

Review

# Contextualizing physical literacy in the school environment: The challenges

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## Abstract

The intent of this paper is to conceptualize physical literacy in the school environment within the United States educational system. Evolution of physical literacy from both a general education and disciplinary focus is overviewed. The challenges of transitioning from a *physically educated* to a *physically literate* person as the primary learning outcome of physical education may inhibit progress. Five prioritized recommendations are made to assist teachers in overcoming such barriers: (a) whole of school approach, (b) effective, differentiated pedagogy, (c) integration of technology for individualized tracking of progress, (d) supportive school climate, and (e) alignment of local efforts with national initiatives.

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## 1. Introduction

Understanding why some individuals are physically active and others are not involves complex study that includes personal, environmental, and behavioral considerations. Since sedentary behavior has been identified as the fourth leading risk factor for global mortality,<sup>1</sup> promoting physical activity (PA) engagement across the lifespan is reasonable. Pursuant of that goal, terminology used to describe bodily movement has been reconceptualized and applied over time. Evolving from formal terms such as *exercise* (planned, structured movement) to the more acceptable term of PA (a behavior produced by skeletal muscles) that expends energy,<sup>2</sup> health communications have been reformed. Although such terms have useful parallels, the designations increase our comprehension of human movement and its corresponding benefits through the defined specificity.

Public health messaging is again at a semantical crossroads, with the introduction of *physical literacy* as the desired learning outcome of the National Standards for Physical

Education (American Alliance for Health, Physical Education, Recreation and Dance (AAHPERD) now called Society of Health and Physical Educators (SHAPE) America, 2013). Adoption of the concept of physical literacy as the disposition facilitating pursuit of a physically active life,<sup>3</sup> did not immediately spark global interest, particularly among scholars from the United States. With a nudge from global partners in the European Union and Canada, U.S. scholars have recently embraced the potential of fostering human capability inferred through the application of physical literacy. The present belief is that physical literacy may have broader representation and greater focus on self-sufficiency, thus maximizing student potential beyond the characterization of a “physically educated person”.

The belated acceptance of physical literacy should not come as a surprise since there was a similar trajectory surrounding literacy in general education. Literacy statistics have long been used to identify the educational level of adults. Yet today, illiteracy is a different issue than it was in the early years. Initial research considered extremely fundamental forms of reading and writing as acceptable and classified 20% and 4% of adults as illiterate in 1870 and 1930, respectively.<sup>4</sup> Despite the reduction in illiteracy to less than 1% of the U.S. born adults, the question remains whether fundamental

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literacy represents an adequate level of functionality in the modern world. It was not until the late 1990s when researchers and educators alike, finally acknowledged the complexity of literacy, as not just the ability to read and write, but also as a means to improve one's knowledge of a subject matter (e.g., financial literacy, emotional literacy, physical literacy).

Presently, literacy and its many forms represent prioritized learning outcomes and are monitored through high stakes accountability assessment. Given the emergence and application of the term "literacy" to academic disciplines, further discussions regarding the challenges faced by educators is both timely and warranted. The primary purpose of this review is to outline the evolution of literacy among educational settings in the US. In addition, the authors will elaborate on how global advancement is challenging teachers who are attempting to transition their physical education (PE) and PA programs toward the desired learning outcome of physical literacy.

## 2. Education and literacy

Until recently, the term literacy was associated with teaching children to read, whereby any potential added value of cross-curricular learning was not measured. Beginning in 1879 the field of education placed an emphasis on developing readability in children through rote memorization and oral interpretation of simple sound patterns.<sup>5</sup> In response to this trend, McGuffey readers were developed to control student-learning experiences by establishing graded reading levels. Yet McGuffey readers went on to spark debate and curiosity about readability tactics and comprehension.<sup>6</sup> Chall et al.<sup>7</sup> concluded that such reading tools were developmentally inappropriate and the vocabulary was often too challenging for their readers, at a given level of difficulty. Although this research confirmed the saliency of challenging and motivating student learning, further investigation into pedagogical approaches to replace ineffective teaching practices such as use of rote memorization and oral interpretation was warranted. Over the course of the next several generations, reading curricula and our understanding of how children learn to read evolved with the emergence of new educational jargon and instructional strategies.

