Connecting with KIBO

Using KIBO to support age-appropriate blended learning and distance learning during school closures

KinderLab robotics

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In Case of Pandemic, Break Glass!

In the winter and spring of 2020, schools everywhere faced an unprecedented set of challenges brought on by the public health emergency of the COVID-19 pandemic. With virtually no time to plan or prepare, schools and districts had to close their physical buildings to ensure student and staff safety through social distancing. Curriculum and teaching shifted overnight to distance learning models, with administrators and teachers working to solve the associated problems of training, equity, and access "on the fly." Educators worked longer hours than ever, re-inventing their teaching and figuring out what worked and what didn't. **The challenge was especially acute for early childhood education, where online, screen-based curriculum and long video chats were simply not age-appropriate solutions.**

As schools and districts plan for the future, everyone is working to translate the discoveries and milestones from this period into durable lessons. What can we as educators do differently to prepare for another situation of extended closure? And even in a return to "normal," what might we carry forward from this time to improve all of our teaching? What resources do we have that can support us, and what can we put in place now?

An **ideal resource for early childhood education** in a time of school closure:

- Aligns with learning standards and objectives
- Allows hands-on, creative learning through play
- Promotes parent-child engagement through collaborative learning
- Promotes engagement between the child and his/her peers despite distance
- Can be distributed to student homes regardless of technology access

If your school has KIBO,

you already have this resource ready and waiting!

Putting Learning First

As we consider the future of schooling – during COVID-19 closures and beyond – we need to look at new models like distance learning and blended learning. But in all these new models, **"learning" remains the most important word**! We know a lot about how young children learn best: through play and movement, through social engagement, and through interaction with manipulatives. As early childhood educators we have a special challenge to maintain these practices even as schooling moves outside of the traditional classroom.

"Kids are craving the opportunity to do hands-on work during this time. Getting creative technology tools like KIBO into the hands of kids is a primary goal of our distance learning program. Parents also want to see that their children are still learning and not falling behind, so parent involvement is part of our strategy."

Jennifer Barker
STEM Instructional Specialist
Newport News Public Schools

KIBO is a robot kit specifically designed for early childhood. KIBO is entirely screen free, as children program their robots with "tangible code" made of wooden blocks. Through these tangible materials, children engage with powerful ideas in computer science, engineering, and design thinking in an age appropriate way. As we work to promote these skills – and meet our states' evolving elementary-grades computer science standards – **KIBO is the ideal foundation for an early childhood distance learning program**. KIBO's standards-aligned curriculum can be adapted to work in recorded lessons, videoconferences, and at home.

Access at Home Promotes Equity

Many of our families lack reliable access to internet or computing resources at home. Providing these families with **access to KIBO is an important move toward equity** in learning across our community. Just as we provide printed packets to support families without reliable internet access or printers, **we can provide hands-on technology tools like KIBO for work at home and to promote parent engagement**.

We can think of KIBO as **"1:1 for K-2"**, putting age-appropriate learning technology into students' hands to be used with teacher support and parent engagement. By encouraging parents to take on the role of co-learner, we help address parents' anxiety as well as **promote deeper bonds** – between parents and students, and between parents and school.

Models for Remote Education with KIBO

With a bit of prior planning and logistics, KIBO can become a powerful tool for remote learning. Teachers can share resources and guidance via teleconference or recorded videos, while the physical KIBO robot kits can rotate from home to home, much like a class pet. Parents can help guide children toward positive, creative engagement with technology.

How will STEAM education look at your school?

Blended Learning
part-time / small-group classrooms

Your school may implement a part-week schedule with smaller groups at a time. In this situation, you can conduct **small group KIBO lessons with the students in the classroom** using KinderLab's *Growing with KIBO* curriculum book. Collaboration within small groups allows you to promote **social-emotional learning** even as social-distancing requirements change classroom dynamics.

During days when students are not in the classroom, they can continue work on "unplugged" portions of KIBO projects, such as building **decorations with art materials**.

Consider setting up **optional KIBO take-home kits** for children to use with parents in a "KIBO Home Visit" activity. Students might bring a kit home on the weekend and return it when they are next in school. This should be presented as an opt-in, "checkout" model to avoid overwhelming parents.

Distance Learning
remote work only

You may need to conduct your robotics classes entirely remotely. In this case, plan **whole-group lessons as either live video-conferences or recorded videos** of yourself. Either way, keep them short! These sessions can introduce KIBO concepts using language and activities adapted from our curriculum. Our *KIBO Says* game works wonderfully over videoconference!

