Journal of Education and Educational Research
ISSN: 2957-9465 | Vol. 7, No. 3, 2024

Knowledge and Participation of Physical Education Teachers in the Official Sports Events

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Abstract: 21st century teachers are expected to develop 21st century competencies in students in more diverse classrooms, while increasing the study of teaching and learning. Teachers must update their teaching techniques, adopt creative teaching methods, and mobilize multiple sources of information to achieve this goal. In this paper, 150 teachers from Guangdong University of Science and Technology (GUT), Guangdong Foreign Studies University (GUFS) and Guangdong Institute of Science and Technology (GDPST) were evaluated by using literature, expert interviews, questionnaire and mathematical statistics to evaluate their knowledge in physical education teaching, including their physical education teaching experience, contact with students and their knowledge The ability to integrate teaching technology. This will further determine the level of teachers' participation in official sporting events, including their willingness, athletic skills and the impact of participation. The main conclusions of the study are as follows:1. The sample used in the study was primarily composed of teachers that were aged 25-29 years old and were mostly female. Their teaching experience ranged from 10 years and above, making the sample have a large population of well-experienced educators. Lastly, during sports events, these teachers would mostly have the role of being officials when participating. 2.For teaching knowledge, the respondents showed to have agreeable positive responses in all fields of experience, engagement, and technology. Although, the knowledge on technology scored the highest, indicating that the respondents had more knowledge in using this when participating in sports events. 3.The assessments showed no significant relationship in the teachers' knowledge in teaching sports when compared to the different demographic factors assessed. 4.For teachers' participation in sports events, there was a fairly agreeable positive assessment for the overall analysis. Although when looking at the indicators individually, only the impacts from participation scored positively, making this a strong indicator in the teachers' participation. On the other hand, willingness and skills scored poorly, indicating the need to improve these two areas.5. The assessments showed no significant relationship in the teachers' participation in sports when compared to the different demographic factors assessed. 6.Lastly, a positive correlation was found only between the teachers' engagement and the teachers' impacts from participation, confirming that these two indicators are linked and affect one another in the study.

Keywords: Teachers; Physical Education; Sports Activities; Official Sporting Events.

1. Introduction

Teachers in the twenty-first century are expected to build students' 21st century abilities in more diverse classrooms, supported by increased research on teaching and learning. Teachers must update their teaching techniques, adopt creative teaching approaches, and mobilize multiple sources of information to accomplish this. This ongoing refreshment of teachers' professional knowledge is vital to their professionalization (Knudsen et al., 2020).

To be involved in a sports event at school, a teacher can take on various roles such as being a coach, an organizer, a referee or umpire, a spectator, a promoter, fitness and health adviser, or a volunteer. Teachers can offer their time and expertise to help with a variety of activities during sporting events. Setting up and disassembling equipment, maintaining scoreboards, and aiding with first aid are all examples. Teachers may help to their kids' overall growth and well-being by actively engaging in sports events, promoting a good and active school atmosphere.

The goal of this research is to get practical information about how instructors may enhance their practice in order to maximize the potential for life skill development through participation in school sports. In line with this, the current study will evaluate the knowledge of physical education teachers in teaching sports program as regards to their experiences in teaching sports, engagement with students, and their ability to incorporate teaching technologies. It will further determine the teachers' level of participation in official sports events as regards to their willingness, skills in sports, and impacts from participation. The researcher sought to conduct this study in order to enhance the existing pedagogy related to teachers' participation in official sports events. There is only one study that has been conducted related to teachers' participation in sports events in China, however it did not include the knowledge of the teachers as a measure or determinant. This research aims to fill that gap.

2. Statement of the Problem

The current study will evaluate the knowledge of physical education teachers in teaching sports program as regards to their experiences in teaching sports, engagement with students, and their ability to incorporate teaching technologies. It will further determine the teachers' level of participation in official sports events as regards to their willingness, skills in sports, and impacts from participation. Specifically, the research will provide answers to the following questions:

1.What is the profile of the teacher-respondents in terms of
1.1Age
1.2Sex
1.3Years of teaching experience, and
1.4Participation role in the sports events?

2.What is the assessment on the teachers' knowledge in teaching sports programs in terms of:

2.1Teachers' experiences in the sport

2.2Teachers' engagement with students, and

2.3Teachers' ability to incorporate technology?

3.Is there a significant difference on the assessment of the teachers'' knowledge in teaching sports programs when their profiles are taken as test factors?

4.What is the assessment of the level of teachers' participation in official sports events in terms of:

4.1Willingness to participate,

4.2Skills in Sports, and

4.3Impacts from Participation?

5.Is there a significant difference on teachers' level of participation in official sports events when their profiles are taken as test factors?

6.Is there a significant relationship between the assessment of the teachers' knowledge in teaching sports and their level of participation?

7.Based on the findings, what capacity building program can be proposed?

3. Scope and Delimitation of the Study

The current study aims to determine the knowledge of physical education teachers in teaching sports program as regards to their experiences in teaching sports, engagement with students, and their ability to incorporate teaching technologies. It will further determine the teachers' level of participation in official sports events as regards to their willingness, skills in sports, and impacts from participation.

The study will be conducted in three (3) selected institutions in Guangdong Province; namely, Guangdong University of Technology (GUT), Guangdong University of Foreign Studies (GUFS), and Guangdong Polytechnic of Science and Technology (GDPST). The study will ensure to follow the research guidelines and ethical considerations of Adamson University where the researcher is from, and also obtain permissions from the three (3) participating schools in China where the sample will be selected.

In total, there are 150 teacher-respondents who participated in the research and 50 of the teachers were picked from each of the participating schools. Some of the limitations of the study are geographical limitations and time constraints. This research will only be conducted in Guangdong province, and the time is limited within 2023/2024 academic year.

