

HYBRID LEARNING - 1:1 HUMMINGBIRD

Old Dominion University Pre-service Teachers Co-learn Coding and Robotics with 5th Graders



OLD DOMINION UNIVERSITY

Pre-service teachers teamed up with engineering undergrads to deliver lessons to 5th graders on engineering, computational thinking, and robotics using the Hummingbird Robotics Kit. They adapted to make this typically in-person learning experience virtual, and you can too!



ADAPTATIONS

- 1 Student : 1 Pre-service Teacher + 1 Engineering Undergrad
- Distributed in-person to local students, mailed to distant students
- Students build independently, but brainstorm design & troubleshoot code in groups virtually

RECOMMENDATIONS FOR DISTANCE LEARNING

1. Train a few highly-interested students as “tech specialists.” Those students can serve as tech support and lead breakout Zoom rooms for the class.
2. Minimize variables that can make tech support challenging by forming groups based on student device or assigning one tech specialist to each device.
3. Reflect and troubleshoot together with a fellow teacher throughout the project by planning units that overlap. Having the support of a coworker is invaluable!
4. Use a Google doc as a real-time Help Forum. Instructors or tech specialists can monitor the doc, communicate last-minute changes, and encourage students to indicate when they can't enter a Zoom call.



CHALLENGES

- Students did not always “show up” for scheduled Zoom meetings
- Teams were using various devices and 2 different models of Hummingbird Kits, increasing the communication barrier between teams
- Troubleshooting the many variables with the Hummingbird Kit was sometimes a lengthy process

SUCCESSES

- Teachers' comfort in 'not being the expert' of new technology increased
- Teachers recognized the benefits of their role as a co-learner, both for themselves and the students
- The hands-on, physical nature of constructing Hummingbird Robots lent much needed movement to a screen-based learning environment.

TEACHING SEQUENCE

1. Teachers were given a brief introduction to the Hummingbird Robotics Kit, paired together to create a simple robot, and given a basic coding knowledge assessment to promote self-efficacy prior to interacting with students. [See resources for teacher introduction.](#)
2. Bio-inspired robotics was the unit topic chosen for the students' STEM project. As an introduction, Teachers prepared lessons on biomimicry and ways to address global challenges with robotics.
3. Teachers introduced students to the components of the Hummingbird Kit and shared the project prompt. Teachers and students worked as co-learners in a team to brainstorm the design of the robots. [See resources for student introduction.](#)
4. Teachers and students each had a Hummingbird Kit at home to construct their own interpretation of the design, and met virtually via a Zoom video call about once per week. From introduction to final robot, the project spanned 4 virtual meetings over 6 weeks.

“Hummingbird is less intimidating than other tools for teachers implementing new technology.”



5. The culminating project was a ‘shark tank’ promotional video created by each student, articulating the ‘why’ and ‘how’ and showcasing the robot. [See the ‘shark tank’ videos here.](#)
6. Teacher and student teams were each given a superlative award during a virtual showcase event that students' families were encouraged to attend.

[Check out one team's journey through the whole project in this 3 min video!](#)