The Physical Educator Vol. 79 • pp. 491–513 • 2022
https://doi.org/10.18666/TPE-2022-V79-I5-11294

PEDAGOGY

Tracking Student Outcomes Through Instructional Choices in Physical Education

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Abstract

This study used self-determination theory to provide a better understanding of learner motivation in a physical education program. Students participated in a sports unit with choice in activities, equipment, partners, and competition as opposed to a traditional teacher-led activity unit. The objective was to determine differences in motivation and perceptions of physical education in grade school children. An alternating treatment design was used in which students experienced both a teacher-led unit and a student choice–driven sports unit. Fifty fifth-grade students from a suburban school in the Western United States participated in this study. Students were assessed through a number of parameters: physical activity enjoyment, situational motivation, fourth- and fifth-grade student attitudes toward physical education, pedometer readings, and interviews. This study used t tests and repeated-measures analyses of variance to explore differences based on condition (i.e., choices and/or teacher led) and gender, as well as common comparisons (i.e., trustworthiness measures) for the interview data. Students displayed significantly higher enjoyment ratings when they had the choice condition second (from the alternating treatment design), immediately before posttests, and boys rated enjoyment of physical education significantly higher than did girls. In another measure, the group with choices of the hockey unit was predominantly more active in the sport than those participating

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in the teacher-led activity. The interview themes elicited the following responses: (a) students expressed a desire for instructional choices, but not in team selections; (b) students loved sports, but they also wanted more fitness; and (c) students identified and valued instructional choices. The findings suggest that competence plays a critical role in physical education, and when students can choose the level of competition and play in small group games, they feel more competent, play more, and have higher enjoyment ratings within the physical education program.

The level of physical inactivity among youth is an area that needs specific focus and change. Currently, a shrinking population of school-aged children are meeting the recommended 60 min/day of moderate to vigorous physical activity. As children age, there is a corresponding decrease in physical activity, and this continues into adulthood. In the literature on physical education, there is broad consensus that the creation of interventions that enhance student competence, social support, and enjoyment can lead to increased motivation and physical activity participation in physical education (e.g., Davies et al., 2015). This study, guided by self-determination theory (SDT), sought to increase student motivation through curricular choice in an elementary physical education program.

Self-Determination Theory

This study used SDT, with a focus on autonomy, competence, and relatedness, to provide a better understanding of learner motivation in physical education. Autonomy is when students choose to do an activity based on their own will (Niemiec & Ryan, 2009). Promoting autonomy is important in student physical activity, both inside the classroom and outside the classroom. Competence is when students feel they have a good understanding and are confident in the content being learned (Niemiec & Ryan, 2009). When students are knowledgeable, they are more motivated to participate. Finally, relatedness focuses on inclusion and involvement with others (Lang, 2010). Students are more likely to participate fully if they have a connection with other students in the class. Student motivation can come from many factors, including prior experiences, prior knowledge, and social connections. Studying the internal and external motivations of students can lead to learning more about their desire to participate in education classes. Motivation includes

internal characteristics such as perceived competence, perceived autonomy, achievement goal orientation, and perceived usefulness, as well as external characteristics such as classroom climate, teaching style, lesson content, and adult encouragement (Kretschmann, 2014). Bryan and Solmon (2012) studied student motivation variables, including external factors of reward or punishment (e.g., being able to see value in an activity but still having guilt or a feeling of obligation to participate), and internal motivation (e.g., having the activity as a part of a person's identity or higher learning goals). They concluded that providing a range of activity choices in classes led to increased autonomy for students in elementary physical education in the Southwestern United States.

Instructional Choices in Physical Education

Many different choices (curricular/instructional) can be provided to students in physical education classes for improving their levels of motivation. Examples of curricular/instructional choices include (a) deciding on the rules and equipment for the games, (b) choosing whom they work with, (c) selecting the competitive level of the game (with several level options in small games), (d) participating in choosing the type/color of equipment they use, and (e) deciding on unit content. Instead of repeating units year after year, students participate in making new curricular choices whose focus could be a combination of sports, recreation, and personal fitness. In physical education, student interest in the lesson is based on personal preference of certain physical activities/sports over others (Sun et al., 2008). Some students may prefer sports activities with competition, while others may prefer fitness or recreational activities. Finding what students prefer in physical education and addressing the needs of all students may increase motivation to participate during class time as well as beyond school programs.

Knowing a student's level of interest about a certain activity is called "situational interest" and is important knowledge for the physical education teacher. Sun et al. (2008) suggested ways to increase student situational interest in physical education: involving students in (a) novel tasks so that when students lack information about a sport or activity, it serves to draw them into the sport more readily; (b) optimal challenges as opposed to easy tasks, which can easily lead to boredom; (c) attention-demanding activities that catch

and hold student attention; (d) sport or activities that require them to explore their intent or desire to do that particular activity; and (e) instant enjoyment, or activities that lead to immediate fun and a sense of delight.

