

Activating Bodies of Knowledge: Improvisation, Cognition, and Sports Education

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Introduction

Whenever I commiserate about the dwindling hours students spend in gym class, I get a lot of sympathy. Almost without fail, the first concern voiced is excessive computer use, the second the rise in the incidence of ADD/ADHD. Never, however, is there any mention of retaining physical education courses for their cognitive benefits—well, that's why we're getting rid of them, right? Because (presumably) they don't equip learners with the skills they will need to think in the world. My point today is to open up a line of thought that questions that perspective, and that seeks to reclaim a more holistic, embodied notion of health, one which the very name "physical education" effaces. My lens for viewing this is improvisation, which I will define as *play within and with structural constraints minimally defined to provide a range of creative interpretation*, a definition that encompasses improvisation in music making, theatrical contexts, and, as discussed below, sports play alike. Group improvisation in these settings may be described as collaborative negotiation within rules structured to enable agency. Learning through improvisation entails a transformation in which learners change with the work they are co-creating. As a result, indeterminacy is a key feature of improvisation, and the constraints that guide responses, invite, may demand, creative problem solving in real time. Improvisation, as with sports play, requires players to think on their feet.

Regrettably, "dumb jock" stereotypes are so entrenched that sports play is seen as a matter of muscle and technique, the antithesis of higher-level cognition. This view of athleticism is reinforced by media coverage that asks little of player reflection, as well as by school policies that seemingly pit sports against academic courses. But more subversively, this faulty understanding may be a result of a focus in physical education that does not take into account the fluid, dynamic thought that constitutes action on the field. I will argue that this skewed view of sports education may be set aright by considering learning in light of the forms of interaction afforded by improvisation.

Both improvisation and sports play may be understood as requiring tactical thought. One way this has been framed is contrasting "knowing what" and "knowing how." Although the dichotomy between declarative and procedural forms of knowledge may be seen as overly reductive, I adopt it here to contrast forms of instruction that do not adequately integrate the two. My chief target, then, is instruction that does not offer learners opportunities to apply their knowledge, that does not actively raise questions about the contexts in which such knowledge is activated, negotiated, and made meaningful.

Below, I sketch out a few directions to direct inquiry. First, I draw upon the work of Francisco J. Varela, Evan T. Thompson and Eleanor Rosch and George Lakoff and Mark Johnson to consider the integral nature of embodiment. In order to consider how this dynamic may be made more prominent in sports education, I present salient features of improvisation, which give insight on cognitive aspects and interactive possibilities in learning. Finally, I introduce an approach that challenges the traditional form of physical education instruction, David Bunker and Rod Thorpe's Thinking Games for Understanding (TGfU) (Bunker and Thorpe; Light and Fawns; Kirk and MacPhail).

Embodiment

By situating knowledge as an instantiation of embodied action, both improvisation and sports play emphasize the interdependence between body and brain. Varela, Thompson and Rosch seek to bridge the Cartesian gap between cognition and embodiment by drawing upon Buddhist philosophy, which sees reflection as a basic aspect of experience. The theory of enactivism they articulate offers a holistic understanding of embodied cognition, one that is "not the representation of a pregiven world by a pregiven mind but is rather the enactment of a world and a mind on the basis of a history of the variety of actions that being in the world performs" (9). The enactive perspective regards commonsense knowledge, or *phronesis*, as "difficult, perhaps impossible, to package into explicit, propositional knowledge," a form of understanding that seems to be more a matter of "knowing how" rather than "knowing that" (148). We gain this knowledge by reflecting upon accumulated experience instead of referring to abstract rules. Varela, Thompson and Rosch claim that in order to account for such commonsense knowledge, "we must invert the representationist attitude by treating context-dependent know-how not as a residual artifact that can be progressively eliminated by the discovery of more sophisticated rules but as, in fact, the very essence of *creative cognition*" (148, italics in original). Lakoff and Johnson hold that embodiment is a constitutive, inseparable facet of our intellect. According to their theory, we share a common neural architecture that does double duty. The computations in which our neurons are engaged form the basis not only for perception and bodily movement, but rational thought as well (16). Physical anthropologists and evolutionary biologists claim that the hand and the brain co-evolved, a feedback

loop that may in part be a result of overlapping areas in the brain associated with control of the hands and gesture and areas associated with verbal language expression (Hanna 494). Research in neuropsychology and cognitive neuroscience in the rapidly growing field of “embodied cognition” reveals the complexity of these feedback loops, which fleshes out our understanding of “learning by doing.” It is this fluid, exploratory process that resonates so clearly with the dynamics of improvisation.

