



**PERCEIVED PHYSICAL LITERACY AS INFLUENCED BY  
ATTITUDES TOWARD PHYSICAL ACTIVITY AND QUALITY  
PHYSICAL EDUCATION: A CONVERGENT DESIGN**

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**Abstract:**

Physical literacy is the foundation of physical education, sports, and public health agendas. Low physical literacy among individuals was reported as a prevalent issue and continues to be a primary concern for physical educators. Although there is a growing interest in investigating physical literacy, there is still an existing scarcity of studies that investigated the interplay of attitudes toward physical activity, and quality physical education using a mixed-method approach. This study utilized a mixed methods approach, specifically convergent design, to determine the influence of attitudes towards physical activity and quality physical education on the perceived physical literacy among state universities and colleges in region X. A sample of 400 respondents, 14 in-depth-interviews and 7 FGD participants were involved in the study. Sets of adapted survey questionnaires and the interview guide were used to extract data relative to the research questions. The multiple regression analysis was used to analyze the influence of two independent variables on the dependent variable as statistical treatment. In the qualitative strand, thematic analysis was employed. Results showed that the two independent variables – attitudes towards physical activity and quality physical education significantly influenced on perceived physical literacy. In the qualitative phase of the study, five essential themes emerged from the lived experiences of the participants, such as physical and mental health benefits, motivation and personal growth, challenges and barriers, social interaction and community support, and educational and knowledge gaps. Furthermore, the merging of quantitative and qualitative findings produced a

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merging-converging nature on the attitudes towards physical activity and roles on the experiences in shaping the attitudes and beliefs, and a merging-diverging nature on the quality of physical education, perceived physical literacy and role of experiences in shaping commitment.

**Keywords:** physical literacy, physical activity, quality physical education, convergent design, attitudes towards PA

## 1. Introduction

One of the key ideas in lifelong physical activity and physical fitness is physical literacy, but little is known about the factors that may be associated with physical literacy (Sunda *et al.*, 2022). Physical literacy is described as the motivation, confidence, physical competence, knowledge, and understanding to maintain physical activity throughout one's life (Shearer *et al.*, 2018). Additionally, physical literacy is the foundation of physical education, sport, and public health agendas. It is not a program, but the development thoughts and aspirational outcomes of organized physical education delivery, which are achieved more readily if learners encounter a range of age- and stage-appropriate opportunities (Ydo, 2021). Ramayudha (2019) reveals that students' level of physical literacy was 4.76 percent were categorized as "Beginning", 85.71 percent as "Progressing", 9.52 percent as "Achieving", and 0 percent fell into the "Excelling" category. Therefore, it is important that physical educators carefully design instructions that center on physical literacy, promoting lifelong physical activities resulting in healthier and more physically fit individuals. Additionally, Basoglu (2018) highlighted that experts from various countries have emphasized the need to increase and broaden the emphasis on physical literacy.

In Canada, physical literacy has been included by numerous organizations and industries in their practices, studies, policies, and programs. However, stakeholders have noted that efforts to promote and enhance physical literacy were hampered by the use of various definitions and conceptualizations of the skill (Tremblay *et al.*, 2018). Furthermore, Chin *et al.* (2022) discovered that preservice teachers exhibit poor performance in implementing physical literacy and preparing to serve as role models within the school environment, aligning with national physical education standards.

In a comparative study by Ming Hui Li *et al.* (2022) investigating the physical literacy of children aged 8 to 12 in China and Greece, it was revealed that both countries demonstrate a limited level of physical literacy. This discovery reflects the worldwide trend of declining physical activity in children, coupled with an increase in sedentary behavior occupying a considerable amount of their time.

In the Philippines, Martin *et al.* (2016) discovered that Filipino college students' physical competence – one important domain of physical literacy – is low, indicating a lack of foundational information on movement. Despite government regulations, most teenagers in the Philippines do not engage in the recommended amounts of physical

activity needed for health benefits. More work is required to translate these goals into concrete actions, emphasizing the significance of setting up national monitoring systems and expanding chances to improve physical literacy (Cagas *et al.*, 2022).

