



Bobby Duke Middle School Successfully Teaching Coding at a Title I School



Scott Baily
Technology Teacher
Coachella, CA

Implementation

Grades Taught 7-8

Length of Use 3 years

Students Enrolled 130
this Year

Courses Covered

- CompSci 1
- CompSci 2
- CompSci 3
- CompSci 4
- GameDev 1

Favorite Features

- Responsive Support
- Immediate Engagement

Challenges

Three years ago, while researching coding programs to implement in his class, Baily reached out to CodeCombat after he “tried using everything.” With a 20 year background in teaching and years of technical and coding knowledge, Baily knew what he was looking for but was not finding it in the suggested solutions.

Bobby Duke Middle School sits nestled between the Southern California mountains of Coachella Valley to the west and east and the Salton Sea 33 miles south, and boasts a student population of 697 students within Coachella Valley Unified’s district-wide population of 18,861 students.

The students of Bobby Duke Middle School reflect the socioeconomic challenges facing Coachella Valley’s residents and students within the district. With over 95% of the Bobby Duke Middle School student population qualifying for free and reduced-price meals and over 40% classified as English language learners¹, the importance of teaching 21st century skills was the top priority of Bobby Duke Middle School Technology teacher, Scott Baily.

Baily knew that teaching his students coding was a key pathway to opportunity in a job landscape that increasingly prioritizes and necessitates computing skills. So, he decided to take on the exciting challenge of creating and teaching the only coding class in the school and finding a solution that was affordable, responsive to feedback, and engaging to students of all learning abilities and backgrounds.

¹ <http://www.ed-data.org/school/Riverside/Coachella-Valley-Unified/Bobby-Duke-Middle>



The most engaging way to learn computer science

In Baily's search, he found that most programs did not scaffold learning or offer the challenge or engagement he was looking for:

"A lot of the other programs [...] were maybe two to three maximum one week programs. They were just too short; it was just you build the block and then there's nothing else you can do, there's no advancement in it."



Baily was determined to find a program that both engaged his students and prepared them for possible futures in STEM by teaching them real coding skills. That turned out to be more difficult than he anticipated. Some coding programs taught obscure languages that were rarely used in the real world. Other programs used block-based mechanisms to teach students to code, but never took them to the next level. And some programs, Baily found, just taught his students rote skills without extracting those concepts. Using a standard LEGO set as an analogy for the problem, Baily explains that you can teach students how to build a LEGO car but after they're done, all they'll have is a car. Baily found a way to reach students and do so much more, saying "with CodeCombat you're teaching them with that same LEGO set how to build a car, how to build the airplane, and how to build the house."

Implementation

On June 2016, Baily reached out to CodeCombat school specialists with a small budget in hand from his principal and a relentless drive to bring coding to his 180 students. A year before reaching out to CodeCombat, Baily's class had tried it and already "logged quite a few hours" on the program. After trying multiple solutions, he discovered CodeCombat through [Hour of Code](#). His students loved it and so did he.

When I got my hands on CodeCombat [and] started having my students use it, the light bulb went on. It was just night and day from every other program that we had used. They're not even close.

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Scott Baily, Technology Teacher