Curricular advancements called for more standards driven<sup>8,9</sup> objective approaches<sup>10</sup> and most recently the adoption of the common core.<sup>11</sup> Further, assessments were transformed from a benchmark and growth trackers<sup>12</sup> to high stakes accountability measures,<sup>13,14</sup> where school funding and effectiveness classifications were directly linked to student performance on standardized testing. Although the aim of adopting standards and high stakes testing was to ensure student success, research suggests that no single educational instructional approach has led to superior achievement in language arts education.<sup>15</sup>

In general, the progression of language arts education continues to be a representative cycle that repeatedly returns to a "back to basics" focus. For example, phonics, the breaking down of words into sounds and syllables, dates back to the

early 1900s and is still a widely known and respected instructional technique.<sup>5</sup> Additionally, one of the most distinguished and highly regarded practices is the "whole language approach", which came into practice in 1972 and is still known as the most significant movement in reading curricula.<sup>16</sup> Separate from the trends surrounding instructional practice, research indicated that student literacy was rooted in metacognitive, conceptual, and content knowledge.<sup>17</sup> New awareness of literacy's depth would later prompt curriculum reform aimed at integrating these knowledge components to enhance comprehension, vocabulary, decoding, and fluency skills.<sup>15</sup> By the turn of the century, the inclusion of literacy had both political and national initiatives and had become the focal point of standards-based achievement.<sup>18</sup>

In sum, literacy is multi-faceted and therefore requires intentional and evidence-based pedagogical strategies to obtain successful results.<sup>19</sup> The learnings from empirical research in language arts has relevance to other academic disciplines attempting to achieve student literacy. One such example is the approach, which focused on enhancing literacy by immersing children in print rich environments.<sup>20</sup> The idea was to blanket the learning environment with opportunities for children to refine their literacy skills by covering the classroom walls with relevant vocabulary words, creating classroom libraries, adding computers, and establishing writing centers. In the case of physical literacy, the print would be related to health and PE content. Yet, upon further examination, improvement of student literacy actually required more than just creating a print rich environment.<sup>21</sup>

Another evidence-based approach, engagement within the learning environment, was considered best practice because it helped children give meaning to their experiences and translate them into real-world action.<sup>19</sup> Specifically, play was identified as an essential component of early literacy learning, because of the interactivity within the learning environment.<sup>22</sup> Among older children, the incorporation of disciplinary literacy has been encouraged because it challenges children to utilize their content knowledge, assume a role of expertise, and solve problems.<sup>23</sup> Uniquely positioned, disciplinary literacy does not use literacy as a separate tool to memorize vocabulary or learn to read, but rather as an essential component embedded within each learning task. In the end, literacy is everywhere and is a critical component of all school subject matters. Despite a paucity of research related disciplinary literacy, initial findings have demonstrated positive effects on student achievement.<sup>23</sup> As such, integrating literacy across the curriculum, including physical literacy as a learning outcome of PE, is currently supported.

## 3. Physical literacy

There are different conceptions of the meaning and purpose of PE in society and academia. However, reform of the National Standards for Physical Education has established "the goal of PE is to develop physically literate individuals who have the knowledge, skills, and confidence to enjoy a lifetime of healthful physical activity".<sup>24</sup> The expectation is that a

quality PE program, provided by a highly credentialed PE teacher(s) will result in refined motor skills, an awareness of the benefits of PA, regular participation in PA, attainment of physical fitness, and a value of the importance of a physically active lifestyle.

As previously stated, the potential of having every child regularly engage in moderate-to-vigorous PA (MVPA; i.e., children meeting the recommendation of 60 min or more of daily MVPA participation), has major public and personal health benefits. Because of the dose-response, effects of PA children who are regularly active reap multiple benefits such as performing better in school and reducing the risk for disease.<sup>25</sup> Yet, seemingly lost in translation from “a physically educated person” to “a physically literate person” are the inherent underpinnings upon which physical literacy is grounded, such as individuality, a continual monitoring of progress, self-regulation, agency, and plurality. Specifically, physical literacy is predicated on the notion that each individual will maximize his/her potential and that there is no one set standard for all.

