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PEDAGOGY

Policy Changes in Physical Education Teacher Continuing Professional Development

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Abstract

Professional development (PD) plays an important role in the quality of K–12 physical education teachers (PETs) and PD policies affect the implementation of PD at the state level in the United States. To date, no studies have examined PD policies for PETs. Therefore, this project aimed to examine changes of state PD policies for PETs from 2001 to 2016. Document analysis method was used in the analysis of data included in the Shape of the Nation Report: Physical Education Programs in the US. The five editions of the report were coded with a focus on PD requirements and state financial support for PD. McNemar's test was performed in the examination of the significant percentage change in K–12 PD policies for PETs during the time period. About 10%–20% of states did not have any PD requirements and less than one third of states required physical education–specific PD since 2001. Although the percentage of states providing support specific for PETs significantly increased in 2016, the overall percentage of state PD support for PETs was less than 30%. There were significant positive changes

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in making PD specific for PETs and state support for PD from 2001 to 2016. Future state PD policies need to be aligned with how PETs learn, focusing on what, when, and how PD should be implemented for PETs.

Continuing professional development (CPD) is one of the most effective strategies to improve teacher quality among various approaches, mostly because of the critical role of teachers in schools (Brener et al., 2013; Darling-Hammond & McLaughlin, 2011; Elliot & Campbell, 2015). This may be due to (a) physical education curriculum and the content offered to students rapidly changing over time to reflect contemporary societal norms (Hodges et al., 2018); (b) routine revisions of national physical education standards (SHAPE America, 2014); (c) the rapid change in educational technologies (Hites & Block, 2013; Liu et al., 2018) and the emergence of technologies that improve PETs teaching effectiveness (Franklin & Smith, 2015); and (d) increased diversity in students' ethnicities and cultural backgrounds (Schachner et al., 2016), requiring the adoption of culturally relevant pedagogy. Additionally, there are frequent changes in general education reform, such as teaching accountability through standardized testing and assessment (Simpson, 2017); data-driven instruction (Dauenhauer et al., 2018); and the Every Student Succeeds Act (Kane, 2017), which has caused PETs to try and keep up. Thus, the importance of high-quality PD offered on a regular basis cannot be overstated given that PETs must receive sufficient professional learning opportunities throughout their career to advance their skills and knowledge and maintain a contemporary, high-quality physical education program (Black et al., 2010; Coulter & Woods, 2012; Elliot & Campbell, 2015).

Education is state mandate (Kohl & Cook, 2013); thus, PD is controlled at the state level and varies greatly among states, with some state policies missing a minimum credit requirement (SHAPE America, 2016). To date, there are no national PD standards (Darling-Hammond et al., 2017), which makes it difficult to understand how, when, and what PD (i.e., key elements determining the quality of PD) has been implemented across states. Furthermore, there is limited research concerning effective PD programs in the field of physical education, even though it is widely believed that PD is essential to teacher effectiveness (Armour & Makopoulou, 2012; Hastie et al., 2015; Michael et al., 2016).

Given the scarcity of PD policy information in the field of physical education, a thorough examination of PD policy literature in the general education settings would help build the theoretical foundation for this study. For PD to be effective, significant state PD policy supports and changes must be in place (Armour & Duncombe, 2004). It would make sense that states' recognition of the importance and support for PD would be reflected in their state policies and funding for PD (Darling-Hammond & McLaughlin, 2011). Furthermore, PD policies for teacher learning must be subject-specific and align with new knowledge about what, when, and how teachers learn in an era of educational reform (Armour & Duncombe, 2004; Keay & Lloyd, 2009). PD policies must focus on improving schools' and teachers' capacities to be accountable for student learning (Darling-Hammond & McLaughlin, 2011). On the other hand, according to adult learning theory or andragogy,

> adults are independent and self-directing, have various degrees of prior experience, integrate learning to the demand of their everyday life, are more interested in immediate problem-centered approaches and are motivated more by internal than external drives. (Chacko, 2018, p. 278)

Therefore, in-service teachers are different from preservice teachers in terms of their age, teaching experiences, and professional learning motivation and needs. To benefit from PD, in-service teachers must (a) be actively engaged in their knowledge acquisition, (b) realize that the "experts" are no longer the only individuals who possess new or more advanced knowledge and skills, (c) be in charge of their own PD learning content and become active consumers of PD on the basis of their daily job, and (d) have access to ongoing support for continuing learning (Souza, 2015). Hence, effective PD policies should consider the characteristics of adult learning from Chacko (2018; Armour et al., 2012; Bechtel & O'Sullivan, 2006; Colburn et al., 2019; G. Doolittle et al., 2008).

