

Play. Code. Create



## After-school/Makerspace KOOV Case Study

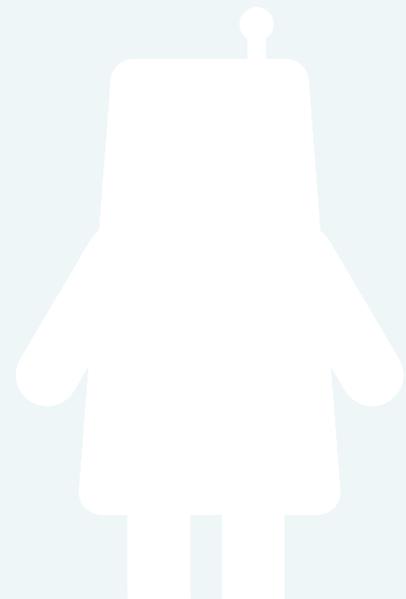
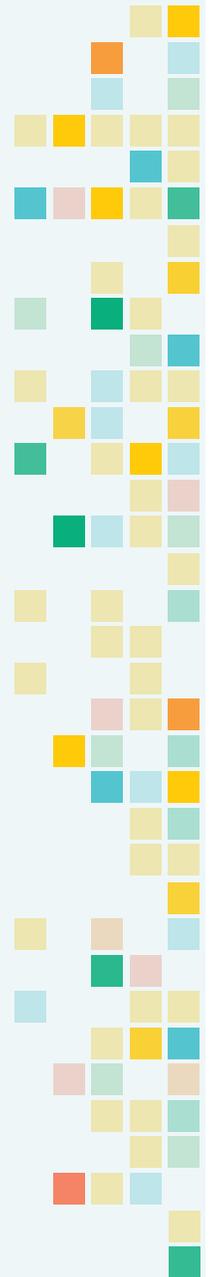
Painted Rock Academy, Phoenix, AZ  
Westview Elementary School, Wood Dale, IL  
Grandview Elementary, Higginsville, MO  
Mathnasium, San Diego, CA  
Rancho Del Ray Middle School, San Diego, CA  
Chula Vista Middle School, San Diego, CA  
Sweetwater Union High School, San Diego, CA  
San Ysidro High School, San Diego, CA  
Bonita Vista Middle School, San Diego, CA  
Hickman Elementary School, San Diego, CA  
Solana Ranch Elementary School, San Diego, CA

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## Background

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These after-school programs and makerspaces all received KOOV prototype kits to use in their classrooms. Over the pilot program period, all the activities had different group sizes and implementation uses for KOOV. This paper is a comprehensive look at how makerspaces and after-school programs incorporated this product into their teaching of coding & robotics.

The participants were asked to observe the students' experiences and give their own thoughts with KOOV, and at the end of the program provide feedback via a survey and an exit interview.

Sony Electronics implemented the KOOV Pilot Program to capture insights and feedback from educators as they look to bring KOOV to the United States.

## Pilot Program Participants

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Michele Alfieri, Painted Rock Academy  
Lisa Acord, Westview Elementary School  
Christa Bell, Grandview Elementary  
Lisa Wayne Hamidi, Mathnasium  
Alex Picazo, Rancho Del Ray Middle School  
James Bogart, Rancho Del Ray Middle School  
Dawn Castillo, Rancho Del Ray Middle School  
Joel Ruiz, Rancho Del Ray Middle School  
Stephanie Hubner, Chula Vista Middle School  
Sara Kazemi, Sweetwater Union High School  
Gabriela Padilla, San Ysidro High School  
Maricruz Rosete, San Ysidro High School  
Kim Morris, San Ysidro High School  
Miriam Rachelson, San Ysidro High School  
Terry Funk, Bonita Vista Middle School  
Robert Daluraya, Hickman Elementary School  
Roderick Gayta, Solana Ranch Elementary School