4. Theoretical Framework

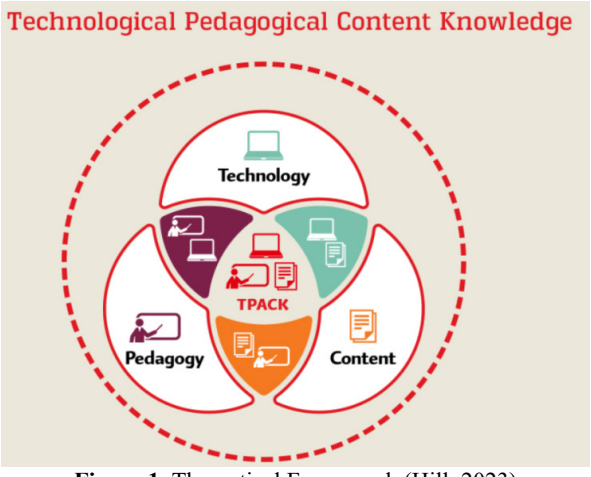

Figure 1. Theoretical Framework (Hill, 2023)

The current study is anchored on the TPACK theory. TPACK is an acronym that stands for Technological Pedagogical Content Knowledge. It is a theory that was established to describe the collection of knowledge that instructors require in order to teach a topic successfully while using technology.

Punya Mishra and Matthew J. Koehler of Michigan State University pioneered the TPACK framework in 2006. This framework highlights three categories of expertise required for successful educational technology integration.

The present study aims to incorporate this framework in evaluation of the teachers' knowledge in sports program and education. The diagram's center, also known as TPACK, demonstrates a complete grasp of how to educate with technology. The goal of TPACK is to understand how to use technology to enhance student learning experiences while teaching topics. Most teachers and administrators realize the benefits of technology in the classroom, whether it is educating students for a technologically driven society or assisting in the simplification of course, school, and district management. However, far too many people believe that technology will solve all their problems. It is frequently presumed, whether deliberately or unconsciously, that digital technologies can improve education on their own.

This is why the TPACK framework is so vital. Many educators could believe that incorporating a superb LMS into the class plan will improve learning. However, TPACK demonstrates that there is a link between technology, content, and pedagogy, and that the deliberate mixing of them is critical (Hill, 2023).

5. Hypotheses

Ho1. There is no significant difference on the assessment of the teachers' knowledge in teaching sports programs when their profiles are taken as test factors.

Ho2. There is no significant difference on teachers' level of participation in official sports events when their profiles are taken as test factors.

Ho3. There is no relationship between the assessment of the teachers' knowledge in teaching sports and their level of participation.

6. METHODOLOGY

6.1. Research Design

This study will be conducted using descriptive-quantitative research design to evaluate the teachers' knowledge and extent of participation in sports events at three (3) selected institutions in Guangdong province. A descriptive research design is a sort of research design that seeks information to characterize a phenomena, situation, or population in a methodical manner. It specifically assists in answering the what, when, where, and how questions about the research challenge rather than the why (Voxco, 2021). This form of research can be carried out by a researcher utilizing a variety of approaches. However, this paper made use of specifically a quantitative data.

6.2. Research Locale

The present study will take place in three schools – Guangdong University of Technology (GUT), Guangdong University of Foreign Studies (GUFS), and Guangdong Polytechnic of Science and Technology (GPST).

6.3. Data Gathering Procedure

The researcher requested permission to do this research by sending a letter to the deans of the three (3) selected institutions in Guangdong. Following clearance from the school deans, the questionnaire was given to the participating teachers after the requirements of the study has been briefed and the teacher-respondents signed the informed consent form.

After the teacher-respondents have completed the questionnaire, the researcher assessed the collected data, and used that to make descriptive analyses of the research output. The proposed program and output from this study is expected to be implemented in the three (3) participating schools within one year of completing the study – in the first quarter of 2024/2025 school year.

7. Results and Analysis

The following chapter presents the results processed from the data gathered. These are each analyzed and interpreted for their value, significance, and relationships according to the research questions established, which are then also combined with comparisons with existing related literature.

7.1. Demographic Profile of the Respondents

For the first research question, the demographic profile of the respondents was assessed. The total population consisted of 150 individuals, which were assessed on their age, sex, years of experience, and respective participation role. The gathered data was then processed for its frequency to further characterize and understand the sample population included in the study. The results can be seen in Table 1 below.

Table 1. Demographic Profile of the Respondents (n=150)

Category		n (%)	
Age (in years)			
	25 – 29	41	(27.3)
	30 – 34	36	(24.0)
	35 – 39	40	(26.7)
	40 and above	33	(22.0)
Sex			
	Male	67	(44.7)
	Female	83	(55.3)
Years of Experience			
	1 – 3	37	(24.7)
	4 – 6	34	(22.7)
	7 – 9	39	(26.0)
	10 and above	40	(26.7)
Participation Role			
	Organizer	36	(24.0)
	Spectator	36	(24.0)
	Player	36	(24.0)
	Official	38	(25.3)
	Others	4	(2.7)

Based on the table above, the age categories of the respondents can be seen to be almost equal in proportion across the different groups. First, it can be seen that a majority of them or 27.3% (41 individuals) were aged 25 to 29 years old. Then, another 26.7% or 40 individuals were aged 35 to 39 years old. This is then followed by 36 individuals or 24% being aged 30 to 34 and lastly, 33 individuals or 22% of the sample being aged 40 and above. This data then shows that the sample population is composed of individuals from their mid- to late-twenties and mid- to late-thirties. Only a small part of the population had teachers that were in the older age groups, but nonetheless, the proportions do not differ by large degrees.

In addition to this, the data collected on sex reveals that a majority of the population was composed of female teachers. This was at 83 individuals or 55.3%, while 67 or 44.7% were male. This indicates that the results that are to be interpreted in the study may majorly come from a female perspective on the knowledge and participation in official sports events. This is an important factor to consider in the study as interpretation and results may potentially be subject to female biases.