In spite of the scarcity of information on a PD policyfor PETs, the Society of Health and Physical Educators (SHAPE America) has tracked state PD requirements for PETs in the *Shape of the Nation: Status of Physical Education in USA* (*SON*) since 2001 (National Association for Sport and Physical Education, 2002; National

Association for Sport and Physical Education & American Heart Association, 2006, 2010; SHAPE America, 2012, 2016). Because SHAPE America publishes these *SON* documents periodically (i.e., every 3–5 years), they are the most reliable and valid data concerning the nation's physical education PD policies (Dauenhauer et al., 2019; Keating et al., 2013). Although all *SON* reports collected state PD policies for PETs periodically, there is a lack of further analysis concerning the strengths and weaknesses of the reported state PD policies at a certain time point. Of greater importance, there are no longitudinal analyses on changes in state PD policies for PETs, making it difficult to develop a scientific understanding of the evolution of PD policies over time. Furthermore, a thorough examination of research on the topic of PD did not turn up any studies on PD policies for PETs, except for the SHAPE America survey data on state PD policies, though there are a handful of studies that examine PD programs, strategies, and effects for PETs (Alfrey et al., 2012; Armour, 2006; Brener et al., 2013; Sears et al., 2014).

Therefore, a thorough analysis of existing PD policy data by each state over the past 15 years could shed more light on PD policy changes for PETs and on future PD policy development. Such information could provide baseline data for research on PD policies and the quality of physical education programs. Such data could contribute to a growing knowledge base about changes in PD policies. Moreover, knowledge about PD policy changes could inform and guide future state PD policy development, with policy changes echoing public health groups' call for strengthening physical education programs to better physically educate students (SHAPE America, 2016; U.S. Department of Health and Human Services, 2008). Hence, the primary purpose of this study was to examine changes of reported PD policies in *SON* reports from 2001 to 2016. The secondary purpose was to identify state PD policy changes by the six regional districts (i.e., Central, Eastern, Midwest, Northwest, Southwest, and Southern; SHAPE America, 2017).

For readers to better understand this study, it is necessary to point out that PD and professional learning have been interchangeably used in the literature on the topic. The same is true for career-long professional learning, continuing professional education, and continuous professional development. As a result, we used these terms

synonymously, understanding that there may be slight nuances to each and differentiating them from one another.

Method

Data Source and Measures

No human subject approval was required because of the use of existing data without human subjects. Data were collected from *SON* reports published in 2001, 2006, 2010, 2012, and 2016, respectively. On the basis of the data included in each *SON* report, the following variables were included in a coding sheet: (a) state requirements (i.e., state-mandated PD requirements for maintaining/renewing teacher certification or licensure, PD topics physical education specific, and career-long requirement) and (b) types of support provided by the state for PD (i.e., PD event and financial support). The constant content comparison method was used in data analysis (Olson et al., 2016). Most variables were dichotomous categorical (i.e., yes or no). The state PD requirement variable was numeric, however, because some states had specific requirements on the total credits needed for teaching certificate renewal. All the investigators reviewed the previously published *SON* reports to develop a consensus on the coding sheet and went through intensive training prior to data collection. Data were entered into an Excel file after the interrater reliability was greater than 95%. Information on types of PD support was not included in the *SON* report for 2001 and information on physical education–specific PD topic was not available in 2006 and therefore was coded as missing values. For rechecking the reliability of the data collection, two of the researchers randomly selected 10% of the states and coded them independently. The interrater agreement was above 90% for all selected sample states. The second author also independently checked all the coded data to ensure the data were accurately collected.

Data Analysis

Descriptive analysis was first used in the calculation of the percentage of PD requirement, PD content, and types of support, respectively. Because requirement, support, and topic for PD were dichotomous categorical variables that were measured five times from 2001 to 2016, the Cochran's Q test was deemed appropriate

for examination of the differences in proportions over the five times of the same measures, followed by McNemar's test as a post hoc test to identify specific variables that differed from each other (Xiang, 2016). As noted, information regarding types of PD support was not provided in the 2001 report; thus, only the state PD requirement in 2001 was included in the Cochran's Q test. Due to missing values, data from 2006 were excluded in Cochran's Q test for the analysis of PD topics. All tests were performed with SPSS 21.0 with the significance level set at .05.