Hill and Hannon's (2008) study on elementary physical education motivation and application of student choices had a number of positive findings. The study focused on student interests and needs in the selection of activity units. More than 700 junior high students self-ranked their interest in given activities, motor skill competency, and out-of-school activity participation levels. The study showed some common themes among students of the same gender, age, and ability level in their favorite activities. For example, the activities students reported reflected activities popular in U.S. culture; similarly ,there was a gender bias in the choice of desired recreational activities, namely, girls chose swimming, volleyball, contemporary dance, aerobics, gymnastics, and rope jumping, whereas boys chose contact and power activities such as weight training, floor/street hockey, and football. In another study of student choice and motivation, Ward et al. (2008) allowed seventh- and eighth-grade students to be responsible for their own physical activity behavior in physical education classes (either before teacher-led activities or after teacher-led activities). There were four classes that participated in two fitness units. Two classes had the choice unit first and two classes had no choice first. Students were able to select activities from among three intensity options; they also selected their own partners and set their own goals during a fitness unit. A comparison group, on the other hand, was given all teacher-led activities with no choices first, then the choice condition. When the students were given choices after a teacher-led unit, their reported intrinsic motivation increased, whereas students with choices prior to teacher-led activities reported decreased levels of intrinsic motivation. Overall, the self-determination improved with the choice group. Autonomy (making choices) increased self-determination, but it did not necessarily increase physical activity patterns in physical education classes. Davies et al. (2015) discussed the potential value of choice in motivation: "A student's choice in modifying their workout to meet their skill level not only makes the class environment less intimidating but also gives each student a sense of autonomy—which is

essential, according to self-determination theory" (p. 9). As students become more competent in skills, they may become more confident (i.e., increased self-efficacy in an activity) and enjoy participating in it. When they enjoy participating in physical activities and sports, their activity level and intrinsic motivation may also increase.

Enjoyment and Instructional Choices

Some people enjoy a walk in the park, whereas others prefer the rush of finishing a half marathon. When thirty-plus students enter the gymnasium for physical education, each student could have a different view of enjoyment in class. This can make it hard for a physical education teacher to create a lesson plan that gives enjoyment to every student. Kretschmann (2014) explained that competence and enjoyment are related to each other when it comes to active participation in physical education. When students have confidence in their knowledge and ability in a specific activity, it is easier for them to enjoy participating in it. Students will also stay more committed to a sport or activity when they find enjoyment in it (Navarro-Patón et al., 2019). Enjoyment combined with motivation may increase student physical activity adoption.

Motivation and Instructional Choices

Decreased student motivation has also been reported from sixth to eighth grade (Bryan & Solmon, 2012), thus making it critical to understand more about youth motivation to participate in physical education. There is a paucity of research studies investigating student motivation and specific curricular models in physical education (Hwang & Jin, 2016). Researchers have used achievement goal theory and the expectancy–value model of achievement to study motivation and motivational changes in physical education. For example, Xiang et al. (2004) had second- and fourth-grade students complete questionnaires over 2 years. They reported that students were more engaged when finding importance, usefulness, and interest in the physical education activities and sports (i.e., intrinsic value and perceived ability). Students also interacted more with different curricular materials. Offering choices led to increased motivation and engagement. Similarly, Brooks and Young (2011) used the Situational Motivation Scale (SIMS) to assess student motivation changes. They found that as students moved along the motivation

continuum from amotivated to intrinsic motivation, there was an increase in cognition (deeper understanding), behavior (increased participation), and affect (better attitude). Thus, intrinsically motivated students in physical education are more likely to practice physically active behaviors in class and potentially participate in physical activity and sports on their own. Although a primary goal in physical education is for all students to be active in class, a more important goal may be to help students become motivated to make behavior choices to participate in a physical activity or sport as a part of their lifestyle, a goal that could be achieved by an increase in autonomy in physical education.

Physical Activity Patterns and Instructional Choices

Children in the United States do not meet daily physical activity recommendations (i.e., 60 min/day). Unfortunately, this is linked to many health issues starting at a young age and continuing onto adulthood. Early engagement in physical education can promote a lifelong physically active lifestyle. In investigations of strategies for encouraging students to be more physically active, providing choices in physical education programs has shown some positive results. Lonsdale et al. (2009) reported that this can also lead to improved levels of physical activity participation among adolescents. Similar results have surfaced in a study of high and low choice conditions outside of physical education (Sanders et al., 2016) in which children were given eight activity options. Sanders et al. (2016) reported that more choice led to increased physical activity intensity levels but not necessarily more time spent in activities.

