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Professional Development and Changes in Teachers' Teaching Practices: A Pilot Study

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ABSTRACT

Current efforts to improve physical education programs involve providing teachers with quality preparation professional development opportunities, especially for elementary classroom teachers (ECTs) who deliver physical education without adequate preparation (DeCorby et al., 2005).[5] However, little is known about the role of continuous professional development (CPD) in changes in ECTs' practices regarding teaching physical education (Parker et al., 2022).[23] This study utilized visual methods to explore changes in ECTs' practices regarding physical education teaching throughout their participation in a state-funded, five-month-long CPD initiative. The participants were four elementary classroom teachers in rural California. The CPD initiative consisted of a three-day summer institute and two follow-up sessions. Participant-generated visual diaries and focus group interviews were used to capture teacher practice changes. Findings revealed three themes: a) A focus on standards-based instruction facilitated teacher's change; b) Involvement in a community of learners can be a powerful source of change; and c) Teacher change is a time-consuming process. This study highlights that ECTs who receive inadequate training in physical education teacher education are more likely to have a lack of competence and confidence in teaching physical education. The CPD activities can potentially enhance ECTs' skills in planning and teaching practice, thereby boosting their confidence.

Keywords: Continuous professional development; Teacher change; Elementary classroom teachers; Physical education; Visual methods

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1. Introduction

Elementary physical education is crucial in developing children's skills, knowledge, and dispositions, enabling them to embrace physically active lifestyles. As a result of a well-designed elementary physical education program, children can become more predisposed to participate in physical activities by gaining confidence in their abilities and discovering enjoyable forms of movement. However, international research has indicated that teacher qualification and preparation are one barrier to implementing quality elementary physical education programs (Lynch & Soukup, 2017;[15] Tsangaridou, 2012).[31] In various countries, including Australia, Britain, and the United States (U.S.), the responsibility for delivering physical education falls upon elementary classroom teachers (ECTs) at elementary schools (Carney & Armstrong, 1996;[2] Faulkner et al., 2008;[10] McKenzie et al., 1998).[17] In the U.S., ECTs are responsible for providing physical education instruction in numerous states, including but not limited to Alabama, California, Florida, New York, and Ohio (Society of Health and Physical Educators America, 2016).[30]

Unfortunately, ECTs frequently encounter insufficient professional training for teaching physical education due to constraints within their undergraduate curriculum (DeCorby et al., 2005).[5] In the best-case scenario, ECTs engage in a single course during their undergraduate studies, aimed at cultivating fundamental knowledge and skills requisite for delivering physical education lessons (Xiang et al., 2002).[32] Consequently, ECTs might find themselves deficient in both knowledge (such as content knowledge and pedagogical content knowledge) and skills due to the constraints of their limited training. This deficiency could impede the successful implementation of high-quality physical education programs (DeCorby et al., 2005;[5] Fletcher et al., 2013).[11] For instance, researchers have uncovered that insufficient training for ECTs can lead to various challenges, including the inappropriate utilization of equipment, a lack of task progression, limited task modifications and challenges, extended transition times, and inadequate provision of specific feedback on students' skill development (DeCorby et al., 2005;[5] Fletcher et al., 2013;[11] Jones & Green, 2015).[14]

Furthermore, inadequate preparation can adversely affect ECTs' confidence in teaching physical education (Faucette et al., 2002;[9] Morgan & Bourke, 2005).[20] Previous research has indicated that many ECTs are generally not confident when teaching physical education (Xiang et al., 2002).[32] In addition to this challenge, ECTs might have negative attitudes toward physical education due to their own discipline experiences as students, perceiving physical education as a break from classroom tasks rather than a vital curriculum component (Xiang et al., 2002).[32] For instance, Morgan and Bourke (2005)[20] reported that ECTs who recalled more negative experiences in physical education exhibited lower confidence in their teaching abilities.

Continuous professional development (CPD) programs present a viable avenue for augmenting the competence and confidence of classroom teachers in teaching physical education. Over the years, researchers have crafted and executed a range of CPD initiatives aimed at to enhance ECTs competence and confidence in teaching physical education (Faucette et al., 1992;[8] Faucette et al., 2002;[9] McKenzie et al., 1997;[18] Morgan & Hansen, 2007;[21] Morgan & Hansen, 2008;[22] Petrie, 2010).[27] Findings from those studies have underscored that the positive effects of collaborative opportunities, engaging experiences, and sustained support (Faucette et al., 2002;[9] Fletcher et al., 2013;[11] McKenzie et al., 1997)[18] are inherent in long-term CPD initiatives. These elements collectively contribute to enhancing ECTs' delivery of physical education lessons.

Professional development opportunities are frequently confined to brief timeframes, detached from the real-world contexts of teachers, and provide limited ongoing assistance (Patton & Parker, 2015).[26] Researchers argue that effective professional development should adopt a continuous approach and involve teachers as active participants rather than passive recipients of knowledge (Desimone,

2011;[6] Morgan & Hansen, 2007;[21] Patton & Parker, 2015).[26] Within a supportive and collaborative environment, teachers tend to show enthusiasm for acquiring new knowledge and are willing to apply it within their classrooms (Patton & Parker, 2015).[26] Effective CPD activities are tailored to address teachers' specific needs (Morgan & Hansen, 2007).[21] Furthermore, scholars suggest that engagement with facilitators and fellow teachers over an extended period contributes to teacher change (Morgan & Hansen, 2007).[21] Teacher change is both a process and the outcomes linked to modifications, adaptations, or transformations in a teacher's beliefs, attitudes, or practices. This dynamic and ongoing process aims to enhance the quality of education and improve student learning outcomes.