Results

Descriptive Statistics

Table 1 shows descriptive PD information by state. More than two thirds of the states had PD requirements for PETs since 2001 (i.e., 78.4% in 2001, 84.3% in 2006, 88.2% in 2010, 76.5% in 2012, and 82.4% in 2016). However, about two thirds of the states did not provide any support for PD before 2016 (*Note*: no data in 2001; i.e., 66.7% in 2006, 68.6% in 2010, and 56.9% in 2012). This trend changed in 2016 with 58.8% of the states reporting varied support. Moreover, only a few states reported specific types of PD support, focusing on funding support rather than event support (33.3% in 2006, 9.8% in 2010, 13.7% in 2012). However, the trend changed in 2016 along with the increased amount of PD support, which suggests that more states provided both funding and event support for physical education teachers (51% in 2016). Limited information regarding PD topic was known in 2001 (i.e., only reported by four states) and 2006 (i.e., no reports). The percentages of states requiring physical education–specific PD remained low from 2010 to 2016 (6% in 2001, 29.4% in 2010, 25.5% in 2012, and 27.5% in 2016).

Professional Development Requirement Changes

Cochran's Q test indicated that the proportions of states requiring PD for PETs did not change significantly over the past 15 years (i.e., 2001–2016), $\chi^2_{(2,\, N=48)} = 5.28$, $p = .259$. The percentages of states that required physical education–specific PD did not significantly change from 2010 to 2012 and from 2012 to 2016, respectively. However, the change from 2010 to 2016 was significant, $\chi^2_{(2,\, N=13)} = 12$, $p = .002$, because of a dramatic increase in the number of states that did not require a physical education–specific PD topic in 2010 (Figure 1).

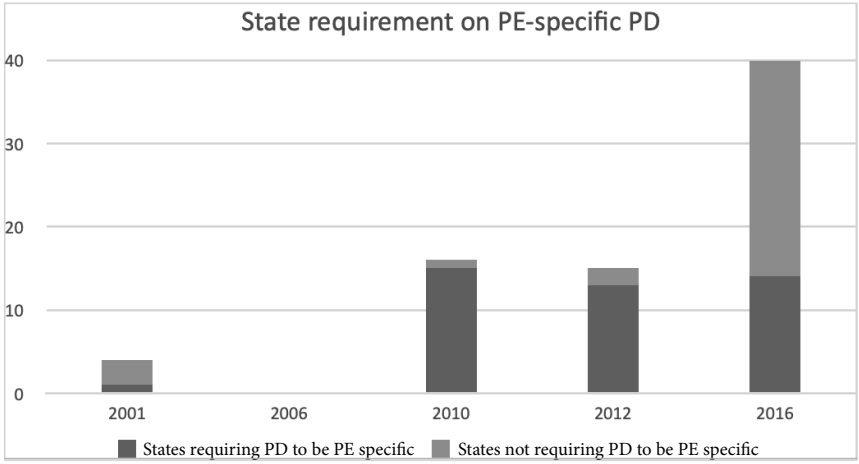
Table 1

Proportions of States Requiring Professional Development, Providing Support for Professional Development, and Requiring Physical Education–Specific Professional Development Topic, and Types of Support

	2001		2006			2010			2012			2016		
Variable	**Yes**	**No**	**Yes**	**No**		**Yes**	**No**		**Yes**	**No**		**Yes**	**No**	
PD requirement														
N	40	11	43	8		45	6		39	9		42	9	
%	78.4%	21.6%	84.3%	15.7%		88.2%	11.8%		76.5%	17.6%		82.4%	17.6%	
PD support														
N	No data		17	34		5	35		8	29		30	16	
%			33.3%	66.7%		9.8%	68.6%		15.7%	56.9%		58.8%	31.4%	
PE-specific														
N	1	3	No data			15	1		13	2		14	26	
%	2%	5.9%				29.4%	2%		25.5%	3.9%		27.5%	52%	
Type of support	No data		Event	Funding	Both	Event	Funding	Both	Event	Funding	Both	Event	Funding	Both
N			0	17	0	1	5	0	1	7	0	1	3	26
%			0%	33.3%	0%	2%	9.8%	0%	2%	13.7%	0%	2%	5.9%	51%

Note. N is the number of states that reported the corresponding professional development policies.

