



Dynamic Learning Maps Mathematics

Initial and Distal Precursors

3rd Grade

This English Language Arts resource provides teachers with enhanced descriptions of the Initial and Distal precursors for the most frequently used Essential Elements.

By providing a clear connection between the IP or DP linkage level and the Target linkage level, teachers can better tailor classroom instruction for each student. Additionally, links to instructional information for each Essential Element and familiar texts in ELA, make these handy classroom resources.

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M.EE.3.NBT.2

M.EE.3.NBT.2 Demonstrate understanding of place value to tens.

Link to Minimap:

http://dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.NBT.2.pdf

Target | Explain place value for ones and tens.

Proximal Precursor M.EE.3.NBT.2	Distal Precursor: Explain ten as a composition of ten ones.	Initial Precursor: Recognize separateness. Recognize set.
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How is the Initial Precursor related to the target?

Initial Precursor: Understanding place value starts with students working on early counting skills. Educators demonstrate and provide explicit lessons on the conceptual and procedural knowledge of number names, number sequence, one-to-one correspondence, cardinality, abstraction principle, and order irrelevance principle all within a context of counting concrete, pictorial, and numeral representations. Educators will support students by counting anything and everything, helping them to notice when things are grouped together and when they are separate.

How is the Distal Precursor related to the target?

Distal Precursor: At this level, students are provided lessons on recognizing equivalence in sets with same items and then with different items. Educators will also have students compare sets and make basic ordinal judgments (e.g., a set has more and fewer disks than the comparison set) using models (e.g., ten-frame, number line, arrays, etc.) of ten as the benchmark for which these comparisons are made.

M.EE.3.NBT.3

M.EE.3.NBT.3 Count by tens using models such as objects, base ten blocks, or money.

Link to Minimap:

http://dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.NBT.3.pdf

Target | Skip count by 10s.

Proximal Precursor Rote count to 30. Count to 30.	Distal Precursor: Explain number sequence pattern.	Initial Precursor: Recognize before. Recognize after.
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How is the Initial Precursor related to the target?

Initial Precursor: In order to fully understand the number sequence and skip counting, students begin by counting objects in a one-to-one fashion. Then, students use small collections to make comparisons (e.g., 3 items is more than 2 items because you have to count further). Once students can count at least 3 items, educators begin introducing the positional words before and after. A powerful way to teach these concepts is to incorporate them into daily routines. For example, lining classmates up to go somewhere, lining up familiar items, following a schedule, and using the words “before” and “after” to describe the relative location of the people, objects, and events. During math, educators will describe the location and the characteristic of the item being discussed (e.g., the square comes before the circle; number 2 is after number 1; in this pattern, blue is before red).

How is the Distal Precursor related to the target?

Distal Precursor: Students will continue to build their familiarity with the counting sequence enabling them to have number-before and number-after knowledge (e.g., when asked "What comes after 5?" the student is able to indicate 6 without having to count up from 1; however, they still may use the count sequence to get a running start: 4, 5, 6). Educators provide students with many opportunities to make close comparisons utilizing models (e.g., ten-frame, number line, sets) so they have a visual or tactual way to compare small collections (e.g., Which is more? 7 or 8; 3 or 4; 9 or 10). The models help students see that two is one more than one, and three is one more than two. This will help them build the concept that each number in the count sequence is one more than the previous number.

M.EE.3.NF.1-3

M.EE.3.NF.1-3 Differentiate a fractional part from a whole.

Link to Minimap:

http://dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.NF.1-3.pdf

Target | Recognize parts of a given whole or a unit.
Explain unit fraction.

Proximal Precursor Partition shapes.	Distal Precursor: Recognize separateness. Recognize wholeness.	Initial Precursor: Recognize some.
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How is the Initial Precursor related to the target?

Initial Precursor: Understanding fractions requires students to first recognize an amount of something. Before students begin to recognize items separately, they recognize sets visually or tactually as a whole (i.e., there is something there). Provide students with meaningful experiences and descriptions of items they can touch, hear, smell, and see. Help students make sense of the items by demonstrating the symbolic word, sign, or symbol (e.g., Here are/is some cubes, some pencils, some dirt). Look for fun and interesting opportunities across the day to use the word some within a natural context.

How is the Distal Precursor related to the target?