Student Attitudes and Perceptions of Physical Education and Instructional Choices

Several studies have addressed student attitudes and choices in physical education programs. Marttinen et al. (2018) reported that enjoyment played a critical role in student attitudinal changes about physical education. The teacher and the curricular model used have also been shown to relate to student attitude toward physical education (Phillips & Silverman, 2015). The authors (Marttinen et al., 2018) found that competitive game units repeated year after year led to less-positive student attitudes about physical education. An important consideration appears to be how the curricular units were

taught. Similarly, Bernstein (2011) showed that students with different experiences in competition in physical education exhibited different attitudes toward physical education. Students with less experience or skill were sometimes afforded less practice and play time in physical education competitions. This resulted in less practice and fewer opportunities to develop competence and skill and may have led to more-negative attitudes toward physical education. Offering competition choices in physical education may lead to more opportunities for participation and skills development and thus lead to more positive attitudes. Students may enjoy participating against students of similar skills and abilities and may be more open to additional opportunities offered as a means to develop their skills.

This study extends previous work by further investigating the role of instructional choices in physical education and related student outcomes. The purpose of this study was to determine if student instructional choice across a 6-week intervention increased their enjoyment, motivation, physical activity patterns, and attitudes and perceptions of physical education classes.

Method

Participants and Setting

Human subjects approval was obtained for this study from both the investigator's university and the students' school. Parents/guardians provided consent, and students provided assent. The participants were two fifth-grade physical education classes from an elementary school in the Western United States. Both male students (n = 26) and female students (n = 24) participated, with an average class size of 27. The ethnic background percentages for students across the two classes were 68% Hispanic, 3% Caucasian, 8% Native American, 2% Pacific Islander, and 15% African American, 4% two or more ethnic backgrounds, as indicated. The mean age of students was 10.47 (SD = .54). Each class demonstrated various ability levels. The chosen elementary school was one of 17 public schools in the district. The school followed the Advancement Individual Determination (AVID) program, which is a college-readiness program that uses evidence-based methodologies across content areas with a rigorous focus on academics. The school's mission statement emphasizes welcoming the community, celebrating diversity, and

instilling responsibility to ensure that every student succeeds. In the 2018–2019 school year, the elementary school reported having 544 students enrolled in pre-K to Grade 5 and having 24 classroom teachers, with an average class size of 25 students. The school qualified for 100% free and reduced meals, with breakfast served in the classroom and lunch served in the cafeteria to each student. Academically, the school was given a "B" letter grade; 28% of the students met the standard for mathematics and 28% for English language arts on state exams, compared to the 41% state average. Students had physical education twice a week for 40 min. The physical education teacher had 7.5 years of teaching experience in a combination of elementary and middle school settings.

Intervention and Study Design

A 6-week intervention was conducted on the basis of an alternating treatment design. Class 1 was not given choices in its volleyball unit over 3 weeks, followed by choices in its hockey unit for 3 weeks. Class 2 had choices in its 3-week volleyball unit, followed by no choice in its 3-week hockey unit. Table 1 shows the instructional choice intervention and no-choice group lesson plans. Data were collected in each fifth-grade physical education class. Procedures included pre–data collection (i.e., physical activity enjoyment scale [PACES], Situational Motivation Scale [SIMS], fourth- and fifth-grade student attitudes toward physical education instrument, which took place during physical education classes before the intervention). Ongoing data collection included physical education teacher observations with field notes. Physical activity data were collected with pedometry during the second 3-week unit of hockey only. After the 6-week intervention, all students again completed the survey instruments coupled with an assessment of student perceptions gained through interviews.

Instruments

Several instruments (Table 2) were used in the collection of information on student outcomes from choice conditions.

Table 1
Instructional Choice Intervention and No-Choice Group Lesson Plans

Day	Skill	Intervention	Control
Volleyball			
	Warm-Ups	"Station" student-chosen fitness	Circle, teacher-chosen fitness activities
1	Bump	#1: Volley Four Square #2: Passing Challenge (group of 2–6)	Volley Four Square
2	Set	#1: Keep Up #2: Volley Knockout	Keep Up
3	Serve	#1: Hula-Hoop Serve #2: Partner Serve	Hula-Hoop Serve
4	Rotation	#1: Team Serve #2: Mini Game	Team Serve
5	Game Play	#1: Love #2: Like #3: Alright (if needed)	Teacher-chosen teams
6	Game Play	#1: Love #2: Like #3: Alright (if needed)	Teacher chosen teams
Hockey			
	Warm-Ups	"Station" student-chosen fitness	Circle, teacher-chosen fitness activities
1	Stick Handling	Obstacle course with or without a stick Obstacle course with or without a ball Obstacle course with a ball or with a puck 1: Passing with a partner 2: Star Passing Game	- Obstacle course without a stick (5) - with stick (5) - with a ball (5)

Table 1 (cont.)

