Beyond Games, Gadgets, and Gimmicks

Differentiating Instruction Across Domains in Physical Education

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"Avoid one-size-fits-all instruction" is a sound injunction, but how should teachers individualize instruction?

Imagine the following scenario in a physical education class: elementary students arrive for class and warm up individually or in small groups by arranging exercise cards in an order of their own choice. After the students warm up, the teacher informs them of the day's learning objectives. The teacher has written the goals on the board, and spends several minutes restating the directions and breaking down the day's activities in easy-to-follow steps for the class.

Students begin to visit a variety of learning stations around the gymnasium. Each station involves a different activity, requiring various amounts of effort. Students may choose the stations they visit and with whom they will travel. Task cards at the station identify how the exercise should be performed and also identify three levels of intensity (high, medium, and low) at which the students may work. The teacher has anticipated, and made appropriate modifications for, students with special needs. Occasionally, the teacher stops the class and directs their attention to a student demonstration at a station. She asks probing questions that enable students to use logic and reasoning to make decisions related to the learning objectives.

As the students work, the teacher moves among them. She is observing, clarifying, assisting, questioning, and responding on an individual basis to enable each child to accomplish his or her learning goals. A teacher from another school, who stops by to observe the class, is surprised to find her available for collegial interaction while the students remain focused around the gymnasium. Shortly thereafter, the physical educator calls the class together and begins to ask provocative questions that cause the students to reflect upon the activities, to internalize the learning experiences and, ultimately, to express comprehension of the day's stated concepts. One student chooses to diagram what she learned on the board, another acts out some of the physiological effects of exercise, while others share their thoughts verbally. The teacher also prompts the students to reflect upon their experiences in their personal physical education journals.

What is going on in this gymnasium? A skillful teacher is differentiating instruction to create a learning environment that is not "one size fits all." The intent of this article is to inspire physical educators to reflect on their individual practices and to investigate ways to implement differentiation strategies in the gymnasium. What should educators know, understand, and be able to do after learning about differentiation? They should know what differentiation is, and be familiar with numerous strategies that can be
practiced in physical education. They should understand that differentiation saturates every facet of the teaching and learning process; that each student’s needs, interests, and abilities guide the decisions made in differentiation; and that through differentiation, individual learning and success can be enhanced in one or all domains. Teachers should be able to select differentiation strategies, and combine them as needed, to appropriately meet the needs of each student they teach.

What Is Differentiation?
Differentiation is a symphony, not one particular instrument, of ongoing modifications to every facet of the learning environment in response to students’ needs, interests, and readiness. Differentiation provides multiple pathways for each student to interact with the content while learning at his or her own pace. Differentiation is not a fad or a gimmick. “It is a philosophy based on the premise that teachers should adapt their instruction to student differences” (Willis, 2000, p. 1).

In a differentiated physical education program, teachers modulate three major components of teaching and learning:

1. Content: the depth and breadth of what is taught in the curriculum.
2. Process: the range of instructional decisions regarding not only how the teacher will present information and organize learning, but also the thinking processes students will use to understand the content.
3. Products: the manner by which students will demonstrate comprehension, and how individual success will be measured.

Students, like all people, are “asynchronous” in their development; that is, their development in one domain is not necessarily synchronized with their development in other domains. A student may be highly competent in the motor domain, but lack skills in the social domain; or he or she may be gifted in the cognitive domain, but demonstrate less developed skills in the motor domain. These variances in skill level make obvious the need for the teacher to implement differentiation strategies to meet each learner’s abilities. As the knowledge of what constitutes effective teaching and learning continues to develop, each teacher must continue to learn how to design and deliver instruction that extends beyond games, gadgets, and gimmicks.

“ Aren’t We Already Doing That?”
Physical educators may ask, “ Aren’t we already doing that?” In the gymnasium, teachers historically have made modifications to meet students’ needs and abilities. In his “spectrum of teaching styles,” Muska Mosston (1966) developed an instructional framework that remains a touchstone in the field. The spectrum shares commonalities with differentiation. Mosston categorized human attributes into “developmental channels,” and emphasized the importance of making decisions to enhance students’ educational development along cognitive, social, emotional, physical, and moral/ethical channels.

When teams are collaboratively solving a problem, such as “crossing the river,” one way to challenge them further is to add a “baby” that the team must care for.