In general, there is a disconnect between standards-based education (i.e., achievement of developmentally appropriate criteria at a specified grade level<sup>26</sup>) and individualization. Because student learning in PE is assessed through learning outcomes that were adoptions or adaptations of the national PE standards, there is a lack of alignment with the application of the physical literacy. Given the *all or none phenomenon* of criterion-based assessment, how can a single standard ever truly represent what is best for all children?

Physical literacy is most appropriately quantified through ipsative assessment, measuring each individual’s progress against their previously attained results as opposed to their peers’ achievements.<sup>27</sup> Ipsative assessment is how we track progression during physical training (i.e., how did today’s running time compare against my personal best?). Children are individuals who develop at different rates and therefore requiring all children to meet a given benchmark on a designated date fails to reflect individual student needs.

Beyond individuality is the need for self-sufficiency and self-regulation. A physically literate person embodies a physically active lifestyle. Individuals who are physically literate have the knowledge, skills, and attitudes to lead healthy lifestyles, as well as to assist others in acquiring these skills.<sup>28</sup> Agency is a critical element within physical literacy, as we are continually faced with healthy/unhealthy decisions. If one elects to not participate in PA when offered (i.e., a group provides an opportunity to go hiking, but the child declines to participate), at some point, the individual must facilitate reengagement. In general education, self-regulation has been implicated as the most important competency for kindergarten readiness,<sup>29</sup> which can be enhanced through active play during recess.<sup>30</sup>

If physical literacy is a disposition capitalizing on embodied capability, then motivation, confidence, physical competence, knowledge, and responsibility are interdependent constructs that must be developed.<sup>3</sup> Physical literacy’s plurality is displayed through the dimensions of mind, body, and

psychosocial attributes attesting that physical literacy is not simply one element but is interactive, the embodiment of the physical, mental, and psychosocial aspects of human beings. Philosophically, physical literacy begins to develop in infancy and tracks through childhood, adulthood, and old age. Physical literacy is an ongoing process, not a concept to be mastered, as suggested by educational researchers who have examined literacy as a means to help children learn to read.

Some scholars question whether all school-aged children can learn to the point of mastery.<sup>31</sup> Although educational researchers such as Bloom<sup>32</sup> and Carroll<sup>33</sup> were supportive of mastery, there are limitations to this conception. First, mastery is immensely difficult to achieve and impractical to assess.<sup>34</sup> Second, if mastery were possible for all children, then why do some children fail?<sup>31</sup> Physical literacy, in our opinion, is not about mastery but is instead a continuous work in progress. On the surface, the idea of individual learning and achievement appears to be advantageous. Much like our health, which is dependent on our decision-making and daily actions, physical literacy is a series of decision-making prompts that we must persistently navigate. In an ever-changing world, physical literacy has merit given its adaptability and self-regulation. The question remains how best can we bring about this disposition within a standard-based, benchmark-driven, criterion-referenced educational system in the US?

#### 4. Challenges of transitioning to physical literacy in schools

In many U.S. schools, PE is a marginalized subject matter, which is plagued by inadequate instructional time, large classes, disproportional student–teacher ratios and often lacks instructional rigor and accountability. Some highly qualified teachers are effective disseminators and have a percentage of children who achieve the national PE standards, having successfully overcome contextual barriers.<sup>35,36</sup> Despite the odds of PE being offered for 150 min per week being significantly enhanced by having a state or schools district policy legislating mandated PA minutes and/or PE standards,<sup>37</sup> the scarcity of such state, local, and school policies and compliance make the provision of quality PE challenging. While in general education, achievement gaps, health disparities and inequities inhibit student learning and academic achievement. This section decomposes some of the challenges faced by PE teachers who wish to refocus their programs to physical literacy.

#### 5. Relationship and inequities

Beyond the impact that the school environment has on literacy development, one must also consider how interpersonal environments such as the community also influence the development of physical literacy, which is contextually embedded in human relationships and culture. The emergence of physical literacy begins in the home environment, where care providers engage in the process with their infants by influencing their attitudes, speech, and experiences. Pre-school, elementary, middle, and high school contexts

introduce varied opportunities, classes, teachers, peers, relationships, and mediums to facilitate physical literacy growth, while early adulthood and adulthood find the individual making informed decisions concerning their health, interactions and purposeful physical pursuits as the journey through life.

