Exploration and Morning Meeting: A Moment in Time in Tim O’Keefe’s Classroom

Tim O’Keefe’s second graders begin their day with exploration—connecting with one another, with Tim, and with projects they are personally invested in. They read independently or together, work on pieces they are preparing for publication, play chess or other games, conduct experiments in the science area, read the local newspaper, and write observations or pose questions in one of the class journals. Tim often helps a small group of children compose a song, conduct a science experiment, and so on. In video clip 5, Tim and a small group of children are reconstructing the skeleton of a dead bat they had buried five months earlier.

Things to notice:

• The other kids in the class are playing chess, reading, or writing in the background.

• Tim and the children in the group exchange exploratory comments and questions, moving fluidly in and out of mentor and apprentice roles and naturally using the language of inquiry:
  o I noticed . . .
  o I wonder . . .
  o I made a connection . . .
  o I appreciated . . .
  o I have a feeling . . .
  o I was surprised by . . .
  o This reminds me of . . .
  o Building on . . .
• They consult William as the resident mentor because he completed an impressive expert project on bats in first grade.

• They use nature magazines and the Internet to explore their emerging questions.

• They use primary and secondary sources to investigate and reconstruct the bat skeleton.

• Individual insights become part of the collective thought.

Transcript

Tim: I have a feeling these are the stronger bones that go across the top [of the wing].

Onastasia: These should be smaller joints.

Zach: Are you trying to put it together? That looks like an alligator model.

Lauren: Is this the claw?

Tim: It could be. I'd say if you have any questions about it put it down here and we can sort of sort it out.

Onastasia: This looks like another part of the wing or something.

Tim: I think that might be the lower part of the leg.

Carly (dropping by to see what the group is doing): I am so impressed!

Tucker: I wonder if we should get William. William? Do you think this one is a female or a male?

William: I have no idea.

Tim (spreading glue on a piece of construction paper): Here Onastasia, can you put those little leg bones down? Sort of next to the big ones?

Onastasia: Sure.
Tim: I’m not exactly sure that this is the way they go. It just sort of seems like it.

Tucker: Hey! Why don’t we try to find a bat book? There might be a bat book.

Tim: If you look in the Zoobooks [a Wildlife Education series] there might be a bat book and they show the skeleton I think.

William (deciding to join the group): Mr. O. is there a bone for the throat? Because the noise they make is produced from their throat.

Tim: What was your question?

William: The peep noise they make is made from their throat so I was wondering if there was a throat bone.

Tim: I’m sure there are some bones in the throat.

Lauren: I wonder if it’s a female or a male.

Tim: I personally don’t know but I’m pretty sure that bat experts can tell. [Tucker brings the bat Zoobook, open to the page of a bat skeleton.] Oh look! Perfect! Set this up here. I think you can tell the difference between a male and a female by the way their pelvis is shaped. Because a female’s is more shaped for having babies and the male’s is probably more narrow.

Tucker: There’s another leg bone right about there, ’cause look (points to the model in the Zoobook).

Tim: Oh, I think we had that right. You’re right there are two leg bones together on the bottom.

Onastasia: We need to put these together.

Tim: So that’s just like a human. There’s one at the top, that’s called the femur and there’s two little ones down below.
Tucker: Look! It does go down there.

Tim: Ahh, but you know what? I have it reversed. No, that’s right.

Carly (who has remained with the group): These must be the toes.

Tim: Yes, and you know those little tiny things? Lauren, you know those little tiny things that you found? I’ll bet they’re the claws.

Lauren: I’ll bet the tinier ones are part of their tail spine.

Tim: Oh, you’re right. No wonder they had such a long spine. I didn’t even think about that. We had the ribs right too, I think.

Tucker: Yeah. They’ve got this one bone coming out of their ribs too. Kind of like right there [points to picture].

Tim: Let’s see. And I think we’re right about the big bones up here. Only the big bones [in the wings] kind of make a W or a V.

Tucker: Yeah, and the big bones go that way.

Tim: So if I put some glue—why don’t you put some glue where you think these more slender bones go?

Onastasia: These? One of these?

Tim (pointing to the magazine): See how they come out sort like a W from that point?

Onastasia: Oh, yeah.

Tim: Kind of like this maybe.

Carly (already gluing something): Excuse me, Onastasia—

Tim: Okay, wait, wait, wait, let’s not do too much glue. You see how these bones are arranged in the picture?

Tucker: Mr. O?
Tim: Yes, Tucker?

Tucker: I’ll bet you one of these bones goes right here because look, this is kind of right there under the center of those two bones.

