# *Who Says You Don't Have to Think in Gym? Fostering Critical Thinking in Physical Education*

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Improving student thinking has long been a recognized goal of American education, and skillful thinking has been listed as a priority in many schools and school districts across the country. Teachers have identified improving thinking as their number one educational goal (6), and the recent Carnegie report (4) strongly recommends that students should "learn to think critically through mastery of an appropriate body of knowledge." Students know how to think; the concern expressed is that students need to be able to think more effectively (i.e., more critically) than is typically done.

To date, most critical thinking research and discussion has focused on traditional classroom settings. Very little information exists about applying critical thinking in the physical education setting. Many people are still of the opinion that one "turns off the brain" when entering physical education class and then "turns it back on" when returning to core academic classes. Though faulty, this stereotype persists. There is no reason that critical thinking cannot be incorporated into teaching physical education. In fact, the physical educator's movement-oriented environment provides rich opportunities for fostering critical thinking. This article is an attempt to examine critical thinking and suggest ways in which it may be utilized on the physical education setting.

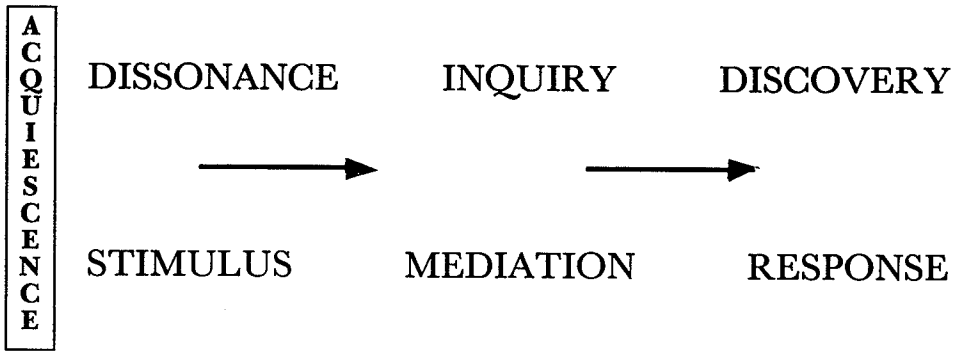
McBride (7) has defined critical thinking in physical education as reflective thinking that is used to make reasonable and defensible decisions about movement tasks or challenges. Reflective thinking refers to the ability to literally "look back" and draw from both general knowledge and domain-specific knowledge to generate information needed to address a critical thinking problem or task. General knowledge refers to an individual's own knowledge base and domain-specific knowledge is the knowledge one posseses relative to a particular field of study (1). Reasonable implies that some clear and focused process is used, while defensible refers to being held accountable for the decision(s) made from the critical thinking process.

In order to evoke critical thinking, students must first be given the opportunity to inquire. Only during inquiry can such critical thinking skills as assessing information, comparing, contrasting, generating and testing hypotheses and the like, be stimulated and activated. The student is taken out of the traditional stimulus→response mode of learning and is required to mediate a problem (think about) rather than merely committing facts to rote memorization. Figure 1 presents a model based on Bruner's (2) and Festinger's (5) learning models that effectively invoke the critical thinking process.

According to Festinger (5), a cognitive dissonance must first be created which, in turn, stimulates within the learner the desire to inquire and seek solutions. The student must move away from cognitive acquiescence (to accept passively) and toward cognitive dissonance (to create an active disturbance). Without the mediation phase (the time needed for the brain to *research*), the learner does not engage in critical thinking and regresses to a stimulus-response state of learning.

The conduits for teaching critical thinking are already in place. McBride, Gabbard, and Miller (8) present and discuss a selection of student-centered teaching models that are appropriate for fostering critical thinking in physical education. Bruner, Goodnow, and Austin's (3) Concept Attainment Model develops a learner's inductive reasoning as well as concept development. Hilda Taba's (10) Inductive Thinking Model is designed to have the learner identify and then categorize data, based on related characteristics. Once identified, students are then required to draw inferences and make generalizations about these data. The final component to Taba's model involves making predictions about the information gleaned from the first two steps. In this phase,

*Figure 1*



students generate hypotheses and are held accountable for supporting these hypotheses.