For the third category assessed on years of experience, the sample population mostly had well-experienced teachers, with 40 individuals or 26.7% having 10 or more years of teaching experience. This is followed by 39 individuals or 26% having 7 to 9 years of experience, then 24.7% having only 1 to 3 years of experience. Then, another 34 individuals or 22.7% were assessed to have 4 to 6 of teaching experience. This data indicates that a majority of the teachers included in the study have spent a significant number of years in the academic environment, making them good representatives for answering the research questions of the study. However, it is also important to note that the study also includes a fair amount of teachers with lesser years of experience, which further balances the sample representation of the study.

Finally, when respondents were assessed based on their participation roles in sports events, it was found that equal proportions had roles of being organizers, spectators, and players. These each had 36 individuals per category or 24% each. In addition to this, a majority were assessed to be officials, which were 38 individuals or 25.3%. Then, only 4 or 2.7% of the sample population were recorded to be under "others." This data then further indicates that while a majority of teachers are officials, many of them are almost evenly

distributed as having other roles as well. This can be further attributed to being useful as students who take part in sports events will have access to different services or personnel based on their needs.

7.2. Assessment on the Teachers' Knowledge in Teaching Sports Programs

Moving on, the second research question in the study involves the assessment of the teachers' knowledge in teaching sports programs. This is divided into three categories, which include the teachers' experiences in the sport, teachers' engagement with students, and teachers' ability to incorporate technology. These were calculated for their mean, which further indicated the interpretation of each parameter in the assessment. The complete results for these can be seen in Tables 2 to 5 below

Table 2. Assessment on the Teachers' Knowledge in Teaching Sports Programs for Teachers' Experiences in the Sport (n=150)

Statements	Mean (SD)	Interpretation
Experiences		
1.I can officiate games during sports events in the sport I teach	2.46 (1.08)	Disagree
2.I can organize practices and foster teamwork among my students	2.55 (1.17)	Agree
3.I can ensure fair play and enforce the rules of the sports	2.61 (1.12)	Agree
4.I can provide guidance on nutrition and injury prevention related to my sport	2.53 (1.11)	Agree
5.I can teach the subject of the sports regardless of the available teaching materials provided for me	2.51 (1.09)	Agree
6.I can explain essential content of my teaching subject in ways that students can understand.	2.59 (1.12)	Agree
7.In my teaching subject I can identify from student errors where there are difficulties in understanding and give appropriate feedback.	2.66 (1.17)	Agree
MEAN SCORE	**2.56 (0.40)**	**Agree**
SD = standard deviation 1.00 – 1.75 Strongly Disagree/Not Effective; 1.76 – 2.50 Disagree/Moderately Effective; 2.51 – 3.25 Agree/Highly Effective; 3.26 – 4.00 Strongly Agree/Extremely Effective		

To begin with, Table 2 above shows the assessment of a teacher's knowledge in teaching sports based on their experiences in officiating in sports events. The data shows that many of the teacher respondents agreed with the parameters mentioned. The highest mean score was received on the statement on identifying student difficulties and giving appropriate feedback, with a mean value of 2.66. This means that a majority of the respondents found it important to understand and help students process and solve their problems relating to sports events. The next statement scoring a high value was then also received from the statement on ensuring fair play and enforcing rules of sports (2.61). This means that out of all the parameters assessed, the respondents agreed the most that rules and fairness were given the most importance. This could further relate to the teachers and sports events using agreeable scoring systems, which is crucial when designing events to uphold fair criteria in determining winners (Csató, 2021).

Other statements that also received agreeable responses were on explaining essential content in understandable ways (2.59), organizing practices and fostering teamwork (2.55), providing guidance on nutrition and injury prevention (2.53) and teaching the subject regardless of materials provided (2.51). This entails that a majority of the experiences of teachers were positively viewed in relation to teaching sports. Although, despite this, it can also be observed from the table that there is a slight disagreement regarding officiating games during sports events, which received the lowest mean value of 2.46. This could then suggest an area where improvement or further training might be beneficial, particularly where teachers are taught more on how to officiate and lead certain sports. This could then also be further related to a hindrance in life skill transfer in teachers, which calls for more individual awareness and development from teachers (Pierce et al., 2019). This would suggest a coaching program or training for teachers to better enhance their skills in officiating, which can also help students taking part in specific fields of sports.

Despite this slight disagreement, the results still show a generally positive assessment of teaching and coaching abilities in sports education when based on experiences. This is shown through the mean value of 2.56, which indicates an agreeable result on the category.

In addition to experiences, the study also assessed the engagement of teachers in relation to teaching sports programs. The results showed that the teachers mostly agreed on encouraging student participation in sporting activities, which had the highest mean score of 2.63. This shows that it was valuable for teachers to further encourage participation of students in sports activities. This data then further correlates to the assessment of other factors which could also influence the participation of students, such as time, personal factors, degree of interest, financial factors, extent of knowledge, involved partners, and facilities (Stafylidis et al., 2023). These factors could potentially reveal interesting partners into a deeper understanding of student participation. This was then followed by promoting the subject through student participation in class and school events, which had a mean score of 2.61, showing how the teachers found value in developing a higher interest in sports. Other areas that had also scored agreeable assessments include organizing fitness challenges for students (2.59), incorporating sports and physical activities in class sessions (2.54), and integrating technological software (games, online assignments, PowerPoints, etc.) for student growth (2.50).

In general, these results show a positive assessment of further engaging students in sports. However, there are areas that may still need further improvement. For instance, the study had found that educating students about the benefits of the course scored poorly with a mean of 2.43. This suggests that students must be taught further on the significance of sports and participating in these regularly.

