

Numeracy Through the Day

Making Thinking and Learning Visible Through: Numeracy Through the Day

Narrator: Thinking and learning happens and is made visible in many different contexts in a full day early learning kindergarten classroom. When planning for effective learning experiences in mathematics, the early learning kindergarten team should include a balance of the follow elements; activating prior knowledge, engaging in the mathematics, reflecting on the process, and celebrating children's learning.

Team members can begin a learning experience by encouraging children to use their prior knowledge to solve a problem. By observing how the children proceed, the team gains insight into what the children already know, and can plan further learning experiences to ensure that the children will have the necessary tools to develop an understanding of the concept being investigated. There are multiple opportunities for engaging in mathematics throughout the day.

In this video, you will see several examples of the various contexts for mathematics learning that have been planned based on assessment information and the learning expectations in the full day early learning kindergarten document.

Team one:

Speaker2: Usually, before we start our activity time, we always have a mini-lesson, and it could be a measurement lesson, or it could be a patterning lesson, or it could be a quick language lesson, and it is amazing to see how the kids take that idea and do it anywhere in the room. So previously I used to think, oh, well, if they are doing measurement, then they have to come and sit at the math table with me and do a measurement thing, and I need to see that they can measure with a measuring tape. But now it doesn't matter where they go in the room, I'm going to see them measuring all over, because we intentionally put things in the room to support what our mini-lessons have. So when we were doing measurement as one of our big ideas, we had all kinds of measuring tools around the room. So it didn't really matter where the kids were. We would see them measuring all over the place.

Team two:

Speaker3: Now, I know you used to do calendar. And that was part of your remove, and you did remove calendar from classroom. Can you tell me what the result of that has been?

Speaker1: Well, I think whether you do calendar or not, children still have an opportunity to understand passage of time, both on a daily basis and on a weekly basis, and the children figure out for themselves that today is Wednesday and we have reading buddies. And most of them say that without us having to say anything. So really the calendar was just something that everybody did, and so we just all integrated it into our program, but yet when you sit down and think about it, there are other ways of doing what you used to do on the calendar.

Speaker2: And for the amount of time you spend on calendar during an opening circle, there are much more useful ways of introducing different aspects of the day and time, and month, and weeks into the children's lives that you can take the time of calendar and actually talk to the children and see what they are interested in.

Speaker1: Because they were very interested this year in seasonal changes, which was huge for them. So again, that is passage of time. We didn't not have a calendar stuck up, and it was the interest of the children.

Speaker3: I am noticing your visual schedule here. Can you tell me about how this came to be, and sort of what your thinking was around the creation of this schedule?

Speaker1: At the beginning of the year we did have a pocket chart, and it had the events of the day and we just had used the Boardmaker program, which just has the little black and white pictures that we printed out. However, we found that it was not personal enough for the children, and it was also running from top to bottom as opposed to left to right, which is of course how we're trying to teach the concepts of print and reading, and of course the flow should be from left to right. And once we had the opportunity to take more photos in the room of the children participating in all of the activities, then we were able to print them out and it made it a lot more personal for them when they themselves on the visual schedule. So throughout the day the children can go and move the magnet along.

Speaker3: So I guess that also sort of lends to what you were talking about earlier around the flexibility, and that these pieces of their schedule can be moved, and changed, and manipulated as the day unfolds, or as things kind of arise in the classroom.

Speaker2: Yes, they are actually just magnet picture frames, so the children are able to take them off and move them around, rearrange them, and for different days of the week we have different items happening. Mrs. Cornwall visits for music on every day two, and so we are able to just stick her in where she would be, and then the children, once they are moving the magnet, they are able to see that when it lines up that is when Mrs. Cornwall is going to be here in order to teach the music. And there are a couple of different, we have reading buddies, and they know on their days to come and add it to the chart, and take it off, rearrange it, whatever they see fit, same with the outside time and everything they can rearrange.