Day	Skill	Intervention	Control
2	Passing	1: Keep Away 2: Howler in the Middle Warm-Up 1: Pass and Shoot 2. Passing in Motion	Egg Toss, Star Passing, Howler in the Middle
3	Shooting	Game 1: Round the House 2: Pucks in the Middle (two teams, all pucks start in the middle, on "go" teams take one puck at a time and shoot a goal. Once the pucks in the middle are clear, count to see who has the most.)	Passing in Motion, Pass and Shoot, Round the House
4	Review	Warm-Up: #1: Passing in Motion #2: Star Passing #1: Shoot-Out #2: Around the House	Pucks in the Middle, Shoot-Out, Keep-Away
5	Game Play	Love, Like, or Alright *Chosen Ball or Puck?	Teacher-Chosen Teams
6	Game Play	Love, Like, or Alright *Chosen Ball or Puck?	Teacher-Chosen Teams

Note. Volleyball curriculum created by and used at first author's school. Hockey curriculum by Arizona Coyotes Amateur Program (ice hockey).

Physical Activity Enjoyment Scale

The Physical Activity Enjoyment Scale (PACES) measures enjoyment of physical activity. It consists of 16 items that differentiate experience of exercising in pleasant conditions versus unpleasant conditions. It also measures modes of physical activity using a 5-point Likert-like scale with anchors of *totally disagree* (1) and *totally agree* (5). Example questions include "I enjoy being active" and "Being active gives me energy" (Motl et al., 2001).

Table 2
Descriptive Statistic Results for the Four Instruments

	Boys				Girls				Total			
	Pre		Post		Pre		Post		Pre		Post	
Instrument	***M***	**(*SD*)**	***M***	**(*SD*)**	***M***	**(*SD*)**	***M***	**(*SD*)**	***M***	**(*SD*)**	***M***	**(*SD*)**
Attitudes	63.73	(10.23)	61.32	(15.20)	63.91	(9.91)	63.36	(10.71)	63.82	(9.97)	62.27	(13.19)
IM SIMS	18.28	(2.65)	17.69	(3.04)	16.70	(3.66)	16.78	(3.65)	17.51	(3.25)	17.26	(3.34)
ER SIMS	14.96	(4.47)	14.19	(4.40)	15.16	(3.70)	13.17	(5.14)	15.06	(4.07)	13.71	(4.74)
PACES	68.64	(7.89)	71.68 *	(7.89)	65.08	(8.62)	66.82	(14.25)	66.89	(8.54)	69.20	(11.28)

Note. PACES = Physical Activity Enjoyment Scale; IM SIMS = Internal Motivation from the Situational Motivation Scale; ER SIMS = External Regulation from the Situational Motivation Scale; Attitudes = fourth- and fifth-grade students' attitudes toward physical education.

*Significant pre–post differences.

Situational Motivation Scale (SIMS)

Situational motivation refers to the motivation people experience directly during an activity (Guay et al., 2000). SIMS was used in the examination of students' internal motivation, (e.g., "because I think that PE is pleasant"), external motivation (e.g., "because I am supposed to do PE"), identified regulation (e.g., "because I am doing PE for my own good"), and amotivation (e.g., "There may be good reasons to do PE, but personally I don't see any"). SIMS is a 14-item scale with anchors on a 7-point Likert scale with 7 being *exactly like me*, 4 *moderately like me*, and 1 *not like me at all* (Standage et al., 2003).

Pedometers

Student participants used pedometers in physical education. Physical activity was measured for 6 days during the hockey unit only (both groups). As students entered the class, they were given a pedometer, which they cleared and placed in their waistband before starting the activity. Students wore the pedometer during the entire class and took it off before lining up. Students wrote down their steps and placed the pedometer back in the box. The instructor immediately recorded the pedometer steps in an Excel spreadsheet. Any extreme outliers in steps were deleted (e.g., student forgot to reset pedometer [extremely high scores] or it was not working properly [extremely low scores]).

Fourth- and Fifth-Grade Students' Attitudes Toward Physical Education Instrument

Attitude is defined as likes and dislikes and is one major pathway a person's life can be directed toward physical activity (Phillips & Silverman, 2015). The fourth- and fifth-grade students' attitudes toward the physical education instrument examines student attitude toward physical education. It is based on 16 items on a 6-point Likert-like scale with anchors of 1 *strongly disagree "no way!"* to 5 *strongly agree "definitely."* Phillips and Silverman (2015) showed that the attitude measurement instrument produced reliable and valid scores in a similar sample of fourth- and fifth-grade students. An example from this instrument (reverse-coded item) is "The activities I do in my physical education class make class unpleasant for me." Results showed students "overall" attitude toward the physical education

class, assessed after choice condition for Class 1 and after no-choice condition for Class 2.

Field notes

The physical education teacher took field notes throughout the 6-week intervention in relation to instructional choices and students' reactions to choices as well as the changes in the physical education classes from the instructional choice conditions. Notes focused on students' excitement levels, comments about the instruction, and general perceptions of participation in classes with and without the instructional choice conditions.

