Leader Guide: Co-ops and Hybrid Schools

Robotics & Embedded Engineering I · Semester 1 · Prices and lessons as of November 2026

1. How it works

- **Who it's for:** ages 13 and up. Neither the leader nor the students need electronics experience; the videos teach.
- **Each student builds their own device** from their own kit. A new kit arrives each month with the parts for that month's build.
- **Each project takes about four weeks**, at 1–2 hours a week. The lessons in the learning portal are grouped Week 1 to Week 4.
- **Simulations come first:** many steps have a browser simulation to try before the physical build. No kit is needed for the simulations.
- **No soldering in Semester 1.**

> **Credit:** About ¼ credit per semester; Semesters 1 and 2 together make a ½-credit engineering elective. Build time away from the videos counts too. Families follow their own state's rules.
> **The course guide** (zynkbots.com/homeschool/course-guide) has the course description, scope and sequence, a rubric and a transcript line.

2. How families sign up

- **Plans:** each family subscribes at zynkbots.com/pricing, either $99 a month or Semester 1 prepaid at $594 (the same $99 a month).
- **Canceling:** a monthly plan can be canceled anytime. A prepaid semester refunds every kit that hasn't been packed, minus $69 if the free Riff has already shipped.
- **Shipping:** kits ship free to the family's home, to US addresses only.
- **Start together:** ask families to subscribe in the same week, so everyone works on the same project. Schedule the first session for after every family has confirmed their Month 1 kit has arrived.
- **Group orders:** if the group itself is buying 10 or more kits, request a group quote at zynkbots.com/homeschool/groups. Group orders are quoted per group.

> **Computers:** each student needs a Windows, Mac or Linux computer with a USB port that can run the free Arduino IDE, and an internet connection for the video lessons. **Chromebooks, iPads and other tablets aren't supported:** they can't run the Arduino IDE, so they can't upload code to the boards. They can still play the video lessons and the browser simulations.

3. Setup checklist (before the first session)

Leader

- ☐ Create an account and watch Cyclone LED Week 1, lessons 1–4: Kickoff & Project Vision, Unboxing & Inventory, Software Setup, Hardware Theory.
- ☐ Confirm that every family has their Month 1 kit.
- ☐ Room: tables with space for each student's laptop and kit, power strips for the laptops, Wi-Fi for the videos, and a screen to play the lesson video for the group.
- ☐ Share the support address with families: support@zynkbots.com.

Each student brings

- ☐ Their kit, unopened if possible, so the group can do "Unboxing & Inventory" together.
- ☐ A charged Windows, Mac or Linux laptop with the Arduino IDE installed. The "Software Setup" lesson can be done at home first.
- ☐ Their learning portal login.

4. Session plans

Every session, 1–2 hours

1. **Show and tell (10 min):** what works since last time, and what doesn't yet.
2. **Watch:** the week's lessons, together on the screen or on each student's laptop at their own pace.
3. **Build and test:** try the simulation first, then the physical build. Students help each other before asking the leader.
4. **Wrap-up (10 min):** each student says what's left to finish at home before next time.

Club, 8 weeks (Months 1 and 2)

Week	Project and lessons	By the end
1	**Cyclone LED, Week 1:** Kickoff & Project Vision; Unboxing & Inventory; Software Setup; Hardware Theory; First Light (simulation, then physical build); Coding Challenge: Customizing the Cycle	Every ring lights up, and each student has changed the cycle
2	**Cyclone LED, Week 2:** Buttons & Buzzers; Reading a Button; Making Sound; Interactive Logic; Full Integration: Light + Sound	Button and buzzer work together
3	**Cyclone LED, Week 3:** The SSD1309 OLED; OLED Hello World; Button State on OLED; Simple Digital Counter; Color Control; Solve & Score	The display shows the game's state
4	**Cyclone LED, Week 4:** The Cyclone PCB; Power Supply Integration; Final Circuit Integration; Code Walkthrough & First Run; Mechanical Assembly	A finished, working game. Hold a group tournament
5	**Smart Alarm Clock, Week 1 (ESP32):** ESP32 Setup; Meet the Hardware; Timer; NeoPixel Strip and Light Control; Buzzer and Button Reaction; Intro to RTC; Hardware Testing	Every part tested on its own
6	**Smart Alarm Clock, Week 2:** The Touch Trigger; OLED Integration; WiFi and the Clock; Color Match Alarm	The clock keeps time and shows it
7	**Smart Alarm Clock, Week 3:** Clock Setup with Buttons; Snooze Alarm; Rhythm Tap	Alarms set, snooze and games working
8	**Smart Alarm Clock, Week 4:** Full Circuit Integration; Enclosure and Final Assembly	A finished clock. Show day for families

Before Week 5, check that everyone has their Month 2 kit.

6-week club

- Weeks 1–4 as above.
- Week 5, "Make it your own": each student designs one change of their own, such as a new sound, color, timing or rule.
- Week 6: a showcase for families. Families carry on with Month 2 at home.

Elective class, one semester (six projects)

Each month is one project of four weeks:

- **On campus, once a week:** start the week's lessons together, build, and solve problems as a group.
- **On home days:** finish the week's lessons and build.
- **Week 4 on campus:** check each device against the course guide's four "done" checks (it works, they can explain it, they made it their own, there's a record) and score it on the rubric.

Month	Project	Board	New this month
1	Cyclone LED	Arduino Nano	First circuit on a breadboard, LEDs and buttons, their first program
2	Smart Alarm Clock	ESP32	OLED display, real-time clock, acting on a schedule
3	Crack-the-Code Safe	Arduino Uno	State machines, PIN logic, menus and modes
4	Speedy Buttons	Arduino Nano	LED matrix display, non-blocking timing, reaction times
5	Nimbus	Arduino Nano	Sensors, transistors, a PWM fan, saved settings
6	Ping	ESP32-C3	Two wireless devices that work as one system

Grading: pass/fail, or a letter grade from the rubric. Both are explained in the course guide.

5. Troubleshooting

- **The computer doesn't see the board:** use the USB cable from the kit, and try another USB port. In the Arduino IDE, pick the board and port the lesson shows. See "Software Setup" (Month 1) and "ESP32 Setup" (Month 2).
- **The upload fails:** check that the board type matches this month's board: Nano, Uno and ESP32 are set up differently. Unplug and plug back in, then try again.
- **Nothing lights up or makes a sound:** compare the wiring with the lesson, one connection at a time, and check each wire is in the right breadboard row and each LED faces the right way. Run the same step's simulation to check the code.
- **It works in the simulation but not on the breadboard:** it's almost always wiring. Rebuild that step one wire at a time.
- **The finished build won't turn on:** check the power connections against the lesson's power step, one at a time.
- **Code errors:** compare with the code in that week's Downloadable Resources, line by line.
- **A missing or broken part:** use "I have a problem with my kit" in the portal, or email support@zynkbots.com. Parts are replaced free within 14 days of delivery.
- **Still stuck:** email support@zynkbots.com and we reply within one business day. The builder forum helps too.

6. Progress and portfolios

- **Progress:** each family sees its teen's progress in the learning portal. There's no leader view of the class yet, so ask students to show their device working at each session.
- **Portfolio:** for each project, a photo or short video of the working device and a copy of the final code.
- **Breaks:** monthly plans can be paused from the account's Subscriptions page. Lessons pick up where the student left off.