Distal Precursor: When working toward an understanding of fractions, students need exposure to a wide variety of items that can be put together and taken apart (e.g., linking cubes, magnetic tiles, puzzles). Encourage students to interact with the objects. Educators should take care to use the words whole and part to describe them. While students do not need to say these words, they do need to learn the meanings. At the same time, students will be working on counting skills. The models used to teach counting (e.g., five-frame, ten-frame, sets, number line) can be used to support the concepts of whole and part.

M.EE.3.OA.1-2

M.EE.3.OA.1-2 Use repeated addition to find the total number of objects and determine the sum.

Link to Minimap:

http://dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.OA.1-2.pdf

Target | Solve repeated addition problems.

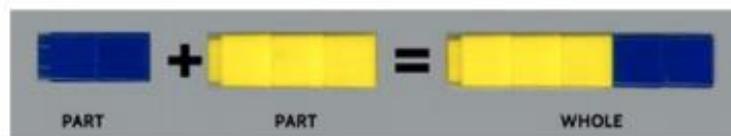
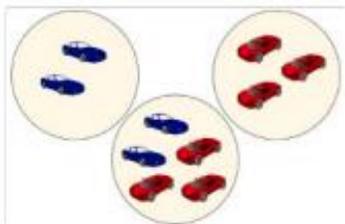
Proximal Precursor Represent repeated addition with an equation. Represent repeated addition with a model.	Distal Precursor: Demonstrate the concept of addition. Combine sets.	Initial Precursor: Recognize subset. Recognize set. Recognize separateness.
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How is the Initial Precursor related to the target?

Initial Precursor: In order to use repeated addition to solve problems, students must first learn to organize items into groups/sets based on a common characteristic such as size, color, shape, texture, or flavor. Students learn how to sort items by separating a group of items into two groups (e.g., vehicles and animals). As students gain comfort sorting items into sets, they are encouraged to use their language to convey their thought process by identifying and naming the characteristic that determines the set (e.g., wheels and legs). Activities that require students to engage actively with the items will foster the students' understanding of set, subsets, and separateness (e.g., the game "one of these things is not like the other"; highlighting one characteristic in a group of similar items [e.g., color] by which the items will be grouped; incorporating creating sets into everyday activities [e.g., during clean up time students place items into one of two bins based on a designated characteristic]).

How is the Distal Precursor related to the target?

Distal Precursor: As students gain an understanding of how to group items into sets, educators will begin to help students connect their knowledge of sets with their knowledge of counting. Educators will provide multiple experiences counting sets and combining sets using multiple models. The models might include sets of objects or two partially-filled ten-frames that are combined to make a third. The following are examples of models.



M.EE.3.OA.4

M.EE.3.OA.4 Solve addition and subtraction problems when result is unknown, limited to operands and results within 20.

Link to Minimap:

http://www.dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.OA.4.pdf

Target | Determine the unknown in a subtraction equation.
Determine the unknown in an addition equation.

<p>Proximal Precursor</p> <p>Recognize the addition sign. Explain the function of the addition sign. Represent addition with equations. Recognize the subtraction sign. Explain the function of the minus sign. Represent subtraction with equations. Recognize the equal sign. Explain the function of the equal sign.</p>	<p>Distal Precursor:</p> <p>Combine sets. Demonstrate the concept of addition. Partition sets. Demonstrate the concept of subtraction.</p>	<p>Initial Precursor:</p> <p>Recognize separateness. Recognize set.</p>
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How is the Initial Precursor related to the target?

Initial Precursor: Understanding how to add and subtract requires a student to be able to recognize a set or group of items (also see M.3.OA.1-2). Students need many opportunities to experience quantities and numerals in context across the school day. Educators provide lessons using a variety of sets to model early counting. Teach students to recognize when items are grouped together into a set or separated out. The educator presents a set, labels it (e.g., two balls, one bear, three blocks), counts the items, labels it again, and encourages students to use numerals to label and count the separate sets.

How is the Distal Precursor related to the target?

Distal Precursor: As students begin to understand labeling and counting small sets, educators will highlight the differences between sets on the basis of overall area or discrete number using the words more, less, and same. Provide students with multiple opportunities to count and compare a wide variety of sets with an increasing number of items, label the set (e.g., eight ball, 12 bears, 15 blocks), and move items in and out of the sets, labeling and counting them again (e.g., "You just said this set has 11 cubes; if I take two cubes, how many will you have?").

NOTE: Educator can work on the Distal Precursor level using the sets of numbers that students working at the Target level are adding and subtracting.

M.EE.3.OA.8

M.EE.3.OA.8 Solve one-step real world problems using addition or subtraction within 20.

