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An Investigation on the Factors Affecting Students' Interest in Physical Education Using Principal Component Analysis (PCA) at a Local City College in Angeles City, Pampanga, Philippines

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ABSTRACT

A descriptive-exploratory study which aims to explore the different factors that affects students' interest in Physical Education. The respondents of the study are 1st and 2nd year students taking minor Physical Education 2 and 4 enrolled in the academic year 2019-2020 at City College of Angeles. Simple random sampling was used to gather data from the respondents. A 35-item questionnaire was adapted to be used on the survey. Principle Component Analysis (PCA) was utilized to identify the factors that affects students' interest towards PE. Based on the results, the following factors were identified: (1) Love for Physical Education, (2) Teacher, (3) Dance Activities, (4) Sports and Physical Fitness, (5) Teacher's Consideration, (6) Climate and Facilities and (7) Teacher as an Instructional Material as factors which can affect the interest of students towards PE. From the results, recommendations were provided to teachers and for future research directions. Limitations of this study is acknowledged.

INTRODUCTION

As defined, Physical Education is an integral part of educational process and a field of endeavor which aims the development of physical, mental, emotional and social fitted citizen through physical activities which have been related with a view to related outcomes (Khatun and Bandyopadhyay, 2016). It also develops the students' health-related fitness, capableness in movement activities, intellectual understanding and affirmative mindset through different physical activities which they can seize a healthy and physically active lifestyle (Lobo, et. al., 2014a). Physical education's main objective is to develop the physical attribute of a human being and is a multi-dimensional discipline where other components are also being developed through different and selected physical activities such as: social development, mental development and emotional development.

Physical education involves various and selected physical and sport activities. It was demarcated as various activities which involves bodily movements which the skeletal muscles can produce that requires lot of energy spending, which is higher than an individual's normal physiological requirement in a typical day in school. The instructions that are being used in Physical education are highly emphasized and must be enjoyed by the students in and Physical activities (Lobo, et. al., 2014b), and should help to develop the knowledge, attitudes, motor skills, behavior skills and the confidence of each student in able to adopt and sustain the needed active lifestyle It also improves students' academic performance, including achievement, behavior, concentration and attentiveness inside the classroom (CDC, 2015).

Interest is a driving force in the engagement of students in the teaching and learning process, as well on their academic performance. It has been thought to be a powerful motivator in schooling (Chen & Wang, 2017). It was recently articulated by (Rink, et. al., n.d.a) in their

study regarding interest, motivation and engagement, interest is a powerful motivator that penetrates human activities. Interest also motivates by leading to a positive emotional response in the content and experience. Because of the diversity of students, each of them has different learning techniques and strategies. Physical education instructors and experts are encouraged to re-visit their teaching techniques and strategies to fully address the needs of the learners. No student can learn in the same way. Learners can learn easily by listening, through observation and through means of hands-on or experiential learning. Students can also learn through working with peers, others are small or big group, or in a more covert situation. Other students need two or more styles in learning, in order for students to learn it well. The instruction in Physical education is complex, and its goal is student learning. Instructors are the primary responsible and accountable in delivering the teaching-learning process. The attention and interest are the primary concern of all instructors, because it can sustain the attention of students, boost efforts, and support learning. It also heightens the strategic processing skills of the learners.

The interest on the course itself drives the concentration of the students that can result to total engagement to different and various physical activities. Students should be able to identify and understand the different opportunities and benefits that they can acquire in taking up the course. Past studies on the interest of the students towards physical activities found out that there is a relatively high percentage of students that doesn't know the importance and benefits of these various activities on their lives. However, few years after, early studies about the perception of student in physical activities contradicted and claimed that, students do believe that physical education is important to their overall education (Tu, et. al., 2004a). Students have positive attitude

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towards the course when they are aware of its benefits, and if they believe that Physical Education would be helpful to. This implies that students are interested to be engaged in various physical activities. Students are conscious in the importance of Physical activity and a positive perception towards the essence and significance of Physical education for quality of life and well-being (Tannehill & Zakrajsek, 1993a). Results from the study of Ghofrani and Golsanamlou (2007) also shown that students from Sistan and Baluchestan University had a positive perception towards general physical education course. The data collected by Tu et. al. (2004b) also stated that students like their Physical education course due to the enjoyment and fun that they derive from it; socialize with peers and make new friends. Self-actualization and social development are models of physical education which build confidence, knowing more friends and promoting a sense of responsibility (Li, et. al., 2014) to all students taking up the course. The study of Avery and Lumpkin (1987) also supported the study of Tu et. al., which they have verified and concluded that students who are enrolled in the University of North Carolina's physical education course valued having fun, getting regular exercise and keeping in good physique condition. New research from Basar and Coşkun (2017) regarding secondary school students' opinion in Physical education which they have concluded that physical education and sports lessons come out to have been reflected to the students' interest and affection, which significantly different from other courses.