Student Interviews

Student interviews produced information about students' views of the two units taught with or without the instructional choice condition with a subsample of 18 student volunteers. A general interview guide was conducted and then transcribed verbatim. Sample interview questions were "What do you like about PE?"; "Some people say that physical education should include an instructional choice each day when you come to PE. Do you agree? Why/why not?"; "Did you prefer having two choices or would you rather have [the teacher] decide for you?"; and "Did you enjoy getting to choose your own teammates? Why/why not?" Table 3 shows sample responses.

Data Analyses

Descriptive Analyses

Descriptive analyses were conducted for all variables across the instruments. In this study, *t* tests were administered for determination of pre–post differences in students' views. The *t* tests were then repeated, with the file split by groups for determination of a difference in views occurred and if the group had the choice condition second (vs. first in the alternating treatment design). Next, a set of repeated-measures analyses of variance (RM-ANOVA) tested for differences by gender pre- to posttest for each instrument. Finally, internal consistency reliability assessments (Cronbach's alpha) for combined pre–post data by instrument determined if the items for each instrument measured the same construct.

Table 3
Student Interview Participant Sample Quotes

Name	Ethnicity	Sample quote	Choice in instructional activity	Choice in partners/ teams
Kyle	Hispanic	"We would be more active if we got to play sports they are the best at"	Choice	No choice
Amanda	Hispanic	"I think we can have two choices because sometimes we don't want to be in that type of sport"	Choice	No choice
Brittany	Hispanic	"Some people want to play more sports and other people just want to play their same sport" "I would rather you choose the partner because I need get better at working with new people"	Choice	No choice
Robert	Hispanic	"We should have more choices to be more entertained"	Choice	Choice
Joe	African American	"Sports that they like to play"	Choice	No choice
Andrea	Hispanic	"If we are not competitive, we don't have to play rough"	Choice	Choice
Hillary	Hispanic	"It wouldn't be fair to the other teams if they only had bad players and the other team had good players"	Choice	No choice
Briel	Hispanic	"We got to pick what we wanted to do in hockey, such as be the goalie"	Choice	Choice
Wade	Native American	"We could be more active" "When we choose our own teammate, we can be more comfortable with the people we are with"	Choice	Choice
Pam	Hispanic/Native American	"Some people don't like what the PE teacher chooses"	Choice	No choice

Table 3 (cont.)

Name	Ethnicity	Sample quote	Choice in instructional activity	Choice in partners/ teams
Andy	Hispanic	"Teacher-chosen partners so I can meet some new people that I have not met"	Choice	No choice
Dia	Hispanic	"Others would be more active if they were playing the sport that they like"	No Choice	Choice
Dylan	African American	"Two choices because everyone could pick on their opinion" "Teacher-chosen partner so that people won't argue"	Choice	No choice
Jamie	Hispanic	"I like to play four square and exercise with my mom and go to the park"	Choice	Choice
Roger	Hispanic	"There is a chance I would end up with a partner I don't work well with"	Choice	Choice
Sara	Caucasian	"if kids had more options, they would participate better and listen more" "Activities are harder, some students would want something easier to participate better"	Choice	No choice
Michelle	Hispanic	"Because some people don't like the games that are planned and want more options"	Choice	No choice
Matt	Hispanic	"Yes, because some kids don't know how to play the other game and if there are more options, they would probably know that better"	Choice	No choice

Note. All students are in fifth grade. Teacher- or student-chosen activity: Did the students prefer the teacher to choose their PE activity or did they want student choice? Teacher or student chosen partners/teams: Did the students prefer the teacher to choose partners/teams or did they want to choose their own partners/teams?

Qualitative Data Trustworthiness Measures

Throughout the qualitative data analysis process, trustworthiness was improved through the following measures suggested by Lincoln and Guba (1985): triangulation of data sources (i.e., survey, interview, field notes, and physical activity) compared findings and looked for consistency across sources. Negative case searches found cases of different or inconsistent findings. Across all analysis methods, a peer debriefer determined consistency of findings across reviewers and help them come to a consensus. Finally, member checking with students ensured accuracy of transcription and theme development. This varied approach to data analysis improved the credibility and trustworthiness of the qualitative analysis process.

Results

Perception Instruments (PACES, SIMS, Attitudes)

Overall pre- and post-paired-sample *t*-test results showed no significant difference in students' enjoyment (PACES), motivation (SIMS), or attitude. When the *t* tests were conducted by group, however, there was a significantly higher score for the group that had the choice condition second on the physical activity enjoyment scale (PACES), $t(16) = -2.26$, $p = .046$. The group with choice second had mean scores pre–post of 65.81 ($SD = 9.22$) and 71.35 ($SD = 6.97$), whereas the group with no choice second (teacher led), immediately before the posttest, had very comparable scores pretest ($M = 67.71$, $SD = 8.07$) and posttest ($M = 67.89$, $SD = 13.20$). Similarly, the only RM-ANOVA pre–post gender differences identified were also for the PACES instrument, $F(1, 42) = 4.32$, $p = .044$, partial $\eta^2 = .09$. The boy's mean scores were higher for the PACES instrument at posttest ($M = 71.71$, $SD = 6.59$), whereas girls' mean scores at posttest for the PACES instrument were lower and more variable ($M = 66.82$, $SD = 14.26$). Figure 1 presents PACES results by individual and overall groups. Internal consistency reliability scores for the four instruments ranged from Cronbach's alpha .83 to .89, showing that the items measured the same construct on each scale. Table 2 presents descriptive statistics for the three perception instruments.