Table 3. Assessment on the Teachers' Knowledge in Teaching Sports Programs for Teachers' Engagement with Students (n=150)

Statements	Mean (SD)	Interpretation
Engagement		
1.I educate the students about the benefits of the course	2.43 (1.13)	Disagree
2.I incorporate sports and physical activities in our class sessions	2.54 (1.17)	Agree
3.I organize fitness challenges for students in physical education classes	2.59 (1.08)	Agree
4.I encourage student participation in sporting activities	2.63 (1.14)	Agree
5.I promote the subject by encouraging student participation in the class and other school events	2.61 (1.17)	Agree
6.I integrate technological software like games, online-based assignments, PowerPoints, etc. to makes a big difference in students' growth in the classroom	2.50 (1.12)	Agree
7.I use technology to generate detailed analytics for students' learning	2.35 (1.15)	Disagree
MEAN SCORE	**2.52 (0.44)**	**Agree**
SD = standard deviation 1.00 – 1.75 Strongly Disagree/Not Effective; 1.76 – 2.50 Disagree/Moderately Effective; 2.51 – 3.25 Agree/Highly Effective; 3.26 – 4.00 Strongly Agree/Extremely Effective		

Then, further improvement should also be in making use of technology in this field, which was derived from the poor scoring on using technology to generate detailed analytics for student learning (2.35). Perhaps, it would be useful to make sure that technology is used as a supplement in teaching, especially as a tool to enhance learning and improve future participation. Maksymchuk et al. (2020) has stated that technology has a significant impact on increasing the readiness of teachers to organize sports events in the future, making this an even more important area to focus on. Despite this, the overall mean score of 2.52 still indicates a general agreement on the effectiveness of engagement strategies in physical education or sports-related courses.

Table 4. Assessment on the Teachers' Knowledge in Teaching Sports Programs for Teachers' Ability to Incorporate Technology (n=150)

Statements	Mean (SD)	Interpretation
Technology		
1.I keep up with important new technologies	2.58 (1.12)	Agree
2.I frequently play around with the technology	2.49 (1.11)	Agree
3.I know about a lot of different technologies	2.55 (1.10)	Agree
4.I have the technical skills I need to use technology.	2.69 (1.13)	Agree
5.I know how to solve my own technical problems.	2.46 (1.12)	Disagree
6.I can learn technology easily	2.78 (1.11)	Agree
7.I have had sufficient opportunities to work with different technologies	2.57 (1.13)	Agree
MEAN SCORE	2.59 (0.44)	Agree
SD = standard deviation 1.00 – 1.75 Strongly Disagree/Not Effective; 1.76 – 2.50 Disagree/Moderately Effective; 2.51 – 3.25 Agree/Highly Effective; 3.26 – 4.00 Strongly Agree/Extremely Effective		

For the final category assessed for teacher's knowledge in teaching sports, the researcher focused on the technology proficiency and comfort levels of the teacher respondents. Based on the table above, it can be seen that the respondents scored the highest on their ease in learning new technologies (2.78). This shows that the respondents were showing openness and interest in using new technology for their teaching, which could improve their adaptability and flexibility. This is then followed by an agreeable score on the respondents' possession of necessary technical skills (2.69). This indicates that the teachers had the necessary skills in using technology properly for teaching. Much of these results could be related to the diversified and improved experiences that incorporating technology can provide, such as with the use of augmented reality (AR) (Soltani & Morice, 2020). Such tools can be used for unique individual experiences that can further close gaps between players.

Other parameters that also had agreeable results include keeping up with important new technologies (2.58), sufficient opportunities to work with different technologies (2.57), knowledge about various technologies (2.55), and frequently experimenting with technology (2.49). These show that the respondents showed flexibility and sufficient knowledge on the use of technologies for teaching. However, it was also seen that the respondents disagreed on the ability to solve technical problems independently, with a mean score of (2.46). This shows that further improvement should be made in learning how to troubleshoot or overcome challenges when technological tools are not working properly. This would need further development on problem-solving, combined with digital literacy. This is believed to be important as Karasievych et al. (2021) had mentioned that there is a need

to create and update new pedagogical conditions that can best help teachers with educating their students, which in the current time, would need to incorporate technology and innovation (). Though overall, the mean score of 2.56 reflects an agreement on technology proficiency and adaptability among the teachers.

Table 5. Summary on the Assessment on the Teachers' Knowledge in Teaching Sports Programs (n=150)

Statements	Mean (SD)	Interpretation
Experiences	2.56 (0.40)	Agree
Engagement	2.52 (0.44)	Agree
Technology	2.59 (0.44)	Agree
OVERALL MEAN SCORE	2.56 (0.25)	Agree
SD = standard deviation 1.00 – 1.75 Strongly Disagree/Not Effective; 1.76 – 2.50 Disagree/Moderately Effective; 2.51 – 3.25 Agree/Highly Effective; 3.26 – 4.00 Strongly Agree/Extremely Effective		

With the first assessment, it can be seen that the area with the highest positive response was on the use of technology with a mean of 2.59. This means that the respondents greatly agreed on the use of technology for teaching sports. This is a positive finding as it suggests that the teachers are able to combine innovative elements in teaching sports, which is particularly important in meeting the demands in current times (Yuldashev, 2021). This is then followed by a positive response on their experiences as well with a mean of 2.56. This can be further attributed to the years of experience of the teachers, with most of them having long careers in the academic environment. Lastly, the engagement scored the lowest with a mean of 2.52, although this still shows a positive response on teachers promoting interest in sports with students. This is an important field to improve as Farias et al. (2020) found that prolonged participation in sports education can positively impact the individual physical literacy journey of an individual, particularly if combined with other factors like enthusiasm, competency, and literacy. Ultimately, the entire assessment received positive responses in all categories, which shows that the teachers are showing effective strategies in using their experiences, promoting engagement, and using technology for participating in sports events in their respective schools.

7.3. Assessment on the Significant Difference Between Teachers' Knowledge in Teaching Sports Programs and Demographic Profile

After the assessment of the teacher's knowledge in teaching sports, the parameters here were further assessed for their significant differences with the respondents' respective demographic profile and the categories that fall under this. The results are presented through Tables 6 and 9 below.