Facilities of the school has been found to be one of the factors that influences the interests of the students. A school consist of the school buildings' provision on a well-located site which includes its facilities and surrounding provided for the learners to learn and concentrate. There is a growing body of research that contributes to the belief that school facility design greatly improve students' achievement, behavior, attendance and teacher retention. School officials should be able to assess the needs of the learners through the physical building in order to provide growth and development. There is a clear connection which exists between the school building and interest which leads to the learning process. In physical education course, equipment and facilities should be properly working for the students not only learn from their lesson from various activities that the course may offer, but to enjoy as well. Pearce et. al. (2014a) identified institutional (outside teacher's control) as one of the barriers in providing quality education in the course. Previous researches have highlighted many institutional barriers most especially the lack of facilities and equipment. Inadequacy of equipment and facilities may result students not to participate to any of the activities, and lose interest on the subject or lesson. These are essentials in achieving the goals of Physical education. Through these equipment and facilities, teachers may be able to maximize and provide conducive learning experience to students. In the recent study of Junio and

Liwag (2016a) identifying facilities and equipment as a factor in the students' interest and academic performance specifically in athletic activities, they have found out that students seem to learn the most when they feel the environment is conducive and supportive.

Studies among children suggested that being outside the classroom or outdoors could be a positive significant of on their activity levels (Cooper, et. al., 2010a; Tabussum, et. al., 2017); therefore, generally, as children spent their physical activities outdoors, they are more physically active rather than indoors (Cleveland, et. al., 2008a; Cooper et. al., 2010b). There are also several studies in the adult population indicate that poor weather is being seen as a barrier to being active physically (Carrie & Develin, 2002; Wilcox, et. al., 2000a; Merrill, et. al., 2005).

Teachers has an important role in the arousal of students' interest in Physical education. Qualities of teachers such as personality, teaching strategies, classroom techniques and managerial skills, relationship with the students, and knowledge about the discipline greatly affects the interest of the students. Teachers should provide maximum physical activity time within the class period, and teach skills and activities that transfer into physical activity outside of physical education class (Schaefer, et. al., 2014a). Teacher's effectiveness doesn't only boost the interests of the students, but it also increases students' achievement (Hattie, 2003a; Tannehill & Zakrajsek, 1993b). Effective learning in the classroom depends on the ability of the teacher to sustain the interest that brought the students to the course in the first place. There have been a number of assessments and meta-analyses to find suitable framework to investigate teachers' effectiveness (Creemers and Kyriakides, 2015), especially in Physical Education. Characteristics of teachers such as age, gender, years of experiences and level of qualification do not appear to predict teacher effectiveness. However, effective teachers have been found to demonstrate better classroom management and to utilize student-centered approaches. Behaviors of generic teachers which have been contributing to effective teaching have been identified (Tannehill & Zakrajsek, 1993c). Prerequisites for effective teaching (including verbal skills, educational coursework undertaken in teacher preparation programs, certification level, knowledge in the content, and experience in teaching), the teacher as a human being, classroom management and organization, planning and organizing for instruction, implementing instruction and monitoring students' progress and potentials (WHO, n.d.a). In terms of teacher's credibility, students found out to view their teachers positively when they "looked like" PE teachers, practice what they preach, and are "awesome pedagogues" (Rink, et. al., n.d.b). Research conducted by Ściślak et. al. (2013) in the relationship between instructor and students was found to be vital to students' performance and success. Therefore, the teacher should be able to connect to his or her students in able to sustain their interest towards the subject which can lead to good performance and success of

