### M.EE.8.SP.4

**Grade-Level Standard**

M.8.SP.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?

**DLM Essential Element**

M.EE.8.SP.4 Construct a graph or table from given categorical data and compare data categorized in the graph or table

**Linkage Levels**

**Initial Precursor**
- Classify
- Order objects

**Distal Precursor**
- Recognize the structure of a bar graph
- Recognize the structure of a picture graph
- Recognize the structure of a line plot (dot plot)
- Recognize the structure of a tally chart

**Proximal Precursor**
- Use bar graphs to read the data
- Use picture graphs to read the data
- Use line plots (dot plots) to read the data
- Use tally charts to read the data

**Target**
- Use graphs to read between the data
- Use tally chart to read between the data
- Represent data using bar graph
- Represent data using picture graph
- Represent data using line plot (dot plot)
- Represent data using tally charts

**Successor**
- Use graphs to read beyond the data
- Use tally charts to read beyond the data

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<table>
<thead>
<tr>
<th>How is the Initial Precursor related to the Target?</th>
<th>How is the Distal Precursor related to the Target?</th>
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<tbody>
<tr>
<td><strong>Initial Precursor:</strong> In order to represent and use data, students begin by learning to recognize what is the same and different between familiar items such as color, shape, quantity, size, texture, and pattern. Educators should take care to use attribute words (e.g., circle/square, more/less/same, rough/smooth, red, green, red, green) 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 or more items in the same set based on an attribute. As the students group two or more items, the educator will demonstrate the representation in a bar graph or line plot and encourage students to actively participate in its creation.</td>
<td><strong>Distal Precursor:</strong> Students actively participate in the creation of bar graphs, picture graphs, line plots, and tally charts by placing representations, x's, or dots for each response to the research question.</td>
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</tbody>
</table>

A diagram showing the relationship of nodes in the mini-map appears below.

*Key to map codes in upper right corner of node boxes:*

- IP Initial Precursor
- SP Supporting
- DP Distal Precursor
- S Successor
- PP Proximal Precursor
- UN Untested
- T Target
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