



# HOW TO IMPROVE ATTITUDES ON MATH LEARNING

**Connecting math learning to careers can increase engagement, motivation to learn and test scores**

It is a widely known fact that many students begin developing a negative attitude toward mathematics instruction at a young age, some as early as elementary school. Past studies have documented evidence that students across a range of settings experience a [decline in attitude toward science and mathematics in the late elementary years](#).

This negative attitude traditionally stems from a lack of understanding, or a feeling of embarrassment at not being able to provide solutions quickly. While overall comprehension of mathematics in the classroom has always been an issue, when placed in terms of national test scores, the statistics become even more alarming.

In 2019, the US scored an average of just 34% in terms of eighth-grade public-school students performing at or above The National Assessment of Educational Progress' "proficient" level in mathematics. For years, district administrators and supervisors have struggled to improve these numbers.

Is it possible a solution lies not in studying the *how* of math, but rather the *why*?

"Students have always struggled with their ability to connect mathematical concepts to their interests," Ricky Williams, former school superintendent and current director of state partnerships for NS4ed, posits. "One of the most important things that a district can do is to allow kids to find purpose for their learning."

An effective way to accomplish what Williams describes is by incorporating real-world applications to math learning, including potential career paths.

## CONNECTING MATH LEARNING TO CAREERS

Math traditionally has been taught in a very linear, abstract format that makes it difficult for most students to relate the subject matter to their daily lives. The responsibility then falls to teachers to help bridge the gap to demonstrate how math can be useful and necessary to students' futures.

One way to bridge that learning divide is to modernize math instruction in a way that brings comprehension and purpose to the forefront.

"The real problem is changing the behavior the students have towards math. We keep trying to think up a better math problem, and we think that if we put it in a textbook, that'll fix it," says Joseph Goins, CEO and founder of NS4ed.

"What we really have to do is take a step back and ask: 'How do we engage students differently about mathematics?'"

One approach that school districts are looking at is teaching math skills that can be applied to different career paths. With this knowledge, students are better equipped to find purpose in their instruction and that purpose allows them to own the learning process and build a better pathway to their desired field of employment.

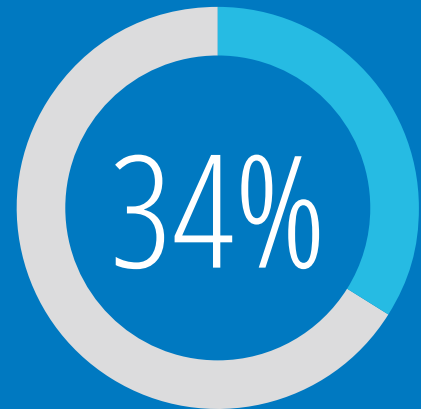
When students find a purpose in their learning — by discovering a career path that leads them directly to employment or to higher education for additional skill attainment — they perform better in school.

Experts, such as Goins, have seen this proven time and again in terms of career and technical education programs nationwide, which focus on hands-on, practical learning. According to the US Department of Education, students on a CTE track while in high school had higher median annual earnings eight years after high-school graduation than students who were not on such a track.

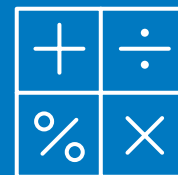
"If students have purpose in math, they've done something that ignites a passion for learning and they follow that trajectory," Goins says.

"We're taking this idea of engagement and purpose, and we can drop it into actual math. And that purpose,

In **2019**, the US scored an average of just



in terms of **eighth-grade** public-school students performing at or above The National Assessment of Educational Progress' **"proficient"** level in mathematics.



For years, district administrators and supervisors have struggled to improve these numbers.

## CASE STUDY

# Career-Based Instruction In Action



The purpose of mathematics learning is the next logical step for both students and teachers; the *why* part of the equation. Now that we understand *how* mathematical concepts work, we can focus on its use in the real world. Mathematics is used in literally thousands of occupations. The work of instructors is to narrow down a student's specific interest, and show them what skills are needed, so they can succeed in acquiring that job.

Teachers can utilize NS4ed's Pathway2Careers™ Curriculum lessons on a daily basis to connect careers to math learning and ensure students are on the correct path to reach their career goals at each level of education they require. Students instantly gain access to up-to-date salary projections and career outlook data based on their region. That means a student studying to be an engineer in Detroit can see what their salary would be once they obtain a job in their region.

"We currently have over 350 lessons that introduce students to more than 400 unique occupations with Pathway2Careers™ Curriculum," explains Joseph Goins, CEO and founder of NS4ed.

"Even if a teacher said they were going to use 20 lessons, that is still 20 careers they are putting in front of a kid

in an algebra class. With these lessons, kids get to go through algebra class and get 20 potential career opportunities embedded in their academic learning."

Pathway2Careers Curriculum includes an innovative measure called the Quantile® Career Database that shows students, in real time, to which careers their current math aptitude can be applied. This invaluable information increases students' awareness of the skills and concepts they will need to qualify for the positions they desire.

“  
We currently have  
over **350 lessons** that  
**introduce students**  
**to more than 400**  
**unique occupations**  
with Pathway2Careers™  
Curriculum.  
”

In contrast, let's say a student's interests don't necessarily align with a specific field of study quite yet. The value of foundational mathematics is that, at its very core, it is interchangeable for an infinite number of careers, including those careers and jobs that have not even been created yet. As long as a student is taught the foundational elements, they can apply those skills to an infinite number of jobs down the road.

The intention of this model is to prepare students for all eventualities by helping them

feel supported in their career choices, as well as fully preparing them with the tools necessary to support success in a variety of careers.

The most popular question teachers are asked, regarding math, is: "When will I need to know this?" With Pathway2Careers, that question can be answered in a matter of minutes. ■

---

along with changing attitudes, is what a lot of research says will lead to better performance.”

One other major factor that affects motivation in students is income. When a student can see firsthand how lucrative certain careers can be, they begin to see the value of their education and are more motivated to succeed.

“A teacher told me a story once,” Goins says. “This teacher had a female student, and their lesson that day was on being an electrician. The female student actually raised her hand and said, ‘I didn’t know a female could do that job.’ I know that sounds crazy in the year 2021 that a female student doesn’t know she can be an electrician. That student is going to say, ‘I can make \$90,000 as an electrician?’ That is a pretty powerful thing to learn in a math class.”

## MAKING CAREER INFO A PRIORITY IN MATH

There is no better time to change students’ attitudes about their academic trajectory than right now. As the educational landscape continues to evolve with the times, so should the approach to education school districts adopt — particularly when it comes to math instruction. When teachers and school administrators apply a purpose-to-learning approach to education, they are better able to ignite a true passion for education in their students; one with which students see the true value of their learning in conjunction with real-world, career-driven applications.

“We can’t teach the same old way; we’ve got to be more creative and be flexible to try to pique their interest,” Williams concludes. ■

“ I know that sounds crazy in the year 2021 that a female student doesn’t know she can be an electrician. That student is going to say, ‘I can make \$90,000 as an electrician?’ That is a pretty powerful thing to learn in a math class. ”



## ABOUT NS4ED

NS4ed is a rising leader and valued education partner in technology-based career and college education services. By tackling complex and relevant issues we offer a unique perspective to drive mission critical change in a community, district, or organization. NS4ed partners with state and local entities to gather data, understand the policy effect and implications, and develop models that yield high value and actionable results.

Learn more at: [ns4ed.com](https://ns4ed.com).

sponsored by