the teaching-learning process. Personality is one of the aspects or perspective of teachers' professional attitude affecting the interest of the students as well academic performance (Khan, et. al., 2016). Students' engagement and motivation by interacting with the teacher has been identified as a potential mediator of interest and academic outcomes (Allen, et. al., 2011), making this as an important teacher-related factor when considering the success and interest of the students in the secondary education. VCE Physical Education students reported that the teacher and student relationship is important (WHO, n.d.b) on their performance academically and similarly teachers in the study of Whittle et. al. (2018), reported that knowing your students and developing a relationship is the same with academic success. The results of the study of Whittle, Telford & Benson supports previous research with primary school teachers who rated positive student-teacher relationships as characteristics of an "excellent" teacher. Therefore, the quality of a physical education depends on the quality of physical educator. It means that if the instructor is of high quality such as having good personality, good lesson planning, good communication and managerial skills then the teacher can easily promote the field of physical education by producing a competent student. Enthusiasm and other positive personalities must be possessed by instructors as well to make the class more fun and enjoyable, since Physical education class should not be a burden to the students, but an avenue for students to perform various physical activities and to alleviate stress. Teacher enthusiasm is assumed to favorably influence students' outcomes; thus, being taught by an enthusiastic teacher should make learning more enjoyable, increase interest and achievement (Keller, et. al., 2014).

The study is all about the factors that greatly affects the interest of college students in towards Physical education. Interest is a powerful influence when it comes to learning. The study intended to explore factors which can affect the interest of the students toward the subject. The researcher conducted the study at City College of Angeles in the Academic year 2019-2020. It is located at Arayat Blvd., Barangay Pampang, Angeles City. After conducting the research, recommendations for Physical education instructors were identified and listed down for further improvements in the instruction of the course.

The researcher seeks to find the different factors that affects the interest of college students who are taking minor Physical education in City College of Angeles. It aims to answer the following questions: (1) What are the factors the affect students' interest in Physical Education and (2) What are the recommendations that can be provided based on the results?

METHODOLOGY

The study is designed quantitatively and descriptive-exploratory was used by the researcher to verify and identify the factors that affect the interest of the students in physical education course. All college students taking up

basic Physical education course, both Physical education 2 and 4, are the respondents of the study. Simple random sampling was used to identify the respondents for the study. A 35-item questionnaire adapted from Lobo et. al. (2014d) was used to determine the factors affecting students' interest. IBM SPSS version 26 was utilized for the statistical treatment of data. Principal Component Analysis (PCA) was used to identify the different factors that influences the interest of students in Physical education.

RESULTS

A principal component analysis (PCA) was used on the 35 items with orthogonal-rotation (varimax). The Kaiser-Meyer-Olkin measure verified the sampling adequacy for the analysis, KMO = .79 indicating a good sample size. Bartlett's test of sphericity $\chi^2(351) = 1390.72$ ($p < .01$) likewise indicate that there were sufficient correlations to proceed with factor analysis. An initial analysis was run to obtain eigenvalues for each component in the data. Four components had eigenvalues over Kaiser's criterion of 1 and in combination explained 62.67% of the variance. Seven components were retained in the final analysis. Table 1 shows the factor loadings after rotation. The items that cluster on the same factor suggest that factor 1 represents "Love for Physical Education", factor 2 "Teacher Factor", factor 3 "Dance Activities", factor 4 "Sports and Physical Fitness", factor 5 "Teacher's Consideration.", factor 6 "Climate and Facilities", and factor 7 "Teacher as an Instructional Material".

The factors that were identified from the analysis are (1) Love for Physical Education, (2) Teacher Factor, (3) Dance Activities, (4) Sports and Physical Fitness, (5) Teacher's Consideration, (6) Climate and Facilities and (7) Teacher as an Instructional Material.

DISCUSSION

Love for Physical Education

The love on the subject itself (Physical Education) was found out to be a factor that affects the interest of students. It was supported by the study of Harackiewicz et al. (2016), Interest is both a psychological state of attention and affect toward a particular object or topic, and an enduring predisposition to reengage over time. In line with this, Physical education instructors should be able to inculcate to students the importance and significance of the course not only on their academics itself, but also in their daily lives.

