This article describes project-based learning in the primary grades, arguing that authentic inquiry, grounded in real-world problems, deepens student learning across the curriculum.

A Discovery

“Ms. Cutler, Ms. Cutler! Look!” Two wide-eyed first graders tugged at her teacher’s coat, guiding her through puddles and mounds of muddy bark chips to the base of the two-story glass foyer wall. Sunset Primary School, where I work as an instructional coach, is brand new and was still under construction on the first day of classes. All through the autumn, painters and carpenters would arrive just as students boarded buses, learners and builders side-eyeing, staring, or oblivious to one another. The new space has soaring ceilings and massive windows, inviting eyes into classrooms and out to the small woods beyond. The lights are LEDs; the doors are heavy and can be locked with the press of a single button behind the secretary’s desk. Beautiful but chilly, it didn’t feel like a school until students arrived to smudge up surfaces with fingertips and spill milk on fresh carpets.

Now, while their classmates slid down slick new slides, a few explorers walked the perimeter of the playground, unearthing all manner of construction detritus. They came upon a dark-eyed junco lying still at the base of a window. Akhri Cutler, their teacher, is a lover of birds and trees and wild things, so they brought her to the bird and, praising them for their keen eyes, she scooped it up with the papers in her hand and brought it into the classroom. After recess she gathered the class on the rug and carefully placed the bird under the document camera, zooming in to show the children the feather patterns, the scales on the feet, and the small, broken beak. She shared her suspicion that the bird had collided with the glass two stories above, and died as a result.

The class bubbled with questions and ideas. “Where was it going? Why did it crash into the window? Why didn’t it see the glass? Are more birds going to die? Why is there blood on the beak? We need to put up a mattress or pillow on the window so they won’t die.” Akhri let the students tease out the answers among themselves, seizing the opportunity for authentic inquiry. Laurie Gurthrie, a paraprofessional, chimed in that she’d found another fallen bird in just the same spot a few weeks prior. Curiosity led quickly to passion, the students appointing themselves avian protectors.

An Opportunity

A project is meaningful if it fulfills two criteria. First, students must perceive the work as personally meaningful, as a task that matters and that they want to do well. Second, a meaningful project fulfills an educational purpose. Well-designed and well-implemented project-based learning is meaningful in both ways. (Larmer & Mergendoller, 2010, p. 35)
The enthusiastic momentum that followed after the students found the junco is what teachers like Akhri, grounded in project-based learning (PBL), live for. The collective excitement presents an opportunity to teach critical grade-level skills in a meaningful context. It allows for a thoughtful intertwining of subjects, so children can experience entire days, even weeks, immersed in a theme and able to make connections across content areas.

Mary Cowhey, a teacher, author, and former community organizer in Massachusetts, beautifully illustrates the power of PBL in her books and articles. She and other PBL practitioners keenly attend to the authentic questions and concerns of young children, folding in grade-level standards across multiple curricular areas to craft inquiry experiences that let students satisfy their curiosity and deepen their understanding of the world. In “Where’s Your Shirt From? Second Graders Learn to Use Data to Change the World,” Cowhey (2009) seizes a simple question about the origin of a garment to launch her learners into an exploration of the history and geography of manufacturing, including the influence of unions and the role of globalization. Throughout, she attends to second-grade standards around research and informational writing, data collection and interpretation, and geography.

Akhri is also a dedicated practitioner of PBL and saw seeds for a powerful project in the questions posed by her earnest students.

An Observation

Akhri pulled out clipboards, paper, and markers for the children and encouraged them to continue looking closely at the junco as they drew. Some stayed on the rug, peering up at the magnified image on the screen, while others gathered around the bird itself, wings folded and black eyes reflecting the bright document camera lamp. As they drew, they continued to talk, brainstorming ways to prevent further bird deaths. Many of the solutions involved some combination of pillows, mattresses, and duct tape, and Akhri jotted their ideas down as they mulled them over. She also told them that the fate of this junco befalls birds all over the world, particularly
in big cities. She let them know that because they were so passionate about helping, she would gather and share strategies that others have used to help birds. Akhri saw this as an opportunity to empower her students as real-world problem solvers: through research, writing, and design, they could develop grade-level skills and engaged-citizen strategies simultaneously.

