JUMPING IN:

Redefining Teaching and Learning in Physical Education Through Project-Based Learning

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Within the past few decades, teaching reform has increasingly shifted from instructional approaches centered on teacher-led teaching and learning to a focus on students' interests and conceptual understanding of specific content (Ji-Wei, Tseng, & Gwo-Jen, 2015). One such model is project-based learning (PBL). Project-based learning is an inquiry-based instructional approach that allows students to gain knowledge and skills by working to investigate and respond in depth to an engaging, complex problem or challenge. Project-based learning is learner-centered and allows students to use their own knowledge, experiences and tools to brainstorm and solve real-world problems (Buck Institute of Education [BIE], 2013a). The essential project design elements of PBL are described in Table 1.

Table 1. Essential Project Design Elements of Project-Based Learning	
Key knowledge, understanding and success skills	The project focuses on student learning goals, including standards-based content and skills such as critical thinking, problem solving, collaboration and self-management.
Challenging problem or question	The project is framed by a meaningful problem to solve or a question to answer, at the appropriate level of challenge.
Sustained inquiry	Students engage in a rigorous, extended process of asking questions, finding resources, and applying information.
Authenticity	The project features real-world context, tasks and tools, and quality standards and speaks to students' personal concerns, interests and issues in their lives.
Student voice and choice	Students make some decisions about the project, including how they work and what they create.
Reflection	Students and teachers reflect on learning, the effectiveness of their inquiry and project activities, the quality of student work, obstacles, and how to overcome them.
Critique and revision	Students give, receive and use feedback to improve their process and products.
Public product	Students make their project work public by explaining, displaying and/or presenting it to people beyond the classroom.

Source: Buck Institute of Education (2013b).

Many classrooms have introduced PBL over the past few years with some success (Lee, Blackwell, Drake, & Moran, 2013; Hung, Hwang, & Huang, 2011), but physical education (PE) classrooms have seen limited exposure to PBL. For some, PBL may seem like an unnatural fit in PE classrooms, but with careful and creative planning, PBL can easily transition into the PE class as well.

Benefits of PBL in PE

Since PE is typically defined as formal instruction in exercise and proper nutrition (Dyson & Casey, 2012), there is a great deal of room for interpretation from the teacher as to how to meet that goal with his or her students. Physical education classes do not look the same from school to school or even classroom to classroom because of the unique demographics of each K–12 school throughout our communities. Those unique demographics are also the reason PBL can be a great fit not only in core content courses but also in PE classes.

Empirical evidence has shown that PBL can engage and motivate students (Younker & Bracken, 2015; Liu, Lou, Shih, Meng, & Lee, 2010), foster collaboration (Liu et al., 2010), meet the needs of students with various skills (Bas & Beyhan, 2010; Liu et al., 2010) and learning styles (Cziprok & Popescu, 2015; Liu et al., 2010), and improve content knowledge (Hernandez-Ramos & De La Paz, 2009; Gubacs, 2004). These key attributes can dramatically enhance physical education programs. Project-based learning also addresses standards, including Common Core, emphasizing real-world applications,

critical thinking and problem solving (BIE, 2013a). Although Common Core standards primarily focus on math and language arts, integrating the standards in physical education is highly recommended. Magnotta and Darst (2015) stressed that there is a strong connection between PE and academic performance. Furthermore, athletes use reading, writing and mathematics in their daily lives, so it is only natural for physical educators to integrate Common Core standards into their curriculum.

Establishing a good PBL plan within the program can allow the teacher to meet each student at his or her individual level. Pieces of each project can be tailored (often by the students themselves) to address areas of strength or weakness for the learner. Students typically rate PBL lessons as more interesting or enjoyable because they can find their "niche" within each individual project (Hirca, 2011) and attend classes more regularly (Smith & Cook, 2012). There is the freedom for students to explore and find an area of interest within the project, and they take ownership of at least one piece of the project. By allowing students to explore, research and/or experience, PBL encourages a greater understanding of content and skills (Hirca, 2011; Smith & Cook, 2012) and leaves plenty of room for interdisciplinary integration. Project-based learning strengthens students' research and study habits, as well as their intrinsic motivation (Morgan, Capraro & Capraro, 2013). As a result, PBL builds and encourages habits that benefit students across content areas. The following section describes five steps for incorporating PBL like a pro. A PBL lesson example is also included.

