Developmental Physical Education and Perceived Physical Competence of First Graders

Angela Ray M. Abarquez & Leonor E. Diaz

This quasi-experimental comparison-group pretest and post-test study examined if there was a significant difference in the perceived physical competence of first graders who were exposed to Developmental Physical Education (DPE) versus those who were exposed to Standard Physical Education (SPE). A secondary aim of this study was to examine if the perceived physical competence of the DPE group improved after the intervention. Data was obtained through an adapted Perceived Physical Competence Scale (PPCS), a researcher-developed and expert-validated interview guide, and observation notes. Forty-eight students from two intact classes in a university laboratory school were recruited for the study. The experimental group was exposed to (DPE), while the comparison group was taught using the school's prescribed PE program (SPE) for ten weeks. A Mann-Whitney U-test was used to test for group differences after the intervention. Results did not show significant differences between the two groups. However, further analysis from a Wilcoxon signed-ranks test yielded a significant difference in the perceived physical competence of those in the experimental group. These results suggest that further studies are warranted to confirm and validate the effectiveness of DPE in various contexts and constructs to encourage children to participate in physical activities regardless of their actual physical competence.

Keywords: *developmental physical education, perceived physical competence, primary learners, early childhood education*

Introduction

Movement plays a significant role in children's lives. It stimulates children to explore, grow, and learn about themselves and anything that surrounds them. According to Dotson-Renta (2016), children can connect concepts to action and learning through experimentation; hence, movement experiences allow them to investigate, understand, and challenge the world around them. Children engage in active learning through play, which is their language for movement. In schools, where students spend a large portion of their time, children participate in various movement experiences, particularly during physical education (PE). PE teaches children how to perform movement skills efficiently and how to use them for practical purposes.

A considerable amount of literature has been published on the importance and advantages of PE in the educational process. However, perceptions of PE remain unbalanced in school systems despite its essential role in children's education (Hardman & Marshall, 2009). The United Nations Educational, Scientific and Cultural Organization (UNESCO, 2015) reported a decrease in the provision of PE in many countries. According to Hardman (2014), 29% of countries globally do not implement PE based on mandatory obligations in school. Further, Bentley et al. (2012), noted that many parents tend to think that children do not have to engage in physical activities based on the assumption that children are "active enough."

According to the National Association of Sport and Physical Education ([NASPE], 2011), PE provides a vital role in educating the "whole child." Preceding studies have proven the benefits of PE in children's learning and development in the primary years. According to Basch (2011), healthier kids perform better in school and school programs can contribute to addressing some health concerns in children. In a recent review study, Opstoel et al. (2020) confirm previous studies which found that PE improves children's personal and social skills. PE is also particularly crucial in the development of motor competence of children in the primary years (Costa et al., 2015; Lopes et al., 2016; Lopes et al., 2017). Furthermore, children's physical abilities positively affect their sense of competence (McFadden et al., 2013; True et al., 2017). These studies support the National Association for the Education of Young Children' (NAEYC) view, which recognizes that areas of childhood development and learning are interrelated and that every learning domain supports and is supported by another (NAEYC, 2020). Moreover, one of its principles of child development and learning presents the importance of an interdisciplinary approach, which makes learning more relevant to the children. In the context of PE, children develop cognitive skills as they comprehend and follow instructions, observe, and learn by doing. Socio-emotional development is evident as children navigate their emotions, perceive themselves, and relate and cooperate with their peers. Apart from the physical motor development that occurs, the multiple benefits of PE support children's holistic development that builds on providing opportunities that promote learning across disciplines.

In early childhood education (ECE), developmentally appropriate practices (DAP) promote the development of children across learning areas. DAP is a framework and set of guidelines designed to provide children with a "strengths-based, play-based approach to joyful, engaged learning" (p.5). For children's learning to be more effective and meaningful, educators must take into consideration the components of DAP, which focus on what is known about 1) the child, 2) the strengths of the child, and 3) the child's social and cultural contexts (NAEYC, 2020). Teachers will be able to provide the right support by observing and being informed about their learners. In schools, PE is utilized as an educational tool that allows for joyful and engaging learning.

The K-12 PE curriculum is the prescribed or standard physical education (SPE) in the Philippines. It aims for fitness and movement education to be instilled in every learner. Particularly in the K-3 levels, the key stage standard focuses on the students' understanding of movement concepts and skills to be able to participate in physical activities. The national curriculum advocates an approach that considers the diverse range of learners to provide

students with equal learning opportunities in PE (K-12 PE Curriculum Guide, 2016). However, individual needs are not addressed in regular PE programs since the activities are designed for the general characteristics of an intended grade level. Furthermore, the time allocation for PE is only 40 minutes per week compared to other subjects such as Math, Science, Reading, or Social Science that receive 150-200 minutes weekly (K-12 PE Curriculum Guide, 2016). Given this context, addressing the different needs of students in PE is more challenging when instructional time, learning options, and opportunities for practice are limited.

In the search for an educational approach that responds to the motor, cognitive, and affective development, the learning enjoyment, and the developmental level of each child, developmental physical education (DPE) was developed. According to Gallahue and Donnelly (2003), "a developmental physical education (DPE) emphasizes the acquisition of movement skills and increased physical competence based on the unique developmental level of the child" (p.11). Since DPE recognizes that every child develops differently, it is imperative to know and understand their individuality. In DPE, instruction depends on individual appropriateness first and foremost, even if learning competencies are common for a specific level. This stems from the fact that children progress at their own pace; hence, careful consideration of what they can and cannot do at a certain point in time is imperative.

A significant amount of research on the effects of PE is available in current studies. Over the years, studies have investigated the positive effects of PE on different educational and health contexts (Bailey et al., 2009; Lihong, 2011; Howie & Pate, 2012; Sallis et al., 2012; Mayorga-Vega et al., 2012; Cairney et al., 2012; Costa et al., 2015; and Solmon, 2015). A study by Valentini and Rudisill (2004) examined the effects of a mastery climate intervention among students (ages 5.9-10.9 years) with and without disabilities while giving attention to the developmental level/pace in learning in PE of these students. In the local context, current PE programs are designed to address the characteristics of learners at particular levels. To the authors' knowledge, there is very little published research that specifically aimed to give attention to the individual characteristics of children, thus the design and implementation of a DPE is the focus of the current study. Furthermore, with PE playing an interdisciplinary part in ECE, perceived physical competence was an important variable in the study since it covers the child's beliefs about one's physical abilities. In line with this, the researchers specifically aimed to 1) examine if there would be a significant difference in the perceived physical competence between first graders who were exposed to ten weeks of developmental physical education (DPE) and those who were exposed to ten weeks of standard physical education (SPE) and 2) examine if the perceived physical competence of the DPE group improved after ten weeks of intervention.

Review of Related Literature

Developmental Characteristics of Primary Learners

Children go through a season of remarkable growth during their primary years. Their physical, social, and cognitive developments are observed in exceptionally different ways. During this critical developmental period, they discover a lot about themselves, develop skills, and acquire behaviors that they bring with them as they get older. Primary grade learners are inquisitive, creative, and ready to embark on challenges. In the first grade, when students begin formal schooling, teachers understand how crucial the primary years are since foundational skills are developed during this phase.

The different developmental areas in the primary years are integrated (NAEYC, 2020). For example, during PE, motor skills are developed along with cognitive skills that help children comprehend and follow both basic and complex instructions in physical activities and games. Students also learn to manage their behavior and emotions as they participate in social interactions with their classmates and teachers. They also begin to control their bodies, and as they learn, they become ready to take on more difficult skills.

As Bredekamp and Copple (2009, as cited in Gordon & Browne, 2016) observe, when children begin to master newly acquired skills, they later on engage in more complex skills that will test their present abilities.

Piaget, one of the most notable theorists of cognition, posits that children are active participants in the development of their cognition. Children in the preoperational stage (ages 2-7) are learning to understand the relationship between their sensory experiences and the world around them (Piaget, 1936, as cited in McLeod, 2018). However, Cook and Cook (2005) clarify that concrete experiences for children to engage in and concrete models for them to observe are still very much essential to their learning. Meanwhile, Albert Bandura's Social Learning Theory (SLT) propounds that children learn through social interactions, observations, and the influence of others (Bandura, 1971). In the learning process, students pay attention to the model, remember, and replicate the observed behavior, and eventually demonstrate the behavior they just learned (Bandura, 1971), which explains why children learn best by doing.

School-age children enjoy taking part in challenging and meaningful experiences and when successful, they take ownership of their learning. Erikson's Industry versus Inferiority stage (1959) describes the school-age years. This phase is where students feel proud of their accomplishments so their experiences of success lead to feelings of competence. In a similar vein, Gesell's maturation theory has also influenced studies and practices in ECE, particularly in children's motor development. Gesell (1940, as cited in Gordon & Browne, 2016) highlights that although growth is universal and follows an orderly and predictable sequence, children develop at their own pace. For Gesell, each child will go through the same developmental progression, but the rate of acquisition of motor skills differs from child to child. Children ages six to seven are at the fundamental movement stage, which is also called the exploration phase, because children discover the movement potential of their bodies (Gallahue et al., 2012). They learn best when they are physically active because they have a lot of energy. For parents and educators, it is imperative to provide children with movement experiences because these benefit children's learning, health, and self-esteem (Doherty & Brennan, 2008; Brazendale et al., 2015).
This period marks the enhancement of fundamental movements that will establish skills and prepare them for the next phase. Children develop and learn at different rates (Stodden et al., 2008; NAEYC, 2009), thus movement skills development varies as well. Not all children acquire skills quickly and it is important that children are provided with many opportunities to explore movement skills. When fundamental skills are not properly established, children may experience frustration (Gallahue & Donnelly, 2003).