The most engaging way to learn computer science

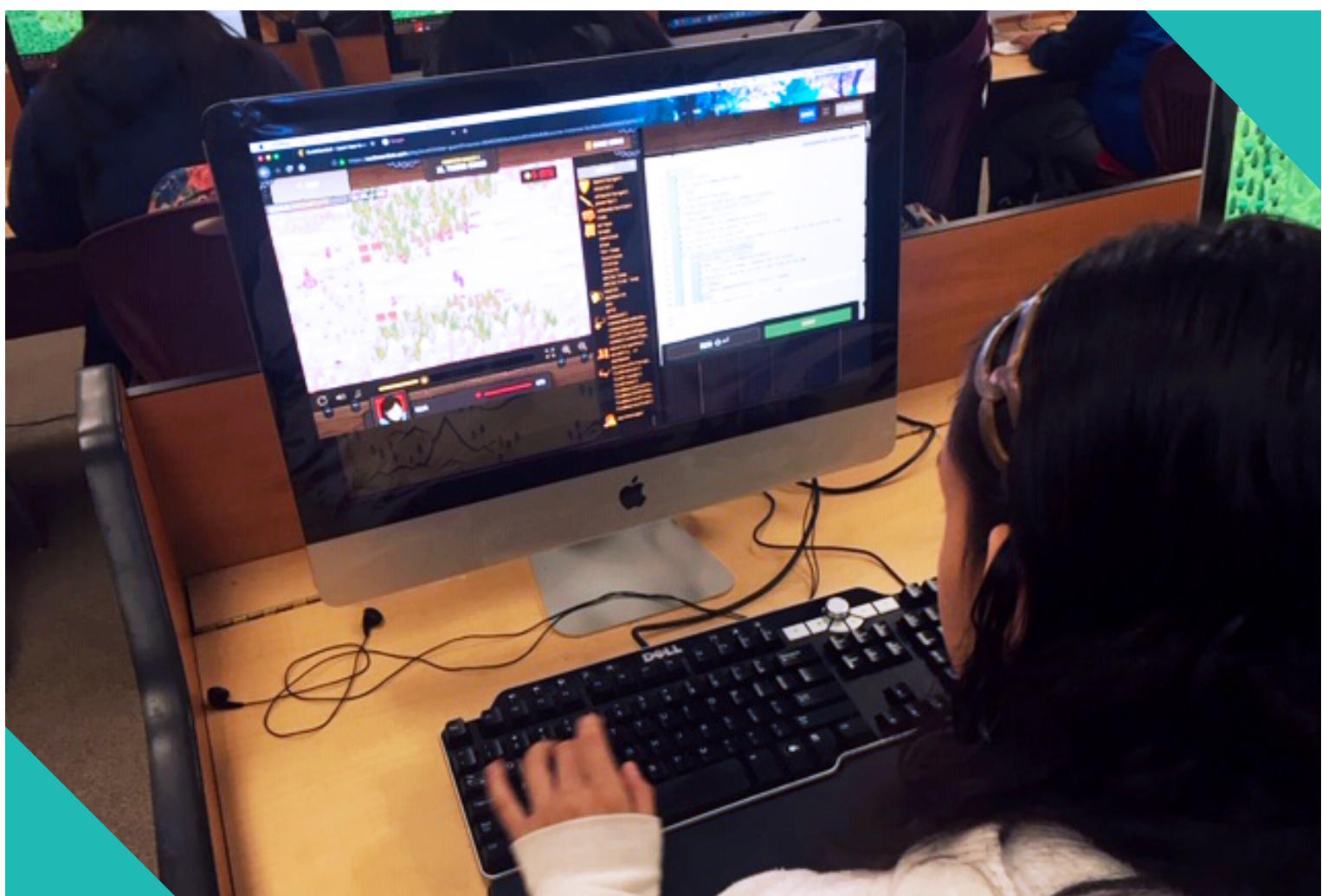
Baily was the only computer science educator teaching coding in the district and wanted to give his students the best opportunity to succeed. He knew he wanted to give them the chance to learn real coding skills, so CodeCombat moved to the top of Baily's proverbial shopping list for the next school year. Then came the difficult task of actually funding the full curriculum for his class.

As a Title I school, Bobby Duke Middle had limited supplemental funds to purchase a full curriculum for the amount of students Baily needed. Undeterred and with a small budget from his Principal, Baily decided to take a chance. The district typically prefers to deal with vendors directly through purchasing, but because Baily knew how long the process could realistically take and wanted to make sure his students would be set up with full access to CodeCombat in time for the start of the school year, he took the initiative and reached out to CodeCombat school specialists directly.

CodeCombat specialists were able to work directly with Baily. In early August, Baily sent a quote to his principal who approved it, and a few weeks later vendor purchasing was able to complete the process. By September 1st, Baily had a full curriculum license for all 180 students, just in time for the start of classes.

Baily, through exploration and the sheer determination that all great teachers show on behalf of their students, was able to bring a coding solution to his students.

Capturing Student Engagement



CodeCombat is a daily part of the core coding curriculum in Baily's four classes of 7th and 8th graders. In a typical class, Baily starts with a brief introduction of the day's lesson, sometimes using the provided lesson plans, and then allows his students 30 minutes to code on CodeCombat at their own pace. CodeCombat courses are composed of several levels that students solve and play through in order to learn various programming concepts.



