Guided Discovery: A Twentieth Century Model Proves Useful in the Twenty-First Century Classroom

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As we entered the twenty-first century, physical activity levels across all demographic groups in the United States were down, and that trend continues today. Low levels of activity and outright sedentary behaviors are associated not only with reduced physical health (United States Department of Health and Human Services [USDHHS], 2000) but also with decrements in psychological well-being, including increased anxiety and depression (Weinberg and Gould, 2011). With the increase in technological devices brought to market, television channels available, and social media options, young people are coming into the physical education classroom with decreased levels of fitness, both from a health-related and functional fitness related standpoint. Furthermore, student skill level and fitness abilities differ widely in physical education, and educators must address the issue of varying abilities (Brusseau, Darst, and Johnson, 2009).

As with any learning environment, better preparation leads to greater understanding and ultimate mastery of course content. This is never more true than when it comes to physical education; students in higher education with a strong baseline kinesthetic awareness are much more capable of grasping new movement concepts and accomplishing them, if not mastering them, than those students who spent the majority of their younger years with technology, television, and social media. In that context, national standards for physical education assign physical educators the responsibility of teaching fundamental movement skills (National Association for Sport and Physical Education, 2004). While understanding how one’s body moves in space and time is critical to performing satisfactorily in physical education classes, it is even more important in the context of truly learning. Lacking the ability to perform even the simplest movements (e.g., forward roll, headstand, jumping and landing), many students lose motivation and fall further
behind their peers in understanding how to perform even the most elementary change in body position.

**Guided Discovery**

So what is a twenty-first century physical educator to do when encountering a student without the ability to perform the most basic of movement skills or the confidence to learn them? Teaching these students is made even more difficult by the need to address varying movement abilities when attempting to maximize learning and success (Brusseau et. al, 2009). What can a physical educator possibly do when one student seems so lost, and is having so much difficulty with a movement, while others seem to master the movement requirement with ease? The answer lies in the consultation of a twentieth century approach to learning – Guided Discovery in Physical Education.

In *Teaching Physical Education*, Muska Mosston builds on ideas originally presented almost twenty years earlier by George Katona in *Organizing and Memorizing* (Katona, 1949). Specifically, Mosston encourages the use of what he calls guided discovery, an approach to teaching within which “the teacher never tells the answer” (Mosston, 1966). The basic principle is that when asked to explain a wrong answer (improper movement technique), students will better discover their mistakes and uniquely develop their own understanding (Weissglass, 2012) when they are required to think through the problem and the likely causes of their shortcoming. In lieu of providing the answer (which, in physical activity settings, is already difficult enough), Mosston instead encourages educators to lead the students to and through the paths of discovery. This approach is in contrast to strategies that Graham, Holt/Hale, and Parker (2010) identify as the Direct Instruction method, which essentially involves a physical educator saying “Perform a skill this way”, and students then attempt to replicate the skill (Drost and Todorovich, 2013). Instead, Mosston eschews the use of exclamatory statements (which connote authority and something to accept on the part of the student without question) in teaching, alternatively substituting a question. By posing a question when there is a student deficiency in performance or understanding, Mosston suggests that the following benefits are most likely to occur:
1. The student learns that the teacher is interested in what he has to say.
2. The student learns that he is expected to give an answer.
3. The expectation to give an answer requires an understanding of the question, necessitating the need to pay attention to the instructor.
4. With the need to answer the question, the student begins to be actively involved in learning.
5. This involvement with the learning process now leads the student to begin pursuing the answer (hopefully both cognitively and through physical movement).

**Cognitive Learning and Focused Listening**

Cognitive learning is often overlooked when using the direct instruction method of learning, as little time is devoted to student interaction and input when it comes to instruction on a fundamental movement (Drost and Todorovich, 2013). This is a mistake that Mosston’s guided discovery approach overcomes to facilitate greater student interaction, greater student responsibility, and ultimately greater student success when it comes to the acquisition of movement skills. Mosston poses the question “What kinds of things can people (students) discover” when exposed to a guided discovery approach? In addition to facts, ideas, concepts, and relationships, a student can discover a “particular physical activity – a movement” (Mosston, 1966).

A final note regarding student interaction is important, and relates to assessment inside the classroom. Focused Listening is a technique that focuses a student’s attention on a single important concept from a particular lesson, and directs them to list several ideas that are closely related to that “focus point” (Angelo and Cross, 1993). While Focused Listening is an extremely simple, quick, and flexible way to collect information on student knowledge about a particular topic (movement skill), Angelo and Cross go on to caution the educator that the technique focuses on only one idea at a time, while the more difficult physical skills necessitate multiple and simultaneous movements. Thus, while beneficial to learning, Focused Listening does have limitations.
Concept Discovery Model

Guided discovery can be beneficial to cadets as they are taught and practice the functional fitness skills required on the United States Military Academy’s Indoor Obstacle Course Test. Using the Concept Discovery Model (Drost and Todorovich, 2013) outlined below, educators walk students through the following elements, not providing the answers but instead helping students to find them on their own:

Focus Skill ➔ Skill Activity ➔ Concept Discovery ➔ Concept Review ➔ Focus Skill Practice

