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Teaching During a Pandemic: Physical Educators' Reflections on Teaching Remotely

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This study documents the lessons learned of K-12 physical educators as they shifted from in-person to remote learning in spring 2020, as a result of the coronavirus pandemic. Fifteen K-12 physical educators participated in semi-structured interviews, utilizing online virtual meeting software. Questions centered around their processes of, and experiences with remote teaching. A constructivist lens was utilized to analyze participant responses. The need for lesson simplicity and student autonomy were common themes among the participants, as were challenges related to student accountability. Participants also agreed that opportunities for student socialization were difficult to replicate in the online environment. Despite differing approaches to remote teaching in this unique circumstance, several common themes emerged which can be applied in the future to help chart success in online physical education programs.

TEACHING DURING A PANDEMIC: PHYSICAL EDUCATORS' REFLECTIONS ON TEACHING REMOTELY

As schools across the United States abruptly closed to prevent the spread of COVID-19 in the spring of 2020, educators in traditional, brick-and-mortar schools, found themselves with the task of attempting to transition all of their learning materials onto an online platform, often with little-to-no preparation on how to proceed. This challenge was particularly difficult to

those in the field of physical education, as a large proportion of the curriculum centers on socialization, shared games and activities, and group work (Graham et al., 2020). Further complicating matters was the fact that online physical education (OLPE) is a relatively new concept, with limited research available surrounding best practices (Daum & Buschner, 2018).

The 2006 *Shape of the Nation* report (NASPE, 2006) is credited with first highlighting the prevalence of online learning in the physical education community (Daum & Buschner, 2018). In the report, it was revealed that 12 states were allowing students to receive physical education credits through the completion of online work. This practice was controversial, as it conjured up images of students receiving physical education credits while sitting in front of a computer. While this image was a misperception and did not accurately reflect the content of early OLPE courses, it seemingly contradicted the aims of physical education. Despite his personal hesitation surrounding this trend, Buschner (2006) penned an editorial in the *Journal of Physical Education, Recreation and Dance*, outlining the potential advantages and disadvantages of OLPE. In doing so, he challenged his colleagues in the field to debate the possible merits of OLPE, rather than to merely dismiss it. The following year, in 2007, the National Association for Sport and Physical Education (NASPE) released its initial guidelines for OLPE (Daum & Buschner, 2018). The number of states that recognized OLPE credits climbed steadily for the next decade (Daum & Buschner, 2018). When the 2016 *Shape of the Nation* report was released (SHAPE America, 2016), it revealed that 31 states honored physical education credits earned online. Along the way, OLPE picked up several proponents who argued that the physical education field should embrace the practice of online education. (Mosier, 2012; Rhea, 2011). While none of these authors lobbied for replacing traditional, in-person physical education with OLPE, they all acknowledged that for some students, OLPE may prove more effective than traditional physical education. In 2018, SHAPE America (formerly NASPE) released an updated guidance document entitled, *Guidance for K-12 Online Physical Education* (SHAPE America, 2018).

As OLPE has expanded as an educational offering, research studies have emerged studying the phenomenon, albeit in a limited capacity. A handful of studies have attempted to review OLPE programs (Daum & Buschner, 2012; Harris & Metzler, 2019; Karp & Woods, 2003). Through these studies, as well as others which focus on perceptions of OLPE, researchers have been able to identify advantages and disadvantages of OLPE. Some of the benefits include: schedule flexibility (Jackson, 2105); a more comfortable environment (Mosier, 2012); and the ability to be tailored to each individual student (Crosby, 2018). Additionally, OLPE affords teachers the opportunity to develop one-on-one relationships with the students (Daum & Buschner, 2018) and allows for a variety of instructional and assessment methods (Crosby, 2018). One clear advantage is that students can easily review material that is unclear to them (Goad, 2018). Conversely, drawbacks of OLPE include:

student accountability and the ease of fabricating results (Daum & Buschner, 2018; Daum & Woods, 2015; Jackson, 2015); and questions about how students will learn responsible social behavior, teamwork and cooperation (Buschner, 2006). The promotion of physical activity and personal fitness, rather than comprehensive physical education is another pressing issue (Buschner, 2006), as are issues of inequity regarding access to the necessary technology for OLPE (Daum, 2020).