Physical Activity

When students are motivated, are enjoying themselves, and have positive attitudes toward physical education, the assumption is that they will move more. Pedometers were used in the comparison of the two groups about whether student instructional choice or the no-choice condition significantly increased student steps. Steps were measured for both groups during the hockey unit only. The instructional choice group was significantly more active during hockey, $t(23) = 3.43$, $p = .002$. Group 1 ($M = .61$, $SD = .84$), the first group with instructional choices, had more steps during the hockey unit than Group 2, which did not have instructional choices during hockey ($M = .99$, $SD = 83.08$).

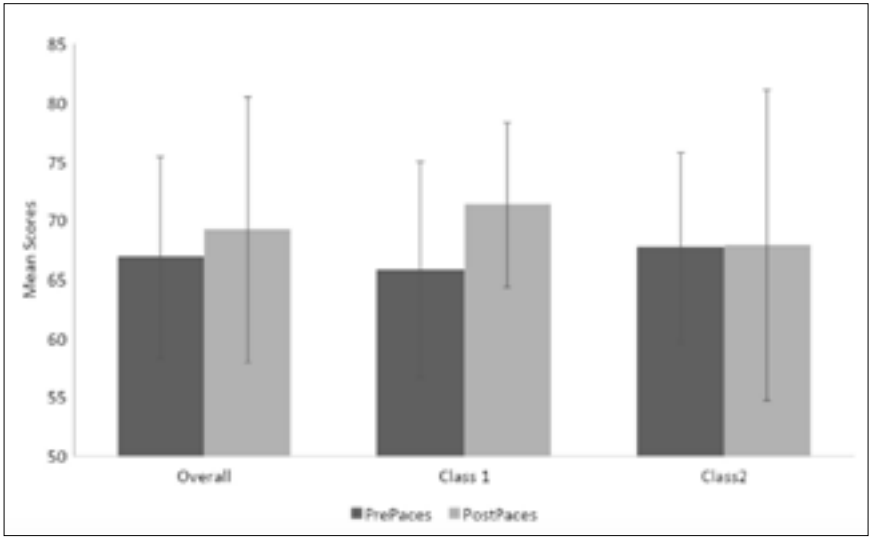
Student Themes on Choices

Three common themes were identified from the interviews and field note data: (a) the desire for instructional choices, but not for team selection; (b) the desire for sports participation in physical education, but also for exercise/running; and (c) an understanding and desire for instructional choice. A descriptive table of student participant quotes is available in Table 3 from the subsample of student participants with interviews ($n = 18$).

Desire for Instructional Choices, but Not for Team Selection

During the instructional choice units, students had multiple opportunities for choice. They were given the choice between two activities such as a volleyball, four square, or passing game; choice of partners, equipment, and positions; and choice of competition level during game play. Most students (one did not agree) reported that they preferred to choose the instructional activity over the no-choice condition. Students reported that making choices in physical education made the challenge posed by the activity more fun and entertaining: "We should have more choices to be more entertained" (i.e., be more active) and "Others would be more active if they were playing the sport that they like" (i.e., interest change each day). Many students mentioned that they enjoyed choosing the equipment they used and which position they played. An interesting result was that two thirds of the students preferred the teacher to choose teammates rather than having the choice to select teams. Students reported that this made games fair: "It wouldn't be fair to the other teams if they

Figure 1
Instructional Choices and Enjoyment Level (PACES Instrument) Pre–Post Intervention



Note. Class 1 instructional choice before posttest; Class 2 had no instructional choices before the posttest.

only had bad players and the other team had good players" was one response. Students also believed that selection by the teachers allowed them to get to know others and that when they chose their own teammates, it was easy to get off task. The students who preferred to choose their teammates said they would be more comfortable with their friends: "When we choose our own teammate, we can be more comfortable with the people we are with." Similarly, when given the choice for more-competitive and less-competitive games "the same students [chose] the same side each day/game" (Field Notes, Day 3, Hockey Unit). Students expressed a need for comfort and fairness in games.