Extend these video lessons with hands on, self-directed activity by **rotating KIBO kits among students' homes**, ensuring that the kits are cleaned and sanitized between families. Keeping one KIBO for yourself for video demonstrations, you can provide the other KIBOs for home use via a rotation. Lead small-group remote videoconferences with the students that have KIBO to support them in their work. A sample schedule for this model is found later in this guide.

KIBO is a flexible resource built on years of research into how young children learn best. Giving children **hands-on, playful learning opportunities** remains critical even in blended and distance learning situations. And when school does return to something more like normal, **KIBO will be there to support engaging classroom-based instruction** as well.

A Preparation Checklist

For schools, one of the most challenging aspects of the COVID-19 pandemic in early 2020 was the suddenness of school closures. Very few schools had time to prepare for the closures and had to implement many aspects of the program after school buildings were already closed to staff. In planning for future readiness to implement distance learning, consider the following checklist:

✓ **Enough KIBOs for Your Learning Model?** More KIBOs available to you increases the options you have. With access to five or more KIBOs (a Small Classroom Package) in a classroom, you will likely be able to organize a program of home-based KIBO sharing. Consider pooling KIBOs across the school or district.

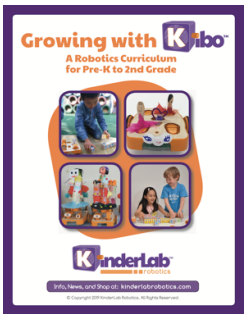
> **EXAMPLE** *For a class of 20 students with five KIBOs, you could send four KIBOs into a home rotation (keeping one for yourself for video demos).*

With access to fewer KIBOs, you may be unable to implement a home-sharing model; you should focus on video lessons only or classroom use in a blended model.

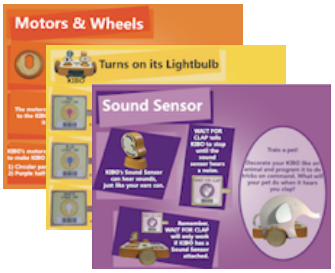
✓ **Professional Development**: Professional development for educators must be part of the strategy when implementing new teaching models. KinderLab offers professional development in the use of KIBO in the classroom as well as workshops and video training in how to use KIBO remotely.

✓ **Curriculum Resources for Each Teacher and KIBO Kit**: To support teachers working from home, you should ensure that all teachers have their own copies of the key curriculum materials for KIBO. Each rotating KIBO Kit should include parent materials.

KIBO Says Cards
(great for videoconference)



Growing with KIBO
(core curriculum)



Activity Cards
(for independent activities)

> Our *Blended Learning Curriculum Bundle* provides all of these teacher- and parent-supporting materials at a discount. Find it at **shop.kinderlabrobotics.com**.

✓ **Lesson-Recording Capabilities**: To limit time spent in group videoconferences (not the ideal learning format for early childhood), we suggest instead sharing short recordings of lessons: KIBO demonstrations, concept introductions, and book readings that might occur during the circle-time portion of a KIBO lesson. A recording setup can be as simple as a smart-phone camera and a classroom-sharing application to distribute the videos.

Sample Schedule for a KIBO Distance Learning Unit

This sample unit is meant as a practical example of how distance-learning and hands-on experiences can be combined in a single sequence. The "Hands-On: Parent-Led" column assumes you are rotating KIBO kits among families. If you are unable to distribute KIBOs to families, a unit like this can be run with only the recorded lessons and check-ins.

