# Articles

On this page, I will post articles that provide evidence explaining why and the degree to which students across the nation need to improve their math skills.

1. Arellano, A., Bedi, S., & Gallagher, T. (2016). **Michigan Achieves! 2016 Michigan State of Education Report**. The Education Trust—Midwest (ETM). Retrieved from https://midwest.edtrust.org/michiganachieves/

   This data-supported report produced by the nonpartisan Educational Trust-Midwest group describes how achievement levels of all Michigan student subgroups are falling behind the achievement levels of students in other states, both in early reading and middle school math. This report then describes the next steps in a plan to make Michigan a top-10 educational state.

2. Columbia University. **Community College FAQs**. Community College Research Center. Retrieved from https://ccrc.tc.columbia.edu/Community-College-FAQs.html

   These FAQs summarize findings from research covering a wide range of topics, from the demographics of who enrolls and completes community college to why students succeed or fail to earn an associate's degree. What I found most interesting was the research and data describing the degree to which students taking 1, 2, or 3 remedial math courses (not for college credit) fail to complete a college-level math class:

   *"A CCRC study of 57 community colleges participating in the Achieving the Dream initiative found that only 33 percent of students referred to developmental math and 46 percent of students referred to developmental reading go on to complete the entire developmental sequence"* (Bailey, Jeong, & Cho, 2010).

3. Bahr, P. R. **A Preliminary Examination of Remedial Course-Taking Patterns in Michigan's "Achieving the Dream" Community Colleges.** University of Michigan. Retrieved from http://www.mcca.org/uploads/fckeditor/file/2%20-%20Peter%20Bahr%20-%20University%20of%20Michigan.pdf

The "OMG!" described in this PowerPoint presentation is the degree to which community college students struggle in remedial math courses. I believe that this data underscores our need to improve K–12 and community college curriculums.

4. Superannuation. (2014, January 15). How Much Does It Cost To Make A Big Video Game? Kotaku.com [Web log post] Retrieved from https://kotaku.com/how-much-does-it-cost-to-make-a-big-video-game-1501413649

   This article takes a historical look at the costs to develop many of the most popular video games that have hit the market since Frogger was introduced in 1982. I have always been amazed at the amount of money that investors sink into the development of recreational video games. Obviously investors reap enormous profits. I would love to see our country reap the profits that are possible with a better-educated workforce. I feel strongly that my Number DNA project would better prepare users to have greater success in algebra, trigonometry, and the science classes needed for success in STEAM related fields.

5. Wan, T. (2015, April 24). **Scholastic to Sell (Most) Education Technology Business to Mifflin Harcourt for $575 Million**. EdSurge News. Retrieved from **https://www.edsurge.com/news/2015-04-24-scholastic-agrees-to-sell-some-education-technology-business-to-houghton-mifflin-harcourt-for-575-million**

   This article speaks to the profitably of the Ed Tech market.

   "*Since its launch in 1999, READ 180 has generated over $1 billion in sales for Scholastic*."

   "*…revenues from the company's overall edtech business have flattened recently, to $175 million for the first nine months of this fiscal year*."

   Yet, students are not profiting by being better able to succeed in algebra, trigonometry and beyond. To me this disconnect is glaringly obvious. Critics point to the fact that the first-generation education Learning Management Systems (LMS) fall far short of their promise to innovate the delivery of math instruction. I'm attaching another article (#6) that talks about ways to improve that next generation LMS systems.

6. The $N^2$GDLE Vision: The "Next" Next Generation Digital Learning Environment Authors: by **Phillip Long** and **Jonathan Mott**

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https://er.educause.edu/~/media/files/articles/2017/7/erm17412.pdf

This article outlines criticisms of many of the Learning Management Systems currently on the market and also outlines the elements needed in the "Next" Next Generation Digital Learning Environments ($N^2$GDLE). I derived great encouragement for my efforts to develop my project because Number DNA includes most of the elements in the $N^2$GDLE shown below.