### 5.1. Relationships

If physical literacy is the goal, then relationships (i.e., student to teacher, peer to peer, content, connectedness, experiences), pedagogy within schools (i.e., creating opportunities, differentiation, assessments), physical competencies (i.e., fundamental skills, knowledge, sports, games, ability to read/interact with the environment), problem solving (i.e., strategies, adaptations, complex skills, reflections, decision making), self-confidence (i.e., identity, motivation), and outside of school (i.e., opportunities, motivation, connections) provide the framework for overcoming challenges and achieving success. Relationships are critical for the advancement of physical literacy, as children need to feel safe, accepted, and engaged. When this relational environment is present, autonomy is fostered from supportive interactions.<sup>38,39</sup> Humans create their individual being through interactions with people and environments and these experiences build upon prior knowledge that will foster their connectedness. From this perspective, PE is an ideal environment to providing opportunities for human interactions that foster physical literacy, through fair play affiliation, and cooperative learning activities.

### 5.2. Inequities

With regard to school culture, Davis<sup>40</sup> found that children largely learn from their immediate contexts. A community either affords or deprives a child supportive relationships and resources. Darling-Hammond<sup>41</sup> suggested that children from impoverished communities have vastly different learnings than children from affluent communities, due to a lack of access to adequate facilities, curriculum, and teachers. Broadly speaking, children of diverse backgrounds and lower socioeconomic status are at increased risk of not having the level of subject matter literacy necessary for the workforce. To overcome such disparities it is imperative that children are given the chance to flourish in positive classroom environments where they actively engage in experiments, discussions, reading, and writing activities.<sup>42</sup> In PE, this would mean highly engaging, developmentally appropriate, and relevant, contextually based lessons.

## 6. Variety of instructional practices

Physical, cognitive, and affective domains operate in concert with one another, orchestrating the layers of capabilities necessary to develop the whole person,<sup>43,44</sup> specifically, a child who is physically and cognitively healthy. PE lessons have the capacity to provide opportunities for children to

engage in MVPA to increase their physical fitness<sup>45</sup> through social interactions. Research on the potential impact of improved fitness and exercise on cognitive function<sup>46</sup> psychological health and learning<sup>47</sup> confirms the interrelatedness of these domains and the holistic impact they might have on children and adults. Yet despite the existence of over 230 studies confirming a positive association between physical health and academic performance,<sup>48</sup> no single pedagogical strategy, utilized within PE, has been implicated as the most appropriate facilitator of academic success.

One evidence-based instructional strategy that targets enhanced literacy among children is the use of differentiated instruction (DI). As Dixon and colleagues<sup>49</sup> explained, DI offers children unique pathways through the learning process that appropriately tap into their strengths and interests. Further, DI provides teachers with a framework that requires them to investigate individual learning needs and track individual progress over time. Based on the knowledge gained about each student's interests, motives, and abilities, teachers then can respond to a range of learning needs by tailoring their lesson presentation, content, and assessments to the unique needs of the classroom instead of using a one size fits all approach.<sup>49</sup> Moreover, DI encourages the use of flexible grouping, a fluid and temporary way of clustering children, where teachers inventory or pre-assess children on a single objective and then group according to strengths and/or interests for the given lesson. According to Tobin and McInnes,<sup>50</sup> DI is an optimal approach to addressing language arts components in the classroom because it provides children with choices about what they read and how they convey what they learned. DI is a way for teachers to offer cognitive apprenticeship for children enrolled in school.<sup>51</sup> When teacher's model, coach, and scaffold literacy concepts, it enables children to become independent scholars engaged in authentic achievement. Although maximizing the effectiveness of instruction remains a challenge regardless of subject matter, empirical evidence suggests that DI may be applicable for physical literacy.

