435**	0.053	1	.493**	0.594**	.425**	.574*	0.758**
Sig. (2tailed)	0.064		0.476	0	0.446	0	0.021	0.113*
N	185	185	185	185	185	185	185	185
TGFU: **Enjoyment**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.343**	.273**	.493**	1	.315**	.0.105	.499*	.564**
Sig. (2tailed)	0	0	0		0	0.154	0	0

N	185	185	185	185	185	185	185	185
Traditonal methods: **Motivation**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.543**	0.056	.594**	.315**	1	.333**	.365**	.658**
Sig. (2tailed)	0	0.446	0	0		0	0	0
N	185	185	185	185	185	185	185	185
TGFU: **Motor skill development**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.543**	0.056	.594**	.315**	1	.333**	.365**	.658**
Sig. (2tailed)	0	0.446	0	0		0	0	0
N	185	185	185	185	185	185	185	185
TGFU: **Confidence**	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.358**	.169*	.574**	.499**	.365**	.210**	1	.540**
Sig. (2tailed)	0	0.021	0	0	0	0.004		0
N	185	185	185	185	185	185	185	185
Overall preference → TGFU	Traditional methods → Technical skills	TGFU → Engagement	TGFU → Game strategies understanding	TGFU → Enjoyment	Traditional methods → Motivation	TGFU → Motor skill development	TGFU → Confidence	Overall preference → TGFU
Pearson Correlation	.432**	0.117	.758**	.564**	.0658**	.463**	.540**	1

Sig. (2tailed)	0	0.113	0	0	0	0	0	0
N	185	185	185	185	185	185	185	185

Regarding Research Objective 2, the results showed that there were positive and significant effects of the motor skills of students, including running, jumping, throwing, balance and coordination, and speed and agility, and their perceptions of the TGFU approach. Strong correlations were observed between balance and coordination with learning game strategies through TGFU and between speed and agility with overall preference for TGFU. These findings indicate that students with higher motor skill development tended to perceive TGFU as more engaging, enjoyable and effective compared to traditional teaching methods.

DISCUSSION

This chapter discusses the findings presented by interpreting the results in relation to the research objectives and existing literature. The discussion focuses on the relationships between the Teaching Games for Understanding (TGFU) approach, students' intrinsic motivation, and motor skill development in Physical and Health Education.

The findings indicate that learners who enjoy and find Physical Education a meaningful activity tend to be intrinsically motivated, engaged, and willing to engage in the learning activities. These results agree with those of previous researchers who found that intrinsic motivation was stronger in students who were shown TGFU or other game-based and student-centred strategies than in students who received a traditional technique-centered instruction.

Theoretically these results are very consistent with Self-Determination Theory which highlights autonomy, competence, and relatedness as essential psychological needs which are the basis of intrinsic motivation. The positive correlations amid the enjoyment, competence, effort and perceived value show that students that feel competent and autonomous in their learning activities tend to invest more effort and value in Physical Education.

The poor and negative correlation between the variables of perceived pressure and intrinsic motivation indicate that, in case students are under excessive pressure, the enjoyment and motivational levels of students can be diminished. Such students might be hesitant or not at ease with the openness of the game-based learning, especially when they are not confident, have no prior experience or understanding of the tactics.

Regarding motor skill development, the results imply that students will develop motor knowledge by constructively engaging with game situations. Instead of repeating the movements, students will need to adapt to them, make decisions, and use the skills depending on the dynamic conditions. This could be the reason behind the especially good relations that have been observed between game strategy knowledge and complex motor skills like balance, coordination, and agility.

Implications

This study brings out this aspect which is the need to ensure that student-centered teaching methods are integrated in Physical Education. The efficiency of TGFU method in the development of motor skills and engagement shows that Physical Education teachers should explore the implementation of game-based learning and tactical learning methods in their classes.

The curriculum development aspect would favor inclusion of a pedagogical strategy like TGFU in the Physical Education curriculum. Inclusion of TGFU into the curriculum can be used to make sure that Physical Education programs are more relevant, engaging, and responsive to the needs of the students.

Limitations

This study has several limitations that must be noted irrespective of its contributions. The correlational research design does not provide an opportunity to develop a causal relationship between TGFU approach, motivation to

learn, and motor skill development. The data were obtained through self-reported questionnaires, where there is the possibility of bias in response. The sample was restricted to the students at a local university in Puncak Alam.

CONCLUSION AND RECOMMENDATIONS

In conclusion, this study demonstrated significant relationships among intrinsic motivation components in Physical Education and provided evidence supporting the effectiveness of the TGFU approach in enhancing motor skills and student engagement. Despite certain limitations, the study contributes valuable insights to the field of Physical Education and offers practical implications for teachers and curriculum developers. Future research should consider using experimental or longitudinal designs to examine the causal effects of teaching approaches such as TGFU on motor skills and intrinsic motivation. Future studies could incorporate qualitative methods such as interviews or observations to gain richer insights into students' perceptions and learning experiences.

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