This kind of situation is evident in PE classes when children hesitate to participate in physical activities. This may explain why children often resort to withdrawal when they do not see themselves performing well in a certain task. Feedback, direction, and encouragement from others are important for children as these influence their motor skills development and participation in physical activities (Robinson, 2011). It would be developmentally inappropriate if children are forced to learn skills they are not yet ready for, may it be cognitively, emotionally, or physically. Table 1 presents a summary of the developmental characteristics of children ages six to seven adopted from various sources.

Table 1

Summary of Developmental Characteristics of Children Aged 6-7

Domain	Characteristics
Physical	Active, have a lot of energy and enjoy rough play Display confidence in movement skills Developing fine and gross motor skills Learn how to control their bodies Improved body balance skills Take part in games with defined rules Can incorporate motor skills into games Learn best when physically active May repeat an activity to achieve skill mastery
Cognitive	Imaginative and are active participants in the learning process Have limited attention span and are easily distracted by their environment Decisions are emotionally based Learn best by doing and through modeling Become less egocentric Begin to think about how other people might think and feel Begin to represent the world with words and images as they begin to think symbolically
Socio-Emotional	Somewhat self-centered Increased awareness of themselves but are more sensitive to others Need to be constantly reminded of the group rules Like to express themselves but must be asked directly Need to deal with demands from society and school Their success makes them feel competent Feelings of inferiority come from their lack of success

Note. Taken from Cherry (2021), Equitas International Centre for Human Rights Education (2008), and Extension (n.d.)

Although there are common characteristics among children, each child still has their own timetable and unique social and cultural contexts that help shape their experiences (NAEYC, 2009). Children, as active learners, draw from these experiences and create a new set of constructs, which they typically use in their daily learning processes (Bredekamp & Copple, 2009, as cited in Gordon & Browne, 2016). Different theories about how development and learning take place among children have evolved and have guided parents and educators in raising and teaching children throughout the years. It is worth noting that primary grade learners undergo immense transitions, cognitively, socio-emotionally, and physically. Learning areas are integrated in such a way that changes in one learning domain could impact other domains (NAEYC, 2020) thus, early childhood development should not be sectionalized. One of DAP's underlying principles is knowing and understanding who the learner is, including their individual characteristics and needs. In doing so, learning becomes more meaningful and more student-centered. The literature presented in this section recognizes the child's uniqueness and argues that developmentally appropriate methods are needed to support children's development and learning.

Standard Physical Education (SPE)

In 2012, the Department of Education launched the K- 12 Basic Education Program. It was a shift from the country's 10-year education cycle to 13 years of basic education, which includes Kindergarten and added Grades 11 and 12. It sought to address the issue of congestion of lessons and aimed to provide Filipino students more time to learn and master skills and concepts necessary for entering college. This educational reform has consequently brought about a shift in the PE curriculum. The PE curriculum that previously focused on professional sports and athletics (Juico, 2008 as cited in UNESCO, 2008) now focuses on the teaching of the what, why, and how of movement especially in the early grades, which allows students to be physically literate and competent to participate in physical activities (K-12 Physical Education Curriculum Guide, 2016).

The curriculum for Grade 1 focuses on body awareness, space awareness, qualities of effort, and physical fitness. PE is conducted once a week for 40 minutes for Grades 1-6. The time allotment for PE in the Philippines is far behind in comparison to the recommendation of the Society of Health and Physical Educators (SHAPE) for schools to provide 150 minutes of PE instruction per week (SHAPE America, 2015). Furthermore, at the end of first grade, students are expected to "understand the movement concepts and skills in preparation for active participation in various physical activities"(K-12 Physical Education Curriculum Guide, 2016, p.5). As recommended by the curriculum's proponents, PE programs must include activities that are developmentally appropriate to meet the diverse needs of the learners.

However, local current PE programs do not address students' individual needs as these programs are designed to address the general characteristics of a particular level or needs of the average student. Furthermore, delivering PE instruction is already challenging given the time allocation for PE; providing opportunities to address the diverse needs of the learners would be even more challenging. The curriculum's aim to provide Filipino students with equal learning opportunities in PE calls for opportunities for every kind of learner. Given that students have their own characteristics and needs, true developmentally-designed PE programs are the ones that consider individual characteristics and provide the appropriate type of support that students need.

Developmental Physical Education (DPE)

Children are given opportunities to perform physical activities through PE classes. According to NASPE (2011), such opportunities bring feelings of joy and accomplishment to students. For Gallahue and Donnelly (2003), success must be experienced by children. They learn best by doing; hence, movement explorations may lead to success. They emphasize that children must see that they are making progress, especially when learning new skills. Providing children with appropriate instruction and learning opportunities will help them experience success. This implies that children carefully improve and master their skills eventually.

In ECE, best practices are sensitive to children's development rate, learning experiences, and context. The Developmentally Appropriate Practice (DAP) framework is based on a perspective that suggests that growth is unique to every child. It guides educators' decision-making using three main considerations: common characteristics among children, individual differences, and contextual factors (NAEYC, 2020).
The Developmental Physical Education (DPE) approach captures the DAP perspective as it supports diversity among learners and supports them at their current level. It "emphasizes the acquisition of movement skills and increased physical competence based on the unique developmental level of the child" (Gallahue, 1987, p.13). The nature of DPE acknowledges the present developmental level of the children instead of their biological age, thus enabling them to progress at their pace. Developmentally-appropriate programs reduce gaps in learning, improve student achievement, and respect the different needs of the learners (NAEYC, 2009). The individuality of the learner and appropriate instruction is the heart of DPE. According to Lihong (2011), individual differences among children make it challenging to

reach learning goals in the same manner; however, DPE does not suggest individual PE lessons for every student in the classroom. Rather, it highlights the importance of having access to a variety of options for students to learn and master their target learning competencies.

O'Connor (2017) stresses that children should come first before curriculum, pedagogy, and assessment. A program is developmentally-planned when it responds to the diverse needs of every child. According to Tomlinson (2000), differences must be addressed to maximize children's potential. One way to maximize children's potential and personal growth (Valiandes, 2015), and address diversity is through differentiated instruction. Differentiation was developed by Tomlinson in 1999 and is built on the understanding and efforts of the teacher to address students' unique individual needs (Tomlinson, 2000). Its main features are differentiation in "content, process, product, and learning environment" (p.5). Differentiation is based on the principle that children develop at different rates; thus, differentiated instruction and learning is fundamental in the primary years. According to Colquitt et al., (2017), differentiation does not receive much attention in PE, and it is more commonly used for those who have special needs; however, all children will benefit from differentiation as they have diverse learning styles and needs.

As a developmental approach, DPE shares a lot of similarities with differentiated instruction as both practices put emphasis on the child's individuality. A mastery climate intervention was used by Valentini and Rudisill (2004) to investigate its benefits and effects on the motor skill development of students ages 5.9-10.9 years old with and without disabilities. The mastery climate intervention resembles a differentiated instruction approach as it provides a range of options for students to attain skill mastery. Furthermore, the lessons were planned based on the students' developmental skill levels and prior knowledge, which indicates attention to the individual needs of the students. The results revealed positive outcomes in motor development for both groups after 12 weeks of intervention. These findings suggest that developmental approaches in teaching and learning are beneficial to children as they provide equal learning opportunities regardless of differences in student abilities.

Rengasamy's (2012) quasi-experimental study also found significant differences in secondary Malaysian female students' cardiovascular endurance and flexibility after a ten-week physical fitness intervention program within a PE class. Both groups followed their twice-a-week 40-minute regular PE. The experimental group underwent the intervention in a form of circuit exercises designed to improve health-related fitness. Based on the results, Rengasamy (2012) concluded that interventions within PE classes can contribute to improving health-related fitness.

In another quasi-experimental study, Valiandes (2015) investigated the effects of differentiated instruction on students' literacy and reading in mixed-ability classrooms. Valiandes (2015) argued that before differentiating instruction, teachers must know their learners and understand each student's needs and characteristics. Written tests, questionnaires, and an observation protocol were used to collect data. Pretests and post-tests were administered to the participants and scores of the experimental and control groups were analyzed to determine the effects of differentiated instruction on student achievement. The results of the study found a significant difference between the achievement levels of students who were exposed to differentiated instruction compared to those who were not. Although the study was not conducted within PE, findings show that through differentiation, educators were able to stabilize the achievement gap, which is a good indicator that differentiation is effective. Provided that differentiation will be employed and improved further, more promising results can be expected (Valiandes, 2015).

Parallel results were found by Koeze (2007) that measured the effects of differentiated instruction and its components among nine-to-ten-year-old students on student achievement. Results indicate that student achievement and learning satisfaction increased when differentiation in choice and interest play was done, as these consider the different learning styles of students. Koeze (2007)

emphasizes that differentiation does not necessitate individual plans for every child. The author argues that children are more successful in their tasks when they are taught in ways that respect and respond to their needs.