One student suggested they write letters to the principal, Michelle Wilson, to alert her to the problem and enlist her help in solving it. Akhri wrote a few key words on the board for them to reference as they wrote—**dear, from, Wilson, junco**—language scaffolds for emergent writers. By lunch, there was a stack of earnest letters ready to be delivered, each featuring a brown bird with a red dot at the tip of the beak: “**To Ms. Wilson. Sad news! Birds crash into the windows. Solution! Paint the windows a see-through paint.**”

Akhri kept the bird in her classroom for the rest of the day, allowing the kids to see it begin to decompose, the bright eyes starting to sink. After school she buried it near a Douglas fir outside the classroom window, as she’d promised her students she would. On the way home that day she mulled over next moves. It had been a special experience, one that drew sincere wonder and fire from her students. She thought through ways she might stoke the flame, extending the scientific inquiry and nurturing their drive to help other birds avoid the same fate.

**An Immersion**

We have an environmental science center in our district that serves as a resource for K–12 teachers and students. Akhri invited the director, Bob Carlson, to come teach her students a bit about local birds. The presence of an expert puffed the students up, affirming the importance of their own growing expertise. Akhri invited the other first-grade classes to join her own, and so seventy-five students squished together in her classroom to hear Bob share secrets for identifying birds. He showed photos of local birds, drawing attention to size, color, and special features, and played recordings of their calls. A beautiful noise followed as the children attempted to
mimic the sounds. Akhri keeps a pair of binoculars in her classroom, and Bob helped students use them to spot birds in the grove beyond the glass.

A few days after the bird discovery, Akhri gathered the students together to watch a TED Talk by scientist Joanna Eckles, who educates and advocates for bird safe glass. In her talk, Eckles (2015) describes walking along the exterior of a mirrored glass building in Minnesota and finding hummingbird after hummingbird—fourteen in all—dead in the grass beneath her feet. Billions of birds die this way in the United States each year, disoriented by reflective glass or mistaking windowed walls for the trees and sky beyond.

The children were incensed. It wasn’t just their junco, or a handful of juncos! The TED Talk concludes by showcasing potential adjustments to make windows safer for birds. Akhri had also used an app called Padlet to create a video collection for students about migration, the risks posed to birds by human infrastructure, and ingenious designs that bird lovers have implemented to mitigate the risks. The children used iPads to explore the resources independently and in partnerships, taking notes on strategies that might help the birds near Sunset.

At the end of the research session, Akhri called the class together and they revisited the solution list they’d started the day they found the bird. They reviewed, revised, and added to the list. Mattresses may not be practical after all, but maybe special markers Joni had seen could be used on classroom windows to mimic the etched glass recommended in one of the videos. Tom noted the fact that birds won’t try to enter a space smaller than six square inches, and Liam excitedly described a “curtain” they could make using string to create six-inch grids across classroom windows.

By the time Michelle Wilson, the principal, responded to the students’ letters with a visit, they were abuzz with new ideas. Michelle listened intently, but didn’t placate the young learners. She agreed that the situation was sad and described the passion she’d felt as a girl, when birds collided with her grandmother’s picture window. But she challenged them as scientists, probing the circumstances. Where exactly was the bird found? What were the weather conditions? A few students speculated that the bird must have died because it was a bright day; the glass looked more transparent in the sunshine. Michelle and Akhri pressed them. What about the bird found by Mrs. Guthrie? Was it sunny that day, too? Had other fallen birds been discovered in different parts of the school grounds? The students were unsure. Having more data might help them land on the right course of action. Lila, squirming in her chair as she followed the conversation, finally burst out, “We need to talk to other classes!”

It was agreed that students from Akhri’s class would visit other classrooms in pairs to share what had happened to the junco and request that any dead birds be reported to their class along with the location of the bird, the weather conditions, and the time of day. Akhri would ask the same of adults working in and around the building. When they had a larger data set, the first graders would examine it for patterns, and select a solution or set of solutions.

Akhri had planned to wrap up the inquiry with her students by making recommendations to the principal about what she could do to solve the dead bird problem. The weekend after Michelle’s classroom visit, Akhri and I drove together to a conference in Salem. The car ride provided a delicious opportunity, outside the bustle and din of the workweek, to dive deep into the beautiful work Akhri and her students were engaged in. Was there a way, we wondered, of keeping the power to affect change with the students, rather than turning it over to an adult “decider”? Children have an inherent sense of justice, but few chances to practice making the world more fair. Akhri’s class engaged in developmentally appropriate environmental inquiry and activism, and they felt utter ownership of the learning. How could we extend that?

