

Part Three

Learners and Learning

Theories of Learning

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Why do we need to learn about learning theories? As long as my students are active, on task and not causing any problems, I am doing my job . . . right?

A key measure of teacher effectiveness is certainly that of student engagement. Yet engaged students need also to be learning something substantial, meaningful and long-lasting. In other words, the focus of learning, which is framed by the curriculum, needs to be considered carefully along with how things are learned, which is a process of gaining knowledge, skills and dispositions via instructional intent. Learning theories guide our considerations of what should be learned in Physical Education and how targeted knowledge, skills and dispositions can be best acquired by having us examine prior questions about what is worth knowing. These theories, as we shall see, help us pinpoint the kind of learning that is distinctive to Physical Education and the instructional means of enhancing such learning.

What Is Learning?

Before we deal with the abstractions of theory, first consider how you have learned to become physically educated yourself.

Reflection

Describe a significant learning experience from your childhood that involves the enhancement of your movement proficiency. Write a few paragraphs detailing the learning context, who was involved, how you learned, and what indications you had that you were subsequently more proficient than before.

Let us keep this self-analysis of learning in mind as we now engage with the behaviourist, cognitivist and situated learning theories as previously categorized by Greeno et al. (1996). As well as our offering of the organic perspective, which according to Davis et al. (2008), recognizes a more complex system of interactions. Each one, as summarized below carries us some way toward understanding what is at the heart of curriculum and instruction in Physical Education.

Key Points

1. The Behaviourist perspective relates learning to strengthened associations between stimuli and responses that result in observable changes of behaviour.
2. The Cognitive perspective equates learning with mental processing of information, problem solving and language acquisition.
3. The Situated Learning perspective defines learning in terms of the dynamic interactions that occur within a group or community.
4. The Organic Learning perspective is related to a complex, evolutionary interaction between individuals, communities and the world in which we live.

These theories, or ‘perspectives’ as we are calling them in this chapter, get a bit confused in practice. We rarely act as true cognitivists, behaviourists or pragmatists; instead we may borrow a little from each perspective in lesson preparations, instructional choices and assessment procedures. Behaviourism may be in evidence in the classroom management strategies used to help students stay on task as they move towards pre-set learning outcomes or goals. Cognitivism may be evident in the processing of information involved with skill acquisition (i.e. the acquiring or inputting of knowledge). Situated learning may involve creating a realistic learning context within a game or commensurate performance setting. Finally, organic or complex approaches to learning may be inferred when teachers attend to the overall maturation of the student, the class dynamics and the environmental repercussions as a whole.

At this point, you might think, ‘That makes sense. Why would I need to explore these approaches to learning any further?’ One reason for doing so is that you may find that you skew your lessons in terms of a theoretical preference, with 75 per cent of the time dedicated to motor skill development set up within a cognitive framework and practised behaviouristically, 25 per cent of the time spent in the authentic or situated learning contexts or game play,

and little or no time teaching the organic pairings and patterns of movement acquisition that remind us of our evolutionary existence (as explored in Lloyd and Smith [2005] and in Smith and Lloyd [2006]). We hope that, by the end of this chapter, you will question the planning and delivery of Physical Education lessons so that you may add variety and depth to your students' learning experiences.

The following overview of the four learning perspectives is necessarily limited to what a developing Physical Education teacher may find helpful. Our intention is to provide you with enough theoretical information to help you reflect on your teaching practice so that you may optimize your students' learning experiences. We discuss each theoretical perspective in turn and in particular order of attending to the most salient aspects of learning to move. These perspectives are, therefore, explanatory of how Physical Education is taught presently and descriptive of how things might be done differently. Good theory is, in other words, a guide to best practice.