## Developing Creativity & Digital Skills for Society

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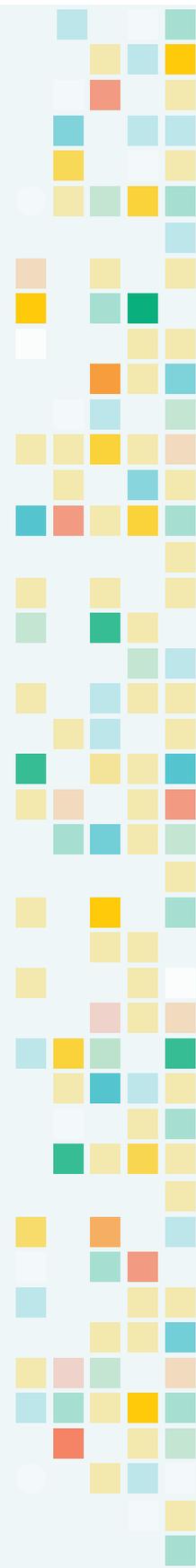
After-school programs and makerspaces are uniquely positioned to offer students incredible learning opportunities. These programs have flexibility and fewer academic requirements that a traditional school setting would have to follow.

While there are always challenges, especially when it comes to equity, these programs are best used for **introducing students to STEM concepts and projects on a smaller scale**, ideally for the purpose of scaling up so that every student has the access they need to new learning models and pathways.

### Makerspaces

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The definition of makerspace is “a place in which people with shared interests, especially in computing or technology, can gather to work on projects while sharing ideas, equipment, and knowledge.” School libraries are quickly becoming the hub for makerspaces, and the American Library Association has done a great deal of research and work on largely related STEM projects. Libraries have seen a massive shift over the past decade from print services to digital. This transformation makes **libraries the perfect place to house makerspaces as the library specialists themselves have become experts on a new way of delivering content.**



## Central & Collaborative

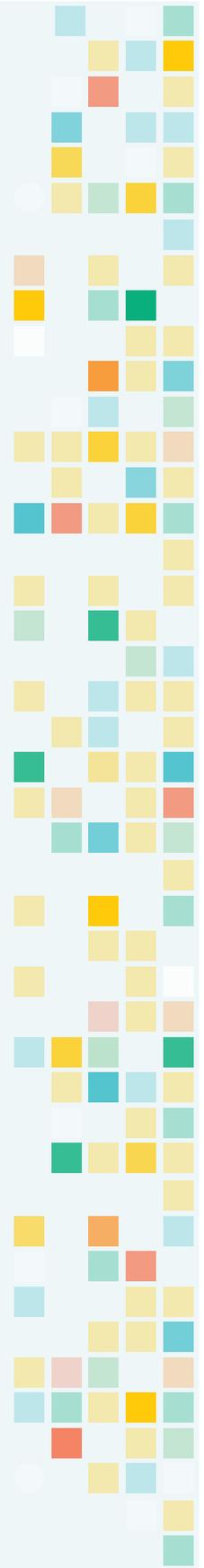
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Libraries are also often housed in the center of a school, which is ideal for makerspaces. The idea of gathering is critical as students come together to collaborate, create, and learn. Alex Picazo of Rancho Del Ray Middle School states, "I invited the Special Ed, the Avid teacher, and my library club members to KOOV Pilot Program, and **each and every experience was overwhelmingly positive. It was just very invigorating to see students who don't typically work together succeed at working in teams.** They all had the drive to build a robot and were excited to see it." This is new territory when it comes to allowing students across multiple areas to interact with each other. This is the type of collaboration that can truly change our system to a more individualized, differentiated, and personalized approach for learning. These projects are based on shared interest, not just grade level or need of services.

## Cultivate Creativity

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Not only do makerspaces cultivate an environment of collaboration, they cultivate an environment of creativity. Many are beginning to speculate that coding is likely to be a blue-collar job in the future. The idea is everyone will eventually know how to code, **but it will be those who not only know how to code but take their knowledge and use it to solve a problem. This is where opportunities to create for students need to run wild.** Makerspaces allow students to be inquisitive and spark imagination. While piloting KOOV, Robert Duluraya of Hickman Elementary noted that, "they [the students] had to think differently, that's always a good thing." **Makerspaces are only as effective as the freedom and tools that are there to support students.**