Contemporary endeavors to enhance elementary physical education programs encompass providing CPD opportunities for teachers, mainly focusing on classroom teachers entrusted with delivering physical education without sufficient preparation (DeCorby et al., 2005).[5] Nevertheless, there remains a gap in our understanding concerning the impact of CPD on the evolution of ECTs' practices in teaching physical education. In addition, while the majority of previous research has employed methods such as interviews, observations, document analysis, and surveys to examine CPD programs targeting ECTs in the field of physical education (Faucette et al., 1992;[8] Faucette et al., 2002;[9] Morgan & Hansen, 2007;[21] Morgan & Hansen, 2008;[22] Petrie, 2010),[27] to the authors' knowledge limited studies have utilized visual methods. Therefore, this study used visual methods to explore changes in ECTs' practices regarding physical education teaching throughout their participation in a state-funded, five-month-long CPD initiative. Visual methods allow participants to articulate their perceptions and ideas more clearly and help them recall their memories during interviews (McIntosh, 2010).[16] This approach also facilitates effective communication between researchers and participants, which contributes to the enrichment of this study.

Theoretical Framework

Guskey's model of teacher change (see Figure 1) served as the theoretical framework for this study (Guskey, 2002).[13] This model visually represents how changes in teachers' practices typically transpire. Specifically, the model of teacher change indicates that professional development activities directly lead to changes in teachers' classroom practices. This initial phase involves teachers engaging in professional development and acquiring specific and concrete knowledge, skills, and concepts, guiding modifications in their planning and instruction. This, in turn, precipitates changes in student learning outcomes due to more effective teaching practices. Ultimately, successful implementation and observable improvements in students' learning outcomes contribute to transforming teachers' beliefs and attitudes. When witnessing their students' success, teachers' newly adopted teaching strategies contribute to a positive classroom environment, further reinforcing teachers' perspectives and confidence in teaching. This study focused on the initial phase wherein CPD influenced changes in ECTs practices. More specifically, this study aimed to utilize visual methods to explore changes in ECTs' practices regarding physical education teaching throughout their participation in a state-funded, five-month-long CPD initiative.

The model of teacher change provides three foundational principles that hold essential significance in designing effective CPD programs. First, ongoing support is necessary for teacher change. This approach enables teachers to enhance their teaching practices and job satisfaction consistently. Absent such support, maintaining changes becomes challenging throughout the process. Second, the process of change is inherently gradual and intricate for teachers. This involves embracing novel approaches and striving to implement them successfully, demanding considerable time and effort. As a result, teachers are compelled to venture into a realm of uncertainty and take calculated risks, given that the effectiveness of these new ideas in fostering student learning outcomes remains uncertain. Last, teachers must

see the changes in student learning. The sense of accomplishment and success for teachers is deeply rooted in observing improvements in their students' learning journeys. This substantiation becomes a pivotal driver in confirming the efficacy of the newly adopted teaching methodologies within the classroom. Therefore, this study utilized visual methods to explore changes in ECTs' practices regarding physical education teaching throughout their participation in a state-funded, five-month-long CPD initiative.

Figure 1. Guskey's model of teacher change (Guskey, 2002, p. 383)[13]

2. Methods

In this qualitative study, we employed a visual method (Pink, 2012).[28] Specifically, we used participant-generated visual diaries and focus group interviews to capture changes in teachers' decision-making as they engaged in a CPD initiative. Visual methods represent an innovative research approach that can encourage and empower participants to communicate their perspectives about specific issues and experiences in meaningful and creative ways (McIntosh, 2010).[16] In this study, photographs served as visual aids, assisting participants in recalling their memories during interviews and facilitating a more explicit articulation of their experiences and perceptions.

Professional Development Initiative

The CPD initiative (which we will call Teaching Institute) was provided by the California Physical Education-Health Project (CPE-HP), one of the nine California Subject Matter Projects authorized by the state legislature to provide CPD for K-12 health and physical education teachers. CPE-HP is funded at the state level to provide teachers with comprehensive and content-focused CPD by building teacher leadership and fostering collaboration with university

faculty. CPE-HP is dedicated to increasing teachers' academic content knowledge and pedagogical content knowledge to improve K-12 student learning. CPE-HP builds communities of practice at regional sites, forms partnerships with school districts to support their work in physical education and health education, and supports teachers in their role as instructional leaders within these two disciplines.

Spanning five months, the Teaching Institute comprised a three-day workshop during the summer and two follow-up workshops in the Fall. All workshops lasted for eight hours and were delivered at a university campus. The Teaching Institute was planned and delivered by a group of veteran physical education teachers and a university faculty, who acted as the content expert. This institute focused on motor learning in the context of standards-based physical education. Workshop sessions involved various activities, including lectures, group work, individual tasks, and practical tasks.

Participants

Participants in this study were four ECTs serving public schools in rural California. All participants were White females with teaching experience between three and 25 years. Specifically, one participant had three years of teaching experience, another eight years, a third 15 years, and the fourth 25 years of experience. All participants taught grades four and five at their elementary school. Among these participants, the teacher with 15 years of teaching experience also served as a coach.

Data Sources

Data sources for this study comprised visual diaries and focus group interviews. Researchers provided clear instructions for the visual diaries, asking teachers to use photography to document changes that represent the changes in teaching physical education, such as a lesson plan, class setup, instructional moments, assessments, or students in action. Following this, teachers were requested to select 6 to 8 photos to include in their visual diaries,

which were to be submitted to researchers before the interviews. Furthermore, the interview guides included open-ended questions to capture teachers' experiences and perceptions. For example, "What is the impact of this institute on your teaching?", "How do you envision successful professional development for teaching physical education in the future?" and "Why did you pick that photo? Can you share a bit about the photo?"

