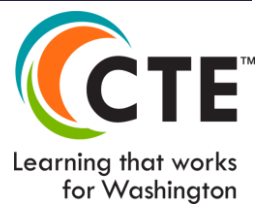




# CTE STEM CAMP REPORT 2019

Renton CTE STEM Summer Camp



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# CAMP OVERVIEW

## Goals and Highlights

The goal CTE STEM Summer Camp is to increase student (especially under-represented populations) interest and confidence in STEM (Science, Technology, Engineering, and Mathematics) topics through a variety of STEM activities. The five-day program covered topics including Android app creation, rocketry, robotics, and video game design. During these activities, campers prepared products for the hour-long STEM Showcase on the final day. Additionally, each day started with an engineering challenge for campers to complete. Students from all four Renton middle schools participated.



Building rockets to launch at the STEM Showcase

Of the four main activities, rocketry was the only one that was new this year. Building off previous camps, we kept three of the most popular topics: they built and programmed Arduino-based robots using a kit we developed and were able to take home at the end of the week; they created new apps for Android phones; and they programmed video games using Scratch programming language. Additionally, campers explored graphic design with PixelArt and Adobe PhotoShop to draw backgrounds and sprites for their games.

When looking for the fourth topic, we wanted to explore aerospace with the local connections to aerospace companies as well as it being a new emphasis in middle school Technology Education classes next year. The campers started by building simple rockets they were able to fire by blowing through a straw before they began to build model rockets with chemical engines. When it was time to launch those, we had to get special permission and oversight from the Renton Municipal Airport. The campers, their families, and the public loved watching these rockets fly.

Thanks to collaborations with outside funding, the camp was free for participants to attend. Staff salaries, rocket kits, and robotics kits were paid for by the Renton Schools Foundation.

## Changes to Camp

Previous camps have started the day after school gets out which gave little time to get set up for camp and meant that the seven or eight-day camp would be divided by a weekend. This year we planned to shorten camp to only five days to give at least a weekend as a mental break from the school year. This seemed to allow students to view camp as separate from school and have more fun with it.



Programming personalized apps in App Inventor

Another challenge at camp during previous years was the age overlap between the campers (incoming 7<sup>th</sup> - 12<sup>th</sup> grade students) and the high school mentors (incoming 10<sup>th</sup> - 12<sup>th</sup> grade students) who were helping run the camp. We found that older campers tended to get distracted more easily since they felt they were “too old” for the material while the younger mentors were often more interested in participating than in mentoring. This year we reduced the age range of the campers to only allow incoming 7<sup>th</sup> - 10<sup>th</sup> grade. We opted to include one year of current high school students to ensure we could still reach our target of 100 campers. Since we had no trouble reaching that goal, we will likely reduce the range to 7<sup>th</sup> - 9<sup>th</sup> grade students next year which will allow us to focus marketing efforts on middle schools only.

In another attempt to make camp feel less like school, we abandoned the multi-period day approach. Instead, campers would arrive for an engineering challenge, then break into a focused activity for the full day. They were given a few hours on Friday morning to finish any projects they didn't have time to complete during the week. Overall, the teachers and campers felt the new format slowed down the day and made camp feel less frenetic.

Finally, by reducing the length of camp, we were able to stretch our meals budget to cover breakfast for campers for the first time. We know that some of our students depended on the lunch we've provided previously and were happy to be able to provide an additional meal.

*“Just wanted to thank you for a great camp, Elizabeth loved it and wished it was longer.”*

*~ Brian Handlin*

## Demographics

This year we were able to reach a large cross-section of the Renton School District population. The race/ethnicity of the campers was similar to the district as a whole with little change from last year. We continued to attract more boys than girls to camp but have a more equal split than last year. This is a recurring problem within STEM programs and one that we are working to solve within CTE. Specifically, we are looking at ways to market the program that are more targeted at girls and hope to continue to increase their representation at camp.