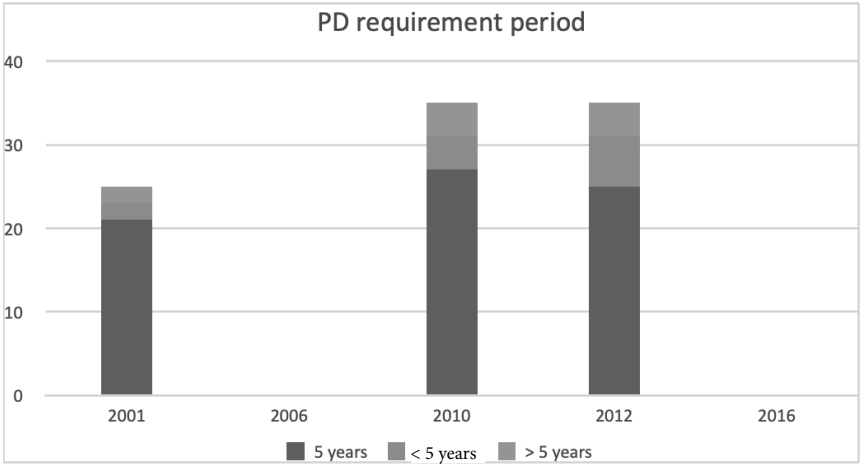
Figure 1
State Requirement on Professional Development Content for Physical Education Teachers



Note. PE = physical education; PD = professional development.

Information concerning a specific PD requirement (i.e., number of credits or PD courses for renewing teaching license) was not well reported in the *SON* reports. In the years when specific PD requirement was reported (i.e., 2001, 2010, 2012), about half of the states asked every 5 years for a PD requirement to renew PETs' teaching license (Figure 2). In 2001, detailed information regarding PD requirement (i.e., exact number of credit/course) was reported by 23 states among the 40 that required PD in 2001. More specifically, the majority of those 23 states (i.e., 13 states) required "6 credits (or equivalent) every 5 years" for license renewal. In addition, PD requirement information was only reported by four states in 2010 (i.e., Arkansas, Georgia, New Jersey, and Pennsylvania) and 2012 (i.e., Arkansas, New Jersey, Pennsylvania, and Rhode Island), with nothing reported in 2006 and 2016. Even though the *SON* report in 2016 was seemingly presented in a more standardized format, no valuable detailed information regarding this topic was available. States described PD as only for PETs to maintain or renew their PET certification or licensure.

Figure 2
State Requirement on Professional Development Period



State Support Changes

Table 2 shows percentages of state PD support. There was a significant increase in the percentage of states that provided support for PD from 2006 to 2016, $\chi^2_{(3,\ N = 51)} = 37.8$, $p < .001$, which was mainly caused by the increase of state support in 2016 compared to previous years (Figure 1). Specifically, states in the Midwest, $\chi^2_{(3,\ N = 6)} = 8.6$, $p = .035$, and Western districts, $\chi^2_{(3,\ N = 11)} = 9$, $p < .001$, contributed to such an increase.

Only a few states reported specifically the types of support they provided for PD before 2016, when 30 states reported the type of support. Therefore, a chi-square test was used only for the data in 2016 for identification of the PD support most often provided among the states. The states were most likely to offer various resources (i.e., both funding and events) to support PD for physical education teachers, rather than a single type, $\chi^2_{(2,\ N = 30)} = 38.6$, $p < .001$.

Discussion

Teachers need to continually learn new knowledge and teaching skills to keep up with the endless changes in education (Tsangaridou, 2012). States need to put forth every effort to guarantee that PETs are continuous learners who have access to content-specific PD to meet their professional needs, in which state PD policies play an essential

Table 2
Comparison of Professional Development Support From 2006 to 2016 by District

	2006		2010		2012		2016	
District	***N***	**%**	***N***	**%**	***N***	**%**	***N***	**%**
Southern	6	11.8	2	3.9	2	3.9	7	13.7
Western*	4	7.8	1	2	1	2	9	17.6
Central	3	5.9	0	0	1	2	3	5.9
Eastern	4	7.8	2	3.9	3	5.9	7	13.7
Midwest*	0	0	0	0	1	2	4	7.8
Total*	17	33.3	5	9.8	8	15.8	30	58.7

Note. N is the number of states that reported state-offered support.