Features of Improvisation

It is worthwhile here to review a number of distinctive features of improvisation, each of which may be seen to enhance pedagogical practice:

1. the focus on emergent context, embodiment, attention, and engagement
2. the application of previously practiced skills in complex environment, and requisite readiness for execution
3. the centrality of decision-making processes (problem solving skills) necessary for acting in indeterminate situations
4. the search for possible ways to behave within loosely constrained rules (in addition, improvisation deals with the limits, interpretations and construction of those rules)
5. the foregrounding of the success of the collective through shared responsibility and mutual support
6. the negotiation skills necessary to achieve collaborative aims
7. the development of critical thinking, fostered through the use of ongoing feedback as a method
8. the regard for skill as an artful and creative expression of agency
9. the possibilities for learners to teach each other in a co-constructed community of practice

As I have discussed elsewhere (Ross 2010), fostering these dynamics in play would help shift classroom participation from more simplistic response to purposeful, creative engagement. I am claiming here that the reiteration and exploration of these cognitive skills in sports play may help promote transfer of improvisation strategies to academic contexts as well.

Thinking Games for Understanding (TGfU)

Traditional physical education has focused upon techniques, upon what may be regarded as training rather than as education (for a provocative look at the distinction between training and education, see Carse 17-19). Bunker and Thorpe critique this type of physical education, which results in “the production of supposedly “skilful” players who in fact possess inflexible techniques and poor decision making capacity” (7). The model they first proposed in 1982 seeks to foster strategic thinking and problem solving. In this approach, instructors modify games to foster specific strategic understanding. These enrichments offer students contexts in which they are able to focus upon both physical and cognitive skills tailored to suit their developmental levels. Bunker and Thorpe state that:

Unlike traditional teaching methods this approach [Teaching Games for Understanding] starts with a game and its rules which set the scene for the development of tactical awareness and decision making, which, in their turn, always *precede* the response factors of skill execution and performance. (Bunker and Thorpe 9, emphasis added)

In their proposed curriculum model for “teaching for understanding,” Bunker and Thorpe make the claim that “games, unlike other activities in the Physical Education Curriculum, present problems of ‘what to do?’ and ‘when to do it?’ and not just ‘how is it done?’” (7). This leads students to critically question the context in which their learning takes place and the situations in which this knowledge may be applied. By foregrounding these negotiated, subjective elements to game-play, sports education instructors go beyond techniques, prompting learners to deeper understandings of the links between cognition and embodiment.

Drawing upon the work of Linda L. Griffin and Joy I. Butler, Ellen Singleton details the ways in which the TGfU approach fosters engagement in harmony with constructivist understandings. In this approach, students

begin with their previous learning experiences intact. They are encouraged to engage with content intellectually and kinesthetically and to actively participate in solving problems, discovering solutions, and experimenting with techniques and tactics. Students are encouraged to collaborate with others, and to use prior knowledge as they interact with new knowledge to develop more complex understandings about a given topic. (Singleton 332)

Improvisation-based curricula complement constructivist frameworks for learning as well. These grow out of the notion that knowledge of the world is not internalized as a given entity but given shape and significance by the individual. Teaching praxes need to take into account this fundamental indeterminacy by making a place for diversity in student expression and learning styles.

A key feature that TGfU shares with improvisation is this unpredictability. Singleton contrasts the varieties of individual interpretation promoted in TGfU with the convergent thinking dictated by traditional methods of games instruction. Students are encouraged to find their own solutions to the challenges that arise in play, and teachers must be able to draw upon their own knowledge and sensitivity in responding to the indeterminacies of play as it unfolds.

TGfU goes beyond a convergent, over-simplified view of sports play as motor training to an understanding of games as a context for the promoting cognitive flexibility. This approach to sports education fosters critical thinking skills by helping players analyze and articulate strategies appropriate to the exigencies that occur in game play. It emphasizes a tactical orientation toward knowledge and its strategic deployment. Strategic knowledge is a form of procedural knowledge, which Katherine T. Thomas and Jerry R. Thomas define as knowledge “used to generate action” (299). Strategic knowledge has not been among the chief concerns for traditional physical education classes, which have focused instead upon military exercises, drill, and calisthenics (Singleton) and winning techniques for sports competition. In traditional physical education, David Kirk and Ann MacPhail note, “teachers and coaches rarely made connections between the technique practices and how and when these techniques should be applied in game play” (Kirk and MacPhail 2).

Instead of the accumulation of isolated skills, TGfU focuses on tactical decision-making processes as they emerge in dynamic contexts, an approach that “offer[s] a progressive way to develop the type of tactical depth only experienced by skillful performers” (Hopper 6). Games are presented first to the learner as a set of primary principles. For example, games classified as invasion/territory games, such as soccer, have associated strategies, such as getting and keeping possession of an object, getting the object within the target area, etc. (Hopper 5). Rather than requiring learners to practice rudimentary techniques before playing or asking them to compete in a varsity level soccer game, teachers using the TGfU approach might modify the size of the field, or begin with players moving toward the goal by throwing and catching. These modifications help players learn through play within context-rich contexts that fosters an awareness of the necessary skills. As Timothy Hopper notes, “Performance comes not from a reliance on technical skills but from a foundation of game play awareness leading to the adoption and adaptation of technical skills within the strategic and tactical demands of a game” (7).