Teacher Factor, Teacher's Consideration and Teacher as an Instructional Material

The Teacher itself is also identified as one that contributes to the interest of students toward Physical Education. Questions that were raised to the respondents via survey questionnaire focuses on the teacher's effectiveness inside the classroom, enthusiasm, time management, and consideration based on the performance of his/her students in class. Since most of the respondents agreed that these are qualities that teachers should embodied,

Table 1. Results of Principal Factor Analysis, Orthogonal Rotation, Factor Loadings > 0.45, N = 801

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
I love Physical Education	.759						
I never get bored in our P.E Class	.745						
I believe that physical education will enhance my skills and will help me to be a healthy individual	.716						
I consider P.E as one of my priorities in school	.667						
The facilities of our school are complete and reliable to use	.495						
My teacher is an effective instructor		.756					
My teacher is enthusiastic in teaching		.691					
My teacher uses our time properly		.589					
My teacher is always on time on our class		.588					
My teacher is considerate when it comes in our performances in class		.522					
I love Folk Dance			.831				
I love Ballroom Dancing			.751				
I am fond of dancing			.729				
I prefer modern dances than folk dances			.706				
I am fond of playing sports				.815			
I love Basketball				.664			
I love doing exercises				.638			
I love to take the Physical fitness test to check my health status				.565			
My teacher always gives us assignment and project in our P.E class					.771		
My teacher gives a high grade on our P.E Subject					.684		
My teacher gives us the opportunity to enhance our skills					.525		
P.E class is great when it's held in the morning rather than with the afternoon						.827	
I like to have our P.E Class when it's a sunny day						.660	
I love to have our P.E class in a covered court, because I feel that I am comfortable and free to move						.522	
I prefer having our class inside the classroom only							.744
I can get clear answers from my teacher when I asked him/her questions about our lesson							.725
I love my P.E teacher when he/she teaches our lesson							.569
% of Variance	11.28	10.87	9.57	8.65	7.61	7.59	7.10
Cronbach's α	.814	.765	.748	.668	.646	.567	.524

it can be stated that the more teachers practice and shows these kinds of qualities the more their interest in the course can be heighten. Based on the result of this study, it was supported by the findings of Hattie (2003b), Stronge (2007) and Harley (2012) where they stated that teacher's effectiveness doesn't only boost the interests of the students, but it also increases students' achievement. The consideration of the teachers was also found out to be one of the factors that affects students' interest in Physical Education. It can be supported by the study of Cicekci & Sadik (2019) that teachers should show more interest towards students, by approaching them positively and to use variety of teaching methods in accordance with the student's level.

Dance Activities, Sports and Physical Fitness

Dance Activities, Sports and Physical Fitness were also factors which affects interest of students towards the subject. From an old study of Chen (1996) supported the result of this study, wherein he stated that teachers

must be able to pick activities properly that will match the interest of the students. It was also supported by the study of Holstermann et al. (2010), findings revealed that hands-on activities showed positive correlations with interest of the students. In this current study, the result can be useful to teachers who are teaching the course to understand that the interest of students may also rely based on the type of activity that they teach to their students.

Climate and Facilities

Climate and facilities were also identified as one of the factors which affects students' interest. The result of the study was supported by the findings of Junio and Liwag (2016b) where they have found out that students seem to learn the most when they feel the environment is conducive and supportive. Among children, it was also suggested that being outside the classroom or outdoors could be a positive significant of on their activity levels (Pearce, et. al., 2014b; Schaefer, 2014b; Stone & Faulkner,

2014); therefore, generally, as children spent their physical activities outdoors, they are more physically active rather than indoors (Cleveland, et. al., 2008b; Cooper, et. al., 2010c). There are also several studies in the adult population indicate that poor weather is being seen as a barrier to being active physically (Wilcox, et. al., 2000b; Currie & Develin, 2002; Tu, et. al., 2004b; Merrill, et. al., 2005). In this, the teachers should know what best suit their students' needs and performance based on climate and also facilities that can be used for various physical activities.

CONCLUSION

It can be concluded that the love for subject, teacher, dance activities, sports and physical fitness, climate and facilities are identified as factors which can affect students' interest in Physical education at City College of Angeles. One of the limitations of this study is that, it was conducted before the COVID-19 pandemic. The result of this study may not be suitable to the new normal. However, in order to confirm if these factors may affect the interest of the students toward Physical education in this new normal of education, a replication of this study may be conducted. Combination of various statistical analysis may be utilized and additional variables can be added to this existing study. This may also be applied in a larger population or different setting and confirm if the results will still be the same. Lastly, this study contributes to existing literatures regarding the different factors that can affect the interest students' interest in Physical education.

Recommendation

Based on the results, the researcher recommended the following:

1. Teachers should let students understand and appreciate the importance of Physical Education on their academics and daily lives. In this, teachers will be able to inculcate to students a high level of appreciation to the course itself.