What sets DPE apart from traditional PE is the consideration of the student's individuality. The course of development in children may be common in many ways, but they differ in several other aspects such as strengths, readiness, needs, and even prior experiences. The views of Valiandes (2015) and Koeze (2007) establish the importance and advantages of differentiated instruction as an effective, developmental teaching strategy that can be used in PE classrooms today.

Moreover, PE is developmental when educators understand how children learn and develop. Anyone who works with children knows that play is the world of children. It is essential to development and learning, especially in the primary years. DAP highlights that play is a "universal phenomenon" across young children coming from different backgrounds. (NAEYC, 2020, p.6). Piaget considers the role of play a large influence in the development of children's cognition. Vygotsky (1978, cited in Van Hoorn et al., 2007) believes that social dynamics that occur during play support children's intrapersonal and interpersonal engagements and that social interactions such as play is the source of development of understanding among children.

Play has always been strongly recommended for integration into the ECE curriculum since it is a powerful learning tool. It is an important means for instilling self-regulation skills among children, because it allows them to enjoy and learn from the world outside their homes (NAEYC, 2009). Children's interactions with the world hone their physical and social competence, which makes the role of play absolutely necessary to their holistic development. Mansaray (2019) examined the importance of play in children's development and concluded that a developmentally appropriate early childhood program must involve play as it supports holistic learning. This explains why play is integrated in every subject in the curriculum as it serves as an avenue for children to learn about themselves, others, and their environment. It is developmentally appropriate, as it responds to children's interests and is known to be a natural activity for them. Through play, children follow rules, learn to regulate their emotions, and learn various skills. Mansaray (2019) reiterates that developmental levels must be taken into consideration to ensure that play becomes a meaningful experience for the child.

According to UNESCO (2015), children should receive quality PE through the school's PE curriculum. Teachers, especially those working in the primary grades, have a critical role in designing and implementing a physical education program that supports the needs of every learner. It has been shown from this review that a developmental program such as DPE is critical to development and learning in the primary years. Taken together, DPE is a play-based, developmentally appropriate PE as it looks at children's individual characteristics and needs, addresses students' diverse needs through differentiated instruction, and supports students' learning and interests through play. This section has reviewed key characteristics that make PE in the primary grades developmental.

Perceived Physical Competence

The concept of competence revolves around one's abilities. As Harter (1982) points out, these perceptions of abilities are evident in different academic areas. Merriam-Webster defines competence as "the ability to do something successfully or efficiently" ("Competence", 2021). Fairclough (2003) notes that perceived competence relates to one's beliefs about one's ability to succeed. Harter (1978) points out that perceived competence may vary per domain, meaning students may perceive themselves as more competent in one domain than in another. Harter (1982) defines perceived physical competence as one's confidence in their ability to perform physical activities. For students, making evaluations about themselves involves cognitive processes. However, inaccuracy of self-evaluations in physical competence may occur as children under seven are still at the preoperational stage of development. Previous studies have shown that children's perceptions do not match their actual

competence because they have yet to acquire the cognitive capacities to accurately make judgments on their abilities (Rudisill et al., 1993; Stodden et al., 2008; True et al., 2017; Morano, 2020). Robinson (2011) suggests that there should be an understanding of the relationship between children's perceptions and their actual abilities to help them in developing the right skills and attitudes that will contribute to their perceived competence.

Children can showcase their abilities in different school activities and develop a feeling of competence when successful. Encouragement and praise from adults and peers play a crucial role in children's competence. Feedback from others is crucial, since perceptions are information taken from one's environment such as feedback from teachers or adults and peers (Brazendale et al., 2015; Robinson, 2010). In the same way, attention must be given to children who display feelings of inadequacy. Lanka and Lanka (2013) state that failure to do so may lead children to self-doubt. Children who receive little encouragement or motivation from their parents, teachers, or peers may begin to think of themselves as inadequate; hence, children's environment influences how they perceive themselves.

Under Erikson's inferiority versus industry stage (1959), children take pride in their accomplishments and capabilities; hence, competence is fundamental at this stage (Cherry, 2021). Various experiences of children influence whether they see themselves as competent or inferior. According to Lingren (1991), students perceive themselves better when a variety of ways to make them succeed are available. Schools must recognize that learning does not occur through a one-size-fits-all instructional approach and disregarding this may leave some children neglected. In classrooms, students have different capabilities, so their sense of accomplishment also varies. What is accomplished by a student may not be perceived as an accomplishment by another child, and that is why educators use a variety of teaching strategies to support the diverse needs of children. PE does not differ from any other subject in the curriculum, as children also have varying levels of physical competence. Thus, giving students multiple opportunities to learn a skill is truly beneficial.

Hausfather (1996) suggests that educators and parents should act as collaborators in children's learning. Guidance is needed from adults for children to fully maximize their learning. The gap between what the child can do with and without help is known as the Zone of Proximal Development (ZPD). According to Vygotsky (1978), optimal learning happens in this zone, and within this zone are skills that can be learned by children with the right amount of support of a more knowledgeable adult or peer. Practices in ZPD are seen in classroom situations when children are encouraged to go beyond their current abilities, but with careful supervision from the teacher.

In a PE class, students are taught first how to perform the movement before applying it to different situations. The teacher breaks the movement down through scaffolding to teach the movement efficiently. When students receive adequate information about the lesson, they are given opportunities to practice the skill in more challenging ways. Due to their success, students' perceived physical competence allows them to challenge themselves because they have confidence in their physical abilities.

Meanwhile, working in groups is vital in PE classes. A student who is part of a group is within an atmosphere of support. Through peer teaching, a student who is a more knowledgeable person in a group can serve as a teacher to another classmate, since the ZPD is not solely about the support that students receive from their teacher, but also from their environment. Abarquez (2018) found working in groups encourages children to perform better when working with children of similar abilities. The group dynamics helped boost children's participation because the environment was encouraging and there was no room for intimidation. Moreover, there was the provision of support when a more knowledgeable classmate assisted those who needed extra help. Children develop a positive view of themselves because they can potentially accomplish new skills in the ZPD. It has been a constant challenge for schools and educators to provide experiences that are stimulating, challenging yet manageable for the students. However, this remains an essential aspect of child development.

Brazendale et al. (2015) investigated "the relationships among enjoyment of PE, perceived competence in PE, and participants' physical activity participation outside of school" (p. 68). The participants were eighth-grade students from a public school who were exposed to team and individual activities all year. On average, students received 250 minutes of scheduled PE. To measure the variables, a self-report questionnaire, divided into three sections, was used by the researchers. To determine students' enjoyment and perceived competence and physical activity participation, portions of the Intrinsic Motivation Inventory (IMI) (Ryan, 1982) and a seven-day recall method were used respectively. The findings revealed that there is a positive significant correlation between enjoyment in PE and perceived competence in PE.

Furthermore, perceived competence was found to be a strong predictor of physical activity participation. Brazendale et al. (2015) recommends that PE experiences should include task-oriented, stimulating, and developmentally-appropriate activities, as these experiences improve children's competence. Fairclough and Stratton (2005) recommend making PE classes enjoyable, educational, and developmental. These substantiate the findings of Carroll and Loumidis (2001) that suggest planning activities that will allow children to feel competent about their abilities. True et al. (2017) urge school and families to be supportive of children's motor skill development to nurture their positive perceived competence. In doing so, children feel assured, regardless of their physical ability, because PE is delivered in a less competitive way, which promotes learning and enjoyment rather than competing (Taylor, 2012).

Vedul-Kjelsås et al. (2011) investigated the relationship between physical fitness, motor competence, and children's self-perception and examined how this relationship is related to gender among 67 sixth-grade students. The study utilized Harter's Self-Perception Profile for Children (SPPC), Movement Assessment Battery for Children (MABC), and Test of Physical Fitness (TPF) to examine the variables. Results showed that the SPPC scores were strongly correlated to the TPF than MABC; however, this result was only found in boys. The TPF and MABC were highly correlated in three SPPC domains: social acceptance, athletic competence and physical appearance, and general self-worth. A significant correlation was found between the TPF and athletic competence among boys. Physical fitness and motor competence also showed a significant correlation. It was concluded that there was a strong relationship between the variables that varied by gender, and factors such as motor competence and physical fitness may impact children's participation in physical activity.

A ten-week PE intervention carried out by Schmidt et al. (2013) investigated if the intervention would increase the level of self-concept of endurance and strength of primary school children. It also sought to look at veridicality in students who had under-or overestimated their abilities. The experimental group received additional endurance and strength-training intervention within their PE classes, while the control group underwent regular PE classes without psychological treatment. The students' physical self-concept was measured using the Physische Selbstkonzept-Skalen (Physical self-concept scales, PSK; Stiller et al., 2004) adapted from the Physical Self-Description Questionnaire (PSDQ; Marsh et al., 1994) and items were scored from 4-1, with 4 being the highest score. Pretests were administered to the participants using the questionnaire and endurance and strengths tests on consecutive days. After the intervention, post-test data were gathered following the same procedure. The results showed that the ten-week PE intervention led to an increase in the students' self-concept of endurance. However, positive results were not seen in the students' self-concept of strength. Schmidt et al. (2013) pointed out that in ten weeks, the PE intervention led to positive effects on the students' self-concept for endurance compared to PE interventions that were usually conducted in after-school programs or those that have been implemented for longer durations.