Despite a limited amount of research in the field, proponents of OLPE have begun to develop a list of best practices, as the field continues to expand. Among the most prominent suggestions: first, it is not sufficient to merely insert a traditional physical education teacher into the role of an online physical educator. Crosby (2018) contends that teachers should receive extensive professional development and technical support. Buschner (2006) argued that to be successful, an OLPE program needs an "effective, reflective, qualified teacher" (p. 3) and it is suggested that teachers should transition from a teaching role to that of a facilitator (Karp & Woods, 2003). Secondly, when crafting the curriculum of an OLPE program, teachers should base their content on state and national standards (Crosby, 2018). Third, assessments should be a cornerstone of the program. Crosby (2018) suggested aligning assessments with course objectives and then utilizing technology to align with the assessments, rather than aligning assessments with the available technology. Daum (2020) offers numerous suggestions for assessments which align with the five National Physical Education content standards (SHAPE America, 2014), which include traditional quizzes, analysis of biomechanical movements, online role playing and utilizing social media to create a physical activity journal. Another valuable suggestion is to incorporate relevant technology into a teacher's pedagogy. This can include utilizing fitness apps, activity trackers or exergaming (Goad et al., 2019; Martin et al., 2015). Finally, an important consideration is that OLPE is considered viable for high school students, but not for elementary students (Daum & Buschner, 2018; SHAPE America, 2018). The concern is that elementary students have not yet developed the fundamental movement skills for participation in OLPE, plus they lack the necessary independence to complete the assigned tasks. There are mixed opinions surrounding the viability for the middle school level (Daum & Woods, 2015).

A critical consideration surrounding all of the suggestions made in the aforementioned literature, is that the transition to OLPE should be an intentional one, done mindfully with appropriate planning. However, in the spring of 2020, the coronavirus pandemic arrived so swiftly that districts were forced to bypass this critical planning stage. Thus, physical educators nationwide were placed in the extraordinarily challenging situation of attempting to navigate OLPE, without proper training. However, as Daum & Buschner (2018) point out: "research lags behind educational practice, 'good practices' will not occur without close examination of OLPE teaching and the learning process" (p. 329).

Thus, despite being placed in an unenviable situation, investigating the experiences of the teachers who taught remotely may provide insight into the limited research on teaching and teachers' perceptions of OLPE. With these understandings, we designed a study for the following research questions.

- What specific methods of instruction did physical educators perceive to be effective when teaching remotely?
- What were the barriers to teaching and learning physical education in an online environment? What aspects of an in-person class were difficult to replicate in an online setting?

THEORETICAL FRAMEWORK

Constructivism provided the lens for examining physical educators' perceptions of their OLPE instruction. The theory advocates the construction of knowledge through experiences that foster learning (Grenier, 2020) and is a popular construct in literature examining online learning (Daum & Buschner, 2012; Karp & Woods, 2003). The foundation of constructivism lies on the premise that an individual actively constructs their own knowledge and understanding, as opposed to learning occurring passively through the transmission of information from one individual to another (Rovegno & Dolly, 2006; von Glasersfeld, 1995). Knowledge construction occurs when a learner adds new understandings to their personal foundation of previous knowledge, skills and attitudes (Daum & Buschner, 2012; Karp & Woods, 2003) and functions to make an individual's behavior more practical in a specific environment (von Glasersfeld, 1995). Learning becomes an active process and is benefitted from collaboration and cooperation (von Glasersfeld, 1995).

From the constructivist perspective, the physical education teachers in this study held previously formed knowledge, skills and perceptions of how a physical education classroom functions. This construct may have been informed by a variety of factors, including: childhood physical education experiences, teacher education programs and professional teaching experiences, among other factors (Lawson, 1986). Given that the participants in this study had no prior knowledge of teaching K-12 physical education in an online environment, the following research questions were formed to explore common themes surrounding teaching in an online environment, based on each individuals' experience with constructing new knowledge within a previously unexplored domain.

