

Participant Handout

Cultivating Students' Mathematical Identity Through Probability and Statistics

Mathematical Identity

What is a role or skill you identify with?

What is a role or skill you do not identify with?

For each of these roles or skills, reflect on the following:

- What are your beliefs about yourself as a learner or doer of that role or skill?
- What are your beliefs about how others perceive you as a learner or doer of that role or skill?
- What are your beliefs about the abilities one needs for that role or skill?

Mathematical identity is:

- our beliefs about math and the nature of math abilities.
- our beliefs about ourselves as math learners.
- our beliefs about how we are perceived by others as math learners.¹

¹Regional Educational Laboratory Northwest, "Promoting."

Anchoring Phenomena

A good **anchoring phenomenon**

- builds upon everyday or family experiences;
- is observable to students and has relevant data, images, or text;
- has an audience or stakeholder that is interested in the findings; and
- doesn't have to be explosive or fantastic.²

What topics could make good anchoring phenomena for your students?

Statistical Questions

A **statistical question** is a question that can be answered by collecting data values that can vary.

Nonexample	Example
How much money does my teacher make?	What is the average salary for a teacher in my state?

Create engagement and sense-making with context and statistical questions.

No Context	Context and a Statistical Question
<p>Find the mean.</p> <p>11, 12, 14, 14, 16, 17</p>	<p>Jada wonders, What is the typical number of minutes it takes my friends to get to school? She asks them, and they tell her the following numbers of minutes.</p> <p>11, 12, 14, 14, 16, 17</p> <p>Answer Jada's statistical question by calculating the mean.</p> <p>Interpret the mean number of minutes in terms of equal shares.</p>

²Penuel, "Qualities."

Census at School

Consider the following data from a sample of 28 middle school students from Colorado.³

Number of Languages Spoken	Number of Occupants in Home	Favorite Season	Allergies
1	3	Winter	Yes
2	9	Summer	No
2	6	Summer	No
2	5	Winter	Yes
1	4	Spring	Yes
1	9	Fall	Yes
1	3	Summer	No
1	6	Fall	No
1	6	Winter	No
1	4	Winter	Yes
1	7	Fall	No
1	9	Fall	Yes
1	6	Winter	No
1	4	Winter	Yes
1	3	Fall	Yes
2	4	Summer	Yes
2	2	Fall	No
2	2	Summer	No
1	6	Winter	No
1	4	Fall	No
1	2	Fall	Yes
2	4	Fall	Yes
3	7	Spring	Yes
1	6	Winter	No
1	3	Fall	Yes
1	4	Fall	Yes
2	4	Winter	Yes
2	4	Spring	No

What statistical questions could you or your students ask about this data?

³ American Statistical Association, "Census."

Works Cited

American Statistical Association. "Census at School - United States." Accessed September 19, 2023.

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