2. Teachers should re-visit their techniques and methodologies that they are currently using and check if these are still applicable to their current students. Seminars/Webinars and workshops may be provided by the administration in order for the teachers to explore the newest trends and other important matters in relation to teaching techniques and methodologies in order to align these to their students' need that may greatly improve their interest to Physical education which can result to higher academic achievement.

3. Teachers should be careful on choosing what specific Physical activities that they will be teaching to their students. If the teachers are following a specific syllabus, in order to retain and prolong the interest of students toward a specific physical activity, they should apply different techniques and strategies to fully engage students' participation.

4. Teachers should also be considerate of their students' performance in class. It is recommended that teachers should observe the level of performance of their students

in executing different activities in Physical education. In this, teachers should identify the needs of students and address these needs to fully engage the students.

5. It is recommended that the college should be able to provide complete equipment and facilities to teachers and students on their Physical Education classes. Adequate facilities and equipment will boost the interest of students to participate more in different activities and enjoy the course itself.

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REFERENCES

- Allen, J.P., Pianta, R.C., Gregory, A., Mikami, A.Y. & Lun, J. (2011). An interaction-based approach to enhancing secondary school instruction and student achievement, *Science*, 333(6045), 1034-1037., <https://doi.org/10.1126/science.1207998>
- Avery, M. & Lumpkin, A. (1987). Students' Perceptions of Physical Education Objectives, *Journal of Teaching in Physical Education*, 1987(7), 5-11. <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.849.3899&rep=rep1&type=pdf>
- Barberos, M.T., Gozalo, A. & Padayogdog, E. (n.d.), Chapter I The Effect of the Teacher's Teaching Style on Students' Motivation Action Research., Department of Teaching and Learning, NYU Steinhardt. <https://steinhardt.nyu.edu/teachlearn/research/action/motivation>
- Başar, M.A. & Coşkun, A. (2017). Secondary School Students' Opinions about Physical Education Course. *International Journal for Culture and Sport*, December 2017, 5(4), ISSN 2148-1148. http://www.iscsjournal.com/Makaleler/515588612_5c4s_2.pdf
- Centers for Disease Control and Prevention. (2015), Facts about Physical Activity. Retrieved from <http://www.cdc.gov/physicalactivity/data.facts.htm>
- Chen, A. & Wang, Y. (2017). The Role of Interest in Physical Education: A Review of Research Evidence, *Journal of Teaching in Physical Education*, 2017(36), 313-322., <https://doi.org/10.1123/jtpe.2017-0033>
- Cicekci, M. A., & Sadik, F. (2019). Teachers' and Students' Opinions About Students' Attention Problems During the Lesson. *Journal of Education and Learning*, 8(6), 15. <https://doi.org/10.5539/jel.v8n6p15>
- Cleveland, V., Crawford, D., Baur, L.A., Hume, C., Timperio, A. & Salmon, J. (2008). A prospective examination of children's time spent outdoors, objectively measured physical activity and overweight, *International journal of obesity*, 2008, 32(11), 1685-1693
- Cooper, A.R., Page, A.S., Wheeler, B.W., Hillsdon, M., Griew, P. & Jago, R. (2010). Patterns of GPS measured time outdoors after school and objective physical