Tips for Teachers

Baily's top recommendation to teachers is to not be afraid to jump in even if they don't know how to code or know the program. Baily says that teachers don't need to supplement this program with other materials, and that teachers are met with responsive support every step of the way.

"You don't have to have one day of coding under your belt. All you have to do is allow the students to have the opportunity to learn the program. And once you set them up and let them go, they're going to go on their own."

In Mr. Baily's Introduction to Computer Science class, students start at the very first course, Intro to Computer Science, where they learn concepts such as basic syntax, loops, and variables. Then, they progress to more advanced courses such as Computer Science 2, Computer Science 3, and Computer Science 4, where they continue to learn concepts such as if statements, functions, input handling, boolean logic, object literals, and more.

With the rapid pace of classes and waning attention, Baily likes that CodeCombat engages students right away and helps them stay focused on completing levels, saying that "Students were involved with the first few levels and [...] unlike other programs that were okay—they were grasping onto concepts better and having more fun with it." In a district with a 23:1 student-teacher ratio, it's not easy to keep students' attention, let alone engage them. Baily usually teaches more than 30 students at a time across his four classes, and found success with CodeCombat, saying "They're not distracted, they enjoy the program."

CodeCombat also gives Baily the flexibility to allow his students to work independently while occasionally engaging other students in small group work or pull out instruction, when he'll do quick assessments with students by asking them questions to reinforce the concepts they've learned.

Students would begrudgingly start working when asked to do so on other programs, but with CodeCombat, students are excited to jump into lessons on their own. Baily explains how students are excited to get to work, saying "This is more, 'Okay, cool! Let's get at it!' and you can use the program for many many months and that excitement and joy stays with them."

Students with no prior coding experience were not only completing multiple levels but having fun doing so. Baily was surprised that he was able to find a program that teaches tangible coding skills while not distracting them with simple games that could be boring or too distracting. Over the past 3 years, Baily has seen a real change in his students.



The most engaging way to learn computer science

At the beginning of the year, the students prior to class starting had no coding ability at all. By the time the year was over, the students were proficient in Python AND JavaScript. I never thought I could get students this engaged in the process...

Scott Baily, Technology Teacher

Motivating Challenge in Students

The excitement is palpable in Baily's voice as he talks about the daily successes all his students share despite differing learning levels. From special education students or those with other difficulties to his general education students, they've all been able to do well in his class and work through challenges.

"It's one thing to go through the Intro to Computer Science initial program, but once you start getting into Computer Science 2, the struggle begins. And I let them know that coding isn't about just learning the program. It's about that struggle; that struggle is part of the whole process. So working their way through that point when they get it, you can see them pump their fists or they'll come over to me like, 'I got it!'"

While completing levels was the incentive, the challenge did not discourage students. "The kids weren't dying going from level to level. The struggle seemed proper from all the levels... the program's very very well designed, from learning step one to learning step two, and so on."



567 Total Students
130 Current Students

Students at Bobby Duke Middle School have written:

54,775 **839,326** **613**

*computer
programs* *lines of code* *games and web
projects*

Concepts Learned

Basic Syntax	Advanced Strings
Arguments	Arithmetic
Strings	Input Handling
While Loops	Boolean Logic
Variables	Arrays
Algorithms	Break Statements
If Statements	Continue Statements
Functions	Object Literals
Parameters	For Loops



The most engaging way to learn computer science

Baily attributes their tenacity to complete challenges and ultimate success to the game's UI (user interface), which provides students with all the feedback they need to fix any errors or mistakes they make without giving them the answers.

Bright Futures Ahead

One of the biggest takeaways Baily wants his students to have when they walk out of his class is how important it is to have a useable skillset they can take with them into advanced classes and future careers, "If this is a passion, they have to go for it, but if it's not, that's OK as well. It's just that it's a solid knowledge base to have." Baily, because of his extraordinary effort and through CodeCombat, is able to genuinely prepare his students for advanced classes in technology or expose them to the skills they'll need to develop for college.

...to me, CodeCombat is very similar to what I would think the colleges like UCLA or USC or any of these other major universities would have their students using. To me it's a college level preparatory class.

Scott Baily, Technology Teacher

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