Another important connection between Mosston’s work and differentiation is the theory of “non-versus” he advanced. Mosston felt that ideas in education are generally presented in opposition to the status quo. This educational tug-of-war prevented the profession from systematically approaching teaching and learning from a broad structure that would both embrace and connect ideas. (Mosston & Ashworth, 2002, p. 2)

The pursuit of effective teaching need not pit the spectrum versus differentiation. Educators should connect the strengths of both philosophies and embrace what is most effective for students.

The spectrum of teaching styles and the philosophy of differentiation both offer a comprehensive perspective for improving the practice of teachers. Mosston identified 11 styles of teaching and set forth characteristics describing the use of each style. When using the spectrum to plan learning experiences, the teacher selects the most suitable teaching style to accomplish the targeted learning objectives and instructs the class following the established guidelines of the chosen style (Byra, 2004; Chatoupis & Emmanuel, 2003). The role of the teacher and the role of the student are defined within each style. Styles A through E focus student learning on the “reproduction” of knowledge, while styles F
students make choices, work at their own pace, and solve problems.

What is the difference between Mosston's teaching styles and differentiation? Foremost, differentiation is not a teaching style. Differentiation is multidimensional and does not follow a linear progression. It is the fluid combination of a myriad of teaching options (table 1) that are integrated to meet the disparate needs of each student. Analyzing what style of teaching works best with each student is one aspect of differentiation. However, while one student may be ready for the "discovery" style of learning, another may need more direct instruction in order to succeed at a task. Teachers who differentiate instruction may incorporate various teaching styles from the spectrum; and they may use all, or part of, one or several styles during a single lesson. An essential difference in differentiation is that students represent a spectrum of abilities, and the teacher selects the strategies that best advance each student's development.

Pathways to Differentiation
Teachers can start on the pathway to differentiation by reflecting on their current practices (table 2). Self-assess-
Table 1. Differentiating-Instruction-Across-Domains Model

What can be modified in physical education to better meet students’ needs, abilities, and interests?

Motor (Moving)
- Grouping options based on physical abilities and developmental appropriateness
- Type of equipment, size of equipment, composition of equipment
- Boundaries of games, activities
- Time limits of games/activities
- Physiological expectations: target heart rates, level of exertion
- Complexity of skills, level of achievement
- Criteria for “success”
- Assessment format

Potential for Staff Development
- Adapting instruction
- Developing assessments of motor skills

Cognitive (Thinking)
- Grouping options based on cognitive abilities
- Degree of abstraction of concepts
- Hierarchy of thinking skills (Bloom’s)
- Questions asked by the teacher and/or students
- Interdisciplinary connections: concepts “internal” to physical education, concepts “external” to physical education
- Opportunities to use intelligences other than bodily/kinesthetic, such as visual/spatial, verbal/linguistic, mathematical/logical, naturalistic
- Criteria by which “success” or comprehension are evaluated
- Assessment format

Potential for Staff Development
- Integrating process skills
- Teaching children with different learning abilities
- The effective use of questioning strategies
- Developing assessments of comprehension

Social (Working Together)
- Grouping options based on interests and social development
- Amount of social interaction with peers
- Amount of competition
- Degree of social challenge in team-building activities
- Degree of responsibility to the group
- Expectations for type/quality of communication among peers
- Degree of peer review and peer feedback
- Opportunities in lessons to practice “real world” social skills, to recognize and discuss feelings of others

Potential for Staff Development
- The role of collaborative challenges
- Developing assessments of social skills

Affective (Feeling)
- Grouping options based on emotional readiness
- Expectations for personal responsibility
- Degree of autonomy during lessons
- Opportunities in lessons to address issues related to recognizing, monitoring, and managing feelings, self-esteem, sense of belonging, personal competency, risk-taking
- Integration of goal setting
- Amount of self-reflection in lessons

Potential for Staff Development
- Integrating character education
- Addressing the affective domain
- The role of goal setting
- The role of emotional intelligence

Students may sometimes work as “think-pair-share” partners, in small groups, and in “jigsaw” groups (Dyson & Grineski, 2001). Grouping students to work with others with the same learning style or with those at a similar level of “readiness” are organizational options. A group can even consist of one. Working independently is a good opportunity for students to practice self-direction, decision-making, and problem-solving skills.

The Motor Domain
Based on knowledge gathered in ongoing assessments, the teacher can appropriately modify the physical components of a lesson or activity. This will decrease or increase the

nesses. Also, teachers should integrate opportunities for students to use their personal strengths in music, art, math, logic, reading, and writing in the curriculum.