Data Collection

Teachers were invited to participate in this study on the first day of the Teaching Institute's three-day program. Those who agreed completed informed consent and joined a meeting with the principal investigator. Within this meeting, the principal investigator provided detailed instructions on how to create a visual diary. Using a combination of photography and captions, visual diaries serve as personal records that capture daily life events, routines, and realities. This approach allows participants to provide authentic accounts of their experiences and engage in reflection (Azzarito, 2012).[1]

Teachers were instructed to create visual diaries by taking photographs of meaningful events, representations, and activities concerning their teaching practice within two one-week windows. At the end of each window, teachers were asked to select 6-8 photos representing changes in their teaching practices regarding physical education instruction. They then inserted the photographs in a Google Doc and wrote a brief caption describing their meaning. The two photograph windows were arranged according to the Institute schedule. Teachers participated in a focus group interview to discuss their visual diaries on the two designed follow-up days of the Teaching Institute (September and October). During these interviews, the visual diaries were provided in printed form, and teachers were prompted to discuss the photographs and their corresponding captions. Figure 2 displays the data collection process.
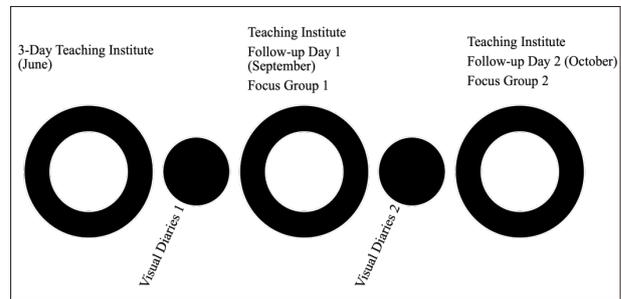

Figure 2. Data collection process

Data Analysis

The responses to interview questions and the visual diaries were analyzed inductively (Miles et al., 2019).[19] Initially, data generated through the interviews were transcribed verbatim. The analysis process followed an inductive approach using the three concurrent flows of activity suggested by Miles and colleagues (2019):[19] a) data reduction, b) data display, and c) conclusion drawing and verification. The constant comparative method (Glaser & Strauss, 1967)[12] was also employed throughout the analysis to ensure the consistency and appropriateness of the coded segments within their designated clusters of data. First, researchers extracted significant phrases or sentences in the interview data that pertained directly to ECTs' teaching practice changes. These extracted elements were then consolidated into a comprehensive list of codes.

Similarly, during the analysis of the visual diary, researchers identified all the features (e.g., objects, people, places) portrayed by the participants in their photographs and quotes. Next, the researchers comprehensively reviewed the compiled codes, encompassing the interview data and the visual diaries. The goal was to discern patterns among these codes by grouping those that shared analogous meanings into distinct categories (Glaser & Strauss, 1967).[12]

Researchers used three strategies to establish trustworthiness in the analysis: a) analytic memos, b) triangulation of data, and d) peer debriefing (Creswell, 2009;[3] Saldaña, 2013).[29] First, analytic memos involved researchers documenting their reflections, thoughts, and questions at various

stages of the study, including after interviews and during data analysis and interpretation. These notes augmented the study's foundation with supplementary insights. Second, data triangulation was applied, leveraging multiple sources of information to acquire diverse perspectives. This encompassed participants' diaries, photographs, and responses to interview questions. This comprehensive approach facilitated a richer understanding of the subject matter. Last, peer debriefing was conducted as a validation measure. The first author devised the codes and themes derived from the data, which the second author assessed and reviewed. This process ensured a rigorous evaluation and refinement of the codes and themes, enhancing the overall credibility of the study.

3. Findings

This paper utilized visual methods to explore changes in ECTs' practices regarding physical education teaching throughout their participation in a state-funded, five-month-long CPD initiative. Data analysis resulted in three themes: a) A focus on standards-based instruction facilitated teacher's change (i.e., standards-based curriculum design, applying multiple instructional strategies, conducting peer assessment); b) Involvement in a community of learners can be a powerful source of change, and c) Teacher change is a gradual process (i.e., phase I and phase II).

A Focus on Standards-Based Instruction: Facilitating Teacher's Change

The Teaching Institute focused on standards-based instruction, resulting in changes in participants'

practices regarding implementing physical education lessons. More specifically, throughout the Teaching Institute, teachers started using the national physical education standards, applied new instructional strategies, and conducted peer assessments in physical education lessons.

Standards-Based Curriculum Design

During the Teaching Institute, ECTs learned that physical education, like any other curricular discipline, is guided by standards. Following the initial workshop, the teachers endeavored to incorporate the national physical education standards and grade level outcomes as guiding principles for designing their lessons instead of teaching the contents randomly. Understanding what should be included in elementary physical education and what needed to be achieved, they chose the contents and developed tasks to align with the standards. During the focus group interview, Katie shared, "I take it more seriously, it was like 'what do you want to play today?' Now it is 'we are going outside, and we are working on underhand rolling.' This is a third-grade standard." Simultaneously, these teachers understood how to unpack and translate the standards into the classrooms. During the interview, Mia presented photos (see Figure 3) that showcased students collaboratively identifying key elements regarding grade level outcome 4.5.4 (i.e., Students will respond to winning and losing with dignity and respect). Mia emphasized that this approach rendered the standard and grade level outcome meaningful for students by having them discuss the definitions of dignity and respect.
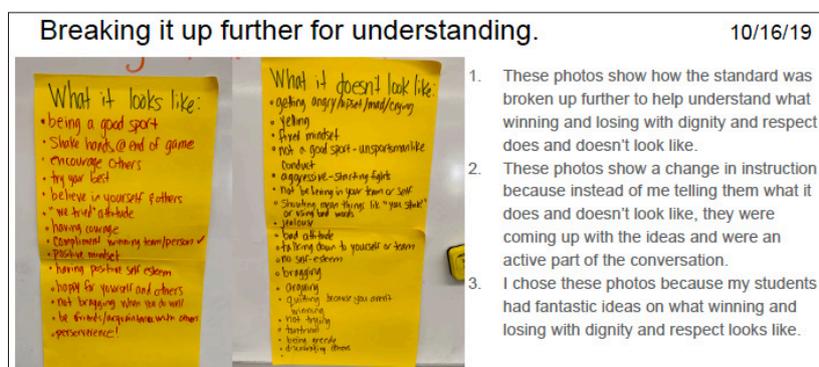