We use metaphor and symbols to simplify and thus help you remember the main categories of learning theories. Although somewhat reductionist in nature, a symbol attached to a learning perspective gives something tangible to consider when describing the learning process. It serves also to prompt some questions about the influence of certain learning metaphors on Physical Education practice. As Lakoff and Johnson (1999, p. 561) point out, many learning metaphors have to do with the assumption that the body is a 'mere vessel for a disembodied mind'. The metaphors that underlie certain theories of learning and that assume that one is not thinking unless using language, that thinking is akin to computational reasoning, that ideas are things to be stated, and that physical activity is the consequence of mental reasoning, need to be questioned. These metaphors need to be challenged if we are to appreciate more fully the learning that is distinctive to Physical Education.

The behaviourist learning perspective is most often represented by the metaphor of the 'blank slate' (otherwise known in its Latin form as the 'tabula rasa'). Within the Physical Education context, however, it seems more fitting to equate learning with the observable movements of the outer body. Like a blank page or a white board, the body may also be represented by an inanimate mass of clay that is ready to be written upon and moulded by the experiences of life that will be pressed upon it. The positive side of the blank slate assumption is that any learner can literally learn anything. Dispositions, talents, or innate abilities do not account for changes in behaviour. Basically, every student has an equal opportunity to learn as long as the connections between stimuli and responses are appropriately strengthened.

There are several behaviouristic assumptions and implications that apply to the learning context (Ormrod, 2006):

- the environment influences learning;
- learning is defined in terms of 'observable events' that can be thought of in terms of 'stimuli' and 'responses';
- the timing or 'contingency' between stimuli and responses play a significant role in strengthening associations.

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One needs only to allow young children access to gym equipment without any prior instruction to realize the truth to this first behaviourist assumption! Balls, bats, climbing frames and swings stimulate children's activity in ways that challenge the teacher's ability to regain class control. Stimuli and responses need to be matched and tempered by ordering of the environment. Learning is then a planned, observable event that is the consequence of conditioning the relationship between stimuli and responses. This conditioning can be achieved through 'classical conditioning', which begins with a pre-existing relationship between an unconditioned stimulus (UCS), say meat in the case of Pavlov's dogs, giving an unconditioned response (UCR), which is salivation, and associating, for instance, the ringing of a bell with the presence of the meat. Very soon the bell stimulus produces the salivation. Classical conditioning may occur in physical education when unconditioned responses such as fear, anxiety or even extreme happiness are associated with neutral stimuli. Consider the example of picking teams. On one or several occasions, Mary is picked last for a sports team (UCS) and gets anxious when neither captain wants her on their team (UCR). The next time the teacher says, 'It is time to organize yourselves into groups', a conditioned stimulus (CS), Mary experiences anxiety, the conditioned response (CR). Generalization occurs with classical conditioning when the conditioned response spreads to another similar context, for example, when Mary experiences anxiety whenever it is time to do work in teams or groups in any subject or class. Fortunately as Pavlov discovered, 'conditioned responses don't necessarily last forever (Ormrod, 2006, p. 300) and we as teachers can intervene to shape positive feelings in the Physical Education environment.

Reflection

Have you experienced classical conditioning in the physical education context? Complete the following:

UCS: _____ UCR: _____

CS: _____ CR: _____

Learning can be explained through 'operant conditioning' when teachers unconsciously or consciously reinforce student behaviours, and those behaviours increase in frequency. Formulated by B.F. Skinner, the principle of operant conditioning is: 'A response [R] that is followed by a reinforcing stimulus [S] . . . is more likely to occur again' (Ormrod, 2006, p. 301). In the Physical Education context, having immediate activity at the beginning of a lesson provides an example of how to reinforce the association between arriving in the gym on time or early (S) with an enjoyable movement experience (R). Reinforcers also produce negative or undesirable behaviours, such as when students put up their hands to demonstrate a skill but are never called upon. Consequently they may either stop volunteering altogether or engage in disruptive, attention getting behaviours. Praise and attention given to each and every student shape demonstrably the learning environment.