In another study, LeGear et al. (2012) studied the relationship between perceived competence and motor skill proficiency of kindergarten children and how gender influenced the relationship. The researchers discovered a modest but significant relationship between the variables and concluded

that children, as young as kindergartners, learn to make self-judgments.

However, according to Rudisill et al. (1993), Stodden et al. (2008), and True et al. (2017), more accurate perceptions are made as children get older. Despite the low turnout in motor skill proficiency, perceived competence for both boys and girls were found to be relatively high. Nevertheless, LeGear et al. (2012) recommend that children must be presented with opportunities that will make them feel competent even during their first years in school. These results corroborate other studies that found that children's skill mastery positively affects perceived competence (Valentini & Rudisill, 2004; McFadden et al., 2013).

Based on these findings, perceived competence can potentially stimulate and be an influence on one's physical activity participation. Physical activities patterns are also positively correlated to their perception of physical competence (Bell, 1997; Fu et al., 2013). In the educational setting, the best way to provide children with the opportunity to perform physical activities is through PE. Gallahue and Donnelly (2003) believe that it is important for children to feel they are making progress especially at the early stage of learning a new movement skill. Educators and parents can support children in realizing that they are capable of accomplishing something.

Studies over the past two decades have provided important information on the effects of PE on different variables. Since SPE is intended to address the general characteristics and needs of particular levels, this research explores DPE and how it would address the individual characteristics and needs of students. This study aimed to investigate if there would be a significant difference in the perceived physical competence of first graders who were exposed to DPE versus those who were exposed to SPE after ten weeks. The experimental work presented here provides one of the first investigations in DPE among primary learners' perceived physical competence in the Philippine context.

Methodology

Design

This study took the form of a quasi-experimental comparison group pretest and post-test design that investigated if there was a significant difference between first graders who were exposed to DPE and those who were exposed to SPE in terms of perceived physical competence. One group underwent the experimental intervention (DPE) and the comparison group received the school's prescribed PE (SPE). The research design resembled that of Rengasamy (2012), which utilized a quasi-experimental design that examined the effects of a physical fitness intervention program within a PE class on selected health-related fitness components among secondary school girls. This research design was adopted because it did not employ random assignment and it aimed to evaluate the effectiveness of an intervention (Campbell & Stanley, 1963). The ten-week intervention was parallel to the study done by Schmidt et al. (2013), which evaluated the effects of a PE intervention on primary school students' general level of self-concept of endurance and strength, and that of Rengasamy (2012). The researchers facilitated the DPE intervention for the experimental group and the SPE for the comparison group to minimize threats such as errors in test administration, time in between pretesting and post-testing, pretest/post-test sensitization, and effects of an experimental arrangement.

Participants

The research sample consisted of 48 physically-able six to seven-year-old first-grade students from two intact classes in a university laboratory school. These classes have equal class sizes and a similar number of male and female students. According to the first-grade teachers of the laboratory school, students at this age display high energy and are learning to control their bodies. As stated in the PE Curriculum Guide - Key Stage Standards (K-12

Physical Education Curriculum Guide, 2016), learners in the K-3 levels demonstrate their understanding of PE concepts through enjoyable physical activities; hence, a developmentally-appropriate and play-based learning PE is an appropriate intervention to use. Prior to the study, the laboratory school was already following SPE for their PE classes.

Measures

The following measures were used in this study: 1) Perceived Physical Competence Scale (PPCS) and 2) interview guide. Both instruments were validated by a panel of three field experts and pilot-tested afterward.

To measure the participants' perceived physical competence before and after the intervention, the researchers adapted the Athletic Competence subscale of Harter's PPCS (1982) (see Appendix A). From hereon, this will be referred to as PPCS. The seven items were modified to focus on the target physical tasks for the study. Likewise, Harter's "structured alternative format" (Harter, 1982 as cited in Harter, 2012) was adapted to "offset the tendency to give socially desirable responses and to provide participants with a range of response choices" (Harter, 2012, p.4). The PPCS, which was administered in small groups of five, was written in Filipino in accordance with the language policy that the laboratory school follows. A main refinement in the PPCS, based on the expert validators' recommendation, was to randomly distribute the socially desirable items as either Statement A or B. This was to reduce the possibility that students' responses would tend to be focused on one column without much attention to the essence of the statements. Testing for internal consistency was not necessary, since the items measured different physical competencies with varying levels of difficulty. The scoring system for the seven-item PPCS is as follows: 4 points for "Totoo" and 3 points for "Medyo Totoo" under the socially desirable statement (*Madali para sa akin…*); 2 points for "Totoo" and 1 point for "Medyo Totoo" under the less socially desirable statement (*Mahirap para sa akin…*). The highest possible score in the PPCS is 28 points.

An individually-administered interview guide was also used to gather information on children's feelings and perceptions toward PE activities/tasks and their physical abilities after the intervention. Two of the seven items needed the students to choose their answers from a 3-point Likert face scale adapted from Bantang (2015) and elaborate on them afterward. The face scale was utilized to represent the children's feelings when successfully or unsuccessfully performing a movement (see Appendix B). Oral instructions were given to ensure that students understood the purpose of the interview. Respondents were informed that there are no wrong answers to the questions and they should openly express their honest thoughts.
In addition, the researchers kept a journal to write down pertinent observations of students during DPE and SPE classes.

Intervention

To examine the effects of the DPE intervention, SPE was used for the comparison group for ten weeks. SPE is the prescribed PE of the laboratory school, which is a once-a-week, 30-minute lesson that consists of a warm-up, skill learning, game and cool down. On the other hand, while the recommendation of the K-12 PE Curriculum is to conduct PE classes for 40 minutes once a week for Grades 1-6 (K-12 Physical Education Curriculum Guide, 2016), the experimental group had twice-a-week 40-minute DPE. This frequency design was similar to that of three studies (Lopes et al., 2016; Fairclough & Stratton, 2005; Rengasamy, 2012) that utilized different conditions of PE on primary and middle school students. This modification of an additional session of 40 minutes per week was allotted for differentiated instruction that aimed to address the individual characteristics of students in the experimental group. The first and second sessions of the DPE group were conducted every Wednesday and Friday respectively. Meanwhile, SPE was held every Friday after the second session of the DPE group.

To eliminate researcher bias, parallel skills for each week were taught in the SPE and DPE groups. Consultations with the first-grade teachers were done to plan a developmentally- appropriate level

of skills and activities. The researcher-developed DPE and SPE lessons were validated by a panel of four experts specializing in early childhood and PE. All lessons were delivered in Filipino in accordance with the school's language policy on the use of Mother Tongue in the early grades.

For both groups, the researchers and the students went over class rules and routines every session to make sure the lessons were delivered smoothly. Active supervision and interaction were maintained by giving direct or one-on-one instructions when necessary. This ensured that all students were carefully monitored and assisted all throughout the intervention period. Table 2 shows a sample DPE and SPE lesson on leaping.

Table 2

Sample DPE and SPE Lesson

Layunin	Gawain	SPE	DPE (Unang sesyon)
Pagkatapos ng aralin, inaasahan na ang mag-aaral ay nailalarawan ang tamang paraan ng paglukso, nakalulukso sa isang diretsong linya, at nakasasali at nakasusunod sa mga patakaran ng laro.	Warm-up (5 minuto)	Ang mga mag-aaral ay gagawin ang mga sumusunod na galaw sa loob ng limang minuto: mabagal na takbo paikot sa palaruan, jumping jacks, at arm swings.	
	Skill Learning (15 minuto)	Tahasang ituturo at ipinakikita ng guro ang mga hakbang sa paglukso. Binibigyan ng pagkakataon ang mga mag-aaral na subukan ito sa pamamagitan ng drills.	
	Laro (5-10 minuto)	Maglalaro ang mga mag-aaral ng Leaping Leprechauns. Kailangan makatawid sa kabilang dulo sa pamamagitan ng paglukso. Pagdating sa dulo, kumuha ng isang gintong barya at bumalik gamit muli ang paglukso. Ang unang grupo na makakukumpleto ng anim na gintong barya ang panalo.	
	Cool Down (5 minuto)	Ang mga mag-aaral ay gagawin ang mga sumusunod na galaw sa loob ng limang minuto: mabagal na takbo paikot sa palaruan, tiptoe walks, at breathing exercises.	
			Ikalawang sesyon
Pagkatapos ng aralin, inaasahan na ang mag-aaral ay nakalulukso ayon sa kanyang kakayahan (Hal. nakalulukso sa isang diretsong linya, nakalulukso sa ibabaw ng isang bagay, o nakalulukso nang tuloy-tuloy at salitan ang dalawang paa)	Warm-up (5 minuto)		Upang maihanda ng mga mag-aaral ang kanilang katawan para sa mga gawain, sila ay maglalaro ng Araw at Buwan na isang larong takbuhan.
	Skill Review (10 minuto)		Magkakaroon ng pagbabalik-aral ang mga mag-aaral sa aralin sa paglukso. Muling ituturo ng guro ang mga hakbang sa paglukso.
	Differentiated Activities (20 minuto)		Ang klase ay mahahati sa 3 grupo at pupunta ang mga mag-aaral sa kanilang mga grupo. Sa bawat grupo, magkakaroon ng dagdag na pagsasanay sa pagluksong naka-ayon sa kakayahan ng mga mag-aaral.
	Cool Down (5 minuto)		Ang mga mag-aaral ay gagawin ang mga sumusunod na galaw sa loob ng limang minuto: mabagal na takbo paikot sa palaruan, tiptoe walks, at breathing exercises.