METHOD

A qualitative research design was utilized to make meaning of the shared experiences of a sample of teachers engaging in OLPE for the first time (Merriam & Tisdell, 2016). The interview method was employed in this study to

enable teachers to reflect on their own experiences and express the conditions and factors that influenced student learning.

Participants

The researchers created a list of possible participants based on personal contacts held within the field. The primary researcher is a doctoral student who has 11 years of experience teaching secondary physical education in New England public schools. The secondary researcher is a faculty member in a New England physical education teacher preparation (PETE) program. Participation was limited to individuals who were teaching K-12 physical education in New England during the spring of 2020. An emphasis was placed on attempting to recruit a balanced number of elementary and secondary teachers for the study. Recruitment of participants from several New England states was desired, as different states had differing educational requirements. Recruitment emails were sent to the finalized list and 10 participants were recruited. An additional participant was recruited through snowball sampling (Goodman, 1961). Another professional in the field aided in recruiting four additional participants, bringing the total sample size to 15 physical educators.

Table 1
Demographic Breakdown of Participants

Name (Pseudonym)	Level	State	Gender	Years of P.E. Teaching Experience
Scott	High	NH	M	10
Andrew	High	NH	M	1
Mason	High	MA	M	2
Patrick	High	VT	M	9
David	Middle	NH	M	21
Phil	Middle	MA	M	33
Craig	K-8	NH	M	3
Caitlin	K-8	NH	F	13
Kevin	PreK-8	MA	M	2
CJ	Elementary	NH	M	8
Kelly	Elementary	NH	F	10
Sue	Elementary	NH	F	32
Jeff	Elementary	MA	F	27
Max	Elementary	VT	M	13
Hannah	Adapted K-12	NH	F	35

Participants were recruited from three different states, including 11 males and four females. Participants had a variety of physical education teaching experience. Four participants had three or fewer years of physical education teaching experience, while three had more than 30. The average years of physical education teaching experience was 14.6 years. All of the participants worked in public schools, with the exception of one K-8 teacher who worked in a private school. All of the participants worked in schools that have predominantly White student populations in towns that could be described as middle to upper class.

Data Collection

Semi-structured interviews were the primary source of data collection (Merriam & Tisdell, 2016). An initial interview protocol was drafted by the primary researcher. The questions were developed to elicit the participants' pedagogical processes during this time period, with an underlying focus on the knowledge they were constructing pertaining to OLPE. It was then shared with the secondary researcher, who provided feedback, leading to a final interview protocol (See Appendix). Study participants engaged in a single interview conducted over Zoom videoconferencing software. Interviews were conducted in June 2020, near the conclusion of the academic year for some participants, and immediately following the school year for others. Interviews ranged from 30-60 minutes, with most lasting between 50-60 minutes. Questions centered on the teachers' processes and experiences with the transition from in-person teaching to remote teaching, with an emphasis on their individual perceived successes and challenges. The primary researcher conducted all of the interviews in a one-on-one setting.

DATA ANALYSIS

The researchers subjected the interview data to thematic analysis (Braun & Clarke, 2006) using a constructivist lens. Phase one of data analysis occurred during the interview transcription process. The first author transcribed the interview set and took notes regarding times when participants explicitly provided answers to the research questions or when they provided evidence of the construction of knowledge. For example, if a participant referenced a change in their curricular delivery that resulted in greater student participation, a notation was made. Phase two consisted of open coding (Corbin & Strauss, 2015; Merriam & Tisdell, 2016). During this phase, both researchers independently reviewed the transcripts and took notes in the margins regarding segments of data that appeared to speak directly to the research questions. Phase three consisted of axial coding (Corbin &