Reflection

Have you experienced operant conditioning in the physical education context? Complete the following:

S: _____ R: _____

Reinforcers come in many forms. Student behaviour can be shaped by concrete objects (such as a sticker or money), social interactions (smiles, shared joy), activities (free time) and positive feedback (specific verbal praise) (Ormrod, 2006). As students get older, the contingency or timing between a behaviour and a reinforcer can increase. An older student may be motivated to work hard if free time is given at the end of a week, whereas a younger student works best if the reinforcer is immediate and tangible. Punishment, however, is not directly related to operant conditioning since it produces a decrease in the frequency of a response. If punishment is required, it can take the form of presenting an undesirable stimulus or removing a pleasant one (such as giving 'time out' from enjoyable class activity). Otherwise pleasing movement experiences can also be used as punishments, such as when push-ups or laps are assigned to disruptive students and a dislike for the prescribed activities necessarily develops. Alternatively, a 'time out' may be exactly what a student wants if the activity is not desirable.

While terms like 'athletic conditioning' are used in physical education, we need to be somewhat wary of applying behaviourist learning theory. Drawing implications from animal research may be our first clue to such wariness, especially in light of recent thinking about animal consciousness (Calarco, 2008; Haraway, 2008). Behaviourism implies that students who continue to work towards goals but are dependent on cues, feedback or rewards from the teacher, remain externally motivated. In fact, rewards to complete tasks may take away from the quality of the learning experience as students aim to 'do things quickly rather than well' (Ormrod, 2006, p. 324). If all that is recorded and rewarded in fitness testing, for example, are the quantitative data associated with numbers of repetitions or the distance covered within a set period of time, then students are not likely to develop movement quality through the enjoyment of pursuing physical activity for its own sake (Smith and Lloyd, 2007).

The Mind: A Cognitive Learning Perspective

The present day metaphor that best represents the field of cognitivism, sometimes referred to as 'mentalism' (Davis et al., 2008) is the computer as it is the most common device that represents a correspondence between the internal and external world. Actions of learning, in keeping with this metaphor, have to do with inputting, storing, processing and retrieving information. Earlier metaphors for learning within this theoretical perspective include 'sculpting, painting, writing, telegraphing, photographing or filming' (Davis et al., 2008, p. 96),

but these metaphors of mimetic representation have been replaced by the computer metaphor of cerebral data processing. Learning is considered a function of a disembodied or pure mind that discounts the influence of the senses. The main principle of cognitivism is that the acquisition of knowledge is attributable to reason alone, independent of the external senses of sight, taste, touch, feel and smell (Greeno et al., 1996) and the internal senses of proprioception and kinesthesia.

Although cognitivism can be considered the exact opposite of behaviourism, stressing the processing of the mind instead of the observable actions of the physical body, these two learning perspectives are actually closely linked. Both rest on the Cartesian assumption that the mind is separated in substance and function from the physical body. The motor skill approach to learning, for example, is based on the assumption that the human body is a machine and that learning relates to the acquisition of knowledge about how to move the body efficiently, skilfully and with goal directedness (Magill, 2001). What is notably missing is any recognition of the 'physical foundations of mindfulness' and those moments in physical education when 'our body and mind come together as a unified phenomenon' that experiences itself both mindfully aware of and deeply connected to the world" (Johnson, 2000, p. 131). Call them moments of deep play, flow, peak experience, or even being in the zone. These notable experiences of physical activity are difficult to compute!

The separation of mind from body within the cognitive orientation is surprising since the roots of cognitive development theories, traced back to Jean Piaget in the 1920s (Flavell, 1998), involved explorations of children in motion, connecting with the external world. Coined 'constructivism' where 'children construct knowledge from their experiences' (Ormrod et al., 2006, p. 17), Piaget's theory describes how thought develops: first of all, from the physical, or sensorimotor stage of stimulus-response operations; second, in the pre-operational stage of initial schematic and symbolic representations; third, in the stage of concrete operations involving logical thought; and fourth and finally, in the stage of formal operations which signals adult reasoning and the capacity to problem solve and engage in abstract, hypothetical thinking processes.