Steps for Incorporating PBL Like a Pro

1. Determine your educational goal

The first step in planning for a PBL project is to ask yourself the following question: *What do I want my students to learn?* (Wiggins & McTighe, 2005). The answer should be directly related to your standards, followed by the creation of an educational goal.

For example, according to the SHAPE America National Standards for K–12 PE (SHAPE America – Society of Health and Physical Educators, 2014), "The physically literate individual applies knowledge of concepts, principles, strategies and tactics related to movement and performance" (Standard 2). A possible goal could be, "Students will be able to demonstrate their knowledge of concepts related to movement and performance."

2. Plan your driving question

In planning for a PBL project, the next step is to create a problem that is meaningful and challenging for the students (BIE, 2013b) and to align with the content area standards (Gubacs, 2004). According to Larmer and Mergendoller (2010), a project is meaningful if students perceive the project as personally significant (making a difference) and as fulfilling an educational purpose. The PBL project should provide an appropriate level of challenge (BIE, 2013b) in order to engage the students. If the challenge is too difficult, the students will likely become frustrated and will be unable to complete the task. If the challenge is too easy, the students will not have the opportunity to increase their knowledge and skills in a particular area. In addition, in the golden age of accountability, it is imperative that the PBL project is aligned with content standards. An example challenge using the goal from the previous section could be "With your knowledge of concepts related to move-

ment and performance, create an obstacle course for a younger grade.

3. Ready, set, go! Implement the PBL project

Now that you have an idea for your PBL project, it is time to set the PBL problem in motion. Since PBL is based on constructivist and student-led principles, your role in the PBL process is one of a facilitator. Share the PBL problem and driving question with the students. Also, provide the students with a list of guidelines and a timeline. Then help students create a plan of action for the project. In this plan of action, the students will decide how they will solve the PBL project.

4. Encourage peer-to-peer feedback

Peer-to-peer feedback is an essential element in PBL in an effort to improve the process and their end product or solution (BIE, 2013a). There should be built-in opportunities throughout for students to receive and provide feedback. In addition, it is recommended to have the group create group norms to ensure that students are respectful of one another when providing their ideas and offering feedback.

5. Assessment is key!

Assessment is imperative to the PBL process to ensure that students have learned what was intended to be learned. The assessment must be able to measure both the educational goal and the driving question. The types of assessment that can be used for PBL projects are endless and may include rubrics, checklists, quizzes and tests. It is also recommended that educators involve students in the assessment process through self-evaluation. According to Stiggins and Chappius (2005), "Student-involved classroom assessment opens the assessment process and invites students in as partners, monitoring their own levels of achievement" (p. 13).

6. Take the time to reflect and celebrate

Reflection is an integral part of the learning and teaching process. According to BIE (2013a), "Students and teachers should reflect on learning, the effectiveness of their inquiry and project activities, the quality of student work, obstacles and how to overcome them." There should also be a time for celebration, highlighting the successes of the PBL project.

Sample Lesson

A possible application of PBL in PE might be to have secondary or high school students plan, organize and implement a field day for an elementary school. After brainstorming and creating a list of appropriate activities and securing approval for those activities through the required administrators and teachers, the students then create a systematic plan for implementing the event. Additionally, these students participate as mentors and activity leaders during the field day event. Incorporating PBL into this activity allows PE students to have a comprehensive experience.

Final Thoughts

As previously mentioned, PBL has a variety of benefits that can have a positive effect on physical education, including engaging and motivating students, improving content knowledge, fostering collaboration, and meeting the needs of students with a variety of skills as well as learning styles. With a little practice and planning, PBL can be integrated into PE with ease and confidence.

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