Strauss, 2015; Merriam & Tisdell, 2016). In this phase, the existing codes were compared to one another, linking individual codes with other codes of a similar nature. Constructivism was the driving force in this phase, as similar instances of teachers constructing new understandings of OLPE were grouped together. Phase four involved selective coding (Corbin & Strauss, 2015; Merriam & Tisdell, 2016). Following the completion of phases two through four, the researchers met to discuss their findings of the most significant themes, as well as the ways that the findings fit within the constructivist framework. Upon agreeing to the most pertinent themes, the primary researcher returned to the transcript to search for disconfirming evidence. To help ensure internal validity, the researchers relied on member checks (Merriam & Tisdell, 2016). The third draft of the manuscript was shared with all the participants of the study following its completion. Each participant was asked to review, at a minimum, the findings and discussion sections, and asked to share any concerns regarding potential misrepresentations of their thoughts. No concerns were reported and no changes were deemed necessary following this phase.

FINDINGS

When viewing the data through the lens of constructivism, three themes emerged from the data most prominently. The first theme, *Effective Strategies for Learning*, was broken down into two sub-categories: Simplicity and student autonomy. The second theme was a *Lack of Student Accountability*. The final theme that emerged was *Inadequate Student Socialization*.

Effective Strategies for Learning

Simplicity

When reflecting on the practices the teachers perceived to be the most successful, many referenced making lessons as simple as possible. Teachers arrived at the notion of simplicity in various ways. Some selected simplicity based on their own intuition, as David stated: "I felt like with all the time they needed to spend on academics it was important for me to keep their physical education experience low key and achievable." Others simplified their lessons at the request of parents or administrators, as Craig noted:

> My lessons sort of got more simple as the time went on. I found that it was tough to get kids motivated to do all of the work that they had on their plate. We were getting emails from parents and from admin saying the kids were overwhelmed and it was too much work.

In an effort to make the transition from in-person learning to online learning more achievable for students, some teachers spoke of transferring established routines from the gymnasium to the online classroom, and revisiting material that had previously been taught. For example, CJ shared:

> I had my student teacher, and her and I were able to make a few different lessons using some of the normal routines that we did in class: Locomotive skills, the muscle song. And a couple other, like, skill themes that we had done prior into the year and something that was a routine. So we tried to keep that as normal as possible.

This was particularly pertinent at the elementary level, where seven out of the nine teachers who worked with elementary students spoke of employing either or both of these strategies.

Many of the participants downplayed the role of live, synchronous classrooms, either because they were not permitted to make attendance mandatory, or because they did not feel that it was an efficient use of the students' time. Thus, most participants relied heavily on teacher-created webpages to relay information and assignments. On this platform, teachers would post a combination of: self-produced videos or internet links to assignments students could complete (typically age-appropriate home workouts on YouTube, GoNoodle, or similar programs). Overwhelmingly (8/9), teachers aimed to produce videos that were five minutes or less. For these teachers, the perception was that if videos were too long, the students would simply elect not to access them. Thus, teachers typically focused on greeting their students, providing a brief description of the activities for the week and adding a motivational component, rather than attempting to provide detailed skill cues. Kevin and Jeff, were the lone teachers who spoke favorably of utilizing synchronous classes. Kevin stated: "I think it was much easier to be on Zoom with them, so you can see them and make sure they're doing the things that you're having them do." Hannah also relied exclusively on Zoom, but as an adapted physical education teacher, she was afforded the ability to provide her lessons in a one-on-one setting, rather than in a group setting of general physical education.

Much consideration was given to making teacher websites as user-friendly as possible. CJ spoke of intentionally reorganizing his website partway through the spring to make it easier to access. Kelly referenced having "to learn to be, like, a little bit of a media-marketing-type person", as she discovered that assignments with attractive buttons for students to click on were likely to receive more responses than those that had text links. Jeff, outlined the six clicks a student or family would have to make in order to access his webpage. "It wasn't easy to find" he lamented, as he wondered if

a more easily accessible website would have garnered more frequent student responses.