| SCHOOL       | TOTAL | %   | 6TH | 7TH | 8TH | 9TH |
|--------------|-------|-----|-----|-----|-----|-----|
| DIMMITT MS   | 11    | 10% | 3   | 5   | 3   | 0   |
| MCKNIGHT MS  | 30    | 26% | 11  | 14  | 5   | 0   |
| NELSEN MS    | 10    | 9%  | 2   | 3   | 5   | 0   |
| RISDON MS    | 53    | 46% | 28  | 13  | 12  | 0   |
| HAZEN HS     | 5     | 4%  | 0   | 0   | 0   | 5   |
| LINDBERGH HS | 2     | 2%  | 0   | 0   | 0   | 2   |
| RENTON HS    | 0     | 0%  | 0   | 0   | 0   | 0   |
| TALLY HS     | 0     | 0%  | 0   | 0   | 0   | 0   |
| HOME         | 3     | 3%  | 2   | 0   | 0   | 1   |

Note, the grades listed here are the ones the students are leaving to better align with recruitment and marketing efforts  
This is **different** from the rest of the report

Another point that came up when looking at the campers was what schools they attend. We had campers from all four Renton Middle Schools, however the numbers from each school were not proportional. Risdon was vastly over-represented (53 campers or 46% of total) followed by McKnight (30 campers, 26%). To try to increase participation from Dimmitt (11 campers) and Nelsen (10 campers), we are looking at

what Risdon does to promote camp and trying to duplicate it at the other schools. Seeing that 73% of families heard about camp from weekly school emails and knowing camp was featured more prominently in the emails from Risdon, we plan to start with Dimmitt and Nelsen emails.

The largest demographic shift from previous years was the increase in English Language Learners. We had about four times as many ELL campers this year and have seen no direct cause for the increase.

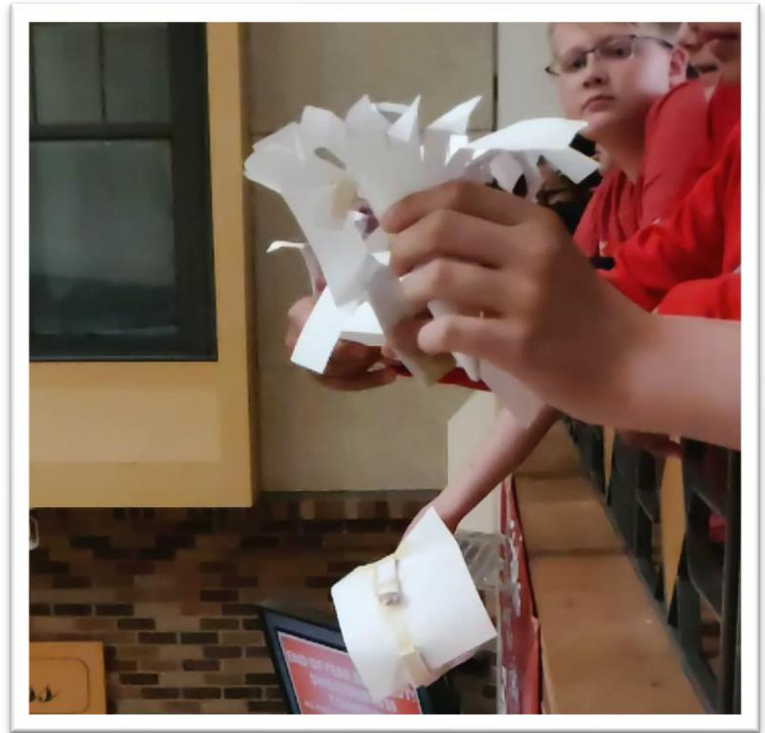
| CATEGORY                              | CAMP # | CAMP % | RSD % | CAMP % 2018 |
|---------------------------------------|--------|--------|-------|-------------|
| <b>AMERICAN INDIAN/ALASKA NATIVE</b>  | 1      | 1%     | 1%    | 1%          |
| <b>ASIAN</b>                          | 47     | 41%    | 25%   | 31%         |
| <b>BLACK / AFRICAN AMERICAN</b>       | 7      | 6%     | 15%   | 11%         |
| <b>HISPANIC/LATINO OF ANY RACE(S)</b> | 15     | 13%    | 25%   | 12%         |
| <b>NATIVE HAWAIIAN / PAC ISLANDER</b> | 1      | 1%     | 1%    | 0%          |
| <b>TWO OR MORE RACES</b>              | 13     | 11%    | 9%    | 7%          |
| <b>WHITE</b>                          | 30     | 26%    | 24%   | 38%         |
| <b>SPECIAL EDUCATION</b>              | 8      | 7%     | 14%   | 9%          |
| <b>ENGLISH LANGUAGE LEARNER</b>       | 33     | 29%    | 14%   | 7%          |
| <b>NON-ENGLISH HOME LANGUAGE</b>      | 31     | 27%    | 38%   | 27%         |
| <b>7TH GRADE</b>                      | 46     | 40%    |       | 33%         |
| <b>8TH GRADE</b>                      | 34     | 30%    |       | 25%         |
| <b>9TH GRADE</b>                      | 26     | 23%    |       | 13%         |
| <b>10TH GRADE</b>                     | 8      | 7%     |       | 15%         |
| <b>GIRLS</b>                          | 35     | 31%    | 49%   | 26%         |
| <b>BOYS</b>                           | 79     | 69%    | 51%   | 74%         |