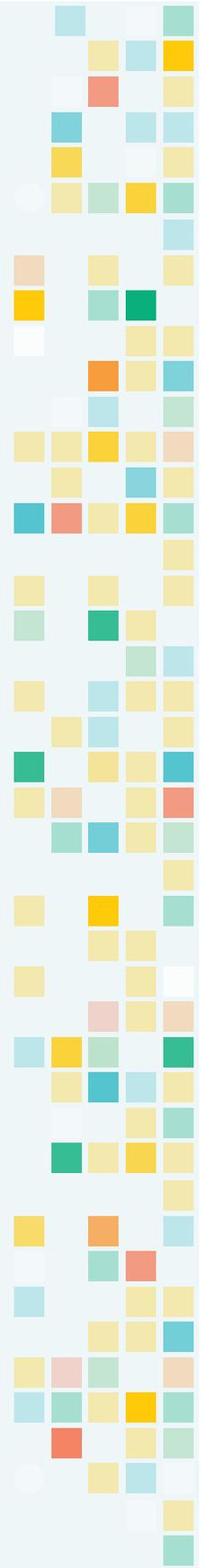
## Enhance Engagement

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It's not only the tools being used that can enhance engagement, but also new ways of teaching. According to the Presidential report, Prepare and Inspire: K-12 Education in Science, Technology, Engineering, and Math (STEM) for America's Future, educators need to incorporate different teaching methods to provide students with the necessary knowledge in STEM subjects: **"STEM education is most successful when students develop personal connections with the ideas and excitement of STEM fields. This can occur not only in the classroom but also through individualized and group experiences outside the classroom and through advanced courses."**



KOOV pilot program participant Gabriella Padilla of San Ysidro High School noted that, "There were 4 or 5 different groups. That's what I wanted, to see how it worked across the board, and it was a very positive response. Not only from the students, but from the teachers, because the kids were engaged. It was positive for us." The idea that students are working in groups, instead of individually, is breaking down silos and enhancing engagement through different shared experiences. This allows educators the freedom to personalize teaching in ways they have not previously been able to.

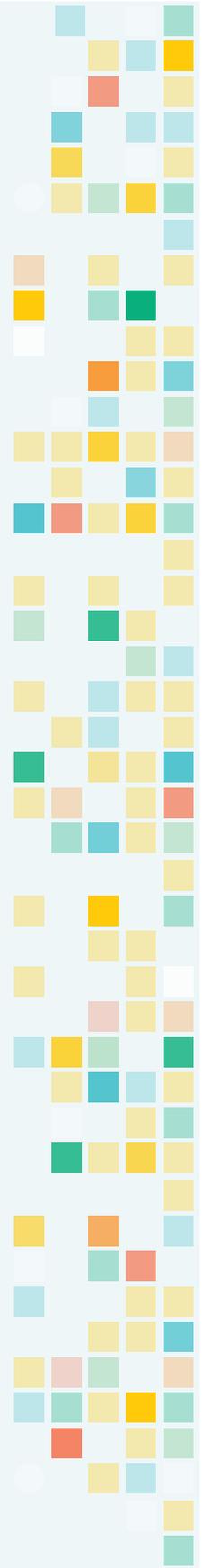


# After-school Programs

The Wallace Foundation found that there are four main benefits to after-school programs, which include:

- Out-of-School Time (OST) programs provide measurable benefits to youth and families on outcomes directly related to program content.
- Academic OST programs can demonstrably improve academic outcomes and do not necessarily reduce program attendance at the elementary level.
- Program quality and intentionality influence outcomes.
- Youth need to attend regularly to measurably benefit from programming.

This data is incredibly important when considering the programming and tools you are choosing to use during your OST program. Any after-school program looking to improve academic outcomes needs to ensure they choose engaging and challenging programs. This includes the ability to again cultivate creativity. Lisa Acord of Westview Elementary School notes that, "there is not any creative element with other STEM tools. **With KOOV, it is much more open-ended (for creativity) - we do not have anything that is both creative on the construction and coding level. KOOV does a good job filling that void in the market.**"



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OST must also choose tools that are user-friendly. Whether the program has paid or volunteer staff, the operators of the program are likely not devoting their full time to this work. The tools used in these programs are critical for positive outcomes. Christa Bell of Grandview Elementary noted that, **“KOOV is much more user friendly than other robotics kits.”** The ease of use to be successful and achieve the outcomes hoped for must be obvious.

Makerspaces and after-school programs have an incredible opportunity to engage interest in STEM fields and improve academic outcomes while preparing scholars for future endeavors. The product and programming are critical for the success of the students.