Figure 3. Mia's Diary on breaking down the standard

Throughout the Teaching Institute, participants learned that physical education standards also included learning in the affective domain. As a result, they commenced incorporating the national physical education standard five (i.e., the physically literate individual recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction) within their classrooms. As Bonnie reflected in her diary, "I never realized that PE (physical education) had Standard 5 in which the students demonstrate and utilize knowledge of psychological and sociological concepts, principles, and strategies that apply to the learning and performance of physical activity existed." Furthermore, teachers planned the lessons intentionally based on students' current skill levels. For example, Bonnie shared her experiences when teaching the soccer unit:

I just put them (students) in the standard for the grades that I'm teaching is being able to pass a soccer ball to a moving target. A lot of them don't even have the skills to dribble the ball which is a second-grade standard. So, I had to backtrack and do some drills. (Focus group 2)

Applying Multiple Instructional Strategies

Classroom teachers indicated they acquired various new ideas for teaching physical education that they applied in their classrooms. All teachers mentioned gaining a new approach to instructing fundamental skills: using performance cues. Mia reported during the interview:

We're not trained in the way PE specialists were, I don't know how to break down the critical elements for every standard. I don't even know if I could do a proper overhand throw because I have never played a sport that involves an overhand throw. So how can I effectively teach others to do an overhand throw if I don't know the proper form and if I can't break it down?

Classroom teachers highlighted that the Teaching Institute supplied them with valuable information and resources contributing to their professional learning and teaching. For instance, the details concerning critical elements of skills in the book aided their grasp of the skills (see Figure 4), which allowed them to teach the skills accurately and use these pictures as visual aids to demonstrate the skills effectively. With the key elements of the skills, teachers could provide students with specific feedback on their performance and guide them in proper forms to facilitate their learning.

Furthermore, ECTs designed the tasks sequentially, allowing students to learn and practice the skills progressively. These teachers reported that they developed various activities and games for students
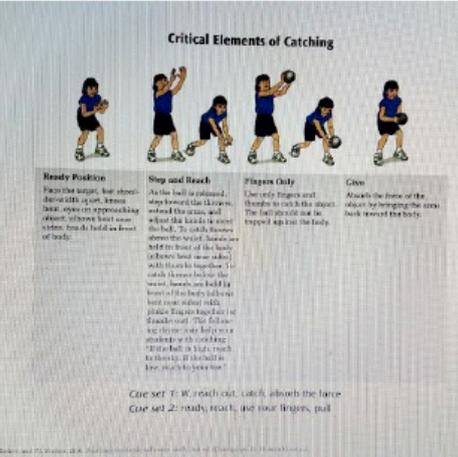
Figure 4. Bella's diary on using critical elements of catching to teach the skill

to practice the skills, and students were "enjoying the activity while they're learning that particular skill" (Bella, focus group 2). For instance, when teaching soccer dribbling, Bella started with "teaching dribbling skill, and then moved on to passing from 10 feet apart, and then 15 feet apart, and 20 feet apart" (Focus group 2). Similarly, Katie commented on the photos regarding chest passing in her visual diaries (see Figure 5):

This is just practicing passing with a partner, and for that, we use soft balls, because there were so many kids who were afraid of the ball. And in the second one, you can see how close they are together. And then the third one, the decision I made was to insist that they give each other more space in their past, I made sure that they stayed that distance away from the person that they were passing with. (Focus group 1)

Another notable change observed in teachers' practices was their newfound recognition of the diverse abilities of their students. They reported that they made some modifications to include students with varying skill levels. As Bella reported, "some of the kids are more advanced because they play Travel Ball or other sports and they know how to do it (throwing), and then some of the other kids that they are not being exposed to" (Focus group 2).

Some teachers noted that the students with limited prior experience in sports faced more significant challenges when acquiring new skills. To facilitate these students' participation in class, teachers broke the skill into several sections and introduced peer teaching; for example, high-skilled students served as tutors to support their peers during skill learning.