Link to Minimap:

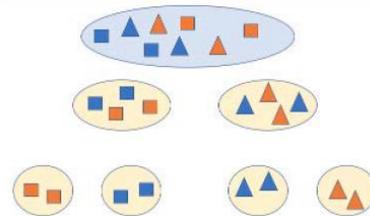
http://dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.OA.8.pdf

Target | Solve subtraction word problems within 100.
Solve addition word problems within 100.

<p>Proximal Precursor</p> <p>Determine the unknown in an addition equation.</p> <p>Determine the unknown in a subtraction equation.</p>	<p>Distal Precursor:</p> <p>Demonstrate the concept of addition.</p> <p>Demonstrate the concept of subtraction.</p>	<p>Initial Precursor:</p> <p>Combine sets.</p> <p>Partition sets.</p>
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How is the Initial Precursor related to the target?

Initial Precursor: The knowledge needed to solve addition and subtraction word problems links back to an understanding of how to create sets (see M.3.OA.1-2), but it also requires learning to manipulate sets (i.e., combining and separating or partitioning). Provide students many opportunities to take a set of objects (e.g., tiles, linking cubes, buttons) and separate them based on a given characteristic (e.g., shape, color, size) into two distinct sets, separate them again based on another characteristic. Guide students to notice how the set size changes each time you combine or partition the sets.



How is the Distal Precursor related to the target?

Distal Precursor: As students gain an understanding of how to group and manipulate items into sets, educators will begin to help students connect their knowledge of sets and counting to addition and subtraction. Educators will provide multiple experiences using the various addition and subtraction problem types (e.g., joining, separating, part-part-whole, and comparison problems). Here are a few examples.

Start: 10 $10 - 4 = \underline{\quad}$

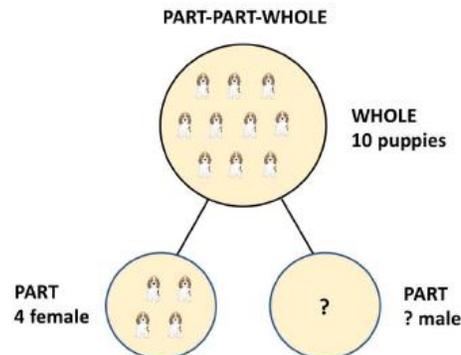
Change: Remove 4

Result: 6

S E P A R A T E

Tiles or Cubes $12 - 7 = \underline{\quad}$

COMPARISON PROBLEM



M.EE.3.OA.9

M.EE.3.OA.9 Identify arithmetic patterns.

Link to Minimap:

http://dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.OA.9.pdf

Target | Recognize repeating patterns.
Recognize symbolic patterns.
Recognize growing patterns.

Proximal Precursor Recognize patterns.	Distal Precursor: Order objects. Classify. Contrast objects.	Initial Precursor: Recognize same. Recognize different.
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How is the Initial Precursor related to the target?

Initial Precursor: Recognizing patterns is an important building block to many mathematical concepts and skills such as skip counting, repeated addition, and multiplication. In order to build toward arithmetic patterns, students need to engage in activities that compare at least two items. Calling attention to both how they are the same and how they are different. This type of instruction should include but may not be limited to quantities, shapes, and attributes across the school day so students have many opportunities to experience same and different.

How is the Distal Precursor related to the target?

Distal Precursor: Building on same and different, educators can use some of the other mathematical concepts like working with sets or recognizing a whole and parts to help students identify same and different. For instance, students may create a set and then create a second set that has the same amount. Then, they can change one of the sets to make it different. As students are learning to create and identify sets that are same and different, educators can draw student attention to the various attributes of an object to teach students to order, classify, and contrast the objects. These understandings will then lead to students having the attentional skills to begin recognizing patterns.

M.EE.3.G.2

M.EE.3.G.2

Recognize that shapes can be partitioned into equal areas.

Link to Minimap:

http://www.dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.G.2.pdf

Target | Partition any shape into equal parts.

<p>Proximal Precursor Model equal part. Partition circle into 2 equal parts. Partition circle into 3 equal parts. Partition circle into 4 equal parts. Partition a rectangle into rows and columns. Partition rectangle into 2 equal parts.</p>	<p>Distal Precursor: Partition shapes.</p>	<p>Initial Precursor: Recognize unit. Recognize wholeness. Recognize parts of a given whole or a unit.</p>
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How is the Initial Precursor related to the target?

