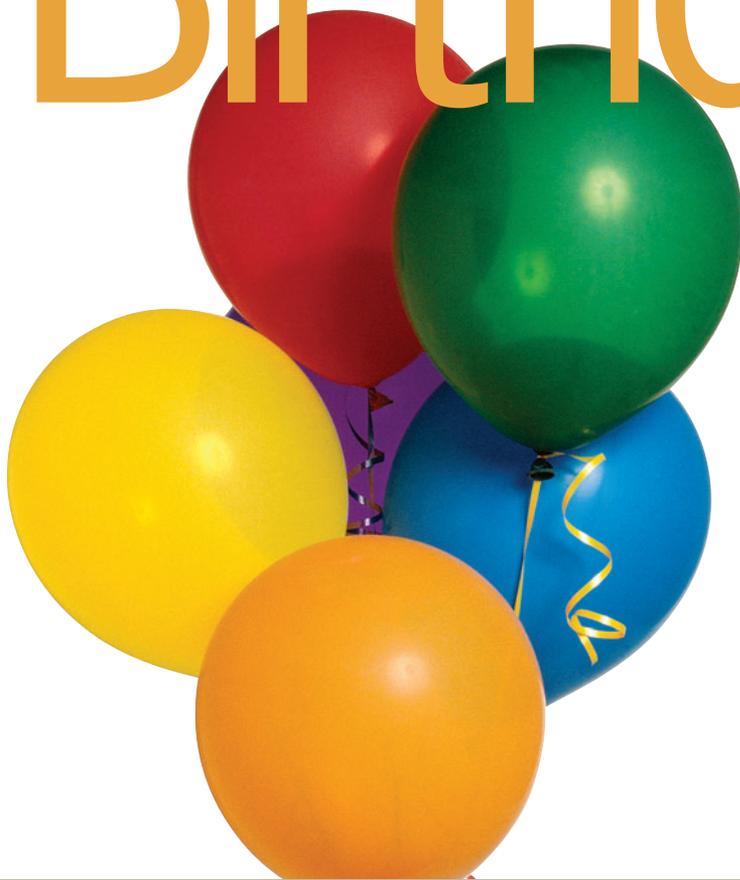


“How Many Days ’til My Birthday?”



Helping
Kindergarten
Students
Understand
Calendar
Connections
and Concepts

By Mary Kathleen Barnes

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“How many days ’til my birthday?”
“My grandma is coming when we are on spring vacation. How long until she gets here?”

“We’re having a party for my baby brother. He’s going to be two on Saturday. How much longer is it to the party?”

My kindergarten students had many questions about “how many days” and “how long” until the special events that were occurring in their lives. They eagerly anticipated birthdays, holidays, and

visits from grandparents and friends. However, unless their special event happened to occur within the single calendar month that appeared on our bulletin board, it was put aside until the “correct” month arrived, when it could be posted on the classroom calendar. This delay represented a significant loss of an opportunity for my students to connect the events of their lives to authentic calendar experiences, as well as a loss of opportunities for problem solving, predicting, and developing number sense and representation abilities that could come from using the calendar in more authentic ways. I was also concerned that the students’ understanding of time was somewhat distorted by the model of an isolated, single monthly calendar that provided no ongoing context for their experiences. Additionally, by removing the calendar at the end of each month and replacing it with the current month’s calendar, the students were also losing a valuable opportunity to build understanding about elapsed time relative to past events in their lives.

Children’s Mathematical Thinking

What do we know about how young children begin to understand the concept of time? How do they develop the conceptual framework for understanding temporal relationships, such as *day*, *week*, *month*, *today*, *tomorrow*, *yesterday*, or *next week*?

We do know that “mathematics learning builds on the curiosity and enthusiasm of children and grows naturally from their experiences” (NCTM 2000, p. 73). We also know that mathematics needs to be appropriately connected to the young child’s world to provide opportunities for exploration of mathematical ideas and experiences (NCTM 2000, p. 74).

What does this mean for early childhood teachers? It means that preschool and kindergarten teachers should use calendars with young children “only as they are functional and of immediate use to children” (Seefeldt 1997, p. 181). It is not necessary for kindergarten teachers to spend the first twenty minutes of every morning talking about the days of the week or months of the year while pointing to charts and calendars. Children do not learn concepts of time by “watching a teacher count the number of days they have been in school or by finding all of the days of the week beginning with the letter ‘T’” (Seefeldt 1997, p. 181). Rather,



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young children develop an understanding of time by connecting it in ways that have meaning for them, such as counting and recording the days before a special event or the days that have passed since a birthday (Seefeldt 1997, p. 181).

Therefore, it is helpful for teachers to understand how children construct their framework for understanding time and to be aware of how complex this process is for young children. This article describes how a calendar wall in a kindergarten classroom was used to help children think about time in more meaningful ways that connected the calendar to their experiences.