- activity in English children: the PEACH project, *International Journal of Behavioral Nutrition and Physical Activity*, 7(1), 31. <https://ijbnpa.biomedcentral.com/articles/10.1186/1479-5868-7-31>
- Creemers, B. & Kyriakides, L. (2015). Process-Product Research: A Cornerstone in Educational Effectiveness Research, *Journal of Classroom Interaction*, 50(2), 107-119
- Currie, J.L. & Develin, E. (2002). Stroll your way to well-being: a survey of the perceived benefits, barriers, community support, and stigma associated with pram walking groups designed for new mothers, Sydney, Australia, *Journal of epidemiology and community health*, 23(8), 882-893.
- Duran, I.L. (2015). Class Schedule: A Predictor of Students' Performance in Computer Programming-1, *International Journal of Scientific & Engineering Research*, 6(5). <https://www.ijser.org/researchpaper/Class-Schedule-A-Predictor-of-Students-Performance-in-Computer-Programming-1.pdf>
- Ghofrani, M. & Golsanamlou (2007). Students' Perception of Physical Education Courses and Its Relationship with their Participation in Sport Activities, *Sport SPA*, 9(1), 21-31. <http://www.sportspa.com.ba/images/june2012/full/rad3.pdf>
- Harackiewicz, J. M., Smith, J. L., & Priniski, S. J. (2016). Interest Matters: The Importance of Promoting Interest in Education. *Policy Insights from the Behavioral and Brain Sciences*, 3(2), 220-227. <https://doi.org/10.1177/2372732216655542>. Interest
- Hattie, J. (2003). Teachers Make a Difference, What is the research evidence?. Australian Council for Educational Research (ACER). https://research.acer.edu.au/cgi/viewcontent.cgi?article=1003&context=research_conference_2003
- Holstermann, N., Grube, D., & Bögeholz, S. (2010). Hands-on Activities and Their Influence on Students' Interest. *Research in Science Education*, 40(5), 743-757. <https://doi.org/10.1007/s11165-009-9142-0>
- Jamero, J. (n.d.), Student Perceptions of School Physical Education Programs., Center for Mental Health Schools, UCLA. <http://smhp.psych.ucla.edu/pdfdocs/physed.pdf>
- Jenkinson, K.A. & Benson, A.C. (2010). Barriers to Providing Physical Education and Physical Activity in Victorian State Secondary Schools, *Australian Journal of Teacher Education*, 35(1), <https://ro.ecu.edu.au/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1481&context=ajte>
- Junio, J. & Liwag, J. (2016). Factors Affecting Students' Performance in Physical Education Class in Lyceum of the Philippines University – Laguna., College of Arts and Sciences, *LPU-Laguna Journal of Multidisciplinary Research*, 4(4). Retrieved from <http://lpulaguna.edu.ph/wp-content/uploads/2017/03/Factors-Affecting-Students-Performance-in-Physical-Education-Class-in-LPU-Laguna.pdf>
- Keller, M.M., Neumann, K. & Fischer, H.E. (2014). 8. Enthusiastic Teaching and its Impact on Students' Interest and Self-Concept: An Investigation of German Physics Classrooms. S.129-143. ISBN 978-3-8309-3055-6. https://kops.unikonstanz.de/bitstream/handle/123456789/30154/Keller_0-265864.pdf?sequence=3
- Khan, A., Khan, S., Khan, S.Z. & Khan, M. (2016). Impact of teacher personality on the academics of the students, *Journal of Physical Education Research*, 3(II), 74-79., <https://www.researchgate.net/publication/306359339>
- Khatun, A. & Bandyopadhyay, N. (2016). An Evaluation of Health Awareness and Physical Education Programme of Different Category of Secondary School in West Bengal, *International Journal of Physical Education, Sports and Health* 2016, 3(3); 624-626. <http://www.kheljournal.com/archives/2016/vol3issue3/PartG/3-3-83-429.pdf>
- Krouscas, Jr., J. (1999). Middle School Students' Attitudes Toward a Physical Education Program. <http://ceskakinantropologie.cz/hendl/metodologie/DISSPA1999.PDF>
- Li, F., Chen, J. & Baker, M. (2014), University Students' Attitudes Toward Physical Education Teaching, *Journal of Teaching Physical Education*, 2014(33), 186-212. <http://dx.doi.org/10.1123/jtpe.2012-0187>
- Learning Liftoff (2017), How Class Schedules Impact Student Success., Retrieved from <https://www.learningliftoff.com/how-class-schedules-impact-student-success/>
- Lobo, J. et al. (2014). Factors Affecting Students' Interest in Physical Education at Francisco G. Nepomuceno Memorial High School. mUndergraduate Thesis, College of Arts, Sciences and Education. Holy Angel University
- Merrill, R. M., Shields, E. C., White, G. L., Jr, & Druce, D. (2005). Climate conditions and physical activity in the United States. *American journal of health behavior*, 29(4), 371-381. <https://doi.org/10.5993/ajhb.29.4.9>
- Pearce, M., Page, A. S., Griffin, T. P., & Cooper, A. R. (2014). Who children spend time with after school: associations with objectively recorded indoor and outdoor physical activity. *The international journal of behavioral nutrition and physical activity*, 11(1), 45. <https://doi.org/10.1186/1479-5868-11-45>
- Pope, N.G. (2016). How the time of the day affects productivity: Evidence from School schedules, *The Review of Economics and Statistics*, 98(1), 150320161741002. http://dx.doi.org/10.1162/REST_a_00525
- P. R. Subramaniam (n.d.). Motivational Effects of Interest on Student Engagement and Learning in Physical Education: A Review. http://www.unco.edu/cebs/psychology/kevinpugh/motivation_project/resources/subramaniam.pdf
- Rahman, S. (2017), Effects of weather on physical activity among School children in Alberta, Canada *Master's Thesis, School of Public Health*. <https://era>