Student Grouping. Before beginning instruction, a physical educator must also decide the most effective method for grouping students based on his or her knowledge of each student. Selecting the most suitable grouping options for learning enables students to maintain maximum attention and developmentally appropriate involvement and enhances student productivity and comprehension. Sometimes the teacher will determine groups or, when appropriate, the students may select groups. Groups should be formed based on students’ motor, cognitive, social, or emotional abilities.
Table 2. A Self-Assessment of Differentiation Practices

- Students' needs, interests, abilities, and individual differences shape my instruction.
- I do not use whole group instruction all of the time. I incorporate a variety of teaching methods to maximize student involvement and learning.
- I encourage student autonomy in learning and provide frequent opportunities for student choice in the gymnasium.
- I plan relevant experiences that are engaging and effectively prepare the "whole" child for the future.
- My instruction is based on more than mastery of facts and skills. I infuse the curriculum with opportunities to use critical thinking and other process skills.
- I provide opportunities for students to learn using multiple modalities.
- I am flexible in using time and instructional arrangements to adapt to students' needs.
- In my classes one frequently sees students helping other students, and the teacher acting as a "facilitator" of learning.
- I define "success" in more than one way; there are multiple ways for students to succeed in my classes. Success is measured in terms of personal growth, not just by one standard.
- I assess students' progress, and provide meaningful feedback, continuously, not just at the end of a unit. I use a variety of tools to assess student learning.

The Cognitive Domain

Bloom's Taxonomy. A "respectful" learning environment results when instruction fits all levels of thinkers, as well as movers, in the gymnasium. One step toward a differentiated classroom is for teachers to allow students to individually come up with conclusions to problems, instead of simply giving them all of the answers all of the time. In Bloom's "taxonomy of thinking" (Bloom, 1956; see table 3) ascending levels of thinking are described. Integrating Bloom's higher levels of thinking requires students to apply more complex and abstract thinking skills in daily learning expe-
Table 3. Bloom’s Taxonomy of Thinking Skills

This table should be read from the bottom, up.

<table>
<thead>
<tr>
<th>Skill</th>
<th>Descriptors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evaluation</td>
<td>Evaluate, judge, debate, choose, discuss, recommend, decide, rate, rank</td>
</tr>
<tr>
<td>Synthesis</td>
<td>Combine, invent, compose, role-play, produce, write, create, design, develop</td>
</tr>
<tr>
<td>Analysis</td>
<td>Classify, categorize, compare, separate, dissect, analyze, survey, diagram</td>
</tr>
<tr>
<td>Application</td>
<td>Demonstrate, apply, solve, use, teach, experiment, construct, operate, do</td>
</tr>
<tr>
<td>Comprehension</td>
<td>Explain, generalize, give examples, infer, summarize, rewrite, describe, interpret</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Ask, match, identify, locate, define, name, outline, list, read</td>
</tr>
</tbody>
</table>

Source: Bloom, 1956

Experiences. Doing so helps students think divergently and shows them that many answers are possible. Higher-level thinking encourages students to see the connections among ideas and allows them to transfer learning to different contexts.

In order to do this, the teacher must become more alert to the type of thinking they require of their students. The complexity of the content can be adjusted upward or downward, as with all differentiation strategies, to meet the ability of the learner. Educators should post Bloom’s levels of thinking in the gymnasium and refer to them often so that students internalize the hierarchy of thinking. There should also be an attempt made to Infuse Bloom’s higher levels of thinking in every facet of physical education, such as at learning stations, during questioning, and embedded in assignments. In order to nurture the development of ideas and solutions, teachers should engage students in experiences that require more than passive involvement; plan curriculum around concepts and skills that address “real world problems,” current events, cultural traditions, or countless other relevant topics to invigorate cognition; and utilize a wide variety of resources in the gymnasium to provide deeper exploration of the content and to generate student interest. Use of varied resources will help students organize and analyze information, will provide them with personal performance feedback, and will act as visual stimuli.

These resources include specimens, models, computers, relevant software, pedometers, heart rate monitors, posters, books, and innovative equipment for active interaction with the content.

