Developing Language Through Physical Education

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1. Introduction

Speech and language skills are key to how we function as people. These skills are what allow us to communicate in the world, express ourselves, understand others, and be self-sufficient. Research has shown the importance of early language exposure and enrichment to success later in life for every type of learner. Since neurology is sequential and builds developmentally from broad skills to specialized skills, language acquisition, development, and augmentation are some of the last pieces to come into play as higher order processes of the brain (Karwas, 2011). Speech also involves motor skills with the formation of sounds using the vocal cords and muscles in the mouth and lips in coordinated sequences.

There are a significant number of children who experience difficulties with language and speech, and it is estimated that 75 percent of children with disabilities can be categorized as having speech language impairment (Sherrill, 1998, as cited by Murata, 2000). In addition, in the United States, the number of children from ages 5-17 who speak a language other than English at home between 1980 and 2009 has increased from 10 to 21 percent of children in this age range, or from 4.7 to 11.2 million children (U.S. Department of Education, 2009). It is clear that the job of integrating language-enriching activities in all subject areas is becoming a larger part of the conversation when curriculum is considered across the board for educators.

Murata (2000) suggests that speech-language pathology techniques and guidelines can be used as a tool by physical educators to help develop language skills in students (p. 36). The unique setting that physical education provides is an opportunity to use kinesthetic learning to its best application, both for language skill and physical skill acquisition. According to Clancy & Hruska (2005), the reason that physical education settings are so effective is because they have

conditions that mimic some characteristics of the first acquisitions of language that children typically have. These are providing:

> "…direct connections between language and concrete activities, physical active involvement with language, the use of multiple modalities to present information, opportunities to demonstrate language comprehension through physical expression, a setting where success does not depend on language alone, a low-stress environment for language performance, an emotionally positive learning environment because children like to be active, and opportunities to interact with others" (p. 31).

A recent trend in the literature pushes for a call to action that more efforts should be made by physical educators to collaborate with other service allies of their students. Physical educators are encouraged to partner with other classroom teachers, as well as secondary service providers including speech-language pathologists, school counselors, health care professionals, physical therapists, and coaches to create the most beneficial psychomotor, affective, and cognitive learning outcomes for all types of students (Murata, 2000; Murata, 2003; Bell & Lorenzi, 2004).

It is essential to examine language and communication skill development and augmentation through the lens of movement and neurological formulations. The correlation between the two areas (language and movement) is nearly unavoidable as presented by Willems and Hagoort (2007), in that there is a supposed single integrated system of communication that links gesture, action and movement with speech and language in the brain (p. 278). Studies have shown that motor problems and language disorders often go hand in hand (Visscher, Houwen, Scherder, Moolenaar, & Hartman, p. e162).

If physical educators can accept this relationship and infuse this idea into their teaching they may increase their capacity to engage the whole child by implementing developmentally appropriate motor programs that simultaneously enrich both language and motor skills of any student, whether they have typical needs, have special needs, or are English language learners.

Working with other service professionals, they may understand together the implications of the correlation between action and language. This paper will discuss language acquisition and development, the connection between language and movement, popular strategies and guidelines for infusing language in physical education, and make recommendations for a two week program for a mainstream fifth grade class that includes students who are considered typical learners, students who are English language learners, and students with various speech-language impairments.

2. Language Acquisition

2.1. Neurological Formulations

According to Sakai (2005), in brain development there is a sensitive period in which we are more apt to learn language, which is before puberty. This comes from the, "loss of flexibility for cerebral reorganization due to acquired aphasia after puberty" (Sakai, p. 816). Brain imaging techniques are making it possible for researchers to determine where changes occur and what areas of the brain are activated by speech and language. Special attention is given to the left frontal cortex in seeing language acquisition occur.

2.2. Windows for Optimal Development

According to Owens (2001), (as cited by Murata, 2003), as young children are maturing from age three to six, they are rapidly expanding vocabulary from several hundred words to several thousand. This is a very important time for acquiring motor skills as well (Owens, 2001). Typical language behaviors of a five year old according to Murata (2003) include beginning to use subject-predicate structures, expressing their feelings, and playing with words and sounds (p. 29).

3. Language and Movement Interconnectivity

3.1. Motor Ability and Communication Skills

Iverson (2010) argues that,

> "changes in motor skills (i.e. achievements and advances in posture, independent locomotion and object manipulation) provide infants with a broader and more diverse set of opportunities for acting in the world. These opportunities provide contexts for acquiring, practicing and refining skills that contribute, both directly and indirectly, to the development of communication and language" (p. 230).