## 2. Research Questions

This study used a convergent design to roughly analyze the influence of attitudes towards physical activity and quality physical education on perceived physical literacy among PATHFit students at the state universities and colleges in Region X. More specifically, this study sought answers to the following questions:

- 1) Do attitudes toward physical activity and quality physical education significantly influence perceived physical literacy?
- 2) What are the participants' lived experiences regarding perceived physical literacy?
- 3) To what extent do the qualitative findings corroborate with the quantitative data?

## 3. Literature Review

### 3.1. Attitudes towards Physical Activities

Attitudes, as described by Kwasnicka *et al.* (2016), are shaped by beliefs about the outcomes of physical activity, including perceived benefits (e.g., improved fitness, weight management, stress reduction) and perceived barriers (e.g., lack of time, physical discomfort, social stigma). The widespread consensus among physical educators is that their attitudes toward physical activity significantly influence students' involvement, participation, and loyalty to physical education programs. According to Stevens *et al.* (2020), Affective reactions and emotional experiences related to physical activity, such as enjoyment, arousal, or stress alleviation during exercise, impact attitudes.

### 3.2 Quality Physical Education

Quality physical education encompasses a range of educational developmental elements, including expertise in sports activities, curriculum design, instructional methods, and assessment strategies. It also involves fostering supportive factors like appropriate facilities, educator professional development, opportunities for further learning, inclusive policies, and gender equality in education (Ho *et al.*, 2018). Jansson *et al.* (2022) viewed quality physical education (QPE) as crucial but often overlooked. He added that teachers can gain valuable insights to facilitate meaningful learning experiences in physical education by better understanding how students view their learning. Further, perceived learning also has the potential to be used as a substitute for school grades in the analysis of outcome equality.

### 3.3. Perceived Physical Literacy

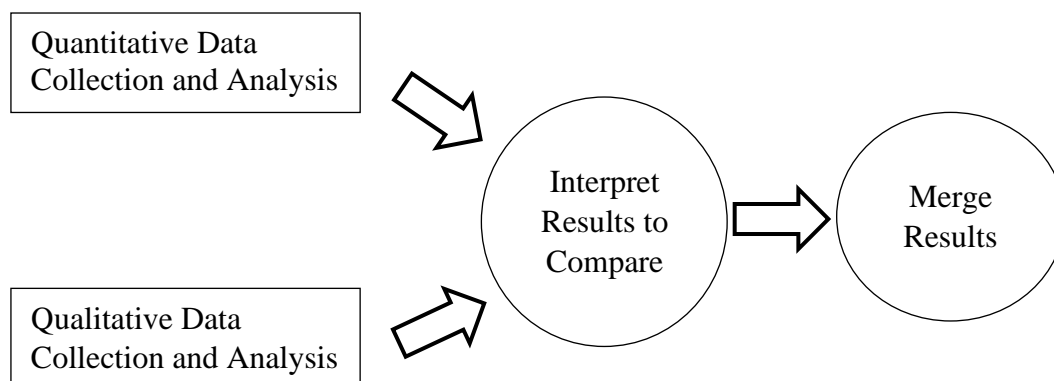
Physical literacy (PL) has become a central concern in global enterprises that encourage physical education, physical activity, and sports. PL represents a comprehensive

understanding of the skills necessary to exploit potential through real-world experience. Governments are making significant financial commitments to PL education, driven by the anticipation of various benefits. These include projected savings in healthcare costs, heightened physical and mental well-being among the public, improved productivity in the workforce, and heightened levels of ability in sports and exercise participation (Giblin *et al.*, 2014).

## 4. Methods

### 4.1 Research Design

In this study, the researcher employed mixed methods research, specifically convergent design. According to Creswell (2013), this is a research technique that promotes the systematic synthesis or mixing of quantitative and qualitative data within a single study or ongoing investigation or inquiry. This method collects and analyzes both quantitative and qualitative data and integrates data during data collection, analysis and discussion. This method uses procedures that implement quantitative and qualitative components concurrently (Creswell & Clark, 2017).