Perhaps one of the most well-known teaching models in physical education is Mosston and Ashworth's (9) spectrum of teaching styles. These teaching styles are placed on a continuum from being highly teacher-centered to highly student-centered. The first five styles (command to inclusion) are characterized as being more teacher-centered. That is, the teacher makes most of the important decisions regarding subject matter and the conditions requisite for student learning. The importance of teacher demonstrations that serve as models (correct solutions) to the students, is emphasized.

It is however, the student-centered teaching styles that are emphasized for fostering critical thinking. The learner must be taken across the 'Discovery Barrier' (9) and into the critical thinking zone. *Guided discovery*—where students are led in a step-by-step process of questions by the teacher to a predetermined solution about a problem or learning task—has merit for stimulating critical thinking. The teacher literally "guides" the student to a correct solution. The teacher does not provide the solution to the learner—rather, students are permitted to "discover" the solutions for themselves.

The *divergent style* of teaching also fosters the development of student critical thinking. The teacher presents a problem or challenge (i.e., creates the cognitive dissonance) to students who then seek to find a solution. With the divergent style, numerous acceptable solutions are permitted as long as the criteria established by the teacher are met.

As mentioned previously, physical education can provide a rich source of critical thinking opportunities. Using the guided discovery approach to teach the long jump represents just one such opportunity. Although the teacher would already have determined the proper mechanics of the skill (form), students would be challenged to discover ways to jump for distance. With guidance from the teacher, students would be allowed to explore variations related to speed of approach, length of approach, arm action, leg position on takeoff, landing, and other variations in technique. Prompting students with questions that focus on "What if," or "How might,", etc. could guide discovery by allowing students to compare, contrast, generate hypotheses and, of course, test them out.

The 'Human Knot' represents a wonderful opportunity to foster critical thinking using the divergent teaching style. Students in groups of 10-12 come together and shake hands with someone opposite them (first left hands, then right hands) so that the group literally becomes a giant knot. The challenge is to untangle the group without letting go of each other's hands and then form a circle. Here, opportunities for numerous solutions are presented. The teacher serves as a resource person by answering questions and providing encouragement. Perhaps the most important criterion for the teacher to exercise is patience—patience to allow the students the opportunity to critically think and solve the challenge.

Critical thinking skills can be employed when teaching traditional sport skills. Once students have been exposed to the domain-specific knowledge (i.e., key teaching points, rules) requisite for the skill, the teacher can employ feedback that utilizes questioning techniques that stimulate critical thinking. Questions posed by the teacher can be helpful by serving as prompts or cues to guide students in their critical thinking.

For example, if a student is committing an error while performing the basketball set shot due to a lack of follow-through, the traditional way of providing feedback has been for the teacher to intervene directly and tell the student what is being done incorrectly. Rather than simply telling the student the correct solution (break the wrist), the teacher, through questioning, can create a cognitive dissonance and thus stimulate critical thinking. The student will have to use domain-specific knowledge about the skill to analyze the performance in order to identify the error.

A guided discovery approach would work very effectively here: "Is there appropriate spin on your ball?"; "What causes the ball to spin?"; "What do you think you need to do to produce spin?" and so forth. These questions will cause students to analyze their performances by utilizing previously taught information to compare, to contrast, and to think critically about the performance in order to identify the error.

Why is it important to foster critical thinking in physical education? Aside from the educational surveys and reports cited during the introduction, students will need to be able to perform higher-level skills of thinking in order to make the kinds of decisions necessary to survive in a rapidly changing world. In an information-processing society, simply learning the skills of reading, mathematics, and writing are no longer enough to ensure survival in the workforce. Students must be taught how to analyze and synthesize facts, compare, contrast, generate and test hypotheses—in short, to think critically. Preliminary results from first implementation of the new Texas Assessment of Academic Skills are not encouraging. Nearly one-third of the students taking the test reportedly failed one or more of the components. If students are to be held accountable for the acquisition of critical thinking skills, then teachers need to ensure that this component is included in *all* areas of the curriculum, and physical education should be no exception. Just as the fundamentals of movement, fitness and motor skills are taught, so too must the fundamentals of critical thinking be fostered. This effort needs to be consistent, from elementary through junior high and especially senior high school physical education programs. The opportunities are available in physical education...they need to be exploited.

*References*...continued on p. 47

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### *References*


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