Though there is limited research on the neurophysical links between language and motor function in very young children, it is useful to look behaviorally to find these links (Iverson, p. 231).

Iverson (2010) believes that the developing motor system in very young children (up to 18 months) is integral to communication for two main reasons: 1) the fact that acquisition of motor skills gives infants a chance to practice skills they need for communication before they are called to that purpose, and 2) These new motor skills alter infants' interaction with objects, people, and their own bodies that incites communication and language development (p. 254-155).

Willems & Hagoort (2007) looked at speech and co-speech gestures that happen simultaneously to discover the linkages between language and action using a review of cognitive neuroscience studies. Evidence for this claim lies in the facts that,

> "First, motor areas activated in speech production are also activated when listening to speech sounds. Second, there is evidence for the involvement of the motor system in understanding action-related language. Third, purely manual languages (sign languages) recruit parts of cortex in deaf signers overlapping with those of spoken language in hearing subjects. Fourth, the understanding of meaningful co-speech gestures evokes similar neural processing as the understanding of words" (p. 286).

4. The Physical Educator's Role in Student Language Acquisition and Development

4.1. General Guidelines and Strategies for Infusing Language in Physical Education

Several researchers present ideas on best practices for infusing language in physical education. These methods are easy to apply, with little preparation besides a notion of intention and focus on the individual students. The physical education world is a perfect place for cross-curricular involvement. Murata (2000), states that, "Using the physical domain as a foundation for development in other areas (i.e., communicative, cognitive, emotional, social, behavioral) can be beneficial to preschoolers and young children with delays" (p. 38). Physical educators are already accustomed to doing a lot of this work in their classrooms by "establishing appropriate attention-getting techniques, demonstrating short and clear directions, praising their students, and developing positive reinforcement strategies" (Murata, 38). He provides 11 suggestions to facilitate language skill learning in early education settings. They are to:

- Use simple, repetitive words and phrases
- Present words, demonstrate action, repeat words, and give praise
- Incorporate counting and/or 'ready set go'
- Accept and praise any verbalization after instruction
- Exhibit patience
- Demonstrate clear, easy-paced speech
- Use prompts and reminders
- Make sure you very the inflection in your own voice
- Rephrase questions
- Try giving them an incorrect answer (to illicit a response)
- Use gestures and manual signs
  (Murata, p. 37-38)

Murata (2003) also gives more suggestions for growing language ability in preschoolers and young children. These include using predictable activities, adaptable learning strategies, activity scripting, novel and colorful materials, collaboration with other players,

verbal utterances using expansion and extension, reviewing the completed task, using simple language, and simply "whatever works" (p. 30-31).

As for working on second language acquisition in elementary and secondary physical education, Bell & Lorenzi (2004) make some good arguments for how a teacher should conduct his or herself to the greatest benefit to the students. They discuss the importance of proper input (teacher communicating) and output (student communicating), feedback, worksheets, and movement activities. Creative outlets in physical education that involve dramatic interpretation, rhythmic activities, dance, stories, or poetry can also allow language learners to pick up verbal and written information more easily (Bell & Lorenzi, p. 49).

In working with populations with disorders of language, Horvat, Kalakain, Croce, and Dahlstrom, (2011) suggest using visual cues with verbal instructions, demonstration, and gestures. They warn against using abstract movement activities and substituting similar words. In terms of activity, they suggest, "academic games and relays that encourage verbal responses or response to visual cues; parachute activities and developmental physical education activities; games that involve counting" (p. 135).

4.2. Utilizing Language Objectives in Physical Education Curriculum

Clancy & Hruska (2005) make a push for physical educators to develop language objectives in the classroom alongside physical objectives. They tailor their article for English language learners, but the principles can be applied to any demographic. These can be in the areas of vocabulary objectives, listening, speaking, reading, writing, language functions, and language structure (p. 33). They give useful prompts and examples throughout to make it easier for teachers to use the principles. If physical educators take the structured approach of creating appropriate objectives for language learners, for those with speech-language disabilities, and for

typical students, they will be more likely to see reflective behaviors in students, and improvements in language skills.