Table 6. Assessment on the Significant Difference Between Teachers' Knowledge in Teaching Sports Programs based on Age (n=150)

Profile	Mean (SD)	t- or F-value	p-value	Interpretation
Experiences				
25 – 29	2.59 (0.40)	0.30	0.8262	Not significant
30 – 34	2.58 (0.37)			
35 – 39	2.51 (0.42)			
40 and above	2.56 (0.40)			
Engagement				
25 – 29	2.49 (0.47)	0.81	0.4901	Not significant
30 – 34	2.55 (0.41)			
35 – 39	2.60 (0.47)			
40 and above	2.45 (0.37)			
Technology				
25 – 29	2.57 (0.39)	0.18	0.9131	Not significant
30 – 34	2.60 (0.40)			
35 – 39	2.63 (0.46)			
40 and above	2.56 (0.48)			
Overall Knowledge				
25 – 29	2.55 (0.23)	0.35	0.7863	Not significant
30 – 34	2.57 (0.23)			
35 – 39	2.58 (0.28)			
40 and above	2.52 (0.29)			
*A p-value <0.05 is considered significant.				

For the first category on age, Table 6 above shows that none of the calculated values portray any significant differences or relationships. In other terms, there are no observed significant differences in the assessment of the teachers' knowledge in teaching sports in terms of experiences, engagement, and incorporation of technology in teaching among different age groups. This further indicates that no matter the age of the teacher, which is quite evenly distributed in the study, there

were no differences found on their teaching knowledge. There were no differences observed whether teachers belonged to younger or older age groups; their knowledge was seen to be the same and did not differ by age when compared to the varying parameters on experience, engagement, and technology. This is then further related to similar studies involving technology, such as that of Erdogan and Topuz (2020) where there was also no relationship between the age of physical education teachers and their level of internet addiction. Despite these results as negative, perhaps a change in parameter would be needed. For instance, rather than age, perhaps education levels of students can provide insight, such as in a study by Fernandez-Rio (2020) where this was found to be significant for gamification in physical education experiences.

Table 7. Assessment on the Significant Difference Between Teachers' Knowledge in Teaching Sports Programs based on Sex (n=150)

Profile	Mean (SD)	t- or F-value	p-value	Interpretation
Experiences				
Male	2.58 (0.40)	0.58	0.5658	Not significant
Female	2.54 (0.40)			
Engagement				
Male	2.54 (0.43)	0.31	0.7567	Not significant
Female				
Technology				
Male	2.53 (0.40)	-1.43	0.1538	Not significant
Female	2.63 (0.46)			
Overall Knowledge				
Male	2.55 (0.23)	-0.34	0.7367	Not significant
Female	2.56 (0.27)			
*A p-value <0.05 is considered significant.				

Moving on, when assessed based on sex, there were also no significant differences observed. The experiences, engagement, and incorporation of technology in teaching knowledge did not differ between male and female teachers. Despite the study having predominantly female teachers, there was still no significant difference that leaned towards the female sex. This then further indicates that the experiences of teachers, coupled with their engagement strategies and use of technology did not have any noticeable differences when assessed based on sex. Both male and female teachers had similar teaching knowledge, with no apparent differences in any of the parameters assessed. Despite these results, it is still important to investigate gender in sports, particularly for ensuring and improving equity and inclusion. A study by Hutzler et al. (2019) had mentioned that professional and academic training was influenced by gender, together with other factors like the academic environment. This is also further important for safe and fair sports environments for different gender categories (Pike, 2021).

Table 8. Assessment on the Significant Difference Between Teachers' Knowledge in Teaching Sports Programs based on Years of Experience (n=150)

Profile	Mean (SD)	t- or F-value	p-value	Interpretation
Experiences				
1 – 3	2.53 (0.37)	1.29	0.2810	Not significant
4 – 6	2.68 (0.40)			
7 – 9	2.52 (0.39)			
10 and above	2.53 (0.43)			
Engagement				
1 – 3	2.54 (0.38)	0.73	0.5352	Not significant
4 – 6	2.47 (0.46)			
7 – 9	2.60 (0.47)			
10 and above	2.48 (0.44)			
Technology				
1 – 3	2.60 (0.41)	1.86	0.1391	Not significant
4 – 6	2.44 (0.41)			
7 – 9	2.67 (0.44)			
10 and above	2.62 (0.46)			
Overall Knowledge				
1 – 3	2.55 (0.23)	0.47	0.7004	Not significant
4 – 6	2.53 (0.24)			
7 – 9	2.60 (0.28)			
10 and above	2.55 (0.27)			
*A p-value <0.05 is considered significant.				

In addition to sex and age, there were also no significant differences in the assessment of the teachers' knowledge in teaching sports in terms of experiences, engagement, and incorporation of technology in teaching among groups with different years of experiences. This is shown through Table 8 above which indicates that the years of teaching experience does not have any significant relationship with any of the parameters assessed. Whether teachers have new or well-experienced careers, their teaching knowledge was not seen to significantly differ. This could then further indicate the assessment of other more detailed parameters that could potentially reveal significance, such as the specific years of experience in using technology or in coaching, and the like. The factor of years of experience is important to take into account despite the finding of negative correlations as this can provide insight on the socialization experiences of teachers as well (Richards et al., 2019). This can then be useful for better recruitment processes when finding suitable instructors for particular roles. The years of experience could then also be useful for improving the professional development of teachers, which could also help teachers with alternative strategies in different teaching settings like distance learning (Mercier et al., 2021).

Table 9. Assessment on the Significant Difference Between Teachers' Knowledge in Teaching Sports Programs based on Participation Role (n=150)

Profile	Mean (SD)	t- or F-value	p-value	Interpretation
Experiences				
Organizer	2.60 (0.40)	0.64	0.6351	Not significant
Spectator	2.62 (0.42)			
Player	2.48 (0.43)			
Official	2.55 (0.36)			
Others	2.54 (0.32)			
Engagement				
Organizer	2.38 (0.46)	2.22	0.0695	Not significant
Spectator	2.67 (0.40)			
Player	2.50 (0.39)			
Official	2.55 (0.44)			
Others	2.39 (0.59))			
Technology				
Organizer	2.62 (0.41)	1.19	0.3163	Not significant
Spectator	2.68 (0.44)			
Player	2.59 (0.47)			
Official	2.47 (0.40)			
Others	2.64 (0.63)			
Overall Knowledge				
Organizer	2.53 (0.26)	0.14	0.9682	Not significant
Spectator	2.66 (0.27)			
Player	2.52 (0.24)			
Official	2.52 (0.24)			
Others	2.52 (0.20)			

*A p-value <0.05 is considered significant.