Student Autonomy

Student autonomy was the second sub-theme related to effective strategies. It was the norm for these teachers to present their students with numerous activities each week and allow the students to select the activity that was most appealing to them. Eleven out of 15 teachers allowed their students to select their activities for the week. When offering possible activities, teachers reported offering between four and ten activities.

Of the remaining four teachers who assigned specific activities, three spoke of providing opportunities for student choice and creativity within the assigned activity. CJ, stated: "I want something where they can use pretty much anything they can use, I want them to be creative and just, like, get enthusiastic about it." Hannah was the exception and did not specifically mention providing student choice. However, as the lone adapted physical education teacher, her lessons were one-on-one and catered to the specific student that she was meeting with.

When offering students choices of activities, most teachers attempted to include holistic wellness options, such as mindfulness or goal setting, in addition to physical activity offerings. Scott pivoted so that his curriculum revolved around goal setting: "Our biggest project was, I just called it our Goal Project …They were required once a week to provide a goal and a goal update on those five categories [knowledge, health, skill, lifestyle and character]." Jeff spoke of offering a choice between a physical challenge, a "garage game", a dance activity, a mindful moment and a kindness activity to his students each week. In addition to offering traditional fitness activities and options for homemade versions of games, such as bocce and Skee-ball, Phil, provided a cross-curricular STEM option by allowing students to create their own Rube Goldberg devices using sports equipment. Caitlin expressed concerns about the reliability of her students' home technology, so she offered at least "one choice … for students who didn't have good internet access or couldn't, like, stream" which was a sentiment Max echoed when discussing the array of assignments he provided.

Lack of Student Accountability

While the main focus of the interviews was on the proactive efforts teachers were taking to engage students, teachers also commented on the number of students that did not participate in physical education class during this online learning experience. Generally speaking, teachers remained positive about the students who were engaging, yet there were clear frustrations regarding the number of students who neglected physical education. Teachers reported the highest percentages of participation at the high school

level, followed by the middle grades, with elementary teachers reporting the fewest participants. Scott and Patrick, both high school teachers, estimated that 90% of their students were turning in the written work that was assigned. However, Patrick was quick to point out that when it came to the number of students who were completing the physical tasks that were asked of them, he estimated the number to be 20%. Teachers in the middle grades commonly placed their students' participation in the 40-60% range. At the elementary level, 50% student participation was considered high, while Sue offered the bleakest report, estimating that only 5% of students were demonstrating completion of the assignments. Kelly noted, however, that this does not automatically correlate with students not completing the assignments: "There was no expectation that they had to respond. But maybe they're doing the video. I just don't get to see that."

Most teachers attributed this phenomenon to the message that participation in physical education was optional. This message was delivered by the administration, sometimes explicitly, other times implicitly. The single elementary teacher reporting that their class was mandatory, was Kevin, but even in that case, it was not until May, nearly two months after online teaching commenced. Additionally, it is worth noting that Kevin was also the lone private school teacher interviewed for the study. Middle school teachers frequently cited an expectation that students participate, but indicated that no quantifiable consequences existed for students who did not meet expectations. As Phil noted, "On the final quarter, everybody got 'Remote Learning'. That was the grade, RL … And the only choices that we could give was 'Exceeding', 'Meeting' or 'Achieving' expectations." Finally, high school teachers frequently alluded to an unspoken tension regarding how rigorous they should actually be. As Andrew stated, "Administration and even in the district offices, are fearing that parents are going to be in uproar because their son or daughter is being held back because of this. It essentially became, everyone's passing." Mason offered a sentiment that was felt by several others in the study: "I think we could have got more out of [online learning] had the kids been held more accountable. Even if it was a pass/fail."

As an adapted physical educator, Hannah had a unique experience within the sample. Given state laws surrounding accountability for students with Individualized Education Programs, her district required her to reach out to each family of the students she services and offer one-on-one virtual meetings. Approximately 20 of the 35 students on her case load accepted the services.