Conducting Peer Assessment

The change in assessment the ECTs made was that they all started to employ peer assessment and developed rubrics to measure student learning. Katie reflected in her diary, "Students evaluated each other on the critical elements of the chest pass in our PE lesson. I have never done this before in teaching PE!" (September). These ECTs pointed out that students exhibited heightened engagement in class due to the awareness of being assessed. Figure 6 shows some rubric examples that those teachers used for peer assessment. Participants reported that students embraced peer assessment as students had the opportunities to collaborate with their peers, resulting in improving their skills and taking accountability for their learning. During the focus group interview, some teachers highlighted that they demonstrated the peer assessment procedure to
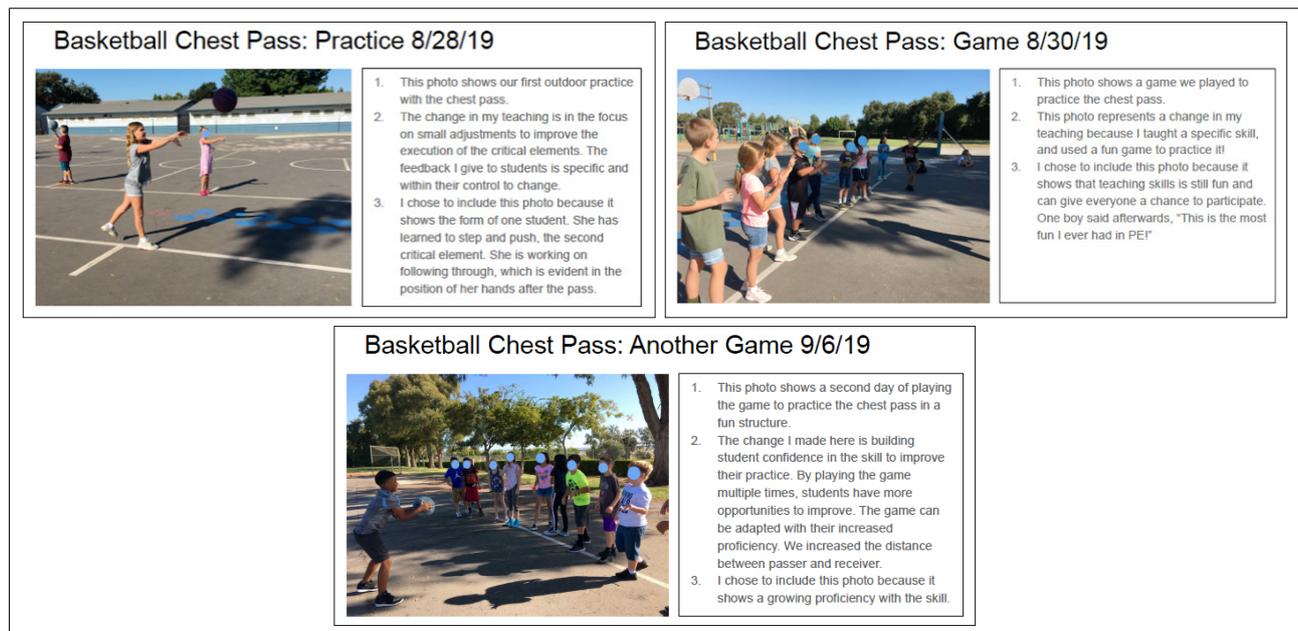

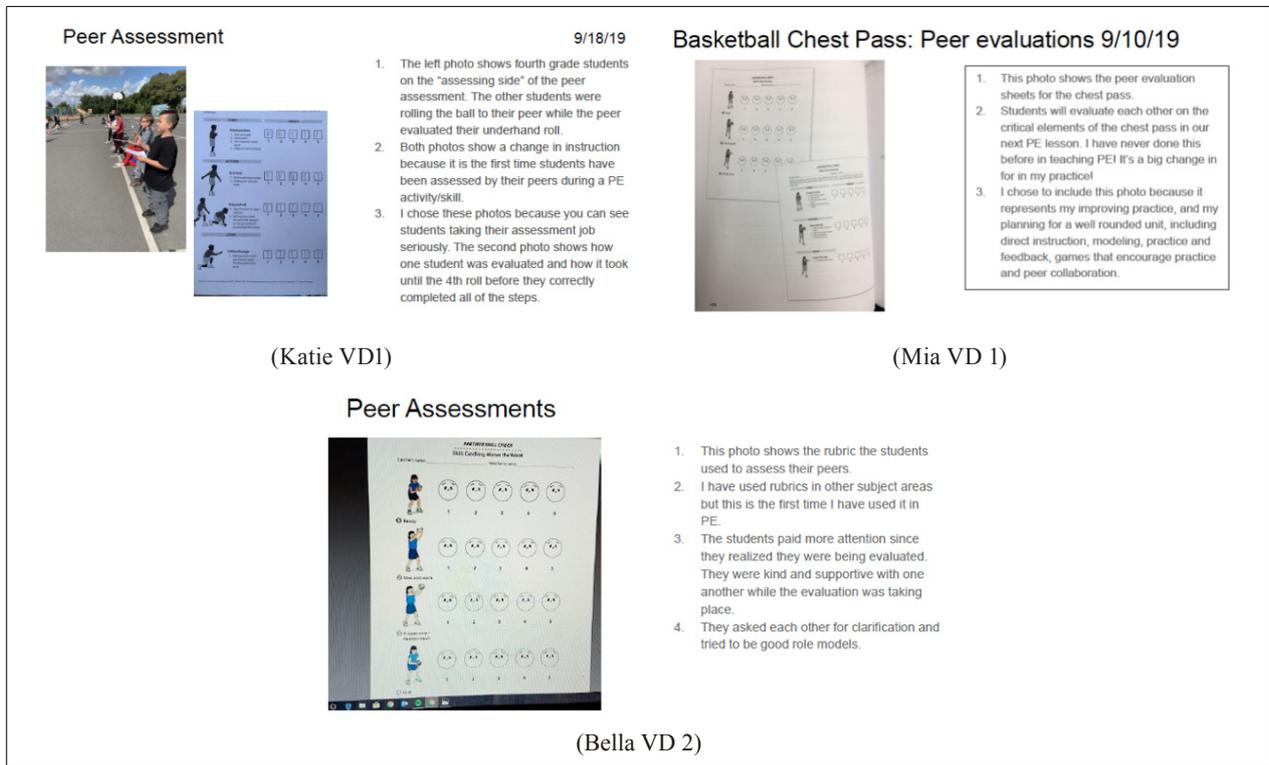**Figure 5.** Katie's three lessons on basketball chest passing