Students Loved Sports But Also Wanted More Fitness

Some students equated physical education and sports as the same thing. Although the interview results showed that many students loved and wanted to play sports, there were a surprising number of students who indicated a desire for more fitness activities in physical education. When prompted with the question "What would make

you more active in PE?" students responded with "run more," "learn new exercises," "jog more laps," and "learn about more muscles." The students who mentioned playing sports to be more active added phrases such as "sports we are best at," "playing our favorite sports," or "sports we like to play." There were also a few students who wanted to play the sports for a longer time, meaning they wanted to extend the unit from six lessons to eight or ten. This would allow them more "game time." One student even suggested a peer teaching style. Students reported that during recess, at home, and on the weekend, they enjoyed recreational activities, for example, "I like to play four square and exercise with my mom and go to the park." Others indicated riding their bikes for physical activity, and a few students reported playing sports outside of physical education.

Students Recognized and Valued Instructional Choices

The students were not informed about being offered more instructional choices in either volleyball or hockey. When prompted with the interview question "Which unit did you get more choices in?" all of the students were able to explain that X unit [the instructional choice condition] gave them more instructional choices and specifically what those instructional choices were. Students indicated that they preferred the instructional choices for a variety of reasons. Frequently mentioned reasons included "Sometimes we don't want to play or don't like what the teacher has chosen"; "Some people are more competitive than others so if we aren't competitive, we don't have to play rough"; and "Some kids know how to play the game better." Field notes confirmed that students self-selected to work with other students of the same skill level or that they wanted to be in practice groups that were either more or less competitive to match their skill and comfort levels. Field notes also confirmed that the first group that had the choices quickly noticed when those choices were taken away. One student asked during teacher-led warm-ups, "What happened to the choices that we got last week?" Students expressed their desire to continue making instructional choices of activities, equipment, positions played, and competitive level.

Discussion

This study investigated instructional choice and various outcomes including students' views of enjoyment, motivation, attitude,

physical activity levels, and their perceptions of the instructional choices. Enjoyment significantly improved as measured on the PACES scale. Navarro-Patón et al. (2019) also found that students had high intrinsic motivation based on the pleasure of participating, having fun, and satisfaction. These studies support the critical relationship between enjoyment and intrinsic motivation. The SIMS instrument results showed an increase in intrinsic motivation and a decrease in extrinsic motivation during the choice teaching condition, which is a relationship supported by self-determination theory. As students become more intrinsically motivated, they build more autonomy, which decreases the need for external motivation. Bryan and Solmon (2012) found overall self-determination and intrinsic motivation to be significantly, positively related. They also noted that both intrinsic motivation and identified regulation positively correlated with attitude, enjoyment, and usefulness. Although the results from this study did not show significance in identified regulation or attitude, enjoyment showed significant positive improvements with instructional choices in physical education. As intrinsic motivation increased, extrinsic motivation decreased. This is believed to stem from autonomy (i.e., as students are more intrinsically motivated, they become more autonomous and have less need for external motivation).

Students' physical activity was assessed during the hockey unit under both the instructional choice condition and the no-choice condition. The instructional choice condition students had significantly more steps during the hockey unit. Lonsdale et al. (2009) also showed this increase in student physical activity when students were given a 40-min physical education lesson with choices. In their study, the first twenty minutes of a basketball lesson were teacher driven and the second twenty minutes were student free-choice. While these two studies are different, both this study and the Lonsdale et al. (9) study found that student choices led to significantly higher physical activity participation in physical education classes. Sanders et al. (2016) also reported that more choice led to increased physical activity intensity; however, they did not find significant time differences. Although there were not significant findings in this study from the attitude survey, Phillips and Silverman (2015) reported that the physical education teacher and the curricular model have

an influence on students' attitude. The lack of significant difference in attitudes in this study may be related to the short duration of the intervention. Attitudes are also generally stable. Further, this study only assessed attitudes pre–post intervention rather than after each unit. Assessing after each unit may have provided a clearer view of attitudes about instructional choices in physical education. Students' perceptions of instructional choices in physical education were also investigated. The findings of this study are similar to those in Hill and Hannon (2008) since students made instructional choices based on their skill level and the sports they felt competent in performing (Niemiec & Ryan, 2009). Higher-skilled students, more so than lower-skilled students, reported preferring specific team sports. The importance of students' competence in skills was also discussed in interviews by students reporting a preference to "choosing sports we are good at." Hwang and Jin (2016) found that when students were in an autonomy-supportive class and in a controlled motivation versus a controlled teaching style, they were more engaged. The controlled motivation could be allowing students instructional choices, which also reduces "teacher control." An interesting finding from this study was that many students preferred recreational games that were no contact and social in nature. Although recreational sports were not offered in this study, many students mentioned the idea of not wanting to play rough or competitively in physical education.

Conclusion

This study examined instructional choices in a physical education setting focusing on students' enjoyment, motivation, physical activity patterns, and attitude and perception of physical education classes. The study found that when students were given choices, whether it be equipment, partner, or activity, their enjoyment, attitude, and physical activity increased. Finally, the study used a small sample size and short units, so more research studies on these topics would be valuable.