Team three:

Speaker2: A lot of times when I think a material is open-ended, what I think the children are going to do with it is completely different than what they have done. So for example, they have taken these blocks. This has very beautifully brought in measurement, very naturally. So they started talking about whether they are taller or shorter than these, and I brought up a pencil and said, well, why don't we mark it? So it's that extending of the learning which happens. And once they have marked it, then they start comparing who is taller, who is shorter, and it was really neat because that is not what I thought they were going to do with these. My intention was, that they were probably going to use this to maybe do some building, maybe make something along the lines of a CN Tower, and it has taken a completely different form, which is really amazing.

Speaker1: And this example in your building center of both those open-ended materials, and of course the commercially produced, is a wonderful example of how the play and the learning changes because we have provided a combination of open-ended and commercially-produced. And we can rejuvenate, if you like, and refresh a variety of our centers by changing up the materials.

Classroom One:

Teacher: What do you think would happen if you took one of those pieces off of the bottom? What do you think would happen?

Student: It would fall.

Teacher: You think it will?

Student: Because actually if you just take one piece...

Teacher: Let's try it. Let's see what happens. Oh, look. Let's see what happens there with that one, Elisa(ph). Let's see. Ag, so do we need all four?

Student: No, it could stand up.

Classroom Two:

Teacher: Hello, Musa(ph). Would you like to go shopping with us? I hear you're coming to the party as well and you need an outfit. Come with us. You can browse through that catalogue created in our class by our children. Look at some outfits there. Shall we go? All right, let's go. Let's go, friends. Oh, good afternoon, ladies.

Student: Good afternoon.

Student: Good afternoon.

Teacher: How are you?

Student: Good.

Teacher: What a lovely store. We are here to buy some clothing and jewelry. We heard you have good prices and we checked your catalogue. What could you recommend for me?

Student: We have some clothes.

Teacher: Oh, I love those dresses, it's beautiful, but I really like this skirt. How much is it, ma'am?

Classroom Three:

Student: He made a hole right here.

Teacher: He did? We saw lots of little holes in the mud when we were walking.

Student: Look at that one, Ella(ph).

Teacher: Look at him, he's stretching, stretching, stretching, and then scrunching, scrunching, scrunching.

Student: Let's count them.

Teacher: Count the ones that we pulled out?

Student: And touching.

Teacher: Okay. Mya(ph) wants to count the ones we pulled out.

Student: I touched this [inaudible].

Teacher: So where do we want to put them, Mya(ph)? Who wants to pull them out to count them?

Student: *(In unison)* Me.

Teacher: Okay. Go ahead, Mya(ph). You pull one out and we'll put it down here.

Student: I want to pull one out, too.

Teacher: So there is one. Should we get a piece of paper and do a tally?

Student: Yes.

Teacher: Can you go get a paper?

Classroom Four:

Teacher: I noticed that you guys were having problems with the base of making the Eiffel Tower, and I was looking here, and you notice when I put the two lines that there was a difference. So Ms. Berdelli(ph) got a different picture for you, and I am hoping that this picture will help you design the bottom. Do you think that will change your thinking?

Student: Yes.

Student: There's a platform right here and here.

Teacher: So there are two platforms that we're going to need, okay. And what about the bottom? What do you notice that is different?

Because I think it was hard for you guys to take a look at this picture and see what was needed. What's needed here?

Student: We need like crossovers on there.

Teacher: Crossovers, okay. And how many legs?

Student: I think there's like lots of legs.

Student: There's four.

Teacher: Do you think there are four? Brendan(ph), do you think there's four? From this picture, does Ms. Berdelli(ph) have to add a couple more pictures so we understand?

Student: One, two, three, four.

Teacher: Four?

Student: Yes, because it could go all around, so it is four.

Teacher: Oh, all around. And what were you trying to do before that wasn't working?

Student: The balance beam.

Teacher: The balance. And did you have four legs?

Student: No.

Teacher: No. Do you think that might have been the problem? Yeah? Do you think we can try to make it now with four? Okay. Let's try again. Do you think if we use the big blocks it would make a difference?

Student: Yes.

Teacher: Yeah? Okay. Grab some and bring them here. Do you think a platform would make a difference?

Student: We are going to have these ones.