Piagetian theory continues to influence physical education. The widespread advocacy of 'developmentally appropriate Physical Education practices for children' is premised on an understanding of development patterns and stages in all three domains (psychomotor, cognitive and affective) (NASPE, 1992; Gallahue and Donnelly, 2003). A complementary perspective, the conceptual approach, emphasizes the how and the why of movement, which helps enhance the students' understanding of movement and its underlying principles. The assumption that children learn in stages, although many contemporary theorists discount a linear progression from one discrete stage to the next, indicates that children benefit from sensori-motor and concrete experiences when learning new things. We call this 'hands on learning' and it is particularly appropriate in physical education where learners need to get a feel for the touch, weight, pressure and release of passing and catching a ball before such actions are subject to the schemas and decision-making of game play.

The Community: A Situated Learning Perspective

The situated learning perspective, often attributed to Jean Lave and Etienne Wenger (1991) who describe learning in relation to legitimate participation within a community of practice, can be traced back to the Russian psychologist Lev Vygotsky. He, like Piaget, also studied cognitive development in the 1920s, but unlike Piaget's individual approach to cognitive development, Vygotsky believed that learning was a consequence of human interaction (Vygotsky, 1986). What has particular relevance for a physical education theorist is Vygotsky's assertion that action is a form of thought. Rather than localizing thought to the mind (which is often assumed to be located in one's head), he claimed that we are observing 'the real thinking of a child' when that child is engaged in the flow of activity (p. 55). With respect to cognitive development, however, Vygotsky shared the same tendency as Piaget of moving away from physical action, considering it to be 'internalized' over time and represented in language.

Lave and Wenger (1991) elaborated further on the sociocultural approach to learning in moving away from Vygotsky's notion of internalization. They felt that a focus on internalization makes a 'sharp dichotomy between inside and outside', suggesting that 'knowledge is largely cerebral' and that the individual is a 'nonproblematic unit of analysis', with learning being mostly a 'matter of transmission and assimilation' (Lave and Wenger, 1991, p. 47). By contrast, learning in a situated context is defined as 'increasing participation in communities of practice' which take into account 'the whole person acting in the world' (p. 49).

Many physical education theorists have caught on to the benefits of the situated approach to learning games and sports. Researchers such as Catherine Ennis (2000) and Daryl Siedentop, Peter Hastie and Hans van der Mars (2004) promote concepts such as 'care' and 'peace' through sport education models. Low skilled students, for example, may learn by caring for the highly skilled in assuming roles that are helpful to the team such as keeping score. Highly skilled students, in turn, may care for the low skilled players by assisting them with skill development. The Teaching Games for Understanding (TGfU) also offers a situated approach to learning as it advocates learning tactics and skills within the playing of games and sports (Butler and McCahn, 2005). Within the TGfU approach, students have an opportunity to experience the joy associated with game-play right from the very beginning of a Physical Education lesson (Lloyd and Smith, forthcoming).

Situated learning theory thus poses some important considerations in Physical Education programming. First of all, it suggests that learning is essentially interactive, that it involves playing and moving with objects, with bats and balls, to music, and with other players and movers who share the space and time of the gym, the playing field, the pool or the dance studio. Becoming physically educated is very much a process of learning to move, with what is now fashionable to call 'bodily-kinesthetic intelligence' (Gardner, 1993), but in concert with others who are engaged in the communities of practice we call games, sports, gymnastics

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and dance. Second, these theories suggest that learning is motivated by the experience of engaging in activity that is 'autotelic'. Not merely motivated by stimulus-response connections, nor simply guided by cognitive decision-making, learning is sustained by the experience of movement itself and, particularly, by the experiences of 'flow' that are intrinsically rewarding (Csikszentmihalyi, 1990; Jackson and Csikszentmihalyi, 1999).