## 7. Lack of consensus regarding best practice in PE

U.S. scholars have struggled to achieve congruency regarding the meaning and purpose of PE. Interestingly, the recommendation for best practice are both disparate and interdependent (i.e., motor skills cannot be developed without PA participation). Tomporowski and colleagues<sup>52</sup> reported that PA for American children has reflected two views: (a) health-related fitness (i.e., public health approach) or (b) affective development (i.e., a whole child approach). While Silverman<sup>53</sup> suggested that PE's primary purpose is for students to develop positive attitudes, motivation, and efficaciousness towards movement. Rink<sup>54</sup> has focused her research on the delivery of quality instruction and development of motor skills as the foundational purpose of PE. Achieving the standards should be a minimum requirement and teachers should extend the learning experiences beyond those introduced in the curriculum standards,<sup>55</sup> which should also include content and pedagogical knowledge to create a positive learning

environment and enable the student to connect to learning.<sup>56</sup> Without complete convergence and adherence among all teachers, the lack of consensus among PE scholars will continue to challenge teachers.

Given the strong link between teacher-led instruction and student performance, it is not surprising that opportunities for educators to engage in professional development (PD) is vital for curriculum development and enhancement in literacy instruction. Teachers need time away from their daily instructional responsibilities to explore common core and emergent pedagogical approaches. Common core PD significantly influences lesson planning and teaching approaches that target literacy as a learning outcome, particularly when the teachers had an awareness of the student prerequisite skills.

Another important aspect that PD offers teachers is an opportunity to feel self-efficacious as they implement a new program or use a new strategy. Effective PD has also been implicated as a way to increase teacher efficacy about specific instructional approaches. Many teachers work in isolation and PD provides an opportunity to communicate with other teachers. This is particularly important when teachers are experiencing self-doubt associated with the implementation of new practices.<sup>57,58</sup> PD offers opportunities for feedback and provides follow-up sessions facilitating increases in teacher self-efficacy.<sup>59</sup> PD is a simple way to expose teachers to cutting edge pedagogical strategies while providing them time to gain confidence in mastering the instructional strategies that go along with it. For PD to be effective for PE teachers it should be specific to PE learning outcomes, collaborative, continual, and aligned with the daily routine of teachers.<sup>60</sup>

## 8. Addressing the challenges

There is no single way for PE teachers to address the challenges that they will face when transitioning from the perspective of a *physically educated* to a *physically literate* person as the desirable outcome of quality PE experiences. Based on the existing evidence in both the PE and public health literature, five recommendations have been prioritized: (a) whole-of-school approach, (b) effective, differentiated pedagogy, (c) integration of technology for individualized tracking of progress, (d) supportive school climate, and (e) alignment of efforts with national initiatives. These assertions are founded in the belief that physically literate individuals will maximize their potential for educational success and optimal health.

### 8.1. Whole-of-school approach and Comprehensive School Physical Activity Programs (CSPAP)

In 2013, the Institute of Medicine<sup>61</sup> report entitled *Educating the Student Body, Taking Physical Activity and Physical Education to School* proposed several recommendations to enhance PA among children. Central to the committee recommendations was that a whole-of-school approach be implemented as a means to address health issues related to physical inactivity and enhanced academic performance

among children. Although, the report did not directly make suggestions about how to enhance physical literacy, the inherent disposition is closely related.

One framework that is considered to be a whole-of-school approach is the CSPAP, which has been implicated as the most likely way to achieve physical literacy.<sup>48</sup> CSPAP provides opportunities for children to be physically active through five different intervention targets: (a) PE, (b) during school (i.e., recess, classroom physically active lessons), (c) before and afterschool, (d) staff involvement (i.e., teachers have a chance to participate in a wellness program, teachers promote and provide PA opportunities across the school day), and (e) family and community engagement.

One misconception is that CSPAP is an atheoretical, non-empirical approach, when in fact, the CSPAP like the coordinated school model which has been around since the 1930s, is grounded in the health-belief model (HBM).<sup>48</sup> The HBM posits that individuals will take health-related action if someone: (a) understands how physical inactivity is related to disease, (b) believes that there will be a positive outcome if they take action, and (c) thinks that they can be successful, if they take action. Conceptually, PE classes are primed as an ideal place to facilitate healthy behavior change.