Figure 6. The diaries from multiple teachers regarding peer assessment

students and then had students practice it to ensure they understood how to measure their partners' performance. Besides, Bonnie added that having students provide specific feedback on their peers' performance can make peer assessment more effective:

I did a peer evaluation too but different from you (another teacher). I feel that I would have to give more explicit instructions on how to effectively evaluate the critical elements because I felt like the kids were just watching their friends pass and saying 'good job' rather than really identifying that one element. (Focus group 1)

Involvement in a Community of Learners: A Powerful Source of Change

Classroom teachers indicated that involving in the community of learners provided collaborative opportunities where they gained resources and ideas from facilitators, discussed their work within the learning community, and received support from one another. These ECTs emphasized that the

ongoing and sustained support from facilitators and colleagues played an essential role in their changes in physical education teaching practices.

Teachers appreciated the learning opportunity in this CPD initiative because "we don't have support from our district" (Mia, focus group 1) and "when we go through the credential program, we learn a little bit" (Katie, focus group 1). The facilitators in this CPD initiative provided valuable resources and novel ideas for teachers concerning planning, instruction, and assessment in physical education. The book (Children Moving: A Reflective Approach to Teaching Physical Education) recommended by facilitators included lesson plan templates, teaching ideas, assessment tools, and grouping techniques, which helped to improve their teaching practices. Figures 4 and 6 represent their utilization of this book: Figure 4 shows critical elements of catching skills, and Figure 6 shows the rubrics for peer assessment. Katie reported that she gained various activity ideas and assessment techniques from that book while teaching new skills, "We're going to teach the skill. These are the activities we're going to

do to enforce the skill. This is something that we can use to assess it." (Focus group 1) Similarly, Bella added her insights on how the book is helpful:

It has really good lessons, and it has rubrics. And that helped me a lot because I don't have the background to create those rubrics. So that's been very helpful because he provides me with focus and I have some evidence for what to use tools (Focus group 1).

Teachers expressed a positive sentiment toward collaborating with their peers within the learning community where they received support. During these gatherings, the ECTs engaged in discussions about their teaching and student progress, addressing questions such as "How are your scores changing?" and "What's happening with that?" (Mia, focus group 1). Furthermore, some teachers indicated that they shared equipment with their peers who lacked sports equipment. For example, Bella said, "We share basketballs, soccer balls, and rubber balls." (Focus group 2) Teachers reported that they liked meeting together to work on unit and lesson plans to ensure the lessons were developed sequentially. As Katie said during the focus group interview:

For me, it was very helpful to have my peers with me because when I taught a few of the lessons and things were not working the way that I thought they should have been working I could brainstorm strategies on how to make it better and because we're all using the same book and the same ideas it was helpful, it was very helpful for our future lessons, that was very powerful for me to have somebody to work with.

Teacher Change: A Gradual Process

Teacher change is a gradual process; making changes takes time and is complex. Comparing the data collected during phase I (between the initial workshop and the first follow-up workshop) and phase II (between the first follow-up workshop and the second follow-up workshop), it is evident that changes in teachers' instructional approaches evolved distinctly during these two phases, with more pronounced shifts occurring over time. In phase I, teachers primarily focused on adopting standards-based planning, teaching fundamental skills with critical elements, implementing peer assessment, and providing constructive feedback to enhance student learning. Transitioning to phase II, teachers honed the techniques gained during phase I and developed new teaching practices, including using peer teaching, creating progressive tasks, and incorporating equity in their classrooms.

Phase I: Between the Initial Workshop and the First Follow-up Workshop

The data analysis revealed that the initial CPD workshop helped teachers increase their knowledge, capabilities, and confidence regarding teaching physical education, as Mia reflected in her diary, "This photo shows my evolution from not knowing how to approach teaching PE at all to having a solid resource to use to help me learn, so I am, in turn, able to teach." The initial workshop delivered standard-based training, offering support, giving teaching resources, and developing a learning community for teachers. As a result, significant changes occurred between the initial workshop in the summer and the first follow-up workshop in the middle of the fall semester. These transformations took place in teachers' instructional practices, including the formulation of standards-aligned curricula, the integration of performance cues in skill instruction, the incorporation of peer assessment, and the proactive delivery of specific feedback to facilitate learning. For example, after the summer workshop, ECTs conducted peer assessments in their current classrooms when they used to "not have a skill assessment" (Mia, focus group 1) or "have an assessment that is not standards-based" (Katie, focus group 1). It should be noted that among these shifts, the most notable change in teachers' teaching during this phase was the adoption of standards-based planning as the Teaching Institute focused on motor learning in the context of standards-based physical education. Bonnie reported:

I have been doing PE for a very long time, but it's never been standards-based. I don't even know that I

knew that there were standards specific to each grade level. Because we didn't talk about that when I went through the credential program, even when I went through the PE class…never really talked about how and what skills they should be doing at each level. (Focus group 1)

Phase II: Between the First Follow-up Workshop and the Second Follow-up Workshop

In this phase, teachers strove to refine the teaching techniques obtained in phase I, particularly emphasizing standard-based planning. Consequently, their planning with the national physical education standards was more authentic, leading them to incorporate lower grade level outcomes as many students required additional practice in fundamental skills. Furthermore, teachers incorporated standard five (i.e., the physically literate individual recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction) into their classrooms, exemplified by instilling dignity and respect. Some teachers delved more deeply into the standards and grade level outcomes during phase II, fostering an in-depth understanding by unpacking these concepts alongside students. For example, Figure 7 shows two diaries from Mia: the left one was recorded in phase I, and the right one was kept in phase II. It is evident that in phase I, Mia identified the grade level outcome to design the class, while in phase II, she facilitated a student-led discussion about the meaning of this grade level outcome, aiming to help students comprehend the expectations surrounding dignity and respect.

