



CASE STUDY:

How Innovative  
Education  
Technology Can  
Improve Math  
Performance by  
84 Percent

Most educators recognize the fundamentally vital role math education plays in preparing students for college and career opportunities. Yet despite this near-unanimous belief, many current students continue to struggle with grasping foundational mathematics concepts like those found in Analytic Geometry and Algebra. The performance of Georgia students illustrates this difficulty, as less than one-third of students statewide (29 percent) scored proficiently on a recent EOC state assessment in math. How can educators succeed in bolstering their students' math performance?

## Situation

Jake Collins is a math teacher at Statesboro High School in Bulloch County near Savannah, Georgia. An 18-year veteran teacher, Collins returned to his alma mater 11 years ago and currently teaches five 10th grade Analytic Geometry classes.

Used to validate student learning, the EOC is a 71-question, state-administered math assessment consisting of algebra, geometry, statistics and number sense questions. When Statesboro High School recently posted an EOC math proficiency rate (38 percent) that was above the state average yet left plenty of room for improvement, Collins and his colleague, Diana Johnson, sought to develop a strategy to improve math performance within their classrooms. Specifically, they wanted to utilize data technology to drive instruction and student learning.

## Challenges

Math education has long proven troublesome for American students and educators. Most math teachers are responsible for 100+ students, and the expectation that a teacher can preside over 30 students within a given class and have them all learn at the same rate is simply unrealistic.

Without the aid of data-informed instruction, students typically wait days to learn their test results and lack the means to take ownership of individualized learning. And when the absence of flexible grouping results in reteaching that impedes the progress of the student majority, review is often glossed over, much to the detriment of those students who benefit from revisiting covered materials.

Technology offerings can vary from classroom to classroom, as evidenced by the fact that Collins' classes had access to Chromebooks but Johnson's classes did not. Moreover, even when technology proves equal, students often aren't exposed to questions matching the rigor of the EOC test, leaving them ill-prepared when the time for state assessment arrives.

The cumulative effect of these factors creates a challenging learning environment in which teachers and student fight an uphill battle towards achieving math proficiency.

## Actions

Collins and Johnson established a three-tiered, technology-driven approach designed to address the identified problem areas in order to improve student math performance:

1. Total immersion into a Professional Learning Community (PLC)
2. Utilization of item banks
3. Adoption of a data and assessment management system

### **Total immersion into a Professional Learning Community (PLC)**

The Professional Learning Community required Collins and Johnson to establish common assessments to ensure test results could be measured accurately across each classroom. While both teachers maintained autonomy over their instruction styles, they shared best practices and engaged in friendly competition intended to optimize both teacher and student performance.

### **Utilization of item banks**

With a newfound reliance on item banks, Collins and Johnson were able to expose their students to higher-level questions. Mapped to the state standards, the math questions contained within item banks better reflected the rigor associated with the EOC testing.

### **Adoption of a data and assessment management system**

The enterprising teaching duo from Statesboro High School also sought the expertise of [Illuminate Education](#) to capitalize on data-driven instruction and create an effective educational assessment system. By administering a quick formative assessment on a particular standard, Collins and Johnson were now aware of which students had mastered a topic and which needed additional work before any of these students even left the classroom. Flexible grouping ensued, whereby students achieving high assessment scores participated in enrichment activities and students in need of extra help revisited the most-missed questions one-by-one, standard-by-standard.

Empowered by [Illuminate Education](#)'s Web-based assessment system, students could now take ownership of their own learning. Already aware of those standards for which they were at risk for deficiency, students seized the opportunity to utilize an Enhanced Learning Target (ELT) to hone their skills through video resources and online practice.

## Results

The fruits of Collins' and Johnson's efforts were evident almost immediately. **Statesboro High School's passing percentage on the EOC math assessment test climbed year-over-year from 38 percent to 70 percent – an improvement of 84 percent.**

## Conclusion

A technology-driven approach combining immersion into a Professional Learning Community with item bank utilization and adoption of [Illuminate Education](#)'s data and assessment management system resulted in a sharp, measurable improvement in math performance for students at Statesboro High School. This strategy should be repeated and extended to other school districts to further validate these results.

## Look Ahead

Despite the seemingly instant success experienced with math performance improvement at Statesboro High School, Collins still sees room for growth. He's not satisfied with a 70-percent proficiency rating on the EOC math assessment test.

Among the program enhancements Collins is targeting is the implementation of Activate Instruction to achieve automation. This student-focused resource sharing platform allows teachers to create and organize resources into "playlists" for students to tackle at their own learning pace.

While Collins remains a dedicated geometry teacher at Statesboro High School for now, he's in the process of transitioning to an instruction technology coaching role. By helping other teachers mimic his technology-driven approach to student performance improvement, he intends to affect change far beyond the limits of his own classroom.

At [Illuminate Education](#) we intend to be your school district's comprehensive provider of Web-based products and services offering innovative data solutions. Serving the K-12 education market, our turnkey data-focused software and services currently assist more than 1,100 school districts across the United States.

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