For the final category on demographic profile, Table 9 above also shows similar results as those in previous tables. There are no significant differences in the assessment of the teachers' knowledge in teaching sports in terms of experiences, engagement, and incorporation of technology in teaching among teachers with different participation roles. This then reveals that the participant role of teachers does not share a significant relationship with their teaching knowledge. Whether teachers are organizers, spectators, players, or officials in a sports event, their teaching knowledge would not be in association with these roles. This could then indicate a need for further assessment as it is important that the knowledge and skills of teachers is first assessed before they take on a particular role. This is to ensure that they have the relevant and necessary skills and competency to take on the respective roles available, which can also further benefit students who are in need of assistance during sports events. However, this is still a relevant parameter to investigate as sports events can shed light on the behavior of participants, and if this progresses over time (Ramchandani et al., 2019). Officiating is also important as this can be related to the application of design thinking, where officials think of innovative designs to help retain and increase participation (Pierce et al., 2021).

7.4. Assessment of the Level of Teachers' Participation in Official Sports Events

Another important objective in the study involved the

assessment of the level of teachers' participation in official sports events. This included three main categories on willingness, skills, and impacts from participation. The results were then calculated as mean values which are shown on Tables 10 to 13 below, with their respective textual interpretation.

Table 10. Assessment of the Level of Teachers' Participation in Official Sports Events for Willingness to Participate (n=150)

Statements	Mean (SD)	Interpretation
Willingness		
1.Offer my time to help with a variety of activities	2.35 (1.11)	Disagree
2.Set up and disassemble equipment	2.62 (1.12)	Agree
3.Assist with first aid	2.47 (1.13)	Disagree
4.Provide guidance and training to students	2.53 (1.12)	Agree
5.Organize sports events within my school and encourage student-participation	2.57 (1.17)	Agree
6.Invite friends and colleagues	2.57 (1.14)	Agree
7.Encourage my students to participate in sports events	2.39 (1.06)	Disagree
MEAN SCORE	2.50 (0.43)	Disagree
SD = standard deviation 1.00 – 1.75 Strongly Disagree/Not Effective; 1.76 – 2.50 Disagree/Moderately Effective; 2.51 – 3.25 Agree/Highly Effective; 3.26 – 4.00 Strongly Agree/Extremely Effective		

For the first part of the assessment, the study is concerned with the willingness of teachers to participate in various activities within the context of sports or physical education. Based on Table 10 above, there are a number of fields that have received positive responses and a few that received negative responses. For the former, it is observed that many of the respondents agreed on the willingness to set up and disassemble equipment (2.62). This could further mean that the respondents are practical and have the knowledge on how to properly use sports equipment. This is then followed by an agreeable response on organizing sports events and encouraging student participation and as well as inviting friends and colleagues, which both have scores of 2.57. This further relates to the engagement assessed in section 2, where this received a positive response. The inclusion of friends could then also supplement the engagement of students as this would ideally make sports events more enjoyable. Lastly, providing guidance and training to students (2.53) was also positively assessed, meaning that teachers showed willingness and eagerness to guide students throughout performing different sports.

Table 11. Assessment of the Level of Teachers' Participation in Official Sports Events for Skills in Sports (n=150)

Statements	Mean (SD)	Interpretation
Skills		
1.Interpersonal skills are key to my participation in sports events	2.25 (1.02)	Disagree
2.Behavioral skills play a role to teachers' participations in sports events	2.53 (1.13)	Agree
3.I participate in sports events due to my cognitive skills	2.47 (1.13)	Disagree
4.My level of Intrapersonal skills encourage me to participate in sports events	2.63 (1.09)	Agree
5.Emotional skills are impactful to teacher participation in sports and sports events	2.55 (1.13)	Agree
6.Teaching skills are essential for sports teachers to boost the level of participation.	2.46 (1.18)	Disagree
7.I believe that technology skills are needed among teachers to be able to participate in sports events	2.40 (1.15)	Disagree
MEAN SCORE	2.47 (0.42)	Disagree
SD = standard deviation 1.00 – 1.75 Strongly Disagree/Not Effective; 1.76 – 2.50 Disagree/Moderately Effective; 2.51 – 3.25 Agree/Highly Effective; 3.26 – 4.00 Strongly Agree/Extremely Effective		

However, despite these responses, the study also received negative responses. Specifically, this was on offering time to help with a variety of activities (2.35), assisting with first aid (2.47), and encouraging students to participate in sports events (2.39). All of these scored quite poorly, which could indicate that there is a need for further improvement on the services that teachers can provide, particularly in helping students and ensuring their safety. With regards to first aid skills, a similar study by Kizilkaya Namli and Doganer (2021) also found that students had varying skills with this, indicating the need to make these more sustainable and updated. This is also quite contrasting to the preliminary results in section 2 that showed positive engagement results. This then could mean that participation of teachers would need further improvement. These results suggest that there is relevance when students feel supported by teachers, which

also influences the optimism that students feel when learning physical education (Vilchez et al., 2021). Overall, the results show a mixed willingness to participate in various activities, but the mean value of 2.50 generally depicts a negative response. This suggests further improvement on the willingness of teachers to perform better during sports events.

Moreover, the study also included an assessment on the skills of teachers participating in sports events. Table 11 above shows mixed results where intrapersonal skills scored the highest with a mean of 2.63. This is then followed by emotional and behavioral skills that scored 2.55 and 2.53, respectively. This shows that the teacher respondents possess fair skills on self-awareness, as well as some degrees of empathy and appropriateness of behavior.

Then, with regards to negative responses, it was observed that the respondents disagreed on cognitive skills (2.47), teaching skills (2.46), technology skills (2.40), and interpersonal skills (2.25). Based on a study by Li et al. (2023), it was found that social abilities were positively correlated with attitudes in exercising. Technology skills were then also found to attract students to learn physical education and further help them with sports skills, problem-solving, and decision-making (Zulkifli & Danis, 2022). This could then further indicate a need for further exploration into the perceived importance of different skill sets in sports event participation among teachers. Particularly, teachers may need to further improve their skills on using different types of technology for teaching, communicating with others, and memory and thought processing.