**Figure 1:** Convergent Design

### 4.2 Research Instruments

This study employed two distinct sets of instruments: one for the quantitative aspect and another for the qualitative component. Experts in the field of education evaluated these questionnaires for content validity. The responses, corrections, and recommendations provided by these experts were integrated into the final version of the questionnaires. Furthermore, to ensure the reliability of the survey questionnaire, the researcher conducted a pilot test with approximately 30 participants. Those selected during the pilot test were not included in the final administration of the questionnaire.

#### 4.2.1 Quantitative Strands

To gather the quantitative data, three adapted questionnaires have been used. The first questionnaire, Attitudes Toward Physical Activity, adapted from the study of Dinc *et al.*

(2019), has been employed as an instrument to measure attitudes toward physical activity. The Cronbach coefficient values for this adapted instrument have been reported as 0.84 for fun, 0.88 for learning, 0.88 for benefits, 0.91 for fitness, 0.82 for self-efficacy, and 0.90 for personal best. The second part of the instrument was the modified questionnaire of Quality Physical Education adapted from the study of Ho *et al.* (2018), having three domains, which follows: development of supportive elements for quality physical education in school, curriculum arrangement of physical activities, and core value of quality physical education. The Cronbach coefficient value for DSEQPE is 0.935, CAPA is 0.890, and CVQPE is 0.850, indicating high reliability and consistency. The third part of the quantitative instrument was the Perceived Physical Literacy adapted from the study of Holler *et al.* (2023), which was composed of 24 statements with six domains, namely: motivation, confidence, physical competence, knowledge, understanding and physical activity behavior. The Omega coefficient value for the g-factor is 0.90, indicating high reliability and consistency.

#### **4.2.2 Qualitative Strands**

The qualitative strand of the study employed a specific set of tools. The researcher conducted FGD and IDI among tertiary PATHFit Students. In the phase of IDI and FGD, the researcher used a validated open-ended questionnaire to ask participants about the problem study. Before the interview, the researcher prepared the validated guide questions regarding the topic the researcher wanted to study and develop.

### **4.3 Participants**

#### **4.3.1 Quantitative Strands**

The study included 400 students from seven selected State Universities and Colleges (SUCs) who were enrolled in Physical Activity Towards Health and Fitness (PATHFit) courses as respondents in its quantitative phase. Bujang *et al.* (2017) recommended a sample size of at least 300 for conducting multiple linear regression analysis to ensure the generation of reliable estimate approximations with parameters in a survey, indicating that the chosen sample size for this study was adequate. To select participants, the researcher utilized proportionate cluster sampling, targeting students from specifically chosen SUCs within Region X. One SUC was considered as one cluster, resulting in a total of seven clusters in the study, corresponding to the seven SUCs in the region. To determine the number of participants in each cluster, the researcher calculated the percentage of total PATHFit enrollees at each SUC and multiplied it by 400 as the total sample size for the study. Cluster sampling, as noted by Salkind (2020), was identified as a probability sampling method frequently employed in large, geographically widespread population studies.

#### **4.3.2 Qualitative Strands**

In the qualitative phase, the researcher intentionally selected fourteen (14) PATHFit students—2 students per SUC (1 male and 1 female) for in-depth interviews (IDI) and

one focus group discussions (FGD), with 1 representative per SUC. The selection criteria included students who were currently enrolled in a PATHFit course and were not included in the survey questionnaire in the quantitative phase across the seven identified SUCs in the region, ensuring a balanced representation of both male and female students.

According to Crouch and McKenzie (2006), the optimal number of participants for FGDs is between seven and eight, as managing a group larger than 10 for in-depth discussions could become challenging and restrict the opportunity for each participant to contribute their insights and experiences.

#### **4.4 Data Analysis**

##### **4.4.1 Quantitative Strand**

Multiple linear regression analysis was used to analyze the influence of the two independent variables on the independent variable. In this study, the objective of multiple linear regression is to establish a model representing the linear relationship between independent variables, namely attitudes toward physical activity and quality physical education, and the dependent variable, which was perceived physical literacy.

##### **4.4.2 Qualitative Strand**

The thematic analysis was used to analyze the qualitative data obtained from the IDI and FGD. Thematic analysis focuses on classifying, examining, and documenting patterns or themes within the data. These themes represent patterns across data sets that are crucial for unfolding a phenomenon and are linked to a specific research question (Mertens, 2018).