Reflection

Reflect on your significant learning experience and describe moments of learning that extended beyond the conditioning of a drill (behaviourist perspective) or a decision that was made (cognitive perspective). Specifically, think of a moment where learning was connected to the interaction between others, the environment, and you.

The World: An Organic Approach to Learning

The apple is a common symbol for schooling or learning. Often associated with a gift for a teacher, an apple can also represent the complex systems of interaction (Davis et al., 2008) that lead to its gestation and presence in the classroom. It symbolizes learning that does not just occur in the here and now, but is anticipated, prefigured, configured and destined to bear fruit here, there and elsewhere.

The common thread between the previously discussed 'situated learning' perspective and the 'complex' or 'organic' approach to learning, is that legitimate participation in a community of practice not only maintains knowledge of a repertoire shared by others, it presents 'opportunities to elaborate that repertoire' (Davis et al., 2008, p. 171). Learning, within this fourth perspective, is not only based on participation but the expansion or overall growth of the learner, community and place wherein all are situated. Knowledge is no longer a noun or a thing one must acquire (as in the cognitive paradigm), rather, 'knowing is about who you are, what you are doing, and it unfolds within interlaced sets of political, social, and environmental conditions', hence what is emphasized is the 'vibrant sense of connection among people and between humans and the more-than-human world' (Davis et al., 2008, p. 11).

The implication for learning within physical education of this theoretical perspective is that we ought not confine our interests to simply the knowledge, skills and dispositions required for playing games and sports well, or for excelling in gymnastics and dance, but that we consider much more broadly and interconnectedly our overall development as healthy, vibrant, vital individuals within expanding communities of practice and within the animate world at large. In contrast to the way curricular documents present fundamental movement skills in disconnected units, we might tap into the natural ebbs and flows of movements as they occur in organic, developmental pairings (Lloyd and Smith, 2005; 2006). Basic locomotor skills of walking, running, hopping, and skipping, for instance, might be better organized in

terms of the developmental dynamics of impulsion, propulsion and resistance. The manipulative skills of throwing, catching, kicking, and so on might be better organized as reciprocated motions of sending and receiving. And the body agility skills of twisting, turning, balancing, bending, stretching might be better understood as motions that extend beyond the span of one's limbs to a connection with others and the wider world of movement possibilities.

Let us state this more simply. Beyond attending to the knowledge, skills and dispositions required for active participation in games, sports, gymnastics and dance, we can also attend to that which enlivens this participation. The complex or organic perspective on learning suggests we consider the fundamental properties of breath, balance, rhythm and feeling that animate movements within these disciplines and that bring us in touch with the animate consciousness we share with others (Sheets-Johnstone, 1999). As we depart from the mechanical learning of motor skills to create opportunities to experience dynamic patterns found within games and life, we consider cultivating vitality, energy, flow and synergy as the primary purposes of Physical Education (Smith and Lloyd, 2006).

The organic approach to learning not only puts us in touch with the physicality of learning, but more specifically, with the organic, dynamic nature of thought itself. No longer reduced to body objects, computers or even individuals within communities, we connect to the vitalities, flows, energies and synergies of an organic world of which we are fundamentally, motorically, kinetically and kinesthetically a part.

Reflection

Choose a lesson plan that you have recently developed for a Physical Education class. Analyse the planned activities and describe the theoretical assumptions you made with regard to student learning. If you were to approach the lesson from a behaviourist, cognitivist, situated and/ or organic learning theory perspective, what changes would you make?

Learning More

Other sources that delve deeper into situated (Lave and Wenger, 1991) and complex (Davis et al., 2008) theories of learning are available. There are also textbooks geared to developing teachers that give practical examples of how theories of learning and principles of education psychology can be applied in educative settings (Ormrod et al., 2006; Ormrod, 2008).

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