# FEEDBACK SUMMARY

After camp, students and parents were asked what they like best about their experience.

Rockets and robotics were the two most popular activities. Below is a sample of some of the other feedback.

- My son even loved the meals.  
The activities at this camp are engaging and educational. My son came home excited and stimulated by what he learned every day. At the end of the week we were all so proud of his accomplishments and amazed by how much these kids accomplished in a week's time. This was a great camp.
- My kid learned a lot many new things
- That my son enjoyed it and was able to be successful :)
- Very organized
- The rocket making and launching. Being able to complete projects.
- Learning how to give functions to Arduinos
- my kid learns coding and he loves it.
- Animating pixel art, Scratch, and editing sounds with audacity
- The food. And app designer.



Launching paper helicopters as part of an Engineering Challenge

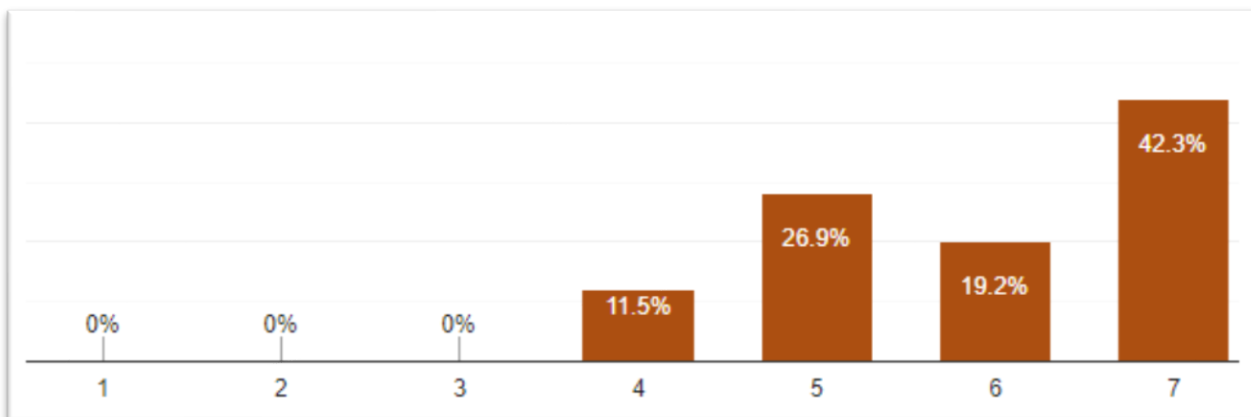
We also asked about their least favorite aspects of camp. The most common answer was “Nothing” (~20% of responses). Interestingly, about the same number of students who specifically said they liked App Inventor as those who disliked it (~15%). The last large grouping of responses was wanting camp to last longer than a week or to go all summer (~11%)

*“Thank you so much. My kid learned so many new things in camp with hands on technology. It was first time she got exposed to robotics and app building, she thoroughly enjoyed it. It was really good to hear from her daily about her hands on experience. Hope Renton school district keeps this up and improve her school district rating. Thank you so much for all hard work you do.”*

*~ Smita Agawane*

## Overall Impression

The most important feedback was about the overall impression of camp. The results from the survey aligned with the anecdotal evidence from the STEM Showcase. The showcase was an opportunity at the end of the week for family, friends, and the community to see what the campers had accomplished during the week. They were excited to show off their robots, rockets, apps, and Scratch games.