Every SPE and DPE lesson began with a warm-up. These exercises were crucial to prepare the students for the series of drills, since leaping requires landing on one foot and students could be prone to injury. The five-minute warm-up was followed by a 15-minute skill learning where explicit instruction was done by breaking down the movement and giving cues for students to follow. During skill learning, drills are abundant so that students will be able to perform the movement proficiently. In this lesson, students performed drills such as leaping forward using either foot or leaping over an object. The students further practiced the skill during the 5–10-minute game portion wherein the target skill is integrated in a fun and enjoyable activity. Finally, the students undergo the cool down portion wherein they perform light movements to transition them to a resting state. The allotted PE time in the laboratory school is 30 minutes but the total administration time took approximately 30-40 minutes.

As shown in Table 2, both groups focused on the same learning competencies. However, only the experimental group underwent the second session as part of the intervention. The warm-up happened before the skill practice. Next, in the skill review, there was recall and practice of the movement learned from the previous session before proceeding to the differentiated activities, the third part of the second session. This is a feature of the DPE program, which is grounded on the Tomlinson (1999) differentiation model. This was conducted through the inclusion of developmentally-appropriate differentiated tasks, flexible grouping, and ongoing assessment and activity adjustment.

Students were grouped as basic, average, or high performing, according to their physical fitness pretest results wherein they were asked to perform physical tasks such as running and jumping. For instance, the lesson on leaping presented various options for the students to learn the skill. Each movement option was demonstrated so that the students could follow. Each group was assigned a similar target skill but with varying levels of difficulty, in accordance with their physical competencies. Unlike in SPE where everyone gets the same instructions and activities, the differentiated activities allow students in DPE to master the skills according to their choice and actual level of competence in the skill. Every student had to start with a certain task, but was free to go back to the previous level or try the succeeding level; otherwise, the student could stay on a task to further master the target skill. Valentini and Rudisill (2004) utilized the same grouping method in which instruction is facilitated by the teacher, but students are given the choice to move freely and independently within the PE class. Continuous monitoring and journal notes were done to aid in the assignment and movement of students to the right group during the intervention.

Procedure and Data Analysis

The 12-week data gathering procedure of this study during the first semester of the school year was organized into three phases: (1) pre-intervention (2) intervention, and (3) post-intervention. During the pre-intervention phase, the PPCS pretest for the experimental and comparison group was administered to groups of five students to ensure that they responded correctly to oral instructions and to reduce extraneous factors that could affect the test administration. This was the best way to administer the PPCS based on the researchers' experience during the pilot test, since it became more manageable to check on each student and listen to their reactions and comments. Orientations were also conducted to establish rapport with students and discuss important reminders.

Following the PPCS pretest and orientations, both groups participated in ten weeks of DPE and SPE classes. The post-intervention phase focused on the administration of the PPCS post-test and one-on-one interviews, which were conducted after the intervention. Quantitative data were analyzed using the Mann-Whitney U test to test for differences between groups and the Wilcoxon signed-ranks to test for differences within groups. All hypotheses were tested at .05 level of significance. Observation notes and interviews were used to support quantitative data.

Results and Discussion

This study tested the null hypothesis that there will be no significant difference in the perceived physical competence of first graders who were exposed to DPE versus those who were exposed to SPE after ten weeks. Results of the Mann-Whitney U test in Figure 1 yielded no significant difference between the DPE and SPE groups, $U = 224.500$, $z = -1.326$, $p = .185$. The p-value is higher than 0.05, which therefore warrants an acceptance of the null hypothesis. This indicates that the DPE intervention did not make a significant difference in the perceived physical competence of those in the experimental group.

Figure 1

Results of the Mann-Whitney U test

Ranks

	Group	N	Mean Rank	Sum of Ranks
MPPCS	Control	24	21.85	524.50
	Experimental	24	27.15	651.50
	Total	48		

Test Statistics[a]

	MPPCS
Mann-Whitney U	224.500
Wilcoxon W	524.500
Z	-1.326
Asymp. Sig. (2-tailed)	.185

The results could be attributed to the general characteristics of primary learners. As mentioned earlier in this paper, developmental areas are integrated (NAEYC, 2020) and one may get a clearer picture of how children's development and learning take place when viewed from this lens.

One possible reason for the results may be associated with some psychological constructs. Based on Piaget's stages of cognitive development (Piaget, 1936, as cited in McLeod, 2018), children in the primary years are at the preoperational stage when their cognitive functioning is not yet capable of making accurate conclusions about themselves. This was evident during differentiated activities in the DPE group when some students displayed uncertainty in their ability to perform a skill, especially during the first few weeks of the intervention. Although the students were given the choice to pick a task/activity which they will work on, some seemed to merely pick a task that their peers chose since they were not sure what they were capable of. These students may still be in the process of learning how to appropriately evaluate their physical abilities, since younger children do not yet possess the cognitive ability to make self-evaluations (Harter, 1978; Stodden et al. 2008; Lopes et al., 2016; Morano et al., 2020). This affirms that specific self-concepts are not fully developed in children below eight (Harter, 1982). It is also important to note that children's perceptions of competence are also influenced by their environment and the people around them. Any feedback they get, whether positive or negative, will influence how they view themselves which is why praise for efforts and constant encouragement are used as tools to motivate young children.

The outcome of the study is also contrary to that of Vedul-Kjelsås et al. (2011) who found a strong relationship among self-perception, motor competence, and physical fitness and that of Brazendale et al. (2015) that discovered a relationship between enjoyment in PE, physical activity participation, and perceptions of competence, which the current study was not able to demonstrate. However, a closer analysis would show that the participants of the mentioned studies are much older (sixth and eighth-grade students) than the participants of the current study (first-grade students). The distinct characteristics of older and younger children would explain these contrasting findings. This again postulates that children's perceptions will become more realistic and aligned to their actual competence as they grow and mature.

Moreover, the student's perceptions may have been affected by their actual competence. Given that young children have the tendency to overestimate their abilities, and their perceived and actual physical competence are not aligned, children realize during physical activities that they are not

capable of as much as they think they are. Consequently, this mismatch may form negative effects on children's perceptions. Primary learners are still at the fundamental movement phase, which means that body coordination and control are still being developed (Gallahue et al., 2012). Children are just beginning to build on their skills; hence, multiple opportunities for learning and consistent practice are needed to attain mastery of skills.

Anecdotal observations from this study noted that the first graders displayed difficulty in body coordination when performing complex movements such as galloping and skipping. Children are just learning to gain control of their bodies and their gross motor skills are still developing; hence, they may need to repeat a physical task persistently before skill mastery which will require a lot more time. As Valentini and Rudisill (2004) highlighted, children under age of seven often display high perceived competence especially when they acquire mastery of the skills. This indicates that more opportunities to practice and learn the tasks are necessary for children to make a significant improvement in their perceived physical competence. Furthermore, the ability to master the skills may also be affected by other developmental factors such as age and maturation. There are skills that children can do at a certain age and maturation level; it should be emphasized that rate is unique to every child (Gesell, 1940 as cited in Gordon & Browne, 2016).

Children would not describe it as an accomplishment when they do not see themselves fully capable of performing skills, but would rather experience feelings of inferiority. As Erik Erikson (1959) theorized, the concept of competence is fundamental in the children ages six to seven. Furthermore, some student responses from one-on-one interviews revealed that they felt sad and frustrated when they were not able to perform the movement proficiently. When asked "*Ano ang nararamdaman mo tuwing hindi mo nagagawa ang isang kilos o galaw?,*" some responses were: "*Nalulungkot po ako kapag nahihirapan po ako at hindi ko magawa*" (male student, age 6), "*Kapag di ko po kaya, nalulungkot po ako*" (female student, age 6), and "*Nahihiya po ako kasi baka asarin ako ng classmates ko*" (male student, age 7). Responses like these show feelings of inferiority. Students who were unsuccessful in getting the skill done may have experienced a sense of failure and this may have negatively affected their perceived physical competence.

While the researchers tried to minimize threats during the intervention, the results could also be associated with some learning disruptions such as inclement weather, examination schedules, holidays, and school-wide activities during the DPE intervention period. For instance, since the data gathering period was conducted during the rainy season, the sudden modifications in the lessons and the venue could have affected the implementation and effectiveness of the DPE. Field notes indicated that the session on galloping had to be paused and moved immediately to another area because it suddenly rained. The school's playground was the most conducive and ideal area for PE but because it was uncovered, lessons are likely to be disrupted due to inclement weather. Although the researchers had the option to conduct the PE sessions in one of the school halls, it was not the safest venue to hold a PE class because of its slippery cement flooring. Changes in the overall implementation of the lesson could one way or another affect the experiences of the students. This also highlights that planning and actual implementation of PE lessons must ensure that the student's experiences are within a physically safe and healthy learning environment (Schmidt et al., 2013; NAEYC, 2020).