Further complicating student accountability was uncertainty surrounding the ways to assess students remotely. Several teachers relied on activity logs, but most acknowledged doing so was problematic. Andrew noted that he'd "be willing to bet at least a few of them" submitted fabricated logs. It

was for this reason that Scott adamantly protested the use of activity logs. Patrick assigned student workouts, but ultimately placed a greater emphasis on projects for their portfolios: “Without any way to police--I’m not saying there isn’t a way to police it-- I’m just saying with everything they have on their plate, we chose not to police the activity.”

While ultimately it is unknown how truthful the students were when submitting activity logs, Caitlin received survey responses at the end of the year that further cloud the matter:

> It was really interesting because one of the questions I put in there was: Were you honest about your exercise journal and what you did, right? So like, One: very, Five: not at all. Right, so they all put it towards the very honest. But then the next question I asked was: Do you think your classmates were honest in their exercise journal? And they all put like, no. (Laughs) So, either they know something I don’t know. Or everyone is just suspicious of everyone else.

This quote suggests that even the students were skeptical about the level of honesty that was used in completing the activity logs, despite the assurance that individually they exhibited integrity when submitting them.

Inadequate Student Socialization

One of the final questions of the interview asked participants to reflect on aspects of a traditional physical education setting that was lost in the transition to online physical education. Overwhelmingly (13/15) participants spoke about the missed opportunity for social interaction, both at the student-to-student and teacher-to-student levels. Max stated bluntly, “Socially, this is a disaster for these kids.”

Many different aspects of student-to-student interactions were discussed. Phil expressed concern for the missed group camaraderie. Craig focused on a missed opportunity for students to appreciate differences when he shared: “For me at the middle school level, PE is so focused on leaving your comfort zone and interacting with other people and being able to show respect for other students and how they function.” Andrew shared a similar sentiment when he stated: “The whole social emotional model for students, teaching ways to behave appropriately and communicate appropriately, like, that’s another huge aspect, even at the high school level”. Hannah, the adapted physical education teacher, expressed sadness for the students in her case load that they no longer had peers to emulate, which she cited as a prime motivational factor. Caitlin shared her disappointment surrounding her students’ inability to generally socialize as they moved through her activities.

Participants also shared a variety of concerns relating to a lack of teach-

er-to-student interactions. Several teachers shared concerns about the inability to provide timely, skill-specific feedback to their students. Patrick, a high school teacher whose curriculum shifted heavily toward physical fitness during the pandemic, pointed out the loss of "one-on-one tweaking of skills where you can really emphasize safety and safe execution." Sue referenced her students who are not highly motivated in class. "I could see this being a big struggle because there's not somebody there as their cheerleader or telling them that they can do it".

In order to combat this, a trend emerged with teachers who used either Zoom or Google Meet. Several teachers spoke of allowing portions or entire synchronous blocks to be used as opportunities for informal check-ins. Some teachers preferred to take an active role in the informal meetings, while others preferred to allow the students to dictate where the conversation went. When reflecting on his classes, Mason acknowledged:

> A lot of classes just turned into a 30-minute conversation. And it really didn't have any real Phys. Ed. content in there. But I would like, weave it back in somehow, you know, like, well, what else can we do outside to be physically active and still stay safe?

This sentiment was echoed by several participants who ultimately felt providing students with a forum for honest discussions trumped subject matter in the extraordinary circumstance.

Table 2
OLPE Recommendations Based on Participant Responses

1. Keep lessons simple, engaging and interesting.
2. Make webpages easily accessible and visually attractive.
3. When producing instructional videos, limit to 5 minutes.
4. Synchronous classes can be beneficial for boosting student accountability; Asynchronous classes can be beneficial for encouraging multiple opportunities to practice.
5. Incorporate elements of student choice in all of your lessons.
6. Be mindful that students may have home technological limitations.
7. Consider incorporating holistic wellness options.
8. Student activity logs can be problematic. Proceed with caution when utilizing these instruments.
9. Encourage administration to make student participation in physical education mandatory.
10. Be intentional in creating opportunities for students to socialize across all levels and abilities.

