



Methods of Learning During Early Childhood Development



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Abstract

Teaching the basic fundamentals of arithmetic such as addition, multiplication, and so on can vary drastically throughout the world. In the early stages of childhood development, these methods implement different thought processes while still coming to the same conclusions. Children of different backgrounds presumably are able to compute complex mathematical functions at the same rate as they progress. We investigated if this hypothesis was true by looking into the different methods taught at an early age, and comparing them to the national test scores as students progress academically.

Introduction

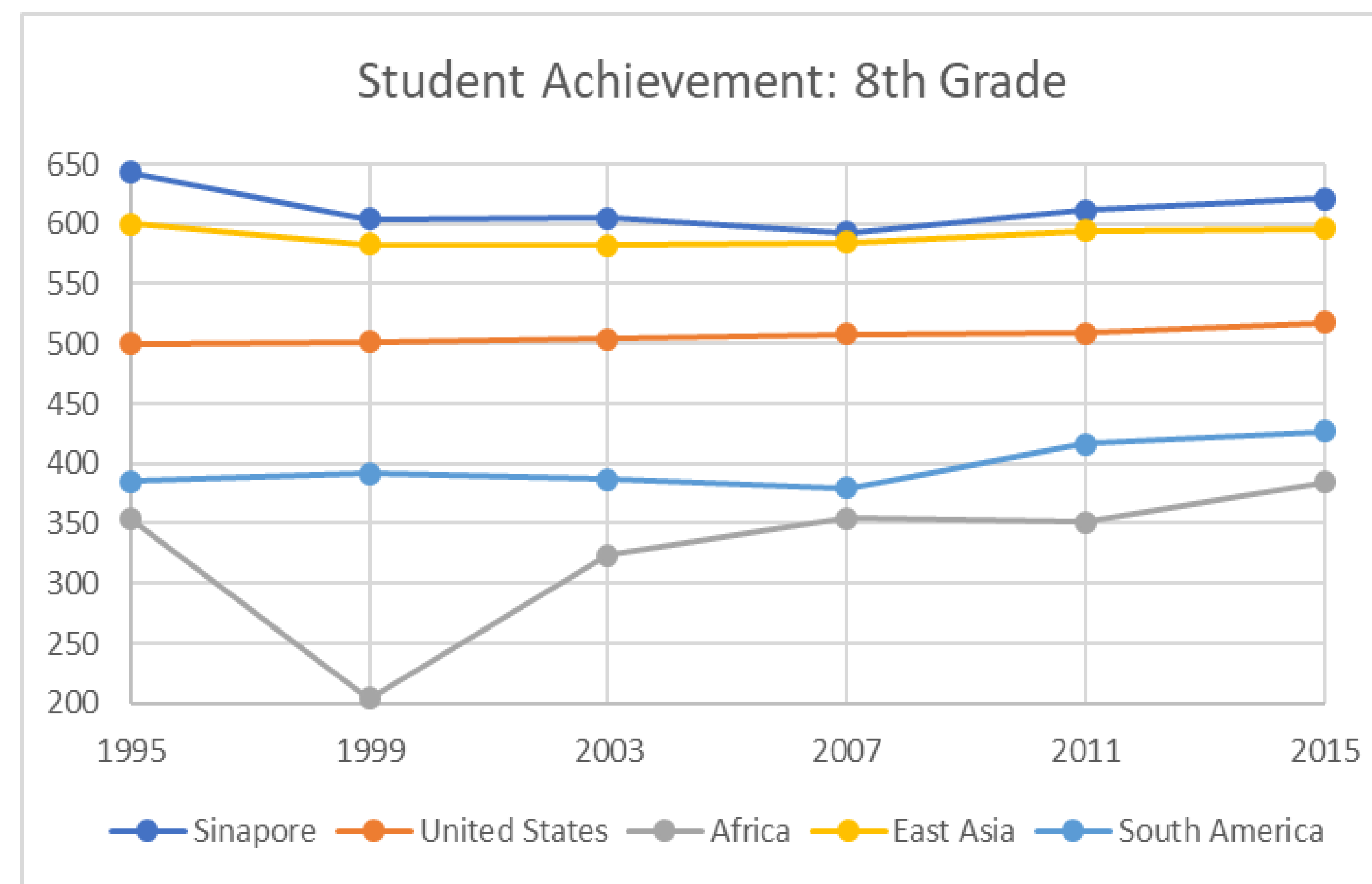
We have reached an age where most educational knowledge is shared throughout the world. Universally teachers and professors refer to formulas and theorems created by mathematicians centuries and even millennia ago. While all countries pool from these same sources, international scores do not represent this fact. Often the same set of countries dominate these international tests at all age groups. Our goal was to find out if there was a specific method of teaching that distanced the top countries from the others.