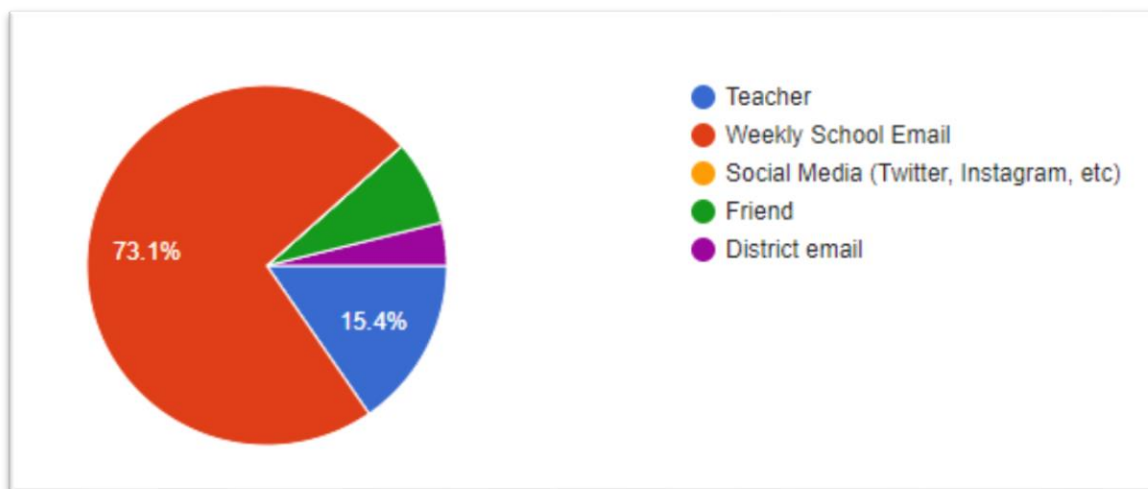
Overall impression rated from 1 (Waste of time) to 7 (BEST.THING EVER!!!)



*“Alisa is very much enjoying the camp and her dad and I love that she is afforded this opportunity.”*

*~ Dede Dolan*

We also asked what the campers would change about it for next year. These tended to reflect what they found least enjoyable about camp which was expected. The two most common responses were nothing and make camp longer. It also included several requests for more organized games and activities during the lunch break.



How did you hear about camp?

The final aspect of the feedback form was looking at how the students found out about camp. We specifically called this out in the survey because we had little data to inform us about the efficacy of our marketing efforts. As we discussed earlier, weekly school email was, by far, the main driver of campers registering, and we will look to expand that next year. Although we saw a lot of interest and activity around our social media posts to advertise camp, they didn't seem to be an influencer on registrations.



Student-made rockets, ready to fly

## BUDGET SUMMARY

This year the budget was similar to previous years and the cost per student (\$412.37) was down slightly from last year (\$427.46). This is comparable to other paid summer camps in the Seattle area. The transportation costs went down slightly due to fewer days of camp. Staffing and meals costs would have gone down for similar reason except that we had additional staff helping this year and included breakfast for the first time.

As we continue to reuse supplies for activities like the rocket launch pads and the sound recording equipment for Scratch programming, costs per camper should continue to decrease.



Programming new games in Scratch

| 2019 CTE STEM CAMP     | RSF Grant          | CTE Contribution   | Total              |
|------------------------|--------------------|--------------------|--------------------|
| Equipment and Supplies | \$7,632.00         | \$875.00           | \$8,507.00         |
| Transportation         |                    | \$7,253.00         | \$7,253.00         |
| Camp Meals             |                    | \$5,709.00         | \$5,709.00         |
| Staff Salaries         | \$25,541.00        |                    | \$25,541.00        |
| <b>Total</b>           | <b>\$33,173.00</b> | <b>\$13,837.00</b> | <b>\$47,010.00</b> |

# CONCLUSION

The Renton CTE STEM Summer Camp has been a popular staple of early summer activities in Renton for years and this year continued the tradition of providing free, educational STEM content to students in our district. We continued to modify our program to better meet the needs of the families and got helpful feedback on ways we can improve next year. The campers and their families are already looking forward to next year while the teachers and mentors are researching new topics to present. We are excited to work with the Renton Schools Foundation and other community partners to offer this hands-on educational experience for years to come.



Launching student-made rockets as part of the STEM Showcase.