4.3. Literacy and Writing in the PE Classroom

Much debate has been had in the world of physical education about including much language-enriched content in the curriculum for both younger students and secondary students. Physical education teachers often find the idea of supporting literacy in their classroom not applicable (Behrman, p. 22). Others have the viewpoint that the more "academic" writing pieces might take away from the physical nature of the class, and many also shun the idea of extension activities or homework for gym class (Behrman, p. 26). Bell and Lorenzi (2004) try to dispel some of those myths and strive to provide creative ways to integrate literacy into physical education, without taking away from the physical components of the class. Some examples they provide include completing a personal physical fitness assessment questionnaire, doing web research on topics in class, making sports related books available to those interested, or bringing in pictures or articles about a certain activity word. Opening up a dialogue about these extension activities during a stretching or warm up time is a great way to get students to discuss and communicate with each other (Bell & Lorenzi, p. 49).

Berhman (2004) argues that, "writing assignments in physical education, in addition to enhancing general literacy, have content-specific values- such as reinforcing key concepts" (p. 22). He challenges physical educators to see writing as a vehicle to promote lifelong fitness, activity, and wellness. In contrast to Bell & Lorenzi, Behrman neglects the language acquisition piece and focuses on the long-term goal of lifelong self-directed health and wellness through providing writing experiences in physical education classrooms that incite students to make gains in the cognitive, affective, and psychomotor domains. Behrman (2004) introduces 16 writing

genres that could be used in a secondary physical education class which include the diary, reflective journal, summary, document critique, prediction, letter, editorial, steps, description/ explanation, analytic exposition, online message boards, brochures/ advertisements, posters, and creative writing (p. 25-26).

4.4. Language-enriched Physical Education and the NASPE Standards

Integrating language-rich components consciously to the physical education does not take a lot of effort, but it does go hand in hand with several of the NASPE standards, only further justifying its usefulness as a tool for physical educators. When students are asked review questions verbally at the end of a class for evaluation purposes, they are exhibiting Standard 2: Demonstrating understanding of movement concepts, principles, strategies, and tactics as they apply to the learning and performance of physical education (NASPE, p. 11). A physical educator might also have one student read a directions card with steps to perform a certain activity on it. They then must explain the activity to their partner verbally, using clear directional terms and movement terms. Another simple way to satisfy this standard would be to stick to simple prompt words and clear directions so students will show they understood by performing the psychomotor task correctly.

Next, when students play on teams for competitive sports, they are showing that they can handle Standard 5: Exhibiting responsible personal and social behavior that respects self and others in physical education settings (NASPE, p. 11). “Responsible personal and social behavior” is all about communication, gesture, movement, expression and, certainly, language. Students who must work together as a team to solve a problem or complete an obstacle course must employ the use of communication skills to formulate a plan of action using various

language concepts, which might include prepositions, spatial concepts, and receptive and expressive terms (Murata, p. 30).

Lastly, a student who is an ELL student might find that learning new vocabulary and relevant sport or physical activity related idioms are a fun new challenge. A reluctant talker might find solace in writing a short reflection journal as an evaluation of what they thought of the lesson, or what they wish the class would do for a future activity. This illustrates Standard 6: Valuing physical activity for health, enjoyment, challenge, self-expression, and/or social interaction (NASPE, p. 11). These are all moments where the physical education classroom can evolve to the benefit of the student, who loses no physical benefits, but gains language skills and to the satisfaction of the teacher, knowing that they have done something unique and helpful to the students.

5. Conclusion

5.1. Research Analysis and Recommendations

Many interesting strategies for integrating language-rich activities into the physical education classroom have been discussed. The virtues needed of a teacher to effectively get through to students with language deficiencies, developmental delays, or new language learners include patience, creativity, and a willingness to go beyond traditional physical education activities. Some agree that writing is the way to reinforce key concepts and incite self-directed lifelong fitness habits (Behrman, 2004). Some believe that teacher input and student output are key components (Bell & Lorenzi, 2004). Others see an opportunity for a structured approach that outlines language objectives to achieve strides towards language augmentation (Clancy & Hruska, 2005). It is clear that there is a connection between motion and language, though the claims are made mostly on a behavioral basis, not neurocognitively (Sakai, 2005; Iverson, 2010).

With the proliferation of English language learners in today's world, it is key for physical educators to be aware of the tools available to develop and augment language in their classrooms. In addition, these same principles can be applied to native speakers of English and students with language difficulties. Physical educators are indeed in a very unique position to be situated in an environment that allows for motion more so than a typical classroom. They may take advantage of kinesthetic learning techniques, and get students to improve on both physical and language skill levels.