DISCUSSION

The purpose of this study was to examine the transition from in-person to online teaching, utilizing a constructivist framework for a sample of physical educators. It is important to highlight that the participants, all experienced teachers, were placed in a situation where they unexpectedly became learners during this period of transition. While they had varying levels of previously existing pedagogical knowledge, none of the participants reported receiving any specific training related to OLPE prior to the arrival of the pandemic. As a result, all of the participants were left to construct their own knowledge for how to implement an online physical education curriculum.

The previously existing research surrounding OLPE suggests that student-centered modifications are essential (SHAPE America, 2018, Daum & Buschner, 2018). Based on their pedagogical actions, all of the participants had this intuition, despite none reporting ever receiving this message explicitly. For all of the participants, the challenge became to balance their previously existing pedagogical knowledge with new lessons learned from teaching in an online environment to construct a new schema for successfully delivering physical education content online. This provides an example of the participants behaviors shifting to become more practical in a specific environment; a key principle of constructivism (von Glasersfeld, 1995).

Relying on simplicity when delivering content and providing student autonomy were commonly perceived as effective pedagogical strategies. For content simplicity, it took teachers varying amounts of time to learn that streamlining content would lead to success. Some participants reported attempts to simplify their content at the outset of their online programming. For others, it took more time to arrive at this conclusion. Some teachers began their online programs with more complex approaches and over time, learned to simplify their content as a means for student success. This subset of teachers frequently reported being guided to this principle by parents or administrators. This harkens back to the key constructivist tenet that learning benefits from collaboration (von Glasersfeld, 1995). This feedback was critical in helping these teachers arrive at this conclusion. Without it, they may have continued offering material that was too complex for their students' needs.

Previous literature has argued for the integration of student choice into traditional physical education settings (Perlman & Webster, 2011), and it is included in the K-12 Appropriate Instructional Practice Guidelines provided by SHAPE America (2009). Thus, the researchers conclude that the participants identified an area of logical crossover between previously established pedagogical knowledge and newly forming knowledge of the online domain. This serves as an example of learners adding to their previous

knowledge (Daum & Buschner, 2012). In this example, the participants applied the previously existing pedagogical principle of student autonomy to the online environment and learned that it could be an effective strategy in both environments.

A lack of student accountability was perceived to be the biggest obstacle to success in OLPE. Generally speaking, at the elementary level, participation was presented as optional. At the secondary level, participants reported that an expectation existed for student participation, but ultimately, most participants questioned if any measurable consequences existed for non-participants. This was perceived to be a district-level decision that was beyond the participants' control. Whereas extrinsic motivation- primarily grades- was not viewed as an effective motivator in this setting, the teachers learned to tap into their students' intrinsic motivation. Several teachers began their online delivery with skill-specific content, much like they would in a traditional physical education class. However, the consensus was that skill-themed lessons received a low number of student responses. Here, the participants implemented one pedagogical strategy based on their previously existing knowledge. Displeased with the number of student responses they were receiving, participants tinkered with their instructional practices to increase student participation. This act demonstrates a key tenet of constructivism: constructing their own knowledge and understanding (von Glasersfeld, 1995). This knowledge was not gained passively; rather participants took active roles in their own learning.

The final finding was that student socialization is difficult to replicate in an online environment. This is particularly problematic in physical education, where one of the five national standards centers entirely around responsible social behavior (SHAPE America, 2013). Frequently, student-teacher communication was asynchronous, and communication between students was non-existent. While mandatory synchronous classes were sparse, many participants did reference providing optional "office hours", where students were free to virtually drop in. Here, rarely was the focus limited to physical education; instead, the participants provided a forum for interpersonal interaction, albeit in an online environment. This provides another example of the participants' new understandings making their behavior more practical in the online environment (von Glasersfeld, 1995). Many of the teachers recognized a gap in their students' social interactions and worked to remedy this for their students. The participants learned that while the in-person physical education environment is naturally conducive to social interactions, in the online environment, teachers must be intentional to foster similar interactions.

