

Student Survey Measures

OUTCOME

► EXPERIENCE IN MATH CLASS

..... Sense of belonging in math class

Feeling supported and valued by the teacher¹ | Items:

- I feel that I can talk to my math teacher about things that are bothering me.
- My math teacher is someone I can count on to help me.
- I believe that my math teacher is interested in the things I have to say.
- My math teachers knows that I can do good work.
- I have a lot of opportunities to get involved in my math class.

Feeling supported by others¹ | Items:

- My math class is like a family.
- Students in math class help each other, even if they are not close friends.
- When I do well in math, the other students in class are usually happy for me.

Feeling a sense of belonging² | Items:

- I feel accepted in this class.
- I feel like I belong in this class.
- I feel like I can be myself in this class.
- I feel comfortable in this class.

..... Engagement in math class

Behavioral engagement³ | Items:

- I stay focused.
- I answer question in math class.
- I put effort into learning math.
- I keep trying even if something is hard.
- I complete my homework on time.

Cognitive engagement³ | Items:

- I try to learn more about the topics we cover in class.
- I go through work that I do for math class and make sure it is right.
- I think about different ways to solve a problem.
- I try to connect what I'm learning to things I have learned before.
- I try to understand my mistakes when I get something wrong.

..... Enjoyment in math class³

Items:

- I often like to be challenged in math class.
- I look forward to math class.
- I enjoy learning new things in math class.
- I want to understand what we are learning in class.
- I feel good when I am in math class.
- Math is interesting.

OUTCOME

MATH IDENTITY



Sense of being a “math person”

Seeing self as a math person⁴ | Items:

- I am just not good at mathematics.
- I get good grades in mathematics.
- I learn mathematics quickly.
- In my mathematics class, I understand even the most difficult work.

Perception that others see self as a math person⁵ | Items:

- Parents/relatives/friends – To what extent do you agree the following people see you as a math person?
- Mathematics teacher – To what extent do you agree the following people see you as a math person?
- Yourself – To what extent do you agree the following people see you as a math person?



Perception of math as useful for reaching goals⁴

Items:

- Trying in mathematics is worth it because it will help me in the work I want to do later in life.
- Learning mathematics is worthwhile for me because it will improve my career prospects.
- Mathematics is an important subject for me because I need it for what I want to study later on.
- I will learn many things in mathematics that will help me get a job.

Note. All survey items for all outcomes are on a scale of 1 (Completely Disagree) to 6 (Completely Agree).

Endnotes

- ¹ Maloney, T., & Matthews, J. S. (2020). Teacher care and students' sense of connectedness in the urban mathematics classroom. *Journal for Research in Mathematics Education*, 51(4), 399–432. <https://eric.ed.gov/?id=EJ1259551>
- ² Hanson, J. (2017). Determination and validation of the Project for Educational Research That Scales (PERTS) survey factor structure. *Journal of Educational Issues*, 3(1), 64–82. <https://files.eric.ed.gov/fulltext/EJ1131721.pdf>
- ³ Fredricks, J. A., Wang, M. T., Schall, J., Hofkens, T. L., & Parr, A. (2016). Using qualitative methods to develop a survey measure of math and science engagement. *Learning and Instruction*, 43, 5–15. https://cadrek12.org/sites/default/files/Wangarticle2_0.pdf
- ⁴ Organisation for Economic Co-operation and Development. (2013). *PISA 2012 assessment and analytical framework: Mathematics, reading, science, problem solving and financial literacy*. OECD Publishing. https://www.oecd.org/en/publications/2013/02/pisa-2012-assessment-and-analytical-framework_g1q27388.html
- ⁵ Cribbs, J. D., Hazari, Z., Sonnert, G., & Sadler, P. M. (2015). Establishing an explanatory model for mathematics identity. *Child Development*, 86(4), 1048–1062. <https://eric.ed.gov/?id=EJ1069048>



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