Initial Precursor: Being able to partition shapes requires a student to recognize a unit and recognize when basic objects are in whole and part forms. Work on this understanding by giving students an opportunity to observe, feel, or otherwise interact with objects and shapes in their whole and part forms. The general goal is to explore the differences between whole units or objects and parts of units or objects. As students explore shapes, label them and describe them as whole or part.

NOTE: Educators can work on the Initial Precursor skills using everyday objects and/or using the shapes that students working at the Target level are partitioning into equal parts.

How is the Distal Precursor related to the target?

Distal Precursor: As students begin to recognize whole objects or shapes and parts of objects or shapes, they can move toward building and taking apart shapes.

NOTE: Educators can work on the Distal Precursor skills using everyday objects and/or using the shapes that students working at the Target level are partitioning into equal parts.

M.EE.3.MD.1

M.EE.3.MD.1 Tell time to the hour on a digital clock

Link to Minimap:

http://www.dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.MD.1.pdf

Target | Tell time to the hour.

Proximal Precursor Recognize the hour on a digital clock. Recognize the minute on a digital clock.	Distal Precursor: Recognize measurable attributes.	Initial Precursor: Attend. Recognize different.
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How is the Initial Precursor related to the target?

Initial Precursor: In order to understand the passage of time and ultimately to tell time and understand its relevance, students begin by learning to focus their attention and recognize when things in their environment change or are different. In the context of learning to tell time, educators can help students attend to what is happening and contrast it with what will happen next or what happened in the past. They can draw students' attention to changes and help them notice new and different things in the environment, especially when those new and different things are associated with the passage of time.

How is the Distal Precursor related to the target?

Distal Precursor: In the context of an Essential Element addressing the ability to tell time, recognizing measurable attributes refers to attributes that begin to mark time. For example, students recognize attributes such as the beginning and ending of an activity; things that are accomplished first then next; and specific time concepts such as day, night, today, tomorrow, and yesterday.

M.EE.3.MD.3

M.EE.3.MD.3 Use picture or bar graph data to answer questions about data.

Link to Minimap:

http://www.dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.MD.3.pdf

Target | Use bar graphs to read the data.
Use picture graphs to read the data.

Proximal Precursor Recognize the structure of a bar graph. Recognize the structure of a picture graph.	Distal Precursor: Classify. Order objects.	Initial Precursor: Recognize attribute values. Arrange objects in pairs.
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How is the Initial Precursor related to the target?

Initial Precursor: In order to be able to understand data on a graph, students begin by learning to notice the attributes of an object. The educator draws the students' attention to new objects or stimuli, labels them, describes them, and the student observes, feels, or otherwise interacts with them. Educators encourage students to begin placing like objects together.

How is the Distal Precursor related to the target?

Distal Precursor: As the students' attention to objects increases, educators will begin to draw the students' attention to what is the same and different between familiar items: color, shape, quantity (1-4), size, texture, and pattern. Educators should take care to use attribute words while defining and demonstrating their meaning. While students do not need to say these words, they do need to learn the meanings. Students will also begin to group two items in the same set based on their attributes (e.g., two tigers, bumpy ball and bumpy gravel, red spoons).

M.EE.3.MD.4

M.EE.3.MD.4 Measure length of objects using standard tools, such as rulers, yardsticks, and meter sticks.

Link to Minimap:

http://dynamiclearningmaps.org/sites/default/files/documents/Math_EEs/M.EE.3.MD.4.pdf

Target | Use an appropriate tool to measure length using inches.
Use an appropriate tool to measure length using feet.

Proximal Precursor Demonstrate iteration of length unit. Measure length using informal units.	Distal Precursor: Make direct comparison of 2 lengths.	Initial Precursor: Recognize attribute values.
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How is the Initial Precursor related to the target?

Initial Precursor: In working toward learning to use tools to measure the length of objects, students begin by learning to notice the attributes of an object. The educator draws the students' attention to an object or stimulus, labels it, describes it, and the student observes, feels, or otherwise interacts with it.

How is the Distal Precursor related to the target?

Distal Precursor: As students are engaging with objects, educators will continue to label and describe them, but they will also begin to incorporate lessons that have students directly compare lengths of two objects by matching one item against another (e.g., placing them side by side). This implies that they can distinguish length from other attributes such as color or shape. As students make direct comparisons, educators should demonstrate the describing words associated with length (e.g., short/long, length) and encourage students to begin using the words.