Understanding Time Is a Complex Endeavor for Young Children

Understanding the referential aspect of time is challenging for children. For example, in order to understand *today*, *tomorrow*, and *yesterday*, a child must be able to construct a reference point in time (*today*) in order to temporally position *tomorrow* and *yesterday*. The child must also be able to understand temporal sequencing concepts in order to comprehend that the present (*today*) is only a single moment in a continuous process (Friedman 1990). For young children, temporal sequencing concepts begin to develop from their experiences of particular events. As Caplan and Caplan (1983) note, “Since children understand time concepts based on a sequence of events before they under-



quickly for the busy parent who is rushing to get everything ready. Through conversations and experiences, children begin to develop an awareness of the experiential nature of time.

Creating a Calendar Wall to Foster an Understanding of Time

As the school year progressed, it was becoming apparent that my kindergarten students were missing some important connections between their classroom calendar and the related conceptual understandings of time and sequence. For example, they demonstrated little understanding of concepts such as *week* or *month*, *past* or *future*, and were relatively uninterested in the calendar as a whole. So in December, I decided to reshape my approach to teaching time and calendar concepts, and began by designating an entire wall as our classroom calendar wall. Our calendar wall display began with the current month of December and included a calendar for each of the next 11 months of the year.

I also decided to discontinue our practice of having a student “pin the date on the calendar” each morning in favor of having a variety of students share in posting events on the calendar each day. This posting of events did not occur at a prescribed time, but rather occurred randomly as the children shared their ideas and questions at various times throughout the day. For example, on Monday we planted narcissus bulbs, and the children were curious about “how long” it would take until they bloomed. In order to provide a reference point in time for the students, I said we could note the planting date on our calendar. In the beginning, I suggested to the children that we could use the wall for help in figuring out answers to our questions about the narcissus plants. On Wednesday, for example, Darren observed with excitement that the narcissus bulbs we had planted on Monday were already sprouting roots. Since we had already noted the date that we planted the bulbs on our calendar, I suggested that we record his observation of the roots as well. On Thursday, Erin observed that our plant leaves “were getting straighter and bigger,” and he suggested that he post his observation on our calendar as Darren had done. This ongoing documenting of the students’ observations helped them develop the concept of logical ordering in time. Their plants were growing and changing over time, and we recorded this



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stand those based on intervals, the use of such words as *before*, *after*, *first*, *next*, *last*, *soon*, and *later* will enable them to further their ideas of temporal order” (p. 90).

Young children are also learning that perception of the length of time varies considerably in relation to the experience. For example, holding your breath for one minute seems much longer than playing with blocks for the same length of time. Tomorrow might seem to be a very long wait for the 5-year-old who is anxiously anticipating a birthday party, but it seems to arrive much more

ordering of events sequentially on the calendar. By providing a reference point in time that was familiar to the students (the day we planted our bulbs), the students could begin to construct temporal sequencing concepts as they talked about the leaves that had grown *three days after* the planting. They also had a reference point to begin to construct an understanding about the length of time that comprises a day.

As the students observed the bulbs each day, they were also engaging in analyzing the changes that were occurring over time, which is a component of the NCTM Algebra Standard (NCTM 2000, p. 37). Initially, the students' descriptions were primarily qualitative, as when Miguel observed on Friday that "the leaves are getting bigger." However, by the middle of the second week after planting, several of the children were attempting more quantitative descriptions by comparing the height of the plant leaves to their stacks of Unifix cubes.

I encouraged posting of classroom events that would be easy for the students to remember, so that we would have a useful shared reference point for *all* the children to use. This was important in order to foster conversation about events that were meaningful and exciting for the children. For example, the children were eagerly looking forward to making homemade pasta on our "Pasta Day." We posted it on the calendar the prior week so we could periodically refer to it as needed. Lavenia asked on Wednesday, "Is tomorrow going to be Pasta Day?" Our common reference point enabled us to talk about concepts such as *before* and *after* Pasta Day, with a shared basis for the temporal reference. When we read *Strega Nona* (de Paola 1975) on the Thursday following our Pasta Day, I asked the students if they could tell me how many days it had been since we made our own pasta. Daria promptly pointed to Pasta Day noted on our calendar and accurately counted the days until Thursday. Then I asked Daria to point to Pasta Day again, and the entire group counted the days together. The students were making clear connections between the calendar and the events that they had experienced, and they were using the calendar as a resource for solving the problem I had posed.

Children also posted events that served as specific reference points for their individual activities. For example, Will brought his "Bag about Me" items to share with the class on Tuesday and posted them on the calendar. His items served as

an excellent reference point for discussing *today*, *tomorrow*, and *yesterday* with him throughout the week. The following week, we could refer to *last week* or *last Tuesday* "when you shared," and he now had a meaningful reference point to use.

The upcoming Christmas holiday was also a point of extreme interest for the students. I decided not to make any notation on the calendar indicating