



Grip & Manipulation

Construct Progression

DOMAIN: Physical/Motor Development

CLAIM: Students can demonstrate competencies in motor skills and movement patterns.

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Domain: Physical/Motor Development

Construct: Fine Motor (Grip & Manipulation)

Background

The grip and manipulation construct progression was designed to reflect the development of proximal (middle of the body) to distal (wrist and fingers) motor control. This means that control of fine motor movement begins with stabilization of the trunk and whole arm movement, then control extends from the shoulder to the elbow, and finally to precise wrist and finger control.

Fine motor activities (e.g. zipping, writing, stringing a bead) are observable representations of using the functions of visual-motor integration together. If a child demonstrates this level with the ability to hold and manipulate the object they are using (scissors, pencil, crayon, etc.), but does not follow the line to cut, stay in the lines to color, or copy a letter correctly when writing, it may be due to visual ability rather than fine motor ability. Talk with your school nurse or occupational therapist for additional information.

Rationale

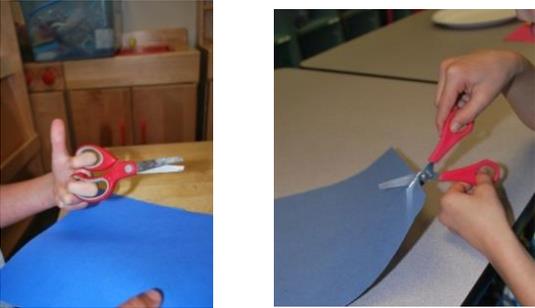
Piaget (1954) was one of many developmental psychologists who linked motor skill development with improvements in perceptual and cognitive development. Motor and cognitive functions tend to follow a similar timeline with intensified development between the ages of five and ten (Gabbard, 2008). Grismmer et. al. (2010) emphasize the importance of motor skill development in children. Their data analyses suggest that fine motor skills were 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” (Grismmer 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 Etnier (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.

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Skills	Performance Descriptors	Example
<p>A. Uses early fine motor skills (e.g., fisted grip, palmar grasp, or early scissor grip) to hold and/or manipulate items, with whole arm movement.</p> <p>Fisted grip:</p>  <p>Palmar grasp:</p> 	<p>When observed in a variety of settings, child grasps objects either with the entire hand (fisted grip) or five-finger grip (palmar grasp), using whole arm movement.</p> <p>When using scissors, child consistently uses an early fine motor grip either by using both hands to grip the scissors, one hand gripping the top loop and one hand for the bottom loop, or by inserting the index finger in one loop and the middle finger in the other loop.</p> 	<p><i>When painting at an easel, Damion grasps the paintbrush using five fingers and paints in large strokes using his whole arm.</i></p> <p><i>When coloring on paper with crayons, Minh holds and manipulates her crayon using a five-finger fisted grip and colors using her whole arm.</i></p> <p><i>When using a pencil, Xander holds and manipulates it using a five-finger palmar grasp and writes using the whole arm.</i></p> <p><i>When eating, Nayika grasps her spoon using a five-finger fisted grip.</i></p> <p><i>When picking up objects, Patti uses her whole hand with a palmar grasp.</i></p> <p><i>When using scissors, Hideki uses both hands to make small snips/cuts on the edge of the paper, but does not cut across the entire paper.</i></p>
<p>B. Uses a more refined grip (e.g., using thumb and finger [pincer grip] or</p>	<p>When observed in a variety of settings, child consistently uses a more refined grip (e.g.,</p>	<p><i>Violet grasps a paintbrush using two fingers and thumb [tripod grip] and paints in large strokes using her whole</i></p>