An Empowering

By the time we pulled into the parking lot of the conference hotel, Akhri decided to guide her students to choose solutions that required minimal help from adults. One idea that appealed to the adults who were privy to the project involved stained glass. Installed in key areas of the building, stained glass
would deter birds while adding to the grandeur of the new space. But it would require an artist in residence, and fundraising, and parent volunteers, and more builders to help with installation. Methods that emerged from student research and imaginations were sloppier, more haphazard, but more immediate and much cheaper, like window paint, decals, and reflective tape. Students would identify the most hazardous windows and apply the bird deterrents. They would also create a display near the spot where the junco fell to educate passersby about the risks posed to birds by modern structures. Knowing that other construction projects are coming down the pike in our district, Akhri decided to work with her students to generate a list of bird-protection recommendations for the design team. One resulting letter read as follows:

Dear Superintendent Dr. Kathy Ludwig,

Hi, we’re first graders from Sunset Primary School. There has been 7 birds that have crashed into Sunset windows in our new building and died. Mr. Gonzales told us that birds are crashing and dying at Lowrie School, too. Leah found a dead Dark-Eyed Junco.

Next time you make a new school. Make sure that you put up window decals because birds are dying and crashing into our windows. Please put up safe windows for birds.

Please write us back.

Typed by Conrad. Edited by Gena, Petra, Conrad, Miles

Thank you.

On a cold morning a few weeks later, Cuco Luna, our building engineer, met the first graders in the spot where the dark-eyed junco died. Cuco had discovered five other dead birds around the building, and he walked the students around to show them where they died. Then he climbed the extra-tall ladder he’d borrowed from the operations department to reach the high window where the junco’s life had ended. Akhri handed up the bird decals the class had decided to order from the Audubon Society and Cuco attached them to the glass while the students perched on the sidewalk watching and chirping placement suggestions.

It wasn’t a perfect moment. The windows were dusty and cold, causing the decals to slide rather than stick. Cuco used his sleeve to wipe the glass, and Akhri breathed warm air onto a decal to warm it up. A student suggested tape, and with Akhri’s nod, he ran to the office to procure some. As excited wiggles turned to squirms, Cuco graciously made a few extra trips up and down the ladder, until finally the decals were (precariously) in place.

The year wound down, and the bird decals stayed up. No additional carcasses were reported. On Earth Day, Akhri’s class shared their learning with the school at an assembly. A group of students created a trifold board that stood at the front of the gym, documenting the steps of their inquiry in photos, graphs, and writing. Another group prepared remarks and passed the microphone from hand to sticky hand, telling the story of the junco and everything that came afterwards.

During the last week of school, Dr. Kathy Ludwig, our superintendent, and Dr. David Pryor, our assistant superintendent of primary schools, visited Akhri’s classroom. They brought colorful bird identification books to add to the classroom library. They thanked the children for alerting them to the problem and congratulated them on the efforts they’d made toward fixing it. “The boss of all the
schools cared about our letter!” A boy told me in amazement.

Sloppy, precarious, imperfect: when inquiry is authentic, rooted in real problems that capture the hearts and imagination of children, the learning matters. And when students have the chance to wrestle with and enact solutions, large or small, to complex problems, they begin to see themselves as change makers. Following the passions of students requires critical listening, thoughtful planning, and strategic collaboration. It doesn’t mean throwing curriculum maps out the window, but recognizing and growing moments that can serve as vehicles for real-world learning.

Cowhey (2006) writes, “As a teacher of critical thinkers, part of my job is to deliberately nurture sustained interest in questions over time” (p. 12). Akhri’s students engaged in research, information and opinion writing, data collection and analysis, art, and simple engineering. These are all skills outlined in the first-grade standards and brought to life by the importance of the problem they addressed together. The learning will have lasting impact in the hearts of the students and the heart of the building—the strips of bird tape fluttering and flashing, crow silhouettes pressed to glass with loops of packing tape, flowers painted directly on windows by shaky six-year-old hands. It’s not what the designers intended, but it’s what makes our building a school.

References

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