This field had a generally low mean value of 2.47, which reflects a disagreement regarding the certain skills for teacher participation in sports events. This shows how further improvement is needed, particularly in the areas mentioned above.

Table 12. Assessment of the Level of Teachers' Participation in Official Sports Events for Impacts from Participation (n=150)

Statements	Mean (SD)	Interpretation
Impacts from participation		
1.Engage with my students in PE classes	2.46 (1.12)	Disagree
2.Boost the morale of my students and encourage them to participate in sporting activities	2.57 (1.13)	Agree
3.Create a sense of community within the school	2.54 (1.13)	Agree
4.Build teamwork among students and colleagues	2.56 (1.10)	Agree
5.Improve teacher-student communication	2.59 (1.17)	Agree
6.Boost students' motivation	2.61 (1.12)	Agree
7.Inspire the participative ability of students	2.61 (1.10)	Agree
MEAN SCORE	2.56 (0.42)	Agree
SD = standard deviation 1.00 – 1.75 Strongly Disagree/Not Effective; 1.76 – 2.50 Disagree/Moderately Effective; 2.51 – 3.25 Agree/Highly Effective; 3.26 – 4.00 Strongly Agree/Extremely Effective		

The last category assessed in this section is the impact of participation, which unlike the two sections above, have more positive responses from the teacher respondents. Table 12 above shows that teachers agreed on boosting students' motivation (2.61)and inspiring the participative ability of students (2.61). This shows that the teachers put emphasis on building inspiring and motivating environments for students to further grow interests in sports. This is then followed by improving teacher-student communication (2.59), boosting the morale of students and encouraging their participation in sporting activities (2.57), building teamwork among students and colleagues (2.56), and creating a sense of community within the school (2.54).

These above results show a general positive response on the impacts of participation where teamwork, community-building, and communication are positively affected. These are all relevant fields in sports and the results indicate that teacher participation is effective in implementing and building these. However, it is also important to note that there is disagreement on engaging with students in PE classes (2.46), which could indicate that engagement is still lacking and this should be further focused to further involve students in sports. Based on a study by Leo et al. (2022), this can further be related to the type of teaching style used by teachers, which was recommended to be decisive. This also further relates to the ability of teachers to support the needs of their students by providing autonomy, expressing competence, and relating to them on a deeper level (Leo et al., 2022).

Then, overall, the mean score of 2.56 reflects a general agreement on the beneficial impacts of participation in sports-related activities. The assessment shows good impacts with a slight need for improving engagement.

Table 13. Summary of the Assessment of the Level of Teachers' Participation in Official Sports Events (n=150)

Statements	Mean (SD)	Interpretation
Willingness	2.50 (0.43)	Disagree
Skills	2.47 (0.42)	Disagree
Impacts from Participation	2.56 (0.42)	Agree
OVERALL MEAN SCORE	2.51 (0.27)	Agree
SD = standard deviation 1.00 – 1.75 Strongly Disagree/Not Effective; 1.76 – 2.50 Disagree/Moderately Effective; 2.51 – 3.25 Agree/Highly Effective; 3.26 – 4.00 Strongly Agree/Extremely Effective		

With the results retrieved from the assessment on the level of participation of teachers in official sports events, it can be seen that this received a fairly positive assessment overall (2.51). This shows that the teacher respondents agreed on the impacts on the positive impacts of participating in sports events, their skills, and willingness. However, when looking closely at the values shown on Table 13, there are also negative responses in the categories assessed. Both the willingness and skills of teachers were lacking, which had the mean values of 2.50 and 2.47, respectively. This data then suggests that focus should be emphasized on increasing the willingness of teachers to assist and participate in sports and as well as further developing the necessary skills needed for taking part in these types of events. This is suggested to be done through developing professional development networks, sharing practices, engaging in discussions, and through collaborative research (Tannehill et al., 2021). This also further indicates a need to challenge the current skills of teachers to extend their understanding and have improved pedagogical approaches and skills (Makopoulou et al., 2022). Lastly, another main point in the study is the general positive impacts from participation (2.56), which shows satisfaction and effectiveness of teacher participation in sports.

7.5. Assessment on the Significant Difference Between Teachers' Level of Participation in Official Sports Events and Demographic Profile

With the following assessment done on section 4, these are then further investigated for significant differences with relation to the demographic profile of the teacher respondents. This includes their age, sex, years of experience, and participation roles, which are shown in detail in Tables 14 to 16 below.

Table 14. Assessment on the Significant Difference Between Teachers' Level of Participation in Official Sports Events based on Age (n=150)

Profile	Mean (SD)	t- or F-value	p-value	Interpretation
Willingness				
25 – 29	2.55 (0.46)	0.92	0.4336	Not significant
30 – 34	2.56 (0.44)			
35 – 39	2.46 (0.41)			
40 and above	2.42 (0.37)			
Skills				
25 – 29	2.50 (0.46)	0.98	0.4051	Not significant
30 – 34	2.53 (0.45)			
35 – 39	2.38 (0.32)			
40 and above	2.48 (0.44)			
Impact of Participation				
25 – 29	2.64 (0.38)	1.77	0.1552	Not significant
30 – 34	2.60 (0.46)			
35 – 39	2.56 (0.47)			
40 and above	2.42 (0.34)			
Overall Participation				
25 – 29	2.56 (0.31)	2.12	0.0998	Not significant
30 – 34	2.56 (0.26)			
35 – 39	2.47 (0.22)			
40 and above	2.44 (0.25)			
*A p-value <0.05 is considered significant.				