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Skills	Performance Descriptors	Example
<p>tripod grip) to and hold and/or manipulate objects with whole arm movement and increased stability from the shoulder.</p>	<p>using thumb and finger [pincer grip] or tripod grip] to hold and/or manipulate objects with whole arm movement.</p> <p>Tripod grip:</p> 	<p><i>arm.</i></p> <p><i>Kingsley holds and manipulates his crayon using two fingers and thumb [tripod grip] and colors using whole arm movement so that most of the coloring is outside of the lines.</i></p> <p><i>Laura holds and manipulates her pencil using two fingers and thumb [tripod grip] and writes/draws using whole arm movement and large, imprecise strokes resulting in letters that are large and difficult to read, lines that are not straight and/or shapes that are large and inaccurate.</i></p> <p><i>Harry grasps his fork using a three-finger grip, similar to a tripod grip, to pick up apple slices.</i></p> <p><i>Petra picks up object using her thumb and fingers to form a pincer grip.</i></p> <p><i>Eli hold and manipulates scissors with his thumb in the top loop and his index finger in the bottom loop and cuts near a wide, straight line on a sheet of paper with emerging control.</i></p>
<p>C. Uses refined wrist and finger movement, beginning to transfer</p>	<p>When observed in a variety of setting, child consistently uses precise finger and wrist</p>	<p><i>Orion grasps a paintbrush using two fingers and thumb [tripod grip] and paints in small strokes moving more</i></p>

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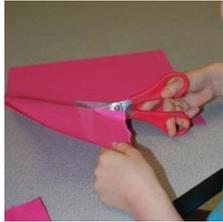
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Skills	Performance Descriptors	Example
<p>control of movement from the shoulder to the elbow.</p>	<p>movement with some transfer of control from the shoulder to the elbow.</p> 	<p><i>from the elbow than from the shoulder and showing some wrist control.</i></p> <p><i>Rosa holds and manipulates a crayon using two fingers and thumb [tripod grip] and colors with more precise control.</i></p> <p><i>Max holds and manipulates his pencil using two fingers and thumb [tripod] grip and writes using smaller strokes moving more from the elbow than from the shoulder and showing some wrist control so that letters and shapes are smaller and more accurate.</i></p> <p><i>Tatyana grasps her fork with a three-finger grip, similar to a tripod grip, to pick up a raspberry.</i></p> <p><i>Aldo picks up and manipulates coins and buttons with emerging control.</i></p> <p><i>Samirah holds and manipulates scissors with her thumb in the top loop and multiple fingers in the bottom loop and cuts with her elbow elevated and away from her body. She is able to cut a square [simple shape] with accuracy, but cuts near the line when cutting the curve of a heart [more complex shape].</i></p> <p><i>During sensory activities, Marian grasps her pencil using tripod grip and creates shapes in the sand.</i></p>

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Skills	Performance Descriptors	Example
<p>D. Uses hands with minimal elbow movement and primary control from wrist and fingers.</p>	<p>When observed in a variety of settings, child consistently uses precise finger and wrist movement, with minimal elbow or shoulder movement, to manipulate objects.</p> <div data-bbox="627 505 850 727"></div> <div data-bbox="919 477 1087 727"></div>	<p><i>Jamie grasps a small paintbrush using two fingers and thumb [tripod grip] and paints precisely using small strokes that show greater wrist control by filling in a tree trunk while painting with water colors.</i></p> <p><i>Teddy holds and manipulates his crayon using two fingers and thumb [tripod grip] and colors within the lines using small precise movements and increased wrist control.</i></p> <p><i>Destiny holds and manipulates her pencil using two fingers and thumb [tripod grip] and writes with small and precise pencil strokes using minimal elbow movement and increased wrist control resulting in letters and shapes that are small and exact.</i></p> <p><i>Gabriel grasps his fork with a three-finger grip, similar to a tripod grip, to pick up blueberries from his plate.</i></p> <p><i>Chana picks up a coin and inserts it into a piggy bank using precise movements.</i></p> <p><i>When cutting out a star shape, Malachi cuts close to the line and turns the paper to facilitate cutting out the shape and to minimize elbow movement.</i></p>

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Resources

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