Another potential explanation of the results is the intervention implementation schedule for both groups despite the parallel lesson plans. The DPE group held its first session on Wednesdays and met for their second session on Fridays; the SPE group met after the DPE's Friday session. It is apparent that the SPE group's Day 1 PE instruction occurred two days after the DPE's class session. This schedule may have affected the delivery in the SPE group since the second run of the same lesson allowed smoother instructional flow and refinements. For instance, the researchers observed the DPE students' responses to the instructions and lesson delivery; hence, ways to calibrate the instruction for more time-on-task were undertaken in the SPE

group. However, this explanation must be viewed with caution since both groups were guided by the same lesson plan for Day 1 sessions.

Taken together, there was not enough evidence to reject the null hypothesis as the results suggest that there is no significant difference between the perceived physical competence of the DPE and SPE groups after ten weeks of intervention. However, the discussion of the findings all the more highlights the conceptual premise of the interrelatedness of developmental learning domains and aspects in early childhood education.

A secondary aim of this study was to examine if there would be a significant difference in the perceived physical competence of those in the DPE group after ten weeks of intervention. The Wilcoxon signed-ranks test in Figure 2 shows that a twice a week 40-minute DPE for a period of ten weeks caused a significant difference in the students' perceived physical competence rating, z = -3.719b, p = .000.

Figure 2

Results of the Wilcoxon-signed ranks test

Test Statistics[a]

	Pre - Post
Z	-3.719[b]
Asymp. Sig. (2-tailed)	.000

a. Wilcoxon Signed Ranks Test

b. Based on positive ranks.

The results in Figure 2 indicate that the ten-week DPE intervention may be associated with an improved perceived physical competence of those in the experimental group. This study extends previous quasi-experimental work (Schmidt et al., 2013; Rengasamy, 2012) that interventions with ten-week durations may bring significant differences in psychological and physical constructs. Findings of this research corroborate LeGear et al., (2012) who concluded that interventions on young children improve perception of competence in PE and motor skill development.

This positive outcome may be significantly credited to the developmental design of the DPE. The developmentally-appropriate lessons were anchored on children's current skill level and individual needs. Physical tasks were available for students with different kinds of needs and skill progressions were based on the current physical abilities of the students. For example, the lesson on leaping presented a range of leaping tasks for the students. The differentiation in content was evident as the lesson contained various ways on how the children can learn how to leap. The progressions ranged from simply leaping from one place to another, to leaping over two to five floor markers, leaping over a higher object, or leaping across the floor. Findings of this study extend the work of Valentini and Rudisill's (2004) mastery climate intervention that gave attention to the diverse needs of the students, including their learning pace.

The improved perceived physical competence of the DPE may also be attributed to the flexible grouping in DPE as students were free to go back to a less difficult task or move to a more challenging task. This affirms what Tomlinson and McTighe (2006, as cited in Colquitt et al., 2017) noted that differentiation involves providing unique ways for children to reach their desired goals for the lesson. Likewise, the results are consistent with that of Fairclough (2003, as cited in Brazendale et al., 2015) who found that children exhibit competence when their tasks are attainable and match their perceived ability. This further sheds light on the importance of developmentally appropriate practice in PE as it responds to children's individual needs.

Furthermore, positive changes may be attributed to how children learn. For instance, the lesson on running started with a warm-up exercise that was similar to the skill that was taught during the previous session. Students displayed various running forms such as excessive swinging of the arms and running with heavy footsteps. These common mistakes were corrected by the teachers during the skill review part. The proper way of running was explicitly taught and the students were given time to practice and refine their techniques.

Specific instructions and further demonstrations were given to the few students who displayed inappropriate running forms. Bandura's Social Learning Theory is manifested especially in PE classes wherein both a live and verbal model are essential to learning. Moreover, it is noteworthy to mention that the students showed determination in learning the correct way of running; thus, this finding reflects Erikson's industry versus inferiority stage (1959) in which children strive to learn and master new skills.

The play activities in the DPE may also be positively associated with the significant differences in the DPE students' perceived physical competence after the intervention. During the intervention, the DPE group played the game "Race to the Camp." It was expected that students would run as fast as they could without much regard for the techniques, so rules were given at the start of the game. One interesting observation was that the students followed the rules and were mindful of the techniques they had just learned. Though there were a few students who put more emphasis on winning the game, most of the students adhered to the rules. Positive feedback was given to the students since they displayed proper running form during the game. Even in the other lessons, DPE students were provided feedback as a form of encouragement which is important since this affects children's self-perceptions (Robinson, 2011; Brazendale et al, 2015). This shows that when primary learners participate and are involved in establishing defined rules in games (Doherty & Brennan, 2008), it is probable that they will be motivated to engage. These findings are consistent with the research of Valentini and Rudisill (2004), which reported that the students' engagement in making the rules will make them more in-charge of their learning.

There were instances where few children displayed apprehension towards the given physical tasks. When asked, their responses were either they thought it was a difficult task or that they could not do it. The skill variations in the DPE addressed this challenge in order to make the lesson more inclusive for all kinds of learners in class. When these children were given an easier task, they became less reluctant and were able to participate well. On the other hand, when the students demonstrated mastery of the task of an easier level, the teachers set another goal for the students to achieve. NAEYC (2020) points out that developmentally appropriate programs should include activities that are both challenging and achievable for the learners.

Accomplishments in physical activities contribute to children's sense of competence (McFadden et al., 2013). Field notes indicated that the students expressed positive remarks about themselves during the PPCS post-tests, which may be attributed to perceived competence (e.g. "*Teacher, kaya ko na 'to, dati hindi eh.*" Teacher, I cannot do this before, now I already can.; "*Madali na lang 'to teacher.*" This is easy for me, teacher.). These responses indicate that regardless of the difficulty of the skill, engagement is likely to lead to learning and mastering the skill after consistent practice. According to Erikson's Psychosocial Theory (1959), this determination to learn the skill is proof that children in the primary years enjoy challenging and stimulating experiences. It was also observed that when a student finally gets the skill, they exclaim "Yes!" which implies that the child feels accomplished.

Conclusion and Recommendations

The main objective of the current study was to determine if there would be a significant difference in the perceived physical competence between first graders who were exposed to ten weeks of DPE and those who were exposed to ten weeks of SPE. Another aim was to examine if there would be a significant difference in the perceived physical competence of the DPE group post-intervention. The study shows that there was no significant difference between the DPE and SPE's perceived physical competence before and after ten weeks. However, a closer look at the DPE group revealed a significant improvement in their perceived physical competence. Perceived physical competence as a psychological construct is influenced by factors such as children's unique characteristics, actual physical competence, the environment, and the interrelatedness of the different domains of development and learning.

Although this positive result was limited to the experimental group, it highlights the outcomes of DPE and offers a starting point to incorporate this in the PE programs in the Philippine setting. Henceforth, it is recommended for educators, especially those who are teaching children from Kindergarten to Grade 2, to explore allocating more time for PE and providing differentiated learning opportunities to students by designing and implementing developmentally appropriate activities in PE as recommended by existing studies (Valentini & Rudisill, 2004; Brazendale et al., 2015). Finally, as this study aims to contribute to PE-related research considering its dearth in the local scenario, conducting further studies to validate and to further demonstrate the results of DPE with the same intervention duration but perhaps on different respondents in the primary level and in relation to other constructs other than physical competence, is also recommended.

References

Abarquez, A. (2018). *Effects of developmental physical education on the physical fitness and perceived competence of first graders* [*Unpublished master's thesis]*. University of the Philippines Diliman.

Bailey, R., Armour, K., Kirk, D., Jess, M., Pickup, I., Sandford, R., & Bera Physical Education And Sport P. (2009). The educational benefits claimed for physical education and school sport: An academic review. *Research Papers in Education, 24*(1), 1-27. https://doi.org/10.1080/02671520701809817

Bandura, A. (1971). *Social learning theory.* General Learning Press.

Bantang, J. R. (2015). *Effects of image iconicity and scale granularity on the psychometric properties of face scales. Retrieved from Quezon City: College of Education, University of the Philippines (Accession No. ED-4550t).*

Basch, C. E. (2011). Healthier students are better learners: a missing link in school reforms to close the achievement gap. *The Journal of school health, 81*(10), 593–598. https://doi.org/10.1111/j.1746-1561.2011.00632.x

Bell, K. W. (1997). *The relationship between perceived physical competence and physical activity patterns of fifth and seventh grade children [Unpublished doctoral dissertation]*. Virginia Polytechnic Institute.

Bentley, G. F., Goodred, J. K., Jago, R., Sebire, S. J., Lucas, P. J., Fox, K. R., Stewart-Brown, S., & Turner, K. M. (2012). Parents' views on child physical activity and their implications for physical activity parenting interventions: a qualitative study. *BMC Pediatrics, 12,* 180. https://doi.org/10.1186/1471-2431-12-180

Brazendale, K., Graves, B. S., Penhollow, T., Whitehurst, M., Pittinger, E., & Randel, A. (2015). Children's enjoyment and perceived competence in physical education and physical activity participation outside of school. *Emotional & Behavioral Disorders in Youth, 15*, 65-69. https://www.researchgate.net/publication/280206297_Children's_Enjoyment_and_Perceived_Competence_in_Physical_Education_and_Physical_Activity_Participation_Outside_of_School

Cairney, J., Kwan, M. Y. W., Velduizen, S., Hay, J., Bray, S. R. & Faught, B. E. (2012). Gender, perceived competence and the enjoyment of physical education in children: a longitudinal examination. *International Journal of Behavioral Nutrition and Physical Activity 2012 9:26.* http://doi.org/10.1186/1479-5868-9-26

Campbell, D. T., & Stanley, J. (1963). *Experimental and quasi-experimental designs for Research.* Rand McNally.