Weekly Lessons	Recorded Lesson: Teacher-Led (1 / week, limited to 20 mins)	Hands-On: Parent-Led (expected: 30 mins / wk.)
Weeks 1-2: Our First Program with KIBO Lesson Plan Resource: *Growing with KIBO* Novice Lessons 1 & 2	Circle-time format demonstration of KIBO build and scanning. Provide plenty of repetition on basic KIBO concepts: what is a program, how to scan. Use *KIBO Says* cards to ask students to act out KIBO's movement commands.	Communicate KIBO rotation plan and phone tree to parents. 4 KIBOs will go to 4 families at a time. Class KIBOs go out to Group 1 families.
Weeks 3-4: KIBO The Dream Car Lesson Plan Resource: *Growing with KIBO* Novice Lessons 5 & 7	Read *If I Built a Car* (Chris Van Dusen) Decorate KIBO as the "craziest-ever" car. Program KIBO Car to drive. Demonstrate the need for "repairs" when the decorations fall off. Introduce stages of the Engineering Design Process.	Group 1 has KIBO at home. Parent and child work together to document "KIBO's Visit" and share photos/ video. Small-group videoconference to check-in with group 1.
Weeks 5-6: KIBO Dance Party Lesson Plan Resource: *Growing with KIBO* Novice Lessons 9	Ask students to dance to the Hokey Pokey. Demonstrate the process building a program to teach KIBO to dance to the song too. "Debug" and improve the program.	Group 2 has KIBO at home. Share group 1 creations with the class.
Weeks 7-8: Our KIBO Pet Lesson Plan Resource: *Growing with KIBO* Novice Lesson 14, Intermediate Lesson 4	Read *Move* (Page/Jenkins). Demonstrate how KIBO "listens" with its ear (sound sensor). Decorate KIBO as a pet and teach KIBO a trick to perform when we clap.	Group 3 has KIBO at home. Share group 2 creations with the class.
Week 9-10: Debugging Lesson Plan Resource: *Growing with KIBO* Novice Lesson 16, *KIBO Assessment Workbook*	Read *A Beautiful Oops* (Barney Saltzberg) Debugging challenges: describe a story that KIBO should act out; then scan a program for that story that includes an error. Demonstrate identifying and fixing the errors.	Group 4 has KIBO at home. Share group 3 creations with the class.
Week 11-12: Wrap-Up	*If possible, implement the final lesson as a whole-class conference.* Circle-time sharing and reflection on the experiences with KIBO. Showcase all of the "KIBO's Visit" shares. Celebrate the work of all students with KIBO, including those who were unable to have KIBO at home.	KIBOs are returned to school. Share group 4 creations with the class. Thank parents for all of their involvement! Invite parents to attend the showcase portion of this week's videoconference.

Distance Learning Tips: KIBO with the Teacher

In delivering KIBO lessons via remote learning, we lose one of the most powerful advantages of KIBO: hands-on engagement by students with a physical "object to think with" (to use Seymour Papert's wonderful phrasing). This is why rotating KIBOs among families is such an important part of the overall distance learning plan. But KIBO can still provide the basis for engaging lessons when the teacher has a KIBO and students do not. Keep the following suggestions in mind when providing teacher-led distance-learning lessons with KIBO.

Video lessons: short and sweet

For young students, long screen-based meetings and meetings with many participants are not an ideal setting. Video lessons and videoconferences need to be short in order to hold student attention. Pre-recorded videos work well too, as students can watch them anytime. We recommend video lessons or conferences be no longer than 20 minutes and include breaks for physical movement and active engagement.

Unplugged movement games

KIBO Says is a collection of large cardstock pictures of KIBO's command blocks. The set is included in each KIBO Classroom Package and is also available for purchase separately. These cards make a wonderful resource for including a movement-break activity in recorded lessons or videoconferences. The teacher displays sequence of movement command cards and the children act out the program, like Forward, Backward, Spin, Shake!

Unplugged coding activities

Using *KIBO Says* cards or programming blocks distributed to homes, or by drawing their own, students can create KIBO sequences to act out themselves. Perhaps it's a movement program for a parent or favorite stuffed animal?

Provide small-group video check-ins

Though full-group videoconferences are difficult for this age group, small-group videoconferences can be more manageable. Collaboration and idea-sharing is an important part of the Engineering Design Process; and social connection is important in making sure students feel safe and supported during school closures.

Readings are always a good choice

Many KIBO lessons include a suggested book to read as part of framing the lesson at circle time. These readings translate very well to distance learning. Consider always including a reading in your lesson introductions. For inspiration, download KinderLab Robotics' *KIBO STEAM Book List*.

Distance Learning Tips: Supporting Parents at Home

Parent engagement is one of the positive outcomes of providing home access to KIBO. Of course, **there are real barriers to parent engagement**. Many parents will have no experience with coding and robotics, and they will feel uncertain about their ability to support their student. Economic uncertainty, disruption of home and work routines, and the impact of sickness all interfere with parents' ability to engage actively. **We should seek to inspire parents with the positive effects of engagement, with compassion and with plenty of resources to support them.**

Make KIBO kit hand-off easy – and safe

To ensure that kits can be cleaned and sanitized between families, you should arrange to have KIBO return to school between families. A staff member can then sanitize the kit prior to moving it to the next family. If children are coming to school part-week, they can hand-off KIBO at school. If not, some schools have set up lockers for this purpose.

Clear guidance for parents

Provide parents with clear instructions and guidance. Point parents to the Quick Start instructions on the KIBO Reference Card included in each kit. Communicate the at-home project you'd like them to facilitate, such as the KIBO's Home Visit project described in the sample unit here. You may want to provide parents with a recorded video of yourself reviewing KIBO and setting expectations for the home activities.