When CSPAP is in place, physical literacy has the greatest potential to develop given the consistent messaging across the curriculum, the continual opportunities to engage in PA, integration of self-regulation strategies, and plurality of the intervention targets. Because CSPAP can be adapted to the context and because they can originate before school, during the school day or afterschool, implementation of the CSPAP framework should be an early focal point for teachers.<sup>62</sup>

### 8.2. Effective, differentiated pedagogy

Pedagogy, devoted to creating an environment that builds confidence, enthusiasm and a desire to learn facilitates the advancement of physical literacy.<sup>63</sup> As such, teachers must use effective, evidence-based instructional strategies, build a positive class climate, provide lessons that are adaptable to individual needs; however, a comprehensive, school-wide approach has emerged as most appropriate way to address the outlined challenges that face PE teachers.

PE lessons should include opportunities to be physically active, investigate, reason, strategize and reflect, as each of these experiences build critical literacy skills.<sup>64</sup> Cooperative activities help build listening and speaking skills culminating in working together for success. In general, employing a broad range of student-centered and teacher-centered pedagogical approaches leads to varied experiences and allows time for skill practice (including healthy decision-making). Teachers must have an awareness of and be responsive to each student's prerequisite skills. Beginning with the current context permits teachers to support the students on their journey to physical literacy.

One additional strategy to engage students in their own learning and apply the concept of maintaining a physically active lifestyle, a portfolio workbook was formulated in an effort to interject self-assessment, student centered learning

experiences and reflection aimed to improve PA levels.<sup>65</sup> Workbooks of this type enable students to log activity participation and perceptions both during and outside the school day stimulating reflection and growth. Physical literacy is a lifelong process that finds adults influenced by the media, home environments, relationships and policies (employer and/ or government) as they strive to realize their potential.

### 8.3. Integration of technology for tracking student progress

In addition to the previously outlined approach of differentiation, various technologies could also be implemented to capture students' attention and provide feedback on their skill attainment. Tablets and other electronic devices can be incorporated to facilitate a more student-centered approach to learning and evaluation. The ability to recognize (upon viewing) and implement the appropriate modifications to their fundamental movements increases the likelihood of successful application. These fundamental physical competencies provide the necessary scaffolding for children to access the essential knowledge requisite to develop skills that are more complex and maintain an active lifestyle. Upon understanding why PA is good for them, children's motivation and participation become recursive. Once those skills are internalized, children are able to read the environment and assess when to utilize a certain skill.<sup>66</sup> Critical thinking skills are further enhanced by increasing the opportunities to read diverse environments and self-regulate appropriate choices.

### 8.4. Supportive school climate

Reflecting on past movements in addition to anticipating future initiatives involved with strategy and creativity further advance physical literacy. Self-confidence may be improved by establishing a nurturing environment, which promotes a culture promoting independence and empowerment, connectedness and the collective responsibility to pursue goals established. Children's early experiences of sport and PA have implications for their subsequent involvement. It is well documented that helping children develop and sustain a physically active lifestyle helps children to become motivated.<sup>67</sup>

The resulting autonomy from supportive classroom climates facilitates self-determination. Engaging in behaviors deemed relevant to the individuals and surrounding community<sup>68</sup> helps to actualize the overarching goal of lifelong participation in PA. Through this process, the individual's identities begin to emerge and redefine what is possible.

### 8.5. Alignment with national initiatives

Many current initiatives can provide help for teachers. For example, teachers can provide positive physical literacy support via the Presidential Youth Fitness Program, Healthy

Schools, CSPAP, National Physical Activity Plan, Let's Move! Active Schools, vertical teaming K-12 for districts, offering extra-curricular opportunities for students to extend their learning, professional development for teachers or they can maintain negative barriers including inadequate facilities, lack of time allotted per day/week for PA, hegemony, location, large class sizes, lack of professional development opportunities and negative classroom experiences.

## 9. Implications for PE teachers and child physical literacy

PE classes in schools are one of the few places that can influence every child's health behaviors. Although there are clear limitations with the immediate application of physical literacy as the primary outcome of PE experiences, in U.S. schools, the benefits likely outweigh the challenges. Implementing CSPAP and effective pedagogical strategies that align with national initiatives is a logical place to start.

Educators have a great opportunity and responsibility to create an environment that will positively impact children throughout their lives. The experience each child has concerning PA magnifies over their lifespan, highlighting physical, cognitive and affective domain implications either positively or negatively. If people in and beyond school share their passion for movement and create a community of support, all children and the physical literacy facilitators will be rewarded by the benefits of a physically literate society.

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