5.2. Connections to Personal Professional Pathway

My own personal interest in this topic stems from my passions in foreign language learning, my fascination with movement, and my aspirations to be a teacher of French and

physical education at the lower secondary level. It is so interesting to see the connections on neurological and physiological levels as to why we move and communicate the way we do. To me, these are some of the things that make it so incredible to be human. I hope to be able to integrate what I have learned from doing this research paper into my own teaching practice in the near future. By this I mean that I would like to see my French classroom be infused with physical movement and kinesthetic learning, as well as my physical education classroom infused with vocabulary word games, reflection, and the occasional writing assignment. Lastly, I would like to continue doing the circus work I do, combining the creative movement and performance aspects with the physical fitness with cognitive and language objectives (writing out patterns, creating routines, recording structured reflections) to create a multidisciplinary experience for students in my classes.

I know from my own experience in education, that the things I remember learning the most clearly were the things I could relate to something in another class, or to my life outside of school. It is my goal to create as many experiences like that for my students, and tailor lessons to fit them individually, giving each one what they need to meet them where they are and go forward from there.

5.3. Two Week Program Block Plan

This block plan is designed for a mainstream two day/ week, 40 minutes per day fifth grade physical education class that has a diverse group of youth including those with speech-language impairments (as well as possibly other disabilities), native English speaking 'typical' students, and English language learners. The goal of this plan is to show an adaptive model that takes on the mindset of inclusion learning and focuses on language-enriching activities in the physical education classroom and is a rhythmic unit.

	Tuesday	Thursday
Week 1	Main Goal of Lesson: Obstacle Course with music Psychomotor Objective: Students demonstrate completion of the obstacle course. Cognitive Objective: Students design a plan to complete the obstacle course. Affective Objective: Students will work cooperatively in groups and follow all directions while maintaining personal space. Warm up: Zip, Zap, Zop Game, plus variations (speed changes, new words introduced, motion introduced with each word). Focus/ Activity: A cooperative learning situation where students design a strategy to successfully complete obstacle course as a team in accordance with directions. Feedback/ Evaluation: Five minute reflection (written): How did your group develop a strategy? What were the group dynamics like? Extension: Teaching Points: Direction cards are clear and simple, each student has a role on the team.	Main Goal of Lesson: Chinese Jump Rope Psychomotor Objective: Students will perform the basic Chinese jump rope step in groups of three. Cognitive Objective: Students will recognize and be able to explain back the sequence of steps in the pattern. Affective Objective: Students will work cooperatively with two other students to complete the activity and follow directions. Warm up: Simon Says game, using patterns. Focus/ Activity: Chinese jump rope patterns. Each group gets a prompt card with a visual and words to go with each step. Feedback/ Evaluation: Teacher listens to each group explain the steps of their sequence. Extension: Teaching Points: Positive feedback for students and constructive criticisms.

	Tuesday	Thursday
Week 2	Main Goal of Lesson: Hula Hooping Psychomotor Objective: Students will perform basic hula hooping skills. Cognitive Objective: Students will respond to verbal cues from teacher and be able to explain them back. Affective Objective: Students will maintain personal space while hula hooping and listening to directions. Warm up: Word association game with partners. Follow the leader with your partner (mirror game). Focus/ Activity: Physical skill acquisition and vocabulary related to skill acquisition. Feedback/ Evaluation: Explain the verbal cue needed to rotate while hooping. Teach your neighbor the steps to getting the hoop to stay up. Extension: Find a rhythm/ dance related article and bring to class tomorrow to show and tell. Teaching Points: Focus on steps of activity.	Main Goal of Lesson: Parachute activities Psychomotor Objective: Students will perform parachute activities to music Cognitive Objective: Students will be able to count beats in the music and move. Affective Objective: Students will maintain personal space and respect equipment while following all directions. Warm up: Show and tell sports related article to class while doing warm up stretches. Focus/ Activity: Parachute patterns and sequences to popular (and appropriate) music. Feedback/ Evaluation: Verbally ask students, What was the first thing we did? What was the pattern we followed? How many counts did we do that for? Extension: Teaching Points: Talk about pattern, have visual and verbal cues ready. Maybe a worksheet for students to examine before activity.

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