- library.ualberta.ca/items/40ce3e90-769d-4ce5-b2cf-37cc4275f18e/view/4e46d922-7731-44a3-b1918587b0ba2654/Rahman_Sholeh_201707_MSc.pdf
- Ramos, N.C. & McCullick, B.A. (2015)., Elementary students' construct of physical education teacher credibility, *Journal of Teaching in Physical Education*, 34(4), 560-575. <https://doi.org/10.1123/jtpe.2014-0052>
- Rink, J., Hall, T. & Williams, L. (n.d.), The Role and Responsibilities of the Physical Education Teacher in the School Physical Activity Program., Excerpt from Schoolwide Physical Activity. <http://www.humankinetics.com/excerpts/excerpts/the-role-and-responsibilities-of-the-physical-education-teacher-in-the-school-physical-activity-program>
- Sauer, K. (2012)., The Impact of Student Interest and Instructor Effectiveness on Student Performance., St. John Fisher College., Fisher Digital Publications., Education Masters., Ralph C. Wilson, Jr. School of Education., https://fisherpub.sjfc.edu/cgi/viewcontent.cgi?article=1244&context=education_ETD_masters
- Schaefer, L., Plotnikoff, R. C., Majumdar, S. R., Mollard, R., Woo, M., Sadman, R., Rinaldi, R. L., Boulé, N., Torrance, B., Ball, G. D., Veugelers, P., Wozny, P., McCargar, L., Downs, S., Lewanczuk, R., Gleddie, D., & McGavock, J. (2014). Outdoor time is associated with physical activity, sedentary time, and cardiorespiratory fitness in youth. *The Journal of pediatrics*, 165(3), 516–521. <https://doi.org/10.1016/j.jpeds.2014.05.029>
- Ściślak, M., Rokita, A. & Popowczak, M. (2013). Secondary School Students' Interest in Various Forms of Physical Activity, *Human Movement*, 14(1), 11-19., <https://doi.org/10.2478/v10038-012-0049-7>
- Stone, M. R., & Faulkner, G. E. (2014). Outdoor play in children: associations with objectively-measured physical activity, sedentary behavior and weight status. *Preventive medicine*, 65, 122–127. <https://doi.org/10.1016/j.ypmed.2014.05.008>
- Stronge, J. (2007)., *Qualities of Effective Teachers* (2nd ed.), Alexandria VA: Association for Supervision and Curriculum Development (ACSD)
- Tabussum, S., Asif, M. & Ahmed, N. (2017). Scientific Benefits and Attitude towards Physical Activity and Physical Education, *International Journal of Scientific & Engineering Research*, 8(7), 643-647. <https://www.ijser.org/researchpaper/Scientific-Benefits-and-Attitude-towards-Physical-Activity-and-Physical-Education.pdf>
- Tannehill, D. & Zakrajsek, D. (1993). Student Attitudes Towards Physical Education: A Multicultural Study, *Journal of Teaching in Physical Education*, 13(1), 78-84., <https://doi.org/10.1123/jtpe.13.1.78>
- Tu, W., Stump, T. E., Damush, T. M., & Clark, D. O. (2004). The effects of health and environment on exercise-class participation in older, urban women. *Journal of aging and physical activity*, 12(4), 480–496. <https://doi.org/10.1123/japa.12.4.480>
- Whittle, R. J., Telford, A., & Benson, A. C. (2018). Teacher's Perceptions of how they Influence Student Academic Performance in VCE Physical Education. *Australian Journal of Teacher Education*, 43(2). <http://dx.doi.org/10.14221/ajte.2018v43n2.1>
- Wilcox, S., Castro, C., King, A. C., Housemann, R., & Brownson, R. C. (2000). Determinants of leisure time physical activity in rural compared with urban older and ethnically diverse women in the United States. *Journal of epidemiology and community health*, 54(9), 667–672. <https://doi.org/10.1136/jech.54.9.667>
- World Health Organization (WHO)., Definition of Physical Activities., Retrieved from <https://www.who.int/dietphysicalactivity>