Teacher: Oh.

Student: I think I know what.

Teacher: What do you think?

Student: This could be the platforms.

Teacher: Okay, I'm going to move these ones, is that okay, Dennis(ph)?

Student: Yes.

Student: These can be the platforms.

Teacher: Okay.

Student: Take one.

Teacher: Oh, so these sections, we'll use that. Did you want to mark that on there so we remember when we get to that section? Where are your four legs that we were talking about, can you show me?

Student: Here is the second one.

Teacher: Yeah, and then we could put your platform on top of them. Do you think we can do that?

Student: I need another straight one.

Teacher: Okay.

Student: We need a straight one.

Teacher: Let's take a look. Can you help them out there, Ryan(ph)? Dennis(ph), Ryan(ph) has an idea. Can you let him try something?

Student: Yes. Okay.

Teacher: Go ahead.

Student: So what do I do?

Teacher: You said you wanted to do the four legs. Can you show me what you were thinking when you thought of four legs?

Student: But that is not like the real one.

Teacher: Does it look like the real one?

Student: No.

Teacher: You do not know? (Inaudible) four legs? Okay.

Student: You have to put it right in the middle because there is a big line going down.

Teacher: Oh, so you need support in the center? Okay, got it. I see what you're doing.

Student: That's why.

Teacher: Are we missing one more...

Student: Yes, that is what I had on then and he just took it out.

Teacher: Hmm.

Student: Who?

Student: You.

Student: Oh, there it is. Look. I'll just put one right here.

Teacher: Oh, good stuff. Brendan(ph), I love your idea. Can you show Dennis(ph) what you were thinking?

Student: I was going to just put one in the center there.

Teacher: Yeah. Perfect.

Student: And then we are going to put these on here.

Teacher: Okay. So what are we doing next?

Student: [Inaudible]

Teacher: Okay.

Student: That would [inaudible]

Teacher: Do you think they are ready for the platform, Ryan(ph)?

Student: Yeah.

Teacher: So here's the first platform, and then we'll use...

Student: Yeah.

Student: And if you put those there, then you would make...

Student: We need a leg. We need a leg right there, so should we put one right here?

Student: Yes.

Speaker1: How does that one feel compared to the other one?

Student: Yeah, this one is smooth. This one is bumpy.

Student: Kind of bumpy.

Student: Hold on, Dennis(ph).

Student: I would put that there.

Student: Yes.

Student: If I was you, I would.

Teacher: What are you thinking, Ryan(ph)? Can you share with them what you're thinking? What would you like to do? What do you think that you are going to use this for?

Student: Like these do not look like the real thing.

Teacher: Okay, can you let them know?

Student: Actually, I was thinking just to make a stem right in the middle about here.

Teacher: To go up top, right?

Student: Yeah. Mm-hmm.

Teacher: You are really concerned with that tip. That's where you want to make it, don't you?

Student: I think I can make it smooth a little bit more.

Teacher: Smooth it? So it's aligned properly?

Student: Then we can...

Teacher: Do you know, I really liked Ryan's(ph) idea of linking all these squares and making the platform before we kind of went up.

Student: We will do that.

Teacher: Do you want to try that one?

Student: Yes, we will do it.

Teacher: Do you know why? When I look at the picture, and Ryan(ph) had that thought, can we try that out?

Student: Sure.

Teacher: And then if it doesn't work we could always change it, do you think?

Student: Yes.

Teacher: Do you want to get the other two of these and we'll link it and make a big platform, would you like to do that?

Student: You know what we could do?

Teacher: What?

Student: We could make it like-, take this off and show Ms. Berdelli(ph) something.

Teacher: Okay.

Student: Okay. We could like stick them together like this.

Teacher: Oh, together. So you are talking the what?

Student: Yes, because see, like they're stuck together.

Teacher: So you are seeing the two of them, so they're higher, am I correct? What do you think?

Student: It's good.

Teacher: It's good? Okay, are we going to put them here then?

Student: I am going to kind of build like a tower shape.