Aside from refining the standards-based planning, new changes became evident between the first and second follow-up workshops, including conducting peer teaching to facilitate students' learning, designing tasks with progression, advocating for equity to include students with different skill levels, and having a lower level of anxiety. During the focus group interview conducted in phase II, some teachers reported that their increased knowledge and skills reduced their anxiety levels in physical education. When asked what contributed to this decrease, Bella said, "Because I know more what to do. I have a structure that I didn't have before" (Focus group 2), and Katie added, "I agree, I think it's having the standards and knowing these are my goals. When you have that guide, I think that helps because you can focus on something." (Focus group 2)

4. Discussions

This study utilized visual methods to explore changes in ECTs' practices regarding physical education teaching throughout their participation in a state-funded, five-month-long CPD initiative. The results of this study indicated that there is a need for ECTs to receive additional specialist preparation in the field of physical education and more resources to support their teaching. Given the lack of knowledge and skills, most ECTs taught unstructured lessons with random content. Teachers in this study reported revealed feelings of incompetence and a lack of confidence in teaching physical education, which led to their anxiety about teaching this discipline. The state-funded CPD initiative provided initial
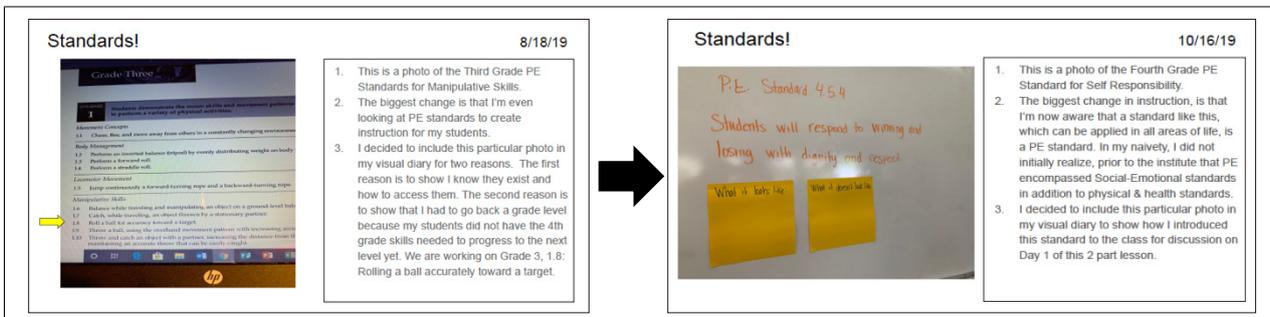

Figure 7. Comparing Mia's diaries in phase I (left) and phase II (right)

and follow-up workshops on standards-based physical education. These workshops employed a multifaceted approach, combining lectures, group work, individual tasks, and practical tasks. These learning opportunities increased teachers' knowledge and skills, aligning with the findings reported by McKenzie et al. (1997)[18] and Faucette et al. (2002).[9] Echoing previous studies (Faucette et al., 2002;[9] Morgan & Bourke, 2005;[20] Xiang et al., 2002),[32] the bolstering of teachers' knowledge and skills contributed to reducing their anxiety about teaching physical education. Thus, teacher CPD plays a critical role in developing ECTs' competence and confidence in teaching physical education (Lynch & Soukup, 2017;[15] Patton & Parker, 2015).[26] For ECTs who do not receive professional training in physical education during their undergraduate studies, pursuing standards-based and instruction-focused CPD can be a valuable strategy to address this gap.

Classroom teachers participating in this CPD initiative came to recognize the presence of national standards and grade-level outcomes within the subject of physical education, a central focus of this endeavor being standards-based physical education. By emphasizing the standards, teachers gained a clearer sense of purpose in designing the lessons, moving away from instructing based on personal preferences or student interests. Some teachers also started implementing standard five (i.e., the physically literate individual recognizes the value of physical activity for health, enjoyment, challenge, self-expression and/or social interaction) in their physical education classroom, aiming to foster holistic student development (Dyson, 2014).[7] Throughout the Teaching Institute, these teachers' approach to implementing standards evolved. Initially, they embarked on the process of unpacking standards independently. Over time, a shift occurred towards student empowerment, involving students in discussions about the standards and learning outcomes. Their alignment with the standards also prompted endeavors to offer developmentally appropriate activities and structured assessments within an organized framework. Thus,

the impact of practical CPD workshops reverberated through teachers' instructional practices, inducing transformative shifts in lesson planning, delivery, and assessment. This impact proved especially pronounced for ECTs who faced initial inadequacies in physical education preparation (Darling-Hammond & McLaughlin, 1995).[4]

It should be noted that the focus of this CPD initiative was on standards-based instruction, given the ECTs' limited expertise in physical education. This highlights the significance of tailoring effective CPD programs to the specific needs of participants rather than adopting a one-size-fits-all approach. Effective CPD should position teachers as active learners instead of passive recipients of knowledge. This involves the creation of dynamic and interactive learning experiences that encourage engagement and social interaction, accompanied by sustained support for teachers (Desimone, 2011;[6] Faucette et al., 2002;[9] Morgan & Hansen, 2007;[21] Patton & Parker, 2015).[25] When designing CPD, trainers can seek teachers' input and understand their unique requirements to create personalized learning experiences (Morgan & Hansen, 2007).[21] For example, facilitators can utilize tools like questionnaires or classroom observations to discern the specific needs of ECTs, thereby informing the design of targeted CPD programs. These tailored CPD experiences are intricately linked to teacher engagement, teaching practice, and student learning, transcending the introduction of new concepts or equipment (Desimone, 2011).[6]

