 Crossing Midline

DOMAIN: Health and Physical Development
CLAIM: Students can demonstrate competencies in motor skills and movement patterns.

RATIONALE
Piaget (1954) was one of many developmental psychologists who linked motor skill development with improvements in perceptual and cognitive development. Motor and cognitive functions tend to follow a similar timeline with intensified development between the ages of five and ten (Gabbard, 2008). Grissmer et al. (2010) emphasize the importance of motor skill development in children. Their data analyses suggest that fine motor skills are a strong predictor of achievement. When analyzed collectively, “attention, fine motor skills, and general knowledge are much stronger overall predictors of later math, reading, and science scores than early math and reading scores alone” (Grissmer et al., 2010, P. 1008). Recent research stresses the importance of facilitating both motor and academic development as the two continue to be linked in neuroscience research. When comparing gross motor skills of age-matched children with and without learning disabilities, researchers found a specific relationship between reading and locomotor skills and mathematics and object control skills - the greater the learning delay, the poorer the motor skills (Westendorp, Hartman, Houwen, Smith, & Visscher, 2011). Sibley and Etier (2003) conducted a meta-analysis showing a positive correlation between physical activity and seven categories of cognitive performance (perceptual skills, intelligence quotient, achievement, verbal tests, mathematics tests, developmental level/academic readiness, and other) among school-aged children. Crossing the midline is an important milestone of development, reflecting integration of the bodily midline, which allows for bilateral coordination (Stilwell, 1987). Difficulty crossing the midline has been linked to a cluster of sensory, perceptual and motor difficulties exhibited by some children with learning exceptionalities (Ayres, 1972; Michell & Wood, 1999; Stilwell, 1987; Murata & Tan, 2009). Previous research suggests that failure of children between the ages of three and four to cross the midline could predict later potential problems in development (Michell & Wood, 1999).

ALIGNMENT TO NC STANDARDS
NC Foundations for Early Learning and Development
HPD-4  Children develop the large muscle control and abilities to move through and explore their environment.
HPD-5  Children develop small muscle control and eye-hand coordination to manipulate objects and work tools.

NC Standard Course of Study (Common Core State Standards & Essential Standards)
PE.MS.1  Apply competent motor skills and movement patterns needed to perform a variety of physical activities.
K.CP.2  Understand how to use performance values (kinesthetic awareness, concentration, focus, and etiquette) to enhance dance performance.
K.DM.1  Understand how to use movement skills in dance.
1.CP.2  Understand how to use performance values (kinesthetic awareness, concentration, focus, and etiquette) to enhance dance performance.
2.CP.2  Understand how to use performance values (kinesthetic awareness, concentration, focus, and etiquette) to enhance dance performance.
### CROSSING MIDLINE

Children are learning that crossing the midline with fine and gross motor activities enables them to perform tasks more efficiently.