Students relish an opportunity to think critically as they use unusual equipment to cooperatively solve exciting problems like “crossing the river,” or removing the “toxic waste,” as detailed in Team Building Through Physical Challenges (Midura & Glover, 1992) and More Team Building Through Physical Challenges (Midura & Glover, 1995). Bloom’s thinking skills are infused in these problems, and students eagerly anticipate each new challenge!

Process Skills. At the Center for Creative Learning, the elementary gifted program in Missouri’s Rockwood School District, experiences in physical education focus on the use of process skills, taken from the Missouri Show Me Standards (Missouri Department of Elementary & Secondary Education, 1996), along with the motor content in every learning activity. Students at the center reflect upon the process skills they use in physical education in a “Daily Learning Log” that is completed after class. This metacognition, or thinking about thinking, helps students internalize the skills they practiced and increases the likelihood that they will use the skills in the future—both in the gymnasium and beyond.

Educators should consult district and state standards to identify the process skills students are expected to learn across all disciplines. Physical education is rich with opportunities to use logic and reasoning, analysis, or problem-solving, when the teacher recognizes the potential to do so. Whether the class is playing a simple game or a complex sport, teachers should encourage, and provide time for, students to develop strategies independently and to justify their reasoning. Teachers should also design and deliver lessons that will turn kids on to thinking. For example, instead of merely handing out pedometers and instructing students to walk for fitness during a lesson, educators should challenge students to synthesize their new knowledge by designing their own creative walking activities that will increase heart rate.

Questioning. The art of asking questions is an essential differentiation strategy. Questions are valuable because they can be custom-made to fit the needs of a whole class or a single student. Asking questions causes students to interact with the content, formulate and articulate ideas, and express comprehension. The types of questions a teacher asks can spark new ideas and serve as a foundation to help students build bridges to understanding. Every part of the physical education curriculum has rich material about which teachers can formulate questions. Learning to ask “fat” questions is a skill that takes practice. A “fat” question requires more than a simple yes or no answer, more than a minute of thought, and more than the mere parroting back of information.

Educators should practice being “facilitators” of students’
learning and should not tell students everything. Specific questions can be planned ahead of time to challenge students’ thinking and can be asked in a way that affords students multiple ways to respond. An effective questioner engages individuals and the whole class during lessons to facilitate the discovery of strategies and to improve performance by posing questions like, “What would happen if...? How could you change...? How does that action affect the next action?” Like many differentiation strategies, questioning relies on the teacher’s personal awareness of the potential for maximizing how the students think about the topic at hand.

Offering Choices. Teachers can take a giant leap forward in the differentiation process by looking for opportunities to offer students choices in the curriculum. Relinquishing some of the “teacher control” of the learning environment is a crucial step in learning how to implement differentiation strategies. The differentiated classroom is characterized by student-directed learning. Providing choices empowers students, increases student ownership of the learning process, increases comfort levels, honors the uniqueness of each person, and taps into one’s passions or strengths.

Teachers can build choices into lessons by creating learning stations that students visit at their own discretion and at their own pace; allowing choice of partners, equipment, learning products, and/or the modality through which comprehension can be demonstrated; allowing students to determine how to budget their time, or simply whether to run, skip or leap. If a physical educator can take only one small step in the differentiation journey, allowing for student choice is an easy one.

Integration. Integrating ideas from within and beyond the discipline of physical education is another form of differentiating the scope of the curricular content. The real world is not artificially divided into separate disciplines of study. High-level integration implies the relevant examination of how ideas from two seemingly separate disciplines intersect. Recently, several fourth-grade classes at the Center for Creative Learning studied problems and solutions related to feeding the world’s burgeoning population. Helping first-world students understand what it might be like to live in the third world is a challenge. The physical educator provided active instruction to kinesthetically differentiate information learned in the regular classroom, enabling students to understand abstract ideas in a more concrete fashion (Smith, 2004). To gain some idea of how the physical demands of living in the third world differ from those in the first world, students simulated farming by hand and farming by machine in the gymnasia. Scooters became tractors and combines. “Farmers” used tin watering cans to “irri-gate” fields of crops. After comparing planting, watering, and harvesting by hand or machine, children proposed how crop production, time management, effort, and personal fitness vary in first- and third-world countries. Integrated lessons such as this creatively promote fitness, elicit lively, high-level discussions, and enable students to draw insightful conclusions about the real world.