To begin with, for investigating the variable of age, the statistical analysis did not find any significant differences in teachers' participation in sports events in terms of willingness, skills, and impact of participation among different age groups. This means that whether the teachers belonged to younger or older age categories, there were no significant differences in their willingness, skills, and impact of participation. Despite these nonsignificant results, a study by Kirkpatrick (2019) found that the behavioral skills training of teachers can be linked to their characteristics and as well as that of students and that this is important for improving the effectiveness of teaching methods (). Then, it is also important to further investigate age as a factor as this can be used as an indicator of other school-entry skills, such as academic and social-emotional skills (Burchinal et al., 2020).

Similarly, when assessed based on sex, there were also no significant differences observed. This means that whether teachers were male or female, there was no significant differences on their skills, willingness, and impacts of participation. Despite the study involving more female teachers, there were also no significant differences observed that were particular to females. Despite these results showing nonsignificance, gender is still a major issue of research in sports. This is important to investigate to find areas of inequity, such as how women have varied cognitive skills influenced by differences in their access to high-skill jobs and decent compensations (Hanushek et al., 2019). Sex and gender are also important as these skills can vary between or among genders, such as how it was found that girls had more social skills than boys during developmental years (Maleki et al.,

2019). This is an important factor to take into account when interpreting the sex characteristics of a population.

Table 15. Assessment on the Significant Difference Between Teachers' Level of Participation in Official Sports Events based on Sex (n=150)

Profile	Mean (SD)	t- or F-value	p-value	Interpretation
Willingness				
Male	2.49 (0.43)	-0.33	0.7403	Not significant
Female	2.51 (0.43)			
Skills				
Male	2.41 (0.41)	-1.52	0.1303	Not significant
Female	2.52 (0.42)			
Impact of Participation				
Male	2.53 (0.41)	-0.75	0.4538	Not significant
Female	2.59 (0.43)			
Overall Participation				
Male	2.48 (0.26)	-1.38	0.1689	Not significant
Female	2.54 (0.27)			
*A p-value <0.05 is considered significant.				

Table 16. Assessment on the Significant Difference Between Teachers' Level of Participation in Official Sports Events based on Years of Experience (n=150)

Profile	Mean (SD)	t- or F-value	p-value	Interpretation
Willingness				
1 – 3	2.52 (0.43)	2.10	0.1024	Not significant
4 – 6	2.40 (0.42)			
7 – 9	2.63 (0.44)			
10 and above	2.44 (0.39)			
Skills				
1 – 3	2.42 (0.42)	2.41	0.0695	Not significant
4 – 6	2.60 (0.52)			
7 – 9	2.52 (0.40)			
10 and above	2.36 (0.32)			
Impact of Participation				
1 – 3	2.56 (0.43)	0.09	0.9631	Not significant
4 – 6	2.54 (0.35)			
7 – 9	2.59 (0.48)			
10 and above	2.56 (0.43)			
Overall Participation				
1 – 3	2.50 (0.26)	1.51	0.2140	Not significant
4 – 6	2.51 (0.26)			
7 – 9	2.58 (0.30)			
10 and above	2.45 (0.22)			
*A p-value <0.05 is considered significant.				

In addition to this, when assessed on years of experience, Table 16 above shows that there are no significant differences in the assessment of the teachers' participation in sports events in terms of willingness, skills, and impact of participation among teachers with different years of experiences. This then further means that whether teachers have more or less years of experience, their skills, willingness, and impacts on participation did not have any drastic differences. Despite the study having more individuals with more years of experience, this still did not appear to have any observable significant differences. This is also important to further investigate as years of experience could be related to the competence of teachers, which could further affect the inclusion of students in sports events (Rekaa, 2019). This could then also be further related to the development of social and personal competencies, which affects enthusiasm and engagement (Bessa et al., 2019).

8. Conclusion

Based on the findings of the study, the following conclusions were made to answer the objectives of the study.

1.The sample used in the study was primarily composed of teachers that were aged 25-29 years old and were mostly female. Their teaching experience ranged from 10 years and above, making the sample have a large population of well-experienced educators. Lastly, during sports events, these teachers would mostly have the role of being officials when participating.

2.For teaching knowledge, the respondents showed to have agreeable positive responses in all fields of experience, engagement, and technology. Although, the knowledge on technology scored the highest, indicating that the respondents had more knowledge in using this when participating in sports events.

3.The assessments showed no significant relationship in the teachers' knowledge in teaching sports when compared to the different demographic factors assessed.

4.For teachers' participation in sports events, there was a fairly agreeable positive assessment for the overall analysis. Although when looking at the indicators individually, only the impacts from participation scored positively, making this a strong indicator in the teachers' participation. On the other hand, willingness and skills scored poorly, indicating the need to improve these two areas.

5.The assessments showed no significant relationship in the teachers' participation in sports when compared to the different demographic factors assessed.

6.Lastly, a positive correlation was found only between the teachers' engagement and the teachers' impacts from participation, confirming that these two indicators are linked and affect one another in the study.

9. Recommendations

With the entirety of the study conducted, there are areas that the researcher suggests for future works. These are highlighted below:

With the demographic profile, it is suggested that the respondents are also assessed on the type of sports that they teach as this can also shed light on their skills and the popularity of the sport of interest. This can further relate to the engagement of students as well when partaking in sports events.

It is suggested that future studies should also include assessing the general interest of teachers to participate in sports events and if this relates to their job satisfaction, self-development, and career happiness.

Perhaps another interesting area to study for future works could be including different demographic factors. Since the study did not find any significant differences, there may be other more relevant factors that need further studying, such as the time investment of teachers in their work, year level being taught, type of sport being taught, and even the location of the schools.

Further studies can also further focus on the use of technology. Since this was a significant variable under the teachers' knowledge, it would be interesting to further study this as a main topic, particularly on how teachers utilize technology when participating in sports events.

Together with the use of technology, it would also be suggested that further studies focus on assessing the specific impacts when teachers participate in sports events. This would be interesting to see through different perspectives, such as through students, school leaders, and maybe even parents. This would then be useful in finding a community-wide analysis of the impacts of teacher participation in sports events.

Another useful recommendation to the study would be the inclusion of a thematic analysis on the perception of teachers on their impacts during sports events. This would give further insight on their perceptions and help identify common themes for further analysis.

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