Tim: It’s kind of like our collar bone and our scapula, our shoulder bones.

Tucker: I broke my collar bone falling off a slide one day.

Tim: So which ones do you think might be the collar bones?

Lauren: Is this a part of a tooth? It looks like it.

Tim: It very well could be. ’Cause I don’t know if we found any—oh no, the teeth are in the skull!

[At this point, Tim begins playing the clean-up music signaling the end of exploration. Students put their materials away and gather on the carpet in the front of the classroom.]

Tucker (reading his entry in the science journal): The bat’s bones are skinny. There is hair.

Tim: Show them the diagram.

Tucker (pointing to his entry): There’s the bones and the skull.
Tim: He wrote this when we first started digging. The more and more we dug, the more and more things we found. And Lauren was in charge of the big pile of dirt. She was so meticulous she kept finding smaller and smaller things. It’s easy to find the big bones, the skull and hipbones and so forth, but she just kept at it while some of us were gluing it together and she kept finding more and more things. Then Tucker said I wonder if we have a book about this? So he found the Zoobook and opened it up and looked at a diagram of a skeleton and it confirmed some of the things we were thinking. Right Onastasia?

Onastasia: Yeah, you’re right, that is the pelvis.

Tim: We confirmed some of the things but had to rearrange some of the bones we had down because we weren’t exactly sure where they went.

Onastasia: I tried to go on the Internet to see if I could find out any more things about them. ’Cause we thought that the human body was much similar to the bat body.

Tim: Almost the exact same kinds of bones we noticed. Like in the leg bone, there’s one big bone here and two smaller bones down here [pointing to his own leg] just like on humans and the vertebrae and the backbone, very, very similar. Even to the point where they had fingers.

Tucker (pointing to a diagram in the Zoobook): Is the collar bone somewhere?

Tim: Yeah, the collar bone and shoulder blade and so forth. We looked at this and then felt around on our own bodies. As you look at this more closely, you will be able to see a lot of similarities with human bodies too. [Children respond spontaneously around the circle.] I frankly thought that we wouldn’t find much at all. I thought we would find the skull probably and a couple of the big bones, maybe the skull and shoulder bone and
pelvis. It’s remarkably well preserved considering it’s been under the earth for five months. Any questions or comments for us?

Cody: Well, I think that you guys did a great job because I would probably be doing something else but then I thought, “Maybe I should go help them too,” but then I noticed that you were already done. I noticed how fast you did it.

Tim: Thanks. Maybe we can do something like this again.

Zach: Well, uh, this is sort of like a time capsule because you buried it five months ago and you saw how it looked five months ahead.

Tim: Yeah, so it was a time capsule, you’re right. [Turning to Tucker, who has his hand up] Go ahead.

Tucker: I wonder if any of the other bones—or if you missed and some bones fell out of the bag. And are in the soil still—with the worms and something?

Tim: That could be. I was a little careless with the soil too. I opened it up, we flipped it over, and got what I thought was most of the skeleton out and I just tossed the bag away. But if I was as careful as Lauren, we would have looked around in that other stuff and probably found some more little toe bones and stuff. But that’s interesting that you mentioned the decomposers. [Addressing the student teacher.] As we pulled this bag out of the ground, were you here, Ms. Powell?

Ms. Powell: No, I wasn’t here for that.

Tim: There was a worm, an earthworm, crawling right out of the dirt. And we know that earthworms are decomposers because we have been studying those.

Tucker: And we saw a baby cockroach.
Tim: A baby cockroach right in that mess, and all kinds of roots. So we found animal decomposers like the baby cockroach and the worms and there were tiny little organisms, I don’t even know what they were, but they were sort of scurrying away from it. And then we found mushrooms, and roots of that great big flowering plant were growing right through the mesh bag just in the last five months, and so I’m sure that plants and fungus and mold and bacteria—all of those things were at work getting rid of the soft parts. And eventually would have gotten rid of the hard parts but I think we got it out just in time. So five months is just about the magic time. Jasmine?

Jasmine (pointing to the model in the book): The backbone looks like sticks and I don’t know, do they eat flies or worms and other stuff?

Tim: They eat small insects, mosquitoes. Actually, I’m glad you asked that. We kept asking William to come over and give us his ideas because we kept having questions like someone said, does a cricket sound like a bat? William, do you want to tell them about that?

William: Well, um, bats are—bats may sound the same but we don’t really know because they are so high pitched we can’t hear them. It’s called ultrasonic sound.

Tim: So, therefore, if you can’t hear the bats and you can hear the crickets, they must have a different sound, right?

William: They have a higher pitch and the frequency is too high for our ears to pick up.