Team Four:

Speaker1: In the beginning, we thought we had to document everything, and over time we realized that you're really looking for those a-ha moments and those moments of really deep learning, and I think recording the children's conversations, we've learned so much about them. And in recording the conversations, we have been able to use that as a reflective tool for ourselves, and to see what kinds of questions we're asking.

Speaker2: The documentation, because we know the students so well, we can follow their comments over time and see what gains they're making, but the documentation also tells us what they're not understanding, and I think that's very important. Or if they are not participating, it's made very visible, and then we can talk about why and how to enable the learning to take place. So it really makes everything visible to us, and I think that is really important.

Speaker1: And I think it makes it visible to them too, because when you read back and we have had that, well, my name is not written there, I didn't say anything. And then they can kind of go, oh. And I think that is a good reflection tool for them.

Classroom Five:

Teacher: Owen, what are you learning about?

Student: How to make this arrow going to that arrow.

Teacher: Well, how do you do that?

Student: You put blocks and then it makes the arrow go like this.

Teacher: Well, I saw you put a block in here and a block in here and it didn't move.

Student: Well...

Teacher: Oh, what happened there?

Student: Well, this thing lifted and that thing now goes down-, up.

Teacher: Hmm. So what do you think is happening?

Student: Hmm. Let's see what happens to this.

Teacher: Oh, what happened there?

Student: When I put in one in there, it go down. Let's see if we put one in both.

Teacher: Well, that was interesting.

Student: This thing is still up.

Teacher: Hmm.

Student: I have to put two in both. Two in there and two in there. Whoa.

Teacher: Well, why do you think this one is down and this one is up?

Student: Well, because this one is touching the ground and this one is up.

Teacher: Well, how come you think this one is touching the ground and this one is up? What is making this one touch the table?

Student: This side is touching the table but not this side.

Teacher: Well, how come this bucket is down touching the table but this one is not?

Student: Because these things are heavier than the bucket, so it's lifting them down.

Teacher: Well, this one is heavier? You said these are heavier than the bucket?

Student: Mm-hmm.

Teacher: So that is pushing that down?

Student: Uh-huh, because this is strong wood and this is not strong plastic.

Teacher: But these ones are also the strong wood. How come they are not touching the ground?

Student: Because there is more here...

Teacher: There is more in this one than in this one?

Student: This here is-, hmm.

Teacher: What are you thinking?

Student: I think that this thing has more weight than that.

Teacher: You think this side has more weight than this side and that is why this one is down?

Student: Uh-huh, and I think that this wood is stronger than that wood.

Teacher: How interesting. Do you think we have other things in the classroom that could do the same thing?

Student: Yeah.

Teacher: What else could we use besides the wooden block?

Student: Lego.

Teacher: Do you think the same thing might happen?

Student: Yep, I think so.

Teacher: So what happened when you put the same amount in each one?

Student: They got heavier and heavier.

Teacher: Do they have the same amount in each one?

Student: No. So I am going to put some in here and there. Now they are the same...now they have the same amount.

Teacher: Now they have the same amount. How many is that?

Student: One, two, three, four, five. One, two, three, four, five.

Teacher: And what happened?

Student: This one got heavier and this one did not.

Teacher: And what happened to the green arrow?

Student: The green arrow almost touched the little arrow.

Teacher: So when you put the same amount in each one...

Student: The green arrow almost touches the yellow arrow.

Teacher: Hmm. But what happened over on this one?

Student: That one, because the blocks are stronger than those things. So these things-, hmm.

Teacher: Do these ones have the same amount?

Student: No.

Teacher: How do you know?

Student: Because I counted them in my head.

Teacher: Oh. So these ones don't have the same amount, and so this one touches the table and this one doesn't.

Student: Mm-hmm.

Teacher: And these ones have the same amount, and what happens?

Student: It touches the thing.

Teacher: What happens if you put the same amount of wooden blocks and the same amount of cubes?

Student: Let's see. Let's see. And there is another one, and then...

Teacher: What happened?

Student: How about we put all of-, and three in that one?

Teacher: Hmm.

Student: Whoa. There are three in both. I thought it was going to go like this.