RECOMMENDATIONS

First, we recommend that when students are taking physical education in an online format, that course participation be mandatory, and that the subject be viewed as equal to academic peers. While ideally, we recommend a grading system that is in line with the rest of the school, we argue that at the minimum, pass/fail grading needs to be implemented in an OLPE setting to promote student accountability.

Secondly, we recommend that online physical educators be intentional in creating specific opportunities for social interaction among the students in their classes. While it may be unrealistic for online peer interactions to mirror those of an in-person class, efforts need to be expended to ensure that students are having positive and responsible social interactions with their peers and teacher. We recommend the use of breakout rooms in a synchronous online environment, so that students may discuss topics related to physical activity while attending class. Individual or small group conferences would be an effective means for teachers to have personal contact with their students.

Finally, we believe that this study has important implications for institutions of higher education, as well. Given the steady growth that OLPE has experienced over the past two decades, coupled with the widespread experience of teaching physical education online during the pandemic, it is our recommendation that physical education teacher education programs closely examine the pedagogy of online teaching within their programs. In doing so, the goal should be to better prepare students for the potential of teaching in an online environment, as well as utilizing learned skills as a result of the COVID-19 pandemic. Additionally, we recommend that researchers continue to probe the field of OLPE to better understand and evolve best practices within this branch of the physical education field.

LIMITATIONS

The current investigation includes limitations related to the sample that should be acknowledged in interpreting the results. First, the regional aspect of the study provides a significant limitation. By including teachers in other regions of United States, or even across the globe, the possibility exists that findings may differ. Secondly, all of the participants worked in schools that were middle to upper class with a predominantly White student population. By including participants who worked in lower socio-economic settings or had more diverse student populations, the results may have differed. Third, this study examines the teachers' perceptions of their own pedagogies. To get a truer sense of their effectiveness, it would be useful to elicit feedback from their students.

Finally, the strength of the data likely would have increased had a greater number of interviews been conducted with each participant. This study was, however, crafted in response to the unpredictable arrival of the COVID-19 pandemic. In order to create a timely product, the researchers were forced to work in an expedited manner, limiting the amount of available data.

CONCLUSION

It is essential to note that the circumstances surrounding this particular switch from in-person teaching to remote teaching were extraordinary. Many of the best practices for OLPE (SHAPE America, 2020) were brushed aside, given the unique circumstances the pandemic presented. With the mandatory closing of schools, these teachers and their students co-explored strategies to better engage students as they formulated their own ideas about what worked best in their teaching. In expounding though a constructivist lens, teachers made meaning though their novel experiences with remote learning aided by their pedagogical knowledge and emerging interactions with the student (von Glasersfeld, 1995).

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We have no known conflict of interest to disclose. Correspondence regarding this article should be sent to: Brandon Foye, Boston University, Wheelock College of Education and Human Development, 2 Silber Way, Boston, MA 02215. Email: bfoye@bu.edu

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APPENDIX
Interview Protocol: K-12 P.E. Teachers

1. Tell me about yourself. How long have you been teaching physical education?
2. Describe your comfort level using technology prior to COVID-19?
3. How prepared did you feel when your school first closed? What sort of direction were you given? What did your first remote teaching lessons look like?
4. Did your lessons evolve over the course of the spring term as you continued to implement remote teaching? If so, how?
5. Did you receive any specific training to help you better serve your students? Did you rely on any colleagues for support? To what extent did your administration provide support?
6. Did you have any interactions with the students during OLPE? What did this look like?
7. Did you require students to send you evidence of learning or completion of assignments? If so, what did that look like? Were there any repercussions for students who did not submit evidence?
8. In your estimation, what percentage of students were accessing your lessons? How do you establish this number (student responses, page views, etc.)?
9. When you think of marginalized populations, do you think they were successfully able to access and implement your lessons?
10. Can you describe elements of your remote lessons that seemed particularly useful to you?
11. Did you find any elements that were not particularly useful to you?
12. Are there benefits of OLPE that students do not typically get in a traditional P.E. setting?
13. Are there aspects of a traditional P.E. setting that can't be replicated by OLPE?