Carroll, B., & Loumidis, J. (2001). Children's perceived competence and enjoyment in physical education and physical activity outside school. *European Physical Education Review, 7*(1), 24-43. https://doi.org/10.1177/1356336x010071005

Cherry, K. (2021). *Erik Erikson's Stages of Psychosocial Development. Very Well Mind.* https://www.verywellmind.com/erik-eriksons-stages-of-psychosocial-development-2795740

Colquitt, G., Pritchard, T., Johnson, C., & McCollum, S. (2017) Differentiating instruction in physical education: Personalization of learning. Journal of Physical Education*, 88*(7)*,* 44-50. https://doi.org/10.1080/07303084.2017.1340205

Competence. (2011). In *Merriam-Webster.* https://www.merriam-webster.com

Cook, J. L., & Cook, G. (2005). *Child development: Principles and perspectives.* Pearson.

Costa, H. J., Abelairas-Gomez, C., Arufe-Giráldez, V., Pazos-Couto, J. M., & Barcala-Furelos, R. (2015). Influence of a physical education plan on psychomotor development profiles of preschool children. *Journal of Human Sport and Exercise, 10*(1). https://doi.org/10.14198/jhse.2015.101.11

Doherty, J., & Brennan, P. (2008). *Physical education and development 3-11: A guide for teachers.* Routledge.

Dotson-Renta, L. N. (2016, May 19). *Why young kids learn through movement.* https://www.theatlantic.com/education/archive/2016/05/why-young-kids-learn-through-movement/483408/

Equitas International Centre for Human Rights Education (2008), https://equitas.org/wp-content/uploads/2013/07/Play_It_Fair_email.pdf

Erikson, Erik H. (1959). *Identity and the life cycle.* International Universities Press.

Extension. (n.d.). *Ages and Stages Characteristics and Implications for Children [PDF file].* https://child.unl.edu/173c1237-6641-4f1c-8b7d-3f5d9a1d3253.pdf

Fairclough, S. (2003). Physical activity, perceived competence and enjoyment during high school physical education. *Physical Education and Sport Pedagogy, 8*(1), 5–18. https://doi.org/10.1080/1740898030080102

Fairclough, S., & Stratton, G. (2005). Improving health-enhancing physical activity in girls' physical education. *Health Education Research, 20*(4), 448–457. https://doi.org/10.1093/her/cyg137

Fu, Y., Gao, Z., Hannon, J., Shultz, B., Newton, M., & Sibthorp, J. (2013). Influence of a health-related physical fitness model on students physical activity, perceived competence, and enjoyment. *Perceptual and Motor Skills, 117*(3), 956-970. https://doi.org/10.2466/10.06.pms.117x32z0

Gallahue, D. L., (1987). *Developmental physical education for today's elementary school children.* Macmillan Publishing Company

Gallahue, D. L., & Donnelly, F. C. (2003). *Developmental physical education for all children (4th ed.).* Human Kinetics.

Gallahue, D. L. Ozmun, J.C. and Goodway, J. (2012). *Understanding motor development: infants, children, adolescents, adults.* McGraw-Hill.

Gordon, A., & Browne, K. W. (2016). *Beginning essentials in early childhood education (3rd ed).* Cengage Learning.

Hardman, K., & Marshall, J. (2009). *Second world-wide survey of school physical Education: final report.* ICSSPE

Hardman, K. (2014). Present and Future Issues in Physical Education. Physical Education and Sport – Competencies for Life. 9-12 October 2014. Nat.

Harter, S. (1978). Effectance Motivation Reconsidered: Toward a Developmental Model. *Human Development, 21*(1), 34–64. http://www.jstor.org/stable/26764380

Harter, S. (1982). The Perceived Competence Scale for Children. *Child Development, 53*(1), 87-97. https://doi.org/10.2307/1129640

Harter, S. (2012). *The construction of the self: Developmental and socio-cultural foundations.* Guilford Press

Hausfather, S. J. (1996). Vygotsky and schooling: creating a social context for learning. *Action in Teacher Education, 18*(2), 1-10. https://doi.org/10.1080/01626620.1996.10462828

Howie, E. K., & Pate, R. R. (2012). Physical activity and academic achievement in children: A historical perspective. *Journal of Sport and Health Science, 1,* 160-169. https://doi.org/10.1016/j.jshs.2012.09.003

Koeze, P. A. (2007). *A Differentiated instruction: The effect on student achievement in an elementary school.* Master's Theses and Doctoral Dissertations. Paper 31. https://commons.emich.edu/theses/31

K-12 Physical Education Curriculum Guide. (May, 2016). http://www.deped.gov.ph/

Lanka, U., & Lanka, V. (2013). A cross sectional study of adjustment of disadvantaged children in an urban school setting. *Archives of Mental Health, 14*(2), 152. https://link.gale.com/apps/doc/A573235960/HRCA?u=anon~9719861a&sid=googleScholar&xid=ef57ae70

LeGear, M., Greyling, L., Sloan, E., Bell, R. I., Williams, B., Naylor, P., & Temple, V. A. (2012). A window of opportunity? Motor skills and perceptions of competence of children in Kindergarten. *International Journal of Behavioral Nutrition and Physical Activity, 9*(1), 29. http://doi.org/10.1186/1479-5868-9-29

Lihong. H., (2011). Research on the developmental physical education model integrated knowledge, belief and practice. *2011 IEEE International Symposium on IT in Medicine and Education.* https://doi.org/10.1109/ITiME.2011.6130807

Lingren, H. G. (1991). *Self-esteem in children.* www.ctahr.hawaii.edu/oc/freepubs/pdf/CF-12.pdf

Lopes, V. P., Barnett, L., & Rodrigues, L. P. (2016). Is there an association among actual motor competence, perceived motor competence, physical activity, and sedentary behavior in preschool children? *Journal of Motor Learning and Development, 4*(2), 129–141. https://doi.org/10.1123/jmld.2015-0012

Lopes, V. P., Stodden, D. F., & Rodrigues, L. P. (2017). Effectiveness of physical education to promote motor competence in primary school children. *Physical Education and Sport Pedagogy, 22*(6), 589–602. https://doi.org/10.1080/17408989.2017.1341474

Mansaray, M. F. (2019). The Importance of Play on the Holistic Development of Pupils in Preschools. *International Journal of Multidisciplinary Research and Publications (IJMRAP), 2*(2), 5-8. http://ijmrap.com/wp-content/uploads/2019/07/IJMRAP-V2N1P72Y19.pdf

Mayorga-Vega, D., Viciana, J., & Cocca, A. (2013). Effects of a circuit training program on muscular and cardiovascular endurance and their maintenance in schoolchildren. *Journal of Human Kinetics, 37*(1). https://doi.org/10.2478/hukin-2013-0036.

McFadden, C., Skaggs, G., & Janosik, S. (2013). Development and validation of the sense of competence scale - revised. *Journal of Applied Measurement, 14*(3), 318–331.

Mcleod, S. (2020, December 7). *Jean Piaget's Theory and Stages of Cognitive Development*. Simply Psychology. https://www.simplypsychology.org/piaget.html

Morano, M., Bortoli, L., Ruiz, M. C., Campanozzi, A., & Robazza, C. (2020). Actual and perceived motor competence: Are children accurate in their perceptions? *PLOS ONE, 15*(5). https://doi.org/10.1371/journal.pone.0233190

National Association for Sport and Physical Education [NASPE] (2011). *Active start: Astatement of physical activity guidelines for children from birth to age 5 (2nd* ed.). NASPE.

National Association for the Education of Young Children. (2009). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8. [Position statement].* https://www.naeyc.org/sites/default/files/globallyshared/downloads/PDFs/resources/position-statements/PSDAP.pdf

National Association for the Education of Young Children. (2020). *Developmentally appropriate practice in early childhood programs serving children from birth through age 8. [Position statement].* https://www.naeyc.org/sites/default/files/globally-shared/downloads/PDFs/resources/position-statements/dap-statement_0.pdf

O'Connor, J. (2017). *The case for differentiation in pe [Web log post].* http://healthphysicaleducation.blogspot.com/

Opstoel, K., Chapelle, L., Prins, F. J., De Meester, A., Haerens, L., van Tartwijk, J., & De Martelaer, K. (2020). Personal and social development in physical education and sports: A review study. *European Physical Education Review, 26* (4), 797–813. https://doi.org/10.1177/1356336X19882054

Rengasamy, S. (2012). A physical intervention program within a physical education class on selected health-related fitness among secondary school students. *Procedia- Social and Behavioral Sciences, 55,* 1104-1112.