During the thematic analysis process, the researcher primarily read and re-read the transcripts to understand the data. The data were then organized to create initial codes, breaking down ideas into smaller meaningful segments. These codes were examined and grouped based on common themes. Themes were shaped, reviewed, adjusted, and refined as necessary.

#### **5. Results and Discussion**

Table 1 shows the results of the multiple regression analysis, which is set at the level of significance ( $\alpha = 0.05$  (two-tailed)). On the one hand, the standardized beta coefficient of attitudes towards physical literacy is .70, with t-statistics of 13.47 and  $p = .00$ , which is less than the .05 level of significance. This indicates that for every unit, an increase in the status of attitude towards physical activity corresponds to a significant increase of .70 in the perceived physical literacy.

**Table 1:** Significance of the Influence of Attitudes Towards Physical Activity, and Quality Physical Education on Perceived Physical Literacy

		Perceived Physical Literacy			
Individual Influence of Predictors		Standardized Coefficient	T	p-value	Remarks
Attitudes Towards Physical Literacy		.70	13.47	.00	Significant
Quality Physical Education		.15	2.84	.01	Significant
Combined Influence of Predictors					
R	.83				
R <sup>2</sup>	.69				
F	436.86				
P	.00				Significant

On the other hand, the standardized beta coefficient of quality physical education is .15, with a t-statistics of 2.84 and  $p = .01$ , which is less than the .05 level of significance. This result indicates that in an individual capacity, quality physical education is a significant predictor of the perceived physical literacy of students. It means that for every unit, an increase in the status of quality of physical education corresponds to a significant increase of .15 in the perceived physical literacy of students.

Further, the F-ratio in Table 2 indicates whether the overall regression model, which is the combined effect of attitudes towards physical activity and quality physical education as predictors of perceived physical literacy, is a good fit for the data in this study. The results reveal that attitudes towards physical activity and quality physical education significantly influence the perceived physical literacy of students, as shown in the result of  $F(2, 397) = 436.86, p < .05$ . Therefore, the regression model is a good fit of the empirical data of this study.

Furthermore, the R-square value reflects the proportion of variance in the perceived physical literacy of the students that can be explained by attitudes towards physical activity and quality physical education. The R-square value is reported at .69, indicating that 69 percent in the variability of the perceived physical literacy of students can be explained by the combined influence of the two independent variables. The remaining 31 percent is attributable to the unexplained variance or other factors not included in this study.

**Table 2:** Lived Experiences of Participants as regards to their Perceived Physical Literacy

Essential Themes	Core ideas
Physical and Mental Health Benefits	<ul style="list-style-type: none"> <li>- Physical activities promote mental well-being and stress reduction.</li> <li>- Engagement in exercise leads to overall health improvement.</li> <li>- Physical activities help build resilience and mental strength.</li> <li>- Fitness routines can improve focus and productivity.</li> <li>- Exercise routines can serve as an outlet for stress and anxiety.</li> </ul>
Motivation and Personal Growth	<ul style="list-style-type: none"> <li>- Environment and peer influence act as motivators.</li> <li>- Personal discovery of physical activity boosts interest.</li> <li>- Physical activities drive personal skill enhancement.</li> <li>- Motivation can be inconsistent and mood-dependent.</li> <li>- Self-improvement through physical challenges.</li> </ul>
Challenges and Barriers	<ul style="list-style-type: none"> <li>- Lack of confidence or peer pressure hinders participation.</li> <li>- Limited resources or time restrict exercise opportunities.</li> <li>- Physical health conditions create barriers.</li> <li>- Academic pressures affect commitment to physical activities.</li> <li>- Inadequate access to sports facilities.</li> </ul>
Social Interaction and Community Support	<ul style="list-style-type: none"> <li>- Physical activities strengthen friendships and social ties.</li> <li>- Group activities increase mutual motivation and support.</li> <li>- Family involvement enhances engagement in physical routines.</li> <li>- Social interactions in sports foster teamwork skills.</li> <li>- Community support is a critical component in maintaining physical activity.</li> </ul>
Educational and Knowledge Gaps	<ul style="list-style-type: none"> <li>- Lack of understanding about physical literacy among participants.</li> <li>- Physical education is often underemphasized in schools.</li> <li>- Knowledge about long-term health benefits is limited</li> <li>- Awareness of proper physical activity techniques is low.</li> <li>- Increased educational outreach could improve participation.</li> </ul>