References

Bernstein, E., Phillips, S. R., & Silverman, S. (2011). Attitudes and perceptions of middle school students toward competitive activities in physical education. *Journal of Teaching in Physical Education*, *30*(1), 69–83. https://doi.org/10.1123/jtpe.30.1.69

Brooks, C. F., & Young, S. L. (2011). Are choice-making opportunities needed in the classroom? Using self-determination theory to consider student motivation and learner empowerment. *International Journal of Teaching and Learning in Higher Education*, 23, 48–59.

Bryan, C. L., & Solmon, M. A. (2012). Student motivation in physical education and engagement in physical education. *Journal of Sport Behavior*, *35*(3), 267–285.

Davies, B., Nambiar, N., Hemphill, C., Devietti, E., Massengale, A., & McCredie, P. (2015). Intrinsic motivation in physical education. *Journal of Physical Education, Recreation, and Dance*, *86*(8), 8–14. https://doi.org/10.1080/07303084.2015.1075922

Guay, F., Vallerand, R. J., & Blanchard, C. (2000). *Situational Motivation Scale (SIMS)* [Database record]. APA PsycTests. https://doi.org/10.1037/t12678-000

Hill, G., & Hannon, J. C. (2008). An analysis of middle school students' physical education physical activity preferences. *Physical Educator*, *65*(4), 180–194.

Hwang, Y., & Jin, J. (2016). How does student motivation affect different teaching styles and student engagement in physical education? *Journal of Physical Education, Recreation, and Dance*, *87*(7), 61–61. https://doi.org/10.1080/07303084.2016.1203690

Kretschmann, R. (2014). Student motivation in physical education - The evidence in a nutshell. *Acta Kinesiologica*, *8*(1), 27–32. http://actakin.com/PDFS/BR0801/SVEE/04%20CL%2004%20RK.pdf

Lang, E. C. (2010). *School age children's physical activity motivation statements reported in a national survey* [Master's thesis]. Florida State University.

Lincoln, Y. G., & Guba, E. (1985). *Naturalistic inquiry*. Sage Publications.

Majchrzak, A., Malhotra, A., & John, R. (2005). Perceived individual collaboration know-how development through information technology–enabled contextualization: Evidence from distributed teams. *Information Systems Research*, *16*(1), 9–27. https://doi.org/10.1287/isre.1050.0044

Lonsdale, C., Sabiston, C. M., Raedeke, T. D., Ha, A. S., & Sum, R. K. (2009). Self-determined motivation and students' physical activity during structured physical education lessons and free choice periods. *Preventive Medicine*, *48*(1), 69–73. https://doi.org/10.1016/j.ypmed.2008.09.013

Marttinen, R., Fredrick, R. N., III, & Silverman, S. (2018). Changes in student attitude toward physical education across a unit of instruction. *Journal of Physical Education and Sport*, *18*(1), 62–70. https://doi.org/10.7752/jpes.2018.01008

Navarro-Patón, R., Lago-Ballesteros, J., Basanta-Camiño, S., & Arufe-Giraldez, V. (2019). Relation between motivation and enjoyment in physical education classes in children from 10 to 12 years old. *Journal of Human Sport and Exercise*, *14*(3), 527–537. https://doi.org/10.14198/jhse.2019.143.04

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom. *Theory and Research in Education*, *7*(2), 133–144. https://doi.org/10.1177/1477878509104318

Phillips, S. R., & Silverman, S. (2015). Upper elementary school student attitudes toward physical education. *Journal of Teaching in Physical Education*, *34*(3), 461–473. https://doi.org/10.1123/jtpe.2014–0022

Sanders, G., Juvancic-Heltzel, J., Williamson, M., Roemmich, J., Feda, D., & Barkely, J. (2016). The effect of increasing autonomy through choice on young children's physical activity behavior. *Journal of Physical Activity and Health*, *13*(4), 428–432. https://doi.org/10.1123/jpah.2015–0171

Standage, M., Duda, J. L., Treasure, D. C., & Prusak, K. A. (2003). Validity, reliability, and invariance of the Situational Motivation Scale (SIMS) across diverse physical activity contexts. *Journal of Sport and Exercise Psychology*, *25*(1), 19–43. https://doi.org/10.1123/jsep.25.1.19

Sun, H., Chen, A., Ennis, C., Martin, R., & Shen, B. (2008). An examination of the multidimensionality of situational interest in elementary school physical education. *Research Quarterly for Exercise and Sport*, *79*(1), 62–70. https://doi.org/10.1080/02701367.2008.10599461

Ward, J., Wilkinson, C., Graser, S. V., & Prusak, K. A. (2008). Effects of choice on student motivation and physical activity behavior in physical education. *Journal of Teaching in Physical Education*, *27*(3), 385–398. https://doi.org/10.1123/jtpe.27.3.385

Xiang, P., McBride, R., & Guan, J. (2004). Children's motivation in elementary physical education: A longitudinal study. *Research Quarterly for Exercise and Sport*, *75*(1), 71–80. https://doi.org/10.1080/02701367.2004.10609135