In TGfU games are grouped in families. Critical thinking is encouraged by asking students to look for simple tactics that can be derived by considering similarities of games within families, and incorporate skills previously learned in other games. Game modification and discussion interview to explore physical and cognitive solutions to problems posed within the game. These lead to more in-depth understandings of skills and tactics that can be brought to bear.

A tactical approach to learning opens students to a perspective of knowledge as context-dependent, the pragmatic knowledge Aristotle called *phronesis*. Learners need to recognize and utilize knowledge appropriate to the unfolding context in which it is employed. This a fundamental feature of a view of learning through apprenticeship described by Jean Lave and Etienne Wenger, which they have termed “legitimate peripheral participation.” Their theory of situated learning not only offers a model of learning which Kirk and MacPhail claim has features in common with TGfU, but has much in common with the apprenticeship roles that often occur in jazz as well. In both, knowledge is not understood as a compendium of techniques; it is, rather, a dynamic that is contextually embedded, and learning comes about through problem solving in meaningful contexts in which it is deployed. Lave and Wenger address this directly, stating, “Learning itself is an improvised practice: a learning curriculum unfolds in opportunities for engagement in practice. It is not specified as a set of dictates for proper practice” (93).

A learning curriculum consists of situated opportunities (thus including exemplars of various sorts often thought of as “goals”) for the improvisational development of new practice (Lave, 1989). A learning curriculum is a field of learning resources in everyday practice *viewed from the perspectives of the learners*. (Lave and Wenger 97, italics in original)

Kirk and MacPhail argue that the TGfU model may be improved upon by reframing “tactical awareness” as “strategic thinking” because this latter term emphasizes the “focused, intentional, relational, goal- and action-oriented sense of what the learner does in the process of using declarative and procedural knowledge” (186).

The dialogic, collaborative aspect of TGfU, and the way it guides the flexible adoption of constraints, is a key feature which ties it to improvisation. This dialogue fosters “*structural understanding*, in which the concept of *organization* of the elements of the problem is basic to understanding its resolution” (López et al. 50, emphasis in original). The emphasis on dialogue, in both TGfU and improvisation, sensitizes players to relation and to shared meaning-making—and it is this sense of relation that lies at the heart of all learning.

Conclusion

As a subject for study in school, body awareness and physical potential needs to be addressed in the broadest sense for effective physical education. As many physical functions are taken for granted, physical education is too easily limited to exceptional feats of coordination or divisive forms of competition, which not only exclude the refinement of daily motor skills, but also marginalize those less adept.

Teaching Games for Understanding shifts the focus of game playing from skill execution to situated cognition, and acts as a structured context in which improvisation becomes a constitutive element. In contrast to learning environments that are divorced from immediate exigencies in the topics under discussion, sports play encourages players to “think on their feet,” both literally and figuratively.

Improvisation, like sports-play, foregrounds procedural memory in dynamic, embodied response. Both call upon participants to see their actions as part of an unfolding context, to recognize their agency as informed by collaboration and interdependency. Both present embodied contexts in which students may “interrogate, analyze, interpret, and construct a wide variety of knowledges” (Singleton 332). In both, individual subjectivities are integrated in the creation of what may loosely be called the “work,” the artistic improvisation or the work of curricula.

Given the complexities and awareness of improvisation, its indeterminacy and imperviousness to “method,” it is not surprising perhaps that teachers have generally opted for more direct forms of instruction. As Griffin and Butler note, “It has been apparent for many years that teachers prefer to equip themselves with material to teach techniques because they have tended to assume that these are more predictable and easier to teach than tactics” (Griffin and Butler 74, qtd. in Singleton 330).

The recognition of the value of the dynamic modes of thought activated in improvisation warrant a more careful look at the forms of engagement in which these aspects are enhanced, engagement that challenges teachers and learners alike.

In conclusion, I have argued that traditional physical education has focused upon the training of techniques and neglected the cognitive demands of sport play. As a result, sports education has not been sufficiently considered as a learning context. The Teaching Games for Understanding approach, and modifications that incorporate situated learning theories, help to address a historically skewed view of physical education as primarily physical exercise by foregrounding the cognitive and negotiated aspects. Sports play following this approach provides vital opportunities for student learning, for it offers them opportunities to improvise—to collaboratively negotiate a co-constructed field of play where they must strategically deploy knowledge. These dynamic aspects of learning need to be fostered in schools, not only in sports education classes but in content areas as well.

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