The KIBO Blended Learning Curriculum Bundle also includes a complete, optional "At Home" curriculum guide.

Recording pictures and videos

Sharing the work done with KIBO at home is important. It helps maintain social connections: among the students, and between students and school. Not all families will have equal capability to record and share photos and videos of the work they do with KIBO. It is important to set the expectation that *any* sharing is welcome, no matter how extensive or limited.

Prompts for joint engagement

KIBO provides a way for parent and child to share in the learning process together. Provide parents with questions they can ask to prompt their child to explore KIBO concepts more deeply:

- What does this part do?
- What do the symbols on KIBO's blocks mean?
- What else can we add to KIBO?
- What should KIBO be today?
- What can you show me about how KIBO works?

By demonstrating that it's OK not to know everything, a parent models a growth mindset and invites the child to explore with an open attitude. This also allows the child to take on the role of teacher; an empowering experience for a young child.

Safe KIBO Kit Handling

The recommended distance learning plan includes rotating KIBO kits from home to home over the course the KIBO unit. Doing so has many advantages: students benefit from the hands-on play inherent in KIBO's design; learning is enhanced through joint parent-child engagement; and class cohesion is strengthened as students share projects they complete at home.

But if your distance learning plans are in response to a public-health crisis like the COVID-19 pandemic, you will want to ensure that sharing the KIBO kit does not put families at risk. Sharing a hands-on resource like KIBO, whether in the classroom or between homes, requires sanitizing to ensure student safety, and to comply with guidelines issued by the U.S. Center for Disease Control and Prevention (CDC).

Cleaning and Disinfecting the Kit

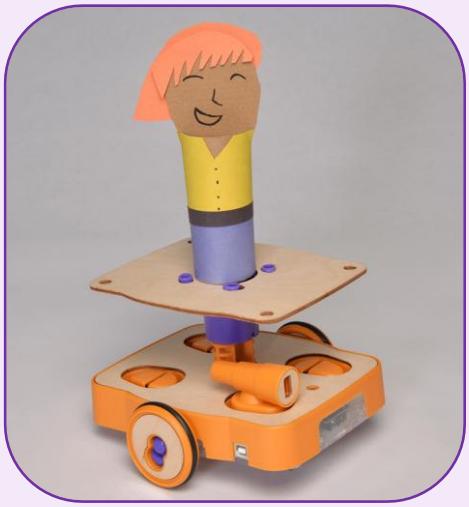
Following recommendations from the CDC, KIBO can be sanitized using a 2% bleach solution. Wet a cloth with the solution and wipe all surfaces, parts, and programming blocks. Allow all parts to air dry. The CDC also provides a list of non-toxic alternatives to bleach that may be effective against viruses.

Consider printing a copy of the KIBO Cleaning and Sanitizing Instructions with each rotating kit. You can download the instructions from our website at www.kinderlabrobotics.com.

What's in the Home Kit?

Ensure the following items are in the KIBO home rotation kit.

- **The KIBO robot kit**. Be sure to include the reference card that comes in each KIBO bin.
- **Spare batteries**. An extra set of 4 AA batteries will help parents avoid hassles.
- **Sanitization instructions (and supplies)**. Include the printed KIBO Cleaning and Sanitizing Instructions from KinderLab. Include a supply of disinfecting wipes if available.
- **Activity Cards**. Print out a copy of the PDF of KIBO Activity Cards, available free from KinderLab.
- **Optional "At Home" Curriculum**. The Blended Learning Curriculum Bundle includes a Home Robotics Guide and complete curriculum booklet designed for parent use.
- **A Craft Supply Kit**. KIBO is made to be built onto with arts and crafts materials. Include a "travel kit" of craft materials to streamline the experience for families: scissors, masking tape, construction paper, cardboard pieces, googly eyes, pipe cleaners, string or yarn.



Get in Touch with KinderLab

We all hope there is never again a need to close schools nationwide for a public health emergency. But we know we need to prepare our schools and districts to continue teaching in case this does happen. We hope this guide has been helpful in thinking about how KIBO can support the need to continue providing quality, hands-on, play-based learning even when schools have closed.

We encourage you to contact us to learn more. We are happy to consult with you on implementing a distance learning preparedness program based on KIBO.

We also invite you to review the *Blended Learning Curriculum Bundle* available at shop.kinderlabrobotics.com. This bundle combines curriculum for both classroom and home use with videoconference-based professional development for teachers to prepare them for distance learning with KIBO.

Ready to get started?

Visit our website at www.kinderlabrobotics.com or reach out to our sales team at sales@kinderlabrobotics.com

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