## 5.1 Generated Themes on the Lived Experiences of Participants as Regards to Their Perceived Physical Literacy

### 5.2.1 Physical and Mental Health Benefits

The participants possess a positive outlook on physical literacy. Their positive outlook revealed that physical activities provide holistic health benefits, enhancing both physical and mental well-being. They reduce stress, improve mental health, and build resilience and mental strength. Regular exercise supports overall physical health, serves as an effective outlet for stress and anxiety, and boosts focus and productivity, underscoring its vital role in promoting a balanced and healthy lifestyle.

### 5.2.2 Motivation and Personal Growth

Personal growth emerges as a central theme in the context of physical activities, driven by various motivators. Environmental and peer influences encourage participation, while personal discovery sparks interest and engagement. Physical activities foster skill enhancement and serve as a pathway for self-improvement through challenges. However, motivation can vary, often influenced by mood, highlighting the dynamic nature of personal drive in the pursuit of growth and development.



### 5.2.3 Challenges and Barriers

Barriers to physical activity stem from various challenges, including lack of confidence and peer pressure, which discourage participation. Limited resources, time constraints, and inadequate access to sports facilities further restrict opportunities for exercise. Additionally, physical health conditions and academic pressures negatively impact commitment, underscoring the multifaceted obstacles individuals face in maintaining an active lifestyle.

### 5.2.4 Social Interaction and Community Support

The participants shared their experiences regarding social interaction and community support related to physical literacy. Engaging in group activities strengthens friendships, fosters teamwork skills, and provides mutual motivation and support. Family involvement enhances participation and commitment to physical routines, while community support creates a nurturing environment that encourages consistency. Together, these factors highlight the importance of social connections in sustaining an active and healthy lifestyle.

### 5.2.5 Educational and Knowledge Gap

The theme of educational and knowledge gaps highlights key barriers to physical activity. A lack of understanding about physical literacy, limited awareness of long-term health benefits, and insufficient knowledge of proper techniques hinder participation. Addressing these gaps through increased educational outreach could significantly enhance engagement and promote healthier, more active lifestyles.

**Table 3:** Data Integration of the Salient Qualitative and Quantitative Findings

Aspects of Focal Point	Quantitative Findings	Qualitative Findings	Nature of Data Integration
On Attitudes towards Physical Activity	Table 1.1 on attitudes towards physical activity with a mean of 3.73 rated as high with an SD of .67. In particular, the item <i>being physically active is helping them have good health</i> with a mean of 4.29 rated as high with SD of 1.04.	In Table 3.2, on lived experiences, has the theme of physical and mental health benefits and has the following core ideas: <i>engagement in exercise leads to overall health improvement.</i>	<b>Merging-converging</b>
On Attitudes towards Physical Literacy	Table 1.1 on attitudes towards physical activity in terms of personal best with a mean of 4.00 rated as high with an SD of .93. In particular, the item <i>going beyond what they have achieved in physical activity as their target</i> , a mean of 3.94 rated as high with SD of 1.04.	In Table 3.2, on the lived experiences, has the theme of motivation and personal health and has the following core ideas: <i>physical activities drive personal skill enhancement.</i>	<b>Merging-converging</b>

