

CASE STUDY

Building a Quality Computer Science Program with Perseverance and Hard Work

Michelle Burke, a Computer Science Teacher at Lake Havasu Unified School District in Arizona

After teaching at Lake Havasu Unified School District for 22 years, Michelle Burke was informed in March of 2018 her position was going to be eliminated. She was offered the role of computer science teacher and though she had no experience in the subject, she decided to



take a chance and try to learn. She spent time researching online resources and came across CodeHS which served as the basis for building her classes.

Michelle began her new position with a unique opportunity to build the computer science program from scratch, using her own creativity and CodeHS as a supporting tool. Michelle spent her summer working through the Introduction

to Javascript (Golden) course as a student so she would be confident teaching students in the fall. She found that if she was ever unsure of how to do something, she could return to CodeHS and figure it out. Her favorite CodeHS resources include the video lessons, lesson plans and most importantly, the problem guides!

“I would quit without CodeHS.”

Since starting the computer science position, Michelle has repeated her initial plan of spending the summer learning a new course and then teaching that course to the students the next year. 2021-2022 is her fourth year running the program and pathways have been fully developed for students.

Michelle offers 4 levels of Computer Science classes to students:

- Intro (year one): Introduction to Javascript (Golden) and Cybersecurity
- Intermediate (year two): Introduction to Python (Rainforest)
- Advanced (year three): Java
- Advanced (year four): Artificial Intelligence & HTML/CSS

In the advanced fourth year course, students are able to pick a passion project at the end of the year. Their projects this year range from taking the AP test for computer science to designing games in Unity and using their coding skills on a 3D printer.

Michelle's classes are part of the Career and Technical Education (CTE) program at her school. The goal of the CTE program at Lake Havasu High School is to "integrate core academics and technical skills to promote student interests and provide hands-on, project-based experience. In CTE classes, students receive specific career and soft skills training that will better prepare them for high-wage, high-skill and high-demand careers!" Michelle's hard work has ensured her classes are able to consistently meet that goal.

"My challenge is making sure I'm preparing the students for the next level. I meet with community members 2 times a year to discuss trends in the field and to share what we are covering in class. The professor that teaches at our local community college says that the students from the high school are coming in prepared and well trained. I will count that as a win! Success!"

Another one of Michelle's main goals is building relationships with her students. She typically has the same students for 4 years and wants to create a safe space for them to try something new and fail. She teaches students academic skills and also focuses on soft skills they will need to be successful in the future. Her students know that learning something new can end in failure but ultimately can be lessons that build their skills for the next challenge.



"Although the challenge problems can be truly challenging, students feel a sense of pride if they use grit and a growth-mindset to persevere through the tough questions."

Many of Michelle's students will be moving to the next level to develop their computer science skills. Jordan is in her first year in the computer science program. She shared ways she has been able to learn about perseverance and not giving up, even when she's stuck. "I've learned to be experimental and willing to try new ideas when the first plan doesn't succeed. I've also learned a lot by asking others for help, by researching, and finding possible solutions from external input. This class has really helped my mindset regarding challenging situations."

Maya is a sophomore who is passionate about coding. She is part of the NCWIT Aspirations in Coding community and earned the Arizona Affiliate Honorable Mention award at NCWIT. She plans to attend college and earn a computer science degree, specifically in software design.



Finishing up his senior year, Logan plans to study computer science in college and dreams of saving enough money working to eventually start his own game studio. He's been in Michelle's class for all four years of high school.

"She's (Ms. Burke) been one of the reasons that I still want to come to school. She shows us respect and lets us work at our own pace. She is also just a nice person in general and is definitely one of the best teachers I've ever had." - Logan, Student

Colin is a senior who plans to continue his coding studies in his post graduate career. Before starting his freshman year, he was unsure about which classes he would take but was set on pursuing something in the medical profession, specifically Pharmaceuticals. He wasn't able to get into his first choice elective which led him to choose computer science class as a backup. From there, he developed an interest in computer science and decided to continue taking each class that was offered.



"I can't think of any other teacher that's made that big of an impact on me throughout high school. I can speak for the students in Ms. Burke's advanced year 4 class when I say that her dedication has impacted us greatly." - Colin, Student

Now that Michelle has run through a full 4 year cycle with students, she is looking forward to developing the program even further. Her passion and dedication to teaching computer science is contagious, which can be seen through her many students who have chosen to continue their education in the field.

CodeHS is excited to continue to support Michelle, and can't wait to see how her students excel and grow in their future careers!