I started learning math outside of school after third grade when I realized that, with the help of computers, I could go beyond the rudimentary math classes offered in school and move ahead as fast as I wanted. Using CD-ROM software, I learned algebra well enough to test out of it, and then geometry and trigonometry. At first, I worked with my father and grandfather, but then I was doing the exercises on my own. The “harder” the math was, the more interesting it became. For mathematical variety, I began attending UCLA’s Sunday Math Circle, where middle and high school students train for math competitions and are exposed to topics such as set theory, modular arithmetic, and advanced geometry.

After third grade, when I was ready to tackle calculus, my parents decided that I needed to get proper credit and guidance, so they found an online course. I took Calculus AB through Stanford University’s Education Program for Gifted Youth (EPGY), working on it at home, and then, with my teacher’s approval, during a geometry class. (I discovered that schools often like you to sit in the prescribed class, no matter how far ahead you are!) Then, after taking Game Theory at a CTY summer program, I decided to try CTY’s online course for Calculus BC.

Jumping In

When I began my online education, I had no school pre-calculus credit. My parents were worried that I wouldn’t be able to meet the prerequisite to take calculus, but we contacted the program and found that the administrators took into consideration classes and experiences outside of school and were flexible with their guidelines.

When I started CTY’s Calculus BC course, my middle school math supervisor gave me free time to learn on my own. Each day, I would go to the school library’s computer lab, log on to the website, and complete the interactive lesson, followed by problems to reinforce it. At the end of each unit, there was a take-home test. Whenever I needed help, I consulted my CTY teacher. Although the teachers are available by phone, I preferred e-mail. The system also has a “whiteboard” where my teacher and I could write on the screen simultaneously, like a chat room. (My supervisor at school could help, too, but, unlike the CTY instructor, he didn’t work with calculus on a daily basis.) At report card time, my math grade came from my grade summary from CTY. The course allowed me to work at my own pace, and I finished it in about a semester. This flexibility, too, is great; there have been times—such as vacations—when I’ve postponed the course for a week or two.

I finished Calculus BC in January and jumped right into CTY’s Linear Algebra, a class I wouldn’t have otherwise taken until college. The dynamic of this course is different because it’s not entirely web-based. Instead, most of what I’ve learned came from the textbook. On a typical day, I read a passage in the textbook and then work through the problems that go with it. I scan my work and send it in. I get the instructor’s feedback in a day or two, and I’m always glad to see his commendations for the problems I did correctly and his constructive suggestions for the ones I got wrong. I had a vague idea of what linear algebra was before taking the course, but now I know how to use multiple variables in mathematical applications, which is essential in computer programming and other applied math. I am on the last chapter and when I finish, I’ll go right to Multivariable Calculus.

The school article about my AP Calculus score was a nice surprise, but the math is the real reward. I’ve learned that if you really want to excel in something, you have to be self-motivated. Others can encourage you, but you have to love the subject to learn outside the box. The other key opportunity. In this digital age, students are no longer limited by their age or by the courses their schools offer. CTY’s structured online courses have given me an opportunity that didn’t exist a few short years ago, allowing me to move ahead, to fill the gap between grade-school math and college.

Aaron Anderson is a freshman at Harvard-Westlake School in Los Angeles, CA. When he’s not doing math, Aaron enjoys ‘60s rock and roll, sings, plays guitar, bass, piano, and harmonica.

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