Differentiating the content of lessons through integration is the result of collegial interaction that does demand conversation, planning, and a willingness from teachers to do whatever it takes to help kids learn. Teachers can start by designing lessons that integrate concepts, such as fitness or nutrition, from within the physical education curriculum. Talking with colleagues to find out what students are learning throughout the school will help educators to identify concepts that students will understand better after kinesthetic exploration. The reward is an enriched learning environment that enables students to understand and feel connections across the curriculum.

The Social Domain
Social skills are the necessary behaviors that a student must be able to have in order to interact appropriately with peers and adults. The physical educator has sustained opportunities to help students learn and practice social skills that will have an enduring effect on the quality of the students’ experience both in, and beyond, the gymnasia. The long list of social skills intertwined with physical education experiences includes practicing how to listen and communicate respectfully with others, how to take turns, how to praise others and accept feedback from others, how to make friends, and how to cooperate to accomplish a common goal.

The process of differentiating curriculum and instruction in the social domain is similar to that in the other domains. “Essentially we teach social skills like we teach academics. Assess the level of the students, prepare the material, introduce the material, model it, practice it, and provide feedback” (McIntyre, 2001). Teachers should spend time in daily lessons discussing and role-playing appropriate behaviors. When the day’s lesson calls for teamwork, time should be spent before the activity in order to role-play appropriate comments and behaviors that “good teammates” demonstrate. Children do not enter the world knowing how to act in a socially acceptable manner, or how to be a good teammate. “They need to know why a skill is important and when and where to use it” (Rogers, 2004). Physical educators must consistently allow time for students to practice social skills, just as they must practice any learned skill.

The Affective Domain
The affective domain addresses issues related to self-esteem, confidence, interests, risk-taking, values, and other attitudes and emotions. In a post-graduate education course
taught in St. Louis by a retired school principal, wise words about how educators think of students were shared. “You don’t teach physical education, social studies or English,” he stated to the veteran teachers, “you teach children” (R. Overfelt, personal communication, June 9, 2003). If educators aim to teach the whole child in the gymnasium, they must accept the idea that the child is a whole entity and cannot be separated from his or her feelings and attitudes.

Students learn, understand, and value only those things they actually care about. Educators should spend time finding out what kids care about and differentiate the curriculum to nurture their passions as well as their self-esteem and confidence. It would not be necessary to overhaul the entire curriculum; teachers could start simply by bringing the “outside world” inside the gymnasium. Teachers should focus on strengthening connections to students’ interests by increasing their skills at real-world activities such as fly-fishing, rock climbing, or rollerblading to maximize motivation.

Teachers should also capitalize on current events of high interest to nourish students’ affective domain. Recently, a fifth-grade class participated in the “Tour de France Fitness” lesson in physical education (Smith, 2004). The entire class represented Lance Armstrong’s team. A large map of France was placed on the floor along with a “Lance Armstrong” game piece. Students were required to visit any two fitness stations of their choice around the gymnasium to earn a chance to advance Lance though the stages of the Tour. Every time students completed two fitness stations, they rolled dice to see whether Lance would advance. Every single student hustled around the gymnasium, raising his or her heart rate, finding strategies to complete stations, and communicating with teammates to establish a plan. The energy was palpable. This activity strengthened students’ interaction, their persistence and cooperation, and ultimately, their self-esteem and sense of accomplishment.

Conclusions

Quality physical education represents so much more than games, gadgets, and gimmicks. Through their combined commitment to professional development, educators continue to seek the best ways to teach each child in physical education. Most teachers would agree that the greatest reward in teaching is to make a difference for kids. A fifth-grade boy stepped up close to the author after class one day and said, “You know what I like about physical education here? It makes you think, learn, and wonder.” If teachers can make kids think, learn, and wonder as they physically educate them in the gymnasium, then investing the time to differentiate instruction across the domains is worth the effort.

The following suggestions will help you start, or continue, on your pathway to differentiation:

• Educate yourself about differentiation. Attend workshops, read articles, and contact your school district about staff-development opportunities.

• Observe other teachers, both in physical education and other disciplines, to learn the various uses of differentiation strategies and to analyze the impact of differentiation on student learning. Decide which strategies will work in your gymnasium.

• Discuss with parents and other teachers the most suitable motor, cognitive, social, or affective modifications to differentiate instruction for students.

• Gather information continuously (both in and beyond the motor domain) to evaluate your students’ needs, interests, and abilities.

• Begin to implement the strategies you have studied. Start with some that are simple and progress to more sophisticated methods.

References


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