Additionally, providing resources is essential for ECTs to facilitate the transition of their teaching practices. While participants in this study recognized the significance of physical education in fostering students' physically active lifestyles, they encountered challenges in effectively implementing physical education instruction. This CPD initiative addressed this by furnishing valuable resources such as samples of lesson plans and adaptable templates for games. The Teaching Institute thoughtfully equipped participants with beneficial resources and reference materials, fostering a willingness among ECTs to

experiment with innovative concepts. This outcome resonates with Morgan and Hansen's (2007)[21] findings, which highlighted teachers' inclination towards using templates and examples over devising their own. Given these insights, CPD trainers can enhance their programs by offering practical resources such as lesson plan templates, creative physical activity ideas, effective classroom management strategies, and comprehensive assessment tools. By making such resources readily available, teachers can seamlessly integrate them into their teaching practices, driving impactful change within their classrooms.

Adhering to the model of teacher change, ongoing support leads to sustaining changes in ECTs' teaching. With guidance from facilitators and the collaboration of peers, these teachers not only refined strategies acquired during the initial workshop but ventured into new techniques over time. The learning community created by the CPD initiative served as a powerful platform in which teachers engaged in informal collaboration, fueling the change process (Parker et al., 2010).[24] This collaborative environment provided a safe space for teachers to experiment with novel classroom approaches and engage in open dialogues within the community. Notably, facilitators played a pivotal role by offering continual support, acting as consultants, and furnishing valuable resources. This collective effort ensured that teachers' professional growth remained an ongoing endeavor. Effective CPD goes beyond mere one-time training, emphasizing sustained support to facilitate continuous improvement in teaching practices. The amalgamation of structured CPD workshops and informal learning communities presents a robust framework, affording teachers ongoing support throughout their transformative journey.

Making changes is a time-consuming and challenging process, demanding a significant investment of time and effort (Parker et al., 2016).[25] The teachers in this study embarked on their journey by initiating alterations between the initial workshop and the first follow-up session. Subsequently, they engaged in a process of refining their novel teaching practices and

acquiring additional strategies after the initial follow-up. The transformative process in teaching evolves gradually and is characterized by incremental steps. Teachers embark on this journey by taking modest strides, often experimenting with a few fresh ideas, implementing them in their classrooms, seeking peer input, refining their strategies, and then iterating. This iterative process underscores teacher change as a continuous growth and adaptation journey. For example, Bella learned about national physical education standards in the initial workshop and utilized the standards to design the lessons afterward. However, upon recognizing that her third-grade students were not yet prepared for the skills aligned with the grade-level outcomes, she opted to revert to the grade two outcomes, allowing her students ample practice time to attain readiness.

Implications

The following are the key implications of this study for designing CPD programs tailored to ECTs teaching physical education. These implications include addressing the knowledge gap, the importance of resources, tailoring CPD to needs, sustained support, and a gradual change process. These insights can also be extended to the design of CPD initiatives in various areas of education. By integrating these implications into CPD, teachers can be better equipped to enhance their teaching practices, thereby contributing to improved student learning outcomes.

Address Knowledge Gap. Classroom teachers without formal training in physical education can benefit from standards-based and instruction-focused CPD training. This approach provides ECTs with the essential knowledge, skills, and confidence to teach physical education effectively, thus addressing the shortcomings resulting from inadequate initial preparation during their undergraduate preparation. Closing this knowledge gap is a foundational step for individuals to acquire basic information for the field.

Importance of Resources. Providing ECTs with valuable resources, such as lesson plan templates, assessment tools, and instructional techniques,

significantly facilitates the implementation of new teaching practices. These resources enable ECTs to integrate innovative ideas into their classrooms and enhance student learning. Ensuring the availability of practical resources can be immediately applied is crucial.

Tailoring CPD to Needs. The study reinforces the importance of customizing CPD to address specific needs and challenges ECTs face. Acknowledging individuals as active learners and involving them in the design of CPD programs ensures a more personalized and practical learning experience.

Sustained Support. The role of ongoing support from facilitators and peers must be considered. A collaborative learning community allowed ECTs to continue improving their practices and seeking advice beyond the initial workshops. This enduring support is essential for maintaining and embedding changes in teaching practices over an extended period. Therefore, sustained support can enhance the potency and longevity of CPD impact on individuals.

Gradual Process of Change. This study highlights that teacher change is a gradual and iterative process. Teachers often begin with small changes and continuously refine their strategies based on feedback and experiences. This emphasizes the need for patience and perseverance to pursue effective teaching practices. In essence, the process of making changes unfolds gradually.

5. Conclusion and Limitations

This study indicates that ECTs who need more training in physical education teaching often experience deficits in their competence and confidence to teach this subject effectively. The CPD activities can potentially enhance ECTs' skills in planning and teaching practice, consequently boosting their confidence in teaching physical education. The CPD activities should tailor the contents and activities for ECTs and provide ongoing support throughout the process. One limitation of this study is that no data was collected to inform the influence of teacher CPD on students' learning outcomes. Future research can examine the impact of long-term CPD programs on changes in student learning performance and ECTs' attitudes and beliefs toward teaching physical education at elementary schools. Overall, the transformative journey in teachers' teaching is a gradual process that teachers should continue to seed CPD opportunities for their professional growth and student learning.

Acknowledgements

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