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On the Quality Physical Education	Table 1.2 on the quality of physical education in terms of the development of supportive elements for quality physical education with a mean of 4.08 and SD of .98 rated are high in particular items <i>having safe and suitable facilities for physical education lessons</i> with a mean of 4.07 rated as high with SD of 1.00.	In Table 3.2 on the lived experiences has the theme of challenges and barriers, has the following core ideas, <i>limited resources or time-restricted exercise opportunities</i> .	<b>Merging-diverging</b>
On Perceived Physical Literacy	Table 1.3 on the perceived physical literacy understanding with a mean of 3.99 rated as high with an SD of .91. In particular, the item, <i>knowing the purpose in engaging in physical activity regularly with a mean of 3.99, rated as very high with an SD of .91</i> .	In Table 3.2, on the lived experiences, has the theme of educational and knowledge gap has the following core ideas: lack of understanding about physical literacy among participants.	<b>Merging-diverging</b>
On the Role of Experiences in Shaping the Attitudes of the Participants Towards Perceived Physical Literacy	Table 1.3 on the status of perceived physical literacy terms of motivation with a mean of 3.86 rated as moderate with SD of .94 In particular, the item, <i>planning to be physically active on a regular basis because of the positive consequences, is simply worth the effort with a mean of 3.89, rated as moderate with an SD of .96</i> .	In the Table 3.2, on the lived experiences, has the theme influence of routine and habit formation has the following core ideas: consistency in routines boosts motivation and adherence.	<b>Merging-converging</b>
Role of Experiences Shape the Beliefs of Participants Towards Perceived Physical Literacy	Table 1.3 on the status of perceived physical literacy terms of knowledge with a mean of 3.82 rated as moderate with SD of .88 In particular, the item, <i>a physically inactive lifestyle, increases the risk of suffering the following diseases: breast cancer, dementia and hypertension with a mean of 3.93, rated as moderate with SD of .1.10</i> .	In Table 4.2, on the roles of experiences that shape the beliefs of participants, has the theme of health as an investment and has the following core idea: exercise is seen as a proactive way to prevent future health issues.	<b>Merging-converging</b>
Role of Experiences Shape the Commitment of Participants Towards Perceived Physical Literacy	Table 1.3 on the status of perceived physical literacy terms of physical competence with a mean of 3.01 rated as moderate with SD of 1.02 In particular, the item, <i>having able to run in 30 minutes without stopping mean of 3.01, rated as moderate with SD of .1.19</i> .	In the Table 4.3 on the role of experiences of participants that shaped their commitment has the theme Achievement and Progress, has the following core ideas: focus on the exercise you often execute.	<b>Merging-Diverging</b>

### **5.3 Joint Display of Salient Points of Qualitative and Quantitative Findings**

#### **5.3.1 Merging-Converging**

In particular, the findings for the nature of data integration in merging-converging consist of the following focal points: The most important thing about the participants' real-life experience on attitudes towards physical activity was helping them to have good health. This had a mean score of 3.73, which is considered as high, and when combined with the qualitative results, it led to the theme that being engaged in exercise leads to overall health improvement. Moreover, the personal best with a mean of 4.0, described as high and when combined with qualitative results, it led to drive personal skill achievement.

The focal point of participants on the role of experiences in shaping the attitudes towards perceived physical literacy in terms of motivation with a mean of 3.86, described as high, and when merged with the qualitative results, converged with the core idea of consistency in routines boosts motivation and adherence.

The focal point of participants on the role of experiences in shaping the belief towards perceived physical literacy in terms of knowledge had a mean of 3.82 rated as moderate, and when combined with the qualitative results, converged with the theme of health as an investment.

#### **5.3.2 Merging-Diverging**

On the other hand, the findings for the nature of data in merging-diverging consists of the following focal points:

The focal point of the lived experiences of the participants with regards to quality physical education in terms of the development of supportive elements had a mean of 4.08, described as high, and when merging with the qualitative results, it was found to be diverging from the essential theme challenges and barriers encountered in their PE classes.

The focal point of participants' lived experiences regarding perceived physical literacy in terms of understanding with a mean of 3.99 rated as high, and when merged with the qualitative results, it diverges with the theme of educational and knowledge gap.

Lastly, based on the experiences of participants with regard to their commitment towards perceived physical literacy, the results show the merging functions as diverging in the quantitative and qualitative data. The results revealed in terms of competence, it obtained a mean rating of 3.01, which is described as moderate, and was found to be diverging from the essential theme of achievement and progress.

## **6. Conclusion**

Attitudes towards physical activity and quality physical education positively contribute to the perceived physical literacy of PATHFit students in state universities and colleges in Region X.

Moreover, five essential themes emerged from the lived experiences of the participants. These are physical and mental health benefits, motivation and personal growth, challenges and barriers, social interaction and community support, and educational and knowledge gaps. Meanwhile, the participants' lived experiences shaped their attitudes, beliefs, and commitment toward perceived physical literacy.