Focus Skill – Specific fundamental movement the student must perform
Skill Activity – Students perform the focus skill and the educator observes initial skill ability
Concept Discovery – Educator presents a progression of questions that lead students to discover a concept of the focus skill, using their experience performing the task to assist in discovering the answers to the questions
Concept Review – Educator immediately captures the cognitive learning that took place in concept discovery (resulting in the students now understanding the “why”), and then again introduces the focus skill with cues, identification of common errors, and a demonstration by the educator (or capable student)
Focus Skill Practice – Students practice the focus skill, getting feedback on performance from the educator on skill cues and the focus skill concept discovered during Concept Discovery. Students now have a deeper understanding of the focus skill, and practice with a purpose

Application - Discovering a Key Element of the Indoor Obstacle Course Test (IOCT) Shelf

Focus Skill – Mount the IOCT shelf without touching metal supports.

Skill Activity – Educator performs a quick demonstration by hooking the heel, rolling the inner thigh onto the shelf, and raising the upper body. Students perform the focus skill and the educator observes initial skill ability.
Concept Discovery – Educator brings the group together and asks the following questions:
- What body parts primarily contact the shelf while mounting it?
- After engaging the shelf with the hands, what should the student immediately do?
- When you hooked the heel, was it best to extend the knee or keep it flexed?
- Does the inner thigh assist or hinder one’s attempt to mount the shelf?

Concept Review – Educator reviews simple cues and addresses all discovery questions:
- Primarily the hands, heel, and inner thigh contact the shelf.
- Immediately upon engaging the shelf, the student should execute a ¾ pull-up.
- It’s best to keep the knee flexed throughout the shelf mount.
- If rolled onto the shelf properly, with the knee flexed, the inner thigh assists the mount.

Focus Skill Practice – Students practice the focus skill, getting feedback on performance from the educator on skill cues and the focus skill concept discovered during Concept Discovery.
Students now have a deeper understanding of the focus skill, and practice with a purpose (Drost and Todorovich, 2013).

Conclusion
A teacher’s personal commitment to continued learning is the key to positive professional development outcomes, and that personal commitment allows educators to embrace new ideas (Chen, 2006). Most educators are open to new ideas, but for decades the primary physical education model of teaching employed the direct instruction method, demonstrating a movement skill and then telling students how to do it. Clearly educators have a responsibility for constant reflection and self-assessment of classroom efficiency and productivity. Teachers need to be able to listen carefully and structure situations in which students talk about their experiences (performance) in order to ensure the student understands both the “How” and the “Why” (Darling-Hammond, 1998). A guided discovery approach to teaching and application of the
Concept Discovery Model goes a long way toward improving not only student understanding and performance, but also the educator’s ability to connect with students and convey to them that their ideas are important and constructive in their own learning. It’s nice to know that in this new age of technology, television, and social media, a twentieth century approach to teaching continues to guide our students toward discovery and growth.

References:


Annotated Readings:


This article lays out the National Association for Sport and Physical Education standards that should serve as a foundation for physical education programs. The authors correctly point out that some physical educators inappropriately use fitness and physical education as punishment, instead of as a vehicle to improve the health and skill-related components of physical fitness. The article then recognizes that student skill levels differ widely in the physical education domain, and that teachers must address the issue of varying abilities in order to maximize learning and
success.

Chen, W. (2006). Teacher’s knowledge about and views of the national standards for physical education. *Journal of Teaching in Physical Education, 25*, 120-142. This research study investigated teachers’ knowledge and views about the National Standards for Physical Education. It concluded that a teacher’s personal commitment to Physical Education standards results in enhanced awareness, and that active participation in professional development helps teachers stay current to improve learning. Finally, Chen advises that future research should focus on the extent to which teachers incorporate physical education standards into their curricula and implement the standards in practice.

Darling-Hammond, L. (1998). Teacher learning that supports student learning. *Educational Leadership, 55*, 6-11. This article in *Educational Leadership* discusses what teachers need to know in order to help students create useful cognitive maps to accomplish a given requirement. It also lays out the importance of analyzing and reflecting on one’s teaching, assessing the effects of one’s teaching, and refining and improving performance in the classroom so that students can thrive. In short, Darling-Hammond presents the case that ongoing professional development not only improves teaching, but also results in enhanced learning for students.

Drost and Todorovich, (2013). Enhancing Cognitive Understanding to Improve Fundamental Movement Skills. *Journal of Physical Education, Recreation, and Dance, 84*, 54-59. This article introduces the idea that physical educators primarily support the psychomotor domain of learning but that learning in the cognitive domain can also take place if task presentation and adequate corrective feedback statements are employed. It goes on to lay out the Concept Discovery Model and provide multiple examples of how to successfully ensure that students discover key elements of different fundamental movement skills.

Mosston, M. (1966). *Teaching Physical Education*. Ohio: Charles E. Merrill Books Inc. This book discusses multiple approaches to teaching, including Teaching by Command, Teaching by Task, Reciprocal Teaching – the use of a partner, and Teaching by Problem Solving. However, the focus of this literature review was on the Guided Discovery chapter, within which Mosston lays out the anatomy of Guided Discovery, examples of Guided Discovery in physical education, and suggested topics in physical education well-suited for a Guided Discovery approach.