<table>
<thead>
<tr>
<th>UNDERSTANDING</th>
<th>SKILLS</th>
<th>PERFORMANCE DESCRIPTORS</th>
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<tbody>
<tr>
<td>A. Isolates movement to one side of the midline (the invisible line running from our head to our toes, dividing the body into left and right halves).</td>
<td>Olivia uses her left hand to manipulate and pick up things located to the left of her and uses her right hand for things located on her right side. Sometimes she picks up an object on her left side with her left hand and switches it to her right hand in front of her body in order to place the object on her right side (thus, avoiding crossing her midline).</td>
<td>At the beginning of the “Macarena Months” song and movement activity, Ethan crosses his right arm to touch his left shoulder and uses his left arm to his right knee. Towards the end of the song, Ethan no longer crosses the midline and uses his left arm to touch the left side of his body and his right arm to touch the right side of his body.</td>
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<td></td>
<td>Painting the capital letter ‘A,’ Noah makes a right slanted line with his right hand. He then switches the paintbrush to his left hand and paints the left slanted line.</td>
<td>During Writer’s Workshop, Martina writes in her journal. She places the paper in front of her and moves her arm across her body to write. Later, when Martina was writing a sign for her structure, she moved the paper to one side of her body and wrote her sign without moving her arm across the center of her body.</td>
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<td></td>
<td>Alyssa picks up chips while counting each one. She picks up the chips on her right side with her right hand. She picks up the chips on her left side with her left hand.</td>
<td>During yoga Christian swung his arms across his body to make the monkey pose. Later, when they did that pose again, he kept his arms to one side without crossing his body.</td>
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<td>While playing a board game, Huan notices the playing piece(s) located to his left. He turns his body so that he picks up the playing pieces with his right hand without crossing his arm across his torso.</td>
<td>Gabriel consistently crosses the midline during a variety of activities and tasks, using his dominant hand (right) for movement and manipulation around his body, not just on the right hand side. He does not manipulate his body, paper or objects in order to avoid crossing the midline.</td>
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<td></td>
<td>Jack places his writing materials at the table. He turns his body so that the paper is located on his right side and begins to write on the paper without extending his arm across his body.</td>
<td>Imani picks up all of her game pieces located in various spaces on the board with her dominant hand.</td>
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<td>Brianna brings the racket across her body to hit the ball (instead of switching the racket to her other hand).</td>
<td>Brandon paints on all areas of a large piece paper with his dominant hand.</td>
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RESOURCES USED


**SITUATION: Throughout the Day**

Understanding: Children are learning that crossing the midline with fine and gross motor activities enables them to perform tasks more efficiently.

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<th>Selecting Learning Target(s)</th>
<th>A. Isolates movement to one side of the midline (the invisible line running from our head to our toes, dividing the body into left and right halves).</th>
<th>B. Begins to cross the midline in some situations.</th>
<th>C. Consistently crosses midline.</th>
</tr>
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**Identifying Opportunities for Eliciting Evidence of Learning**

The teacher observes children as they participate in activities throughout the day and pays particular attention to their ability to cross the midline. There are many opportunities to observe midline throughout the day. Teachers may observe how children paint on a large piece of paper using one hand to make a stroke from one side to the other and/or paint on both sides. While using writing or drawing materials, the teacher may notice if a child uses one hand to make all strokes of a letter or writes, draws, and colors across the paper. When playing games, the teacher may see if a child stretches from left to right and/or from right to left to pick up a card during a matching game. As a child turns the pages in a Big Book, the teacher may observe whether the child uses his right hand to turn the pages, crossing over the midline, rather than switching hands to complete the page turn. When working with manipulatives (e.g., blocks, coins, chips, counting bears, cubes), the teacher may notice if the child picks up or places manipulatives across the body from left to right and/or from right to left. As children sing songs and play games with body movements that include activities such as “touch left hand to right knee” or “right hand to left shoulder,” the teacher may observe how children make such movements.

**Eliciting Evidence of Learning**

During learning stations/centers, the teacher moves around to various stations and observes children using materials. At the math center, the teacher looks for children crossing the midline when picking up and placing objects, such as counting bears, into three buckets placed in front of them for a sorting activity.

**Suggested Probes:**

- “Try using one hand.”
- “Can you keep your body facing forward?”

**Probes to avoid:**

- “Use only one hand.”
- “Do not turn your body.”
- “Move your arm across your body like this.”

**Observing the Evidence**

**Observation:** Mia picks up objects with her right hand to place them in the basket on the right. She picks up objects with her left hand to place them in the basket on the left. Occasionally she picks up objects with her right hand to place them in the basket on the left.

- Identify Learning Status on Construct Progression: **B. Begins to cross the midline in some situations.**

**Adapting/Responding to Learning Needs**

Once the evidence is interpreted and the learning status is identified on the construct progression, continue to adapt and respond to the learning needs of the student, addressing the same learning target if the student hasn’t met it. If the student has met the learning target, work with the student to select a new learning target for teaching and learning.