*significant change.

role (Colburn et al., 2019; S. Doolittle, 2014; Elliot & Campbell, 2015; Hastie et al., 2015).

Although SHAPE America has published invaluable state PD policies for PETs every 3 to 5 years beginning from 2001, to the best of our knowledge, such information has not been reanalyzed and does not shed light on PD policy changes for PETs in the past 15 years. Specific information concerning state PD policy compliance remains unknown. More alarmingly, no available data indicate the effectiveness of these state PD policies in improving teaching. The lack of research on this important topic related to teacher quality hinders the endeavors of improving physical education in K–12 programs via required PD, which is pivotal to educating the student body (Kohl & Cook, 2013). Given that teachers play a critical role in effective teaching, more attention should be given to this topic of research in the future.

For a full understanding of the entire field of PD for PETs, it is first important to understand state PD policy changes in the past 15 years to shed new light on further investigations on PD implementation and teacher effectiveness. It is also critical to identify the weaknesses of the current state PD policies so that better PD policies can be developed and executed. To date, this study marks the first systematic attempt to examine state PD policy changes

through nationwide data collected by SHAPE America since 2001. The unique contributions of this study are threefold: (a) State PD policies have been kept the same since 2001, using the mechanism of teaching license renewal every 3 to 5 years; the what, when, and how of PD for PETs have not fully aligned with how teachers learn. (b) State PD support, especially financial support, remains low. (c) There is a lack of inclusion concerning new sources of PD and the use of new educational technologies. The results of this study could guide state PD policy development for PETs and future PD survey design and data collection conducted by SHAPE America.

Professional Development Requirement Changes

One distinctive aspect of this study was the use of the theory of andragogy (Knowles, 1977; Knowles et al., 2011) in the analysis of state PD policy changes focusing on the what, when, and how of PD implementation. While teacher PD policies need to be changed to meet the new challenge of teaching students with diverse cultural background (Chepyator-Thomson et al., 2000; Darling-Hammond et al., 2017; Darling-Hammond & McLaughlin, 2011), the data from this study indicate that the field of physical education has not kept up with the new trends in teaching physical education, with only 76% to 84% of states having specific PD requirements for PETs (Table 1). This finding suggests that the survey report on state PD requirements every 3 to 5 years has little impact on the changes of state PD policies in the United States. Besides continuous collection of state PD requirement data, there is an urgent need for more studies on the topic. The necessity for developing the national guidelines for state PD requirements for PETs also warrants more attention of professionals in the field of physical education and health education.

As noted, effective PD policies should fully align with how teachers learn, focusing on when, what, and how aspects of PD implementation (S. Doolittle, 2014; Patton et al., 2012). Given the limited number of states with PD requirements, it seems that PD policies for PETs do not consider the aforementioned aspects concerning quality PD. While it is critical for policies to tie PD requirements to teacher license renewal, which is one of the most commonly employed PD policies (i.e., about 80%) in the past 15 years (Table 1), existing state PD policies do not specify the PD content to be covered.

An exception are the *SON* reports in 2010 and 2016, in which less than 30% of states required physical education–specific PD content.

As widely known, physical education teaching is different from teaching of other subject matters in schools in terms of teaching content, class management and organization, teaching settings, and status in schools (Beddoes et al., 2014). PD can be effective only when teachers believe that it is needed. Further, the "top-down" approach for PD yields limited effects on improving teachers' professional knowledge and skills (Bechtel & O'Sullivan, 2006). Thus, it is minimally encouraging that about 30% of states require physical education–specific PD for PETs.

In addition to what PD should be covered, when and how PD should be implemented are also very important. PD should not be a one-time event and, further, ongoing PD is essential for effective PD (Alfrey et al., 2012; Armour & Yelling, 2007; Hastie et al., 2015). Unfortunately, in 2016 65% of states did not specify when or how often PD should be completed. Since state policies strongly influence the implementation of PD at the local school district level, it is extremely critical that state PD policies are strategically designed and evaluated to meet the needs of ever-changing PETs and student demographics (Chepyator-Thomson et al., 2000).