Teacher: I thought it was going to go like that, too. I wonder what happened?

Student: Hey, what do these things do?

Teacher: Well, what do you think would change if we moved those? What happens if we slide those?

Student: Whoa.

Teacher: Hmm.

Student: It lifts them. Watch this? See?

Teacher: What happens if you slide both of them over to the middle?

Student: And if we put this down-, hmm.

Teacher: Hmm.

Student: I'm trying to make this one go down here.

Teacher: Okay, so how can you make this one go down? What are you thinking?

Student: We put one of these.

Teacher: Oh.

Student: How about if we put more in this one?

Teacher: What happens?

Student: That one will go down. If we put more and more and tons in this one...

Teacher: Owen(ph), will you share your discovery with the class later? Will you explain what you were learning by doing this later?

Student: Yes.

Teacher: Would that be okay?

Classroom Six:

Student: This is what you do. So you roll the dice and that is how many turns you get.

Student: No, I didn't get many turns because I saw one, two, three, four, five, six.

Student: Okay, let me show you how it is done, okay? You roll the dice. That's how many turns you get. So one, two, three, four. So I get four turns. After that, you do this and you move them here. If they move here and get out of control, it's okay, because you (inaudible)

each game, but you do that and put it in the right order, then we do-, so that means you keep them.

Student: Okay. I go first, remember?

Student: Yes. First I need to do one thing. There.

Student: I get this much, right?

Student: Yes.

Student: One, two, three, four. So I get four turns. The same?

Student: Try to hit them through here and try not to touch-, oh, it is okay. It's okay.

Student: Okay, your turn.

Student: My turn.

Student: I get to roll the dice, too.

Student: Same one. Your turn.

Student: Two.

Student: Just two. Do a two now.

Student: Okay, only two.

Student: You did it.

Student: Then I get a new score because I had two.

Student: There. My turn.

Student: Yeah, your turn.

Student: Three. Oh, one, one is next. Hey, hey. Here. You are messing up the line.

Student: Sorry.

Student: It is okay.

Student: Kayla(ph), get me the dice.

Student: Fix the line.

Student: Give me the dice, Mikayla(ph).

Student: I am going to do one last thing.

Student: Okay.

Student: Six.

Student: One, two, three, four, five, six.

Student: Six turns.

Student: Okay. Okay, this is my two.

Student: So you keep this, and I keep the black.

Student: This is my three. This is my four, and this is my six.

Reflection:

Teacher: So when we first placed these materials, we noticed the children were patterning and counting, and we had really observed that being explored heavily, so we wanted to get the numbers sense across. So just by placing a die there it changed the play completely, and we noticed that the children created their own game and they worked collaboratively on it. So we didn't feel that we had to explain how to use it, or that we needed to give instructions. We just needed to be intentional in the choice we made.

Well, when we place these materials and we document and observe what is happening, we always have to bring it back to the curriculum, and we noticed that a lot of patterning had been explored at the light table. So we thought, well, how can we explore another area of math, and so we made that decision.

Student: Two, three, four. Okay.

Student: You get this one.

Teacher: So Isabelle(ph), I noticed in this game you have a new way to count.

Student: Yeah.

Teacher: With both hands.

Student: Yeah.

Teacher: Was that your idea? Yeah? Do you count that way too when you go back?

Student: Yes.

Teacher: Yeah?

Student: I'm like almost done the blacks and the whites.

Teacher: You're keeping the blacks and the whites separate? So what is this here?

Student: The line, so we don't hit the line.

Teacher: Oh, you have to make sure you're coming outside of the line.

Student: Like this, we hit the sides and go across and they can (inaudible), but we have to keep it when the person...

Student: Yes, if you just hit it, then you've got to keep it.

Student: If you hit the line, you keep it.

Teacher: If you hit the line, you keep it?

Student: Yeah.

Teacher: And if you don't hit the line, what happens?

Student: You keep it.

Student: If you don't hit the line, you don't keep it.

Student: Yeah.

Teacher: Okay. So if you hit the line you keep it, if you don't hit the line you don't keep it. That's an interesting rule.