Robinson, L. (2011). "The Relationship between Perceived Physical Competence and Fundamental Motor Skills in Preschool Children." *Child: Care, Health and Development, 37*(4), 589–596. https://doi.org/10.1111/j.1365-2214.2010.01187.x

Rudisill, M. E., Mahar, M. T., & Meaney, K. S. (1993). The relationship between children's perceived and actual motor competence. *Perceptual and Motor Skills, 76*(3), 895-906. https://doi.org/10.2466/pms.1993.76.3.895

Sallis, J. F., Floyd, M. F., Rodríguez, D. A., & Saelens, B. E. (2012). The role of built environments in physical activity, obesity, and CVD. *Circulation, 125*(5), 729–737. http://doi.org/10.1161/CIRCULATIONAHA.110.969022

Schmidt, M., Valkanover, S., Roebers, C., & Conzelmann, A. (2013). Promoting a functional physical self-concept in physical education: Evaluation of a 10-week intervention. *International Journal of Qualitative Methods, 19*(2), 80–92. https://doi.org/10.1177/160940690600500107

Society of Health and Physical Educators. (2015). Physical Education Program Checklist. www.shapeamerica.org.

Solmon, M. A. (2015). Optimizing the role of physical education in promoting physical activity: A social-ecological approach. *Research Quarterly for Exercise and Sport, 86*(4), 329-337. https://doi.org/10.1080/02701367.2015.1091712

Stodden, D., Goodway, J., Langendorfer, S., & Roberton, M. A., Rudisill, M., Garcia, C., & Garcia, L. (2008). A Developmental Perspective on the Role of Motor Skill Competence in Physical Activity: *An Emergent Relationship, Quest, 60(*2), 290-306. https://doi.org/10.1080/00336297.2008.10483582

Taylor, J. S. (2012). Students' and teachers' perceptions of physical education (Bachelor's thesis, Avondale College, Cooranbong, Australia). https:// research.avondale.edu.au/ theses_bachelor_honours/10

Tomlinson, C. A. (1999). *The differentiated classroom: responding to the needs of all learners. Alexandria: Association for Supervision and Curriculum Development.*

Tomlinson, C. A. (2000). *Differentiation of Instruction in the Elementary Grades* (ED443572). ERIC. https://eric.ed.gov/?id=ED443572

True, L., Brian, A., Goodway, J., & Stodden, D. (2017). Relationships between product-and process-oriented measures of motor competence and perceived competence. *Journal of Motor Learning and Development, 5*(2), 319–335. https://doi.org/10.1123/ jmld.2016-0042

United Nations Educational, Scientific and Cultural Organizations. (2008). *Innovative practices in physical education and sports in Asia.* unesdoc.unesco.org/ images/0015/001585/158509e.pdf

United Nations Educational, Scientific and Cultural Organizations. (2015). *Quality physical education: guidelines for policymakers.*unesdoc.unesco.org/ images/0023/002311/231101E.pdf

Valentini, N. C., & Rudisill, M. E. (2004). Motivational climate, motor-skill development, and perceived competence: Two studies of developmentally delayed kindergarten children. *Journal of Teaching in Physical Education, 23*(3), 216-234. https://doi.org/10.1123/jtpe.23.3.216

Valiandes, S. (2015). Evaluating the impact of differentiated instruction on literacy and reading in mixed ability classrooms: Quality and equity dimensions of education effectiveness. *Studies in Educational Evaluation, 45,* 17–26. https://doi.org/10.1016/j.stueduc.2015.02.005

Van Hoorn, J., Nourot, P. M., Scales, B., & Alward, K. (2007). *Play at the center of the curriculum.* Merrill/Prentice Hall.

Vedul-Kjelsås, V., Sigmundsson, H., Stensdotter, A., & Haga, M. (2011). The relationship between motor competence, physical fitness and self-perception in children. *Child: Care, Health and Development, 38*(3), 394-402. https://doi.org/10.1111/j.1365-2214.2011.01275.x

Vygotsky J., L. S. (1978). *Mind in society: The development of higher psychological processes.* Harvard University Press.

Appendix A

Perceived Physical Competence Scale

Halaw sa Self-Perception Profile for Children ni Harter (1982)

Pangalan_____ **Edad**_____

Guro: Ang surbey na ito ay upang matukoy ang inyong palagay o pagtingin sa inyong kakayahan sa iba't ibang gawain natin sa PE. Tandaan, hindi ito isang pagsusulit. Pakisagot nang tapat ang bawat bilang. Makinig nang mabuti sa panuto.

Panuto:

1. Pakinggan ang dalawang pangungusap na babasahin ko.
2. Piliin kung pangungusap A o pangungusap B ang naglalarawan sa iyo.
3. Isipin kung ang pangungusap na napili mo ay **medyo totoo** o **totoo** para sa iyo.
4. Lagyan ng tsek ang kahon ng iyong sagot.

Totoo	Medyo Totoo	A	B	Totoo	Medyo Totoo
		Nahihirapan akong tumakbo mula sa isang cone patungo sa isa pang cone nang maraming beses.	Nadadalian akong tumakbo mula sa isang cone patungo sa isa pang cone nang maraming beses.		
		Madali para sa akin ang curl-ups.	Mahirap para sa akin ang curl-ups.		
		Nahihirapan akong gawin ang sit and reach.	Nadadalian akong gawin ang sit and reach.		
		Nahihirapan akong maglakad nang patalikod sa balance beam.	Nadadalian akong maglakad nang patalikod sa balance beam.		

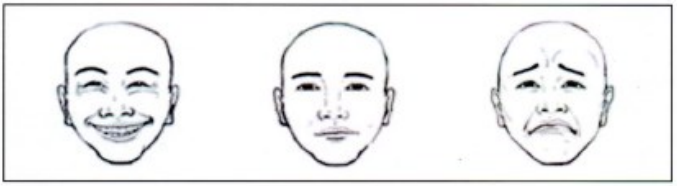
Totoo	Medyo Totoo	A	B	Totoo	Medyo Totoo
		Madali para sa akin ang lumipat ng plate mula sa isang plate sa loob ng 20 segundo.	Mahirap para sa akin ang lumipat ng plate mula sa isang plate sa loob ng 20 segundo.		
		Madali para sa akin ang tumakbo nang mabilis mula sa isang cone patungo sa isa pang cone nang 5 beses.	Mahirap para sa akin ang tumakbo nang mabilis mula sa isang cone patungo sa isa pang cone nang 5 beses.		
		Nahihirapan akong tumalon nang malayo	Nadadalian akong tumalon nang malayo.		

Appendix B

Interview Guide/ Gabay sa Panayam

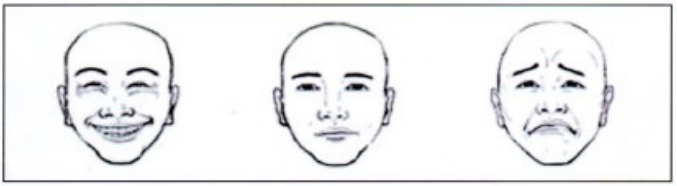
Guro: Ang panayam na ito ay upang matukoy ang iyong nararamdaman, palagay o pagtingin sa iyong mga kakayahan sa iba't ibang gawain natin sa PE. Tandaan na walang tama o maling sagot sa mga itatanong sa iyo.

1. Ano ang nagustuhan mo sa P.E.? Bakit mo ito nagustuhan?
2. Ano ang hindi mo nagustuhan sa P.E.? Bakit mo ito hindi nagustuhan?
3. Ano ang nararamdaman mo sa tuwing nagagawa mo ang isang kilos o galaw? Pumili ng mukha para sa iyong sagot.



Bakit ito ang napili mong mukha?

4. Ano ang nararamdaman mo sa tuwing HINDI mo nagagawa ang isang kilos o galaw? Pumili ng mukha para sa iyong sagot.



Bakit ito ang napili mong mukha?

5. Ano ang nagpapasasaya sa iyo tuwing P.E.?
6. Ano ang hindi nagpapasaya sa iyo tuwing P.E.?
7. Sa tingin mo ba ay malakas ka? Bakit/Bakit hindi?

About the Authors

Angela Ray M. Abarquez earned her Master of Arts in Education and Bachelor in Elementary Education major in Teaching in the Early Grades from the University of the Philippines Diliman. She is an Assistant Professor at the UP Integrated School and is currently the Department Head of the Kindergarten to Grade 2 Department. She has also served as a facilitator of seminars and workshops on teaching beginning reading in different parts of the country. Her research interests include physical activity in children and movement education. She hopes to make her contribution to improving the state of Physical Education in the Philippines.

Dr. Leonor Ercillo Diaz is currently a full-time faculty of the Early Education Area at the UP College of Education, where she handles undergraduate and graduate courses. Prior to working at the tertiary level, she delighted in teaching primary students at the UP Integrated School. Her areas of expertise revolve around early literacy, numeracy, play, curriculum design, and assessment. She is currently a board director of the Reading Association of the Philippines (RAP), where she served as president in 2018-2019. She is also the current vice president of PRAECE, the local chapter of PECERA (Pacific Early Childhood Education Research Association). Dr. Diaz strongly believes that each child can learn anything, most especially if this is done through meaningful ways and the teacher's role is to create developmentally appropriate opportunities to this end.

Correspondence concerning this article should be addressed to Angela Ray M. Abarquez at amabarquez@up.edu.ph.