Methods and Goals

Researching data collected by both the PISA and TIMSS our group wanted to:

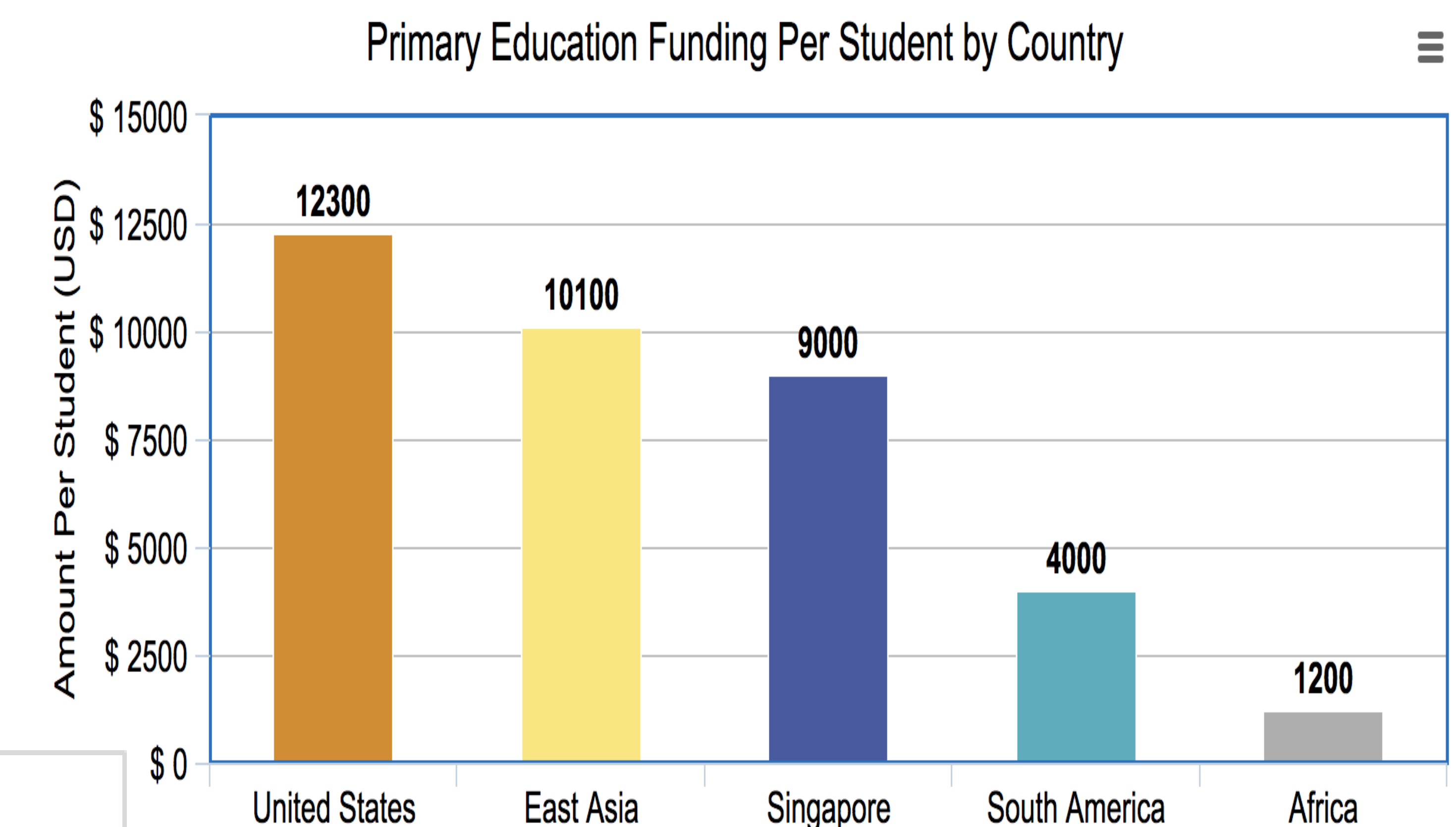
- Establish the consistent top tier of countries that take the TIMSS and PISA exams.
- Research what methods are used by the top countries during early childhood development.



Data from TIMSS 1999-2015

Findings

- Western countries often focus on lesson plans containing an excessive amount of content.
- Eastern countries tend to go over much more in depth over a comparative miniscule amount of material.
- African and South American countries consistently are found at the bottom of these rankings
- East Asian countries, specifically Singapore, seem to dominate both the TIMSS and PISA international average scores.



Conclusions

From our research we can conclude that there were two primary variables that contributed to test scores:

- The lowest ranking countries consistently have a lack of resources in education. This puts primarily the African and South American countries at a disadvantage.
- Countries who focus on a smaller number of topics at a time while going more in depth typically outscore countries who spread their lesson plan thin.

Future Work

We found that the East Asian countries did not show positive correlation between educational expectations and mathematic achievement. It would be interesting to do more research into what seems to be contradicting evidence.

References

- National Center for Education Statistics. [March, 21, 2019]. <https://nces.ed.gov/timss/timss2015/>.
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