

The logo for the Center for Teaching and Learning (CTL) at CSUN, featuring the letters 'CTL' in a large, bold, serif font.

## ON THE CUTTING EDGE

### *Raising Test Scores Without Teaching to the Test: Access and Equity for Developing Mathematical Understanding*

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May 2019

In August 2017 the CSUN Center for Teaching and Learning (CTL) created a contract with Birmingham Charter High School in LAUSD to provide ongoing professional development (PD) and coaching for their math department. In that first year, three of the CTL math experts (Dr. Ivan Cheng (lead), Mr. Bob Buck, and Ms. Enchantee Minor) visited the campus weekly on a rotating basis. Throughout the 54 days that they were on campus, they provided a suite of services that included individual one-on-one coaching, collaborative co-planning, and “mini-PDs” during teachers’ conference periods based on their requests. Individual coaching sessions focused on everything from classroom management to engagement strategies to co-planning and Universal Design for Learning (UDL).

In the spring of 2018, the BCHS math teachers and CTL math consultants brainstormed ways that they could collaborate to help the school improve its state test scores. One strategy suggested, and subsequently implemented, involved de-tracking students in the 11th grade so that all students, regardless of their past performance in Algebra I and Geometry, would be enrolled in Algebra II. Second, they agreed to redesign lessons to accommodate all students based on the principles of UDL. Third, the CTL experts offered ongoing support for teachers in implementing the newly redesigned lessons. With tremendous administrative support, a team of teachers was assembled to provide instruction to every 11th grade student. During the summer of 2018, a team of BCHS math teachers met with the CTL team to begin designing a new curriculum for Algebra II instead of purchasing textbooks. During the summer planning, the teachers determined the sequence of the standards to be taught, the standards that could be chunked together, which units should be taught first, and how activity development could be divided.

This work was important because too many students were not meeting standards, as measured by state tests. More important, too many students were not provided the means to access post-secondary college and career opportunities. Thus, this presented a huge problem in equity and access. Our work helped the school overcome traditional barriers to student success and simultaneously empowered teachers to bring about student success. As a result of the shifts that were made in the schoolwide delivery of Algebra II, a number of significant effects were seen. First, and perhaps most exciting, a large number of students who had previously failed Algebra I and Geometry were now experiencing success in math. In fact, the average test score of these students on the first unit was 86%, which was a remarkable feat considering that they took the exact same test as the “typical” and “honors” students. Second, the teachers made significant shifts in how they presented material to the students. Using key principles of UDL, the teachers created lessons that helped students develop and solidify their understanding of math topics before formalizing those ideas as textbooks typically do. In other words, the teachers developed lessons that had a low floor to make the content accessible to all students and a high ceiling to help all students engage in rigorous mathematics. Third, the culture of the classrooms was transformed to focus on developing student agency, where students were encouraged to explore and experiment with their hunches.

The work that has been done at Birmingham Charter HS has truly been transformative. By empowering teachers to take charge of student learning outcomes, they were able to step outside the “box” of traditional teaching practices. As they tailored lessons to students’ developmental stage of learning, the teachers developed confidence and efficacy in their own ability to help students learn mathematics. Supported by ongoing coaching, teachers internalized and implemented research-based best practices. Working together, we were able to figure out ways to overcome the common barriers to student success.

**Dr. Ivan Cheng** is professor in the Department of Secondary Education with over two decades of experience teaching mathematics at the middle school and high school levels. As one of the first teachers in the area to receive National Board certification, Dr. Cheng is a frequent presenter at math conferences and professional development workshops.

## Want to Learn More About How to Create a Robust Mathematics Program? Check Out These References

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