State Professional Development Support Changes

The importance of PD support cannot be overstated because it strongly assists in policy implementation (Goodyear et al., 2014). This is extremely important for PETs given they have limited time for PD and seldom have self-initiated professional learning activities (McEvoy et al., 2015). The significant increase in state PD support since 2001 is encouraging. However, the percentage of states providing PD support in 2016 indicates that PD support is still relatively low (i.e., 45%). This is a cause for concern given that more than a half of the states did not provide any PD support for PETs in the past 15 years. In addition, the extent to which a state provides PD support to PETs points to a value priority set by the state on the importance of physical education programs and PETs. This may affect other educational policies such as physical education class size and instructional time, which may impact the quality of physical education.

Noticeably, states in Western and Midwest districts provide more PD support. This contributed to the significant change in state

support. The state can affect educational policies and, further, the geographic location can matter (Edwards et al., 2011). However, it is unclear what causes the states in these districts to increase their PD support for PETs. We did not find any research on this topic.

Inclusion of New Professional Development Sources and Technologies in State Professional Development Policies

Until recently, it was unclear what new PD sources and technologies should be included in state PD policies for PETs due to the rapid changes in the fields of PD and learning technology (Ince et al., 2006). The National Educational Technology Standards for teachers, however, were developed by the International Society for Technology in Education (2002), which set specific PD guidelines for education-related technologies for teachers. The data from this study suggest that state PD policies fail to note the possible influence of new educational technologies in PD. With the emergence of new video-conferencing technology such as Skype, Zoom, and Google Hangouts, online professional learning is on the rise (Charbonneau-Gowdy, 2012). In fact, ongoing online PD provides teachers with lifelong professional learning and builds learning communities that support each other professionally, which is urgently needed for PETs (Herrington et al., 2009). It is likely that continual online PD will become the centerpiece of future PD. With its nationwide coverage and low costs, for the first time in PETs PD history, states could team up to deliver effective PD via video conferences. Future state PD policies need to consider the use of online PD for PETs.

Moreover, traditional PD structures (i.e., experts giving lectures or seminars) face challenges from new educational technologies (Jess & McEvilly, 2015). In fact, lectures, workshops, and seminars are no longer the only PD sources for PETs to gain new knowledge and skills (Hastie et al., 2015). PETs value as PD informal learning such as learning from peers and/or self-initiated searching for information online (Armour & Yelling, 2007). Furthermore, online learning communities also positively affect PETs' PD (Goodyear et al., 2014). Overall, through modern educational technologies, PD for PETs is becoming more informal through various sources while being ongoing and teacher centered (Armour & Duncombe, 2004). However, the agenda for PD should be based on PETs' assessment of their students' learning needs (Armour & Yelling, 2007).

Limitations

The limitations of the study are twofold. First, the data in the study are about the policies reported by the states only. It is unclear if these policies have been implemented. Second, the data concerning state PD policies for PETs are limited to those in the *SON* reports. These focus on state requirements and support. Hence, the state PD policy data may not be inclusive. Some states may have additional PD policies that are not included in the survey.

Conclusion

State PD policies for PETs play a critical role in the quality of PETs. In an era of new knowledge and skills constantly emerging, PD becomes more important than ever in improving teachers' effectiveness. Physical education is essential in educating the student body that is directly related to students' current and future overall health. Every effort to improve PETs' effectiveness is needed so that schools can help combat childhood obesity.

It is encouraging that state PD requirements and support have increased since 2001, even though the overall percentages of states for both requirements and support are still low. However, the existing state PD policies for PETs do not align with how PETs learn. The what, when, and how of PD implementation must be specified in state PD policies for PETs. Each state may need to offer more free PD opportunities for PETs. More importantly, to date, professional learning has taken diverse forms and new technologies have changed the landscape of PD. Future state PD policy must reflect, in a timely manner, the changes concerning how teachers learn in an era of educational reform and rapidly emerging technologies.

Implications for Physical Education

Physical education plays a vital role in the development of the whole child. Arguably, a child's acquisition of physical literacy can offer lifelong benefits, such as the ability to maintain an active and healthy lifestyle. This is a skill that many other subject areas cannot provide. Thus, more empirical data that address how to train school health coordinators effectively on novel best practices are needed. This may result in a better understanding of how districts can maintain a quality physical education and health program. This is

especially important given that content and curricula are constantly changing to match contemporary societal norms and student interests. Training stakeholders in mandates and practices is a vital first step toward offering practical approaches and providing ongoing PD that can reshape the culture of how teachers are being trained in physical education and health.

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