Subsequently, there was merging-converging in nature when quantitative and qualitative data were combined, particularly on attitudes toward physical literacy and the role of experiences in shaping attitudes and beliefs. However, a merging-diverging nature was observed, as the quantitative results showed high ratings, but contradictions emerged when combined with the qualitative findings. Participants shared experiences that conflicted with the quantitative results, particularly on quality physical education, perceived physical literacy, and the role of experiences in shaping commitment.

## **7. Recommendations**

Attitudes towards physical activity and quality physical education significantly influence perceived physical literacy. It is recommended to focus on promoting positive attitudes toward physical activity through engaging and inclusive programs that highlight the benefits of active lifestyles. Schools should continue to prioritize high-quality physical education by ensuring that instructors are well-trained and curricula are diverse, relevant, and student-centered. Encouraging a supportive school environment, where physical activity is seen as fun and beneficial, along with fostering strong connections between physical education and overall well-being, will help sustain and improve students' physical literacy.

For academic scholars and researchers, it is recommended to further explore the relationship between attitudes toward physical activity, quality physical education, and perceived physical literacy through longitudinal studies and diverse populations. Researchers should investigate effective strategies for fostering positive attitudes and improving physical education practices, while also examining the long-term impact of perceived physical literacy on overall health and academic performance. Additionally, conducting comparative studies across different regions or educational systems could provide valuable insights for improving physical education programs and promoting physical literacy on a larger scale.

## **Acknowledgements**

The researcher extends his deepest gratitude to all those who contributed to the success of this study through their time, effort, encouragement, support, and professional guidance.

Special thanks to his dissertation adviser, Dr. Porferia S. Poralan, for her invaluable guidance, direction, and encouragement, as well as her insightful comments and suggestions that significantly contributed to the realization of this study.

Gratitude is also extended to the technical panel, chaired by Dr. Avee Joy B. Dayaganon, with members Dr. Sylvia J. Pidor, Dr. Edna T. Salva, Dr. Thelma O. Alderite, and Dr. Felix C. Chavez, for their expertise, thoughtful recommendations, and constructive feedback, which helped shape and refine the study.

Acknowledgement is given to the Chairperson of the UIC Research Ethics Committee for their profound guidance in ensuring ethical compliance throughout the research process. Appreciation is also extended to Dr. Dayaganon, Dr. Pidor, Dr. Salva, Dr. Alderite, and Dr. Chavez as validators for their contributions to enhancing the research instruments, along with sincere thanks to the study's data analyst.

The researcher is deeply thankful to Dr. Freddie T. Bernal, CESO III, Regional Director of CHED Region 10, and to the SUC Presidents and Chancellors: Atty. Dionel O. Albina (USTP-CDO), Dr. Rolito G. Eballe (CMU), Dr. Joy M. Mirasol (BUKSU and NBSC), Prof. Alizedney M. Ditucalan, JD, LLM (MSU-IIT), Dr. Nelson P. Cabral (NMSCST), and Dr. Macario B. Oclarit (CPSC), for their support and consideration in this study.

Heartfelt thanks go to the selected students from the State Universities and Colleges in Region X, who participated in the survey, in-depth interviews, and focus group discussions, for their time and valuable contributions.

The researcher acknowledges his NBSC family for their patience and encouragement throughout this journey, and his family—Papang Simo, Mamang Lina, wife Connie Rose, and siblings—for their unwavering love, support, and inspiration that gave him the strength to complete this study.

Special thanks to his PhD classmates at UIC, who supported and motivated one another to persevere, and to the "Cockroach Theory Legit GC" group, for their constant assistance and camaraderie. Appreciation is also extended to his Region 10 classmate buddies for their solidarity and encouragement.

Sincere gratitude goes to Dr. Mary Jane B. Amoguis, Dean of the Graduate School, for her consistent supervision, guidance, and inspiration to see this study through to completion.

Above all, the researcher gives glory to the Almighty Father for the wisdom, knowledge, strength, and countless blessings that made this endeavor possible. To God be the highest glory.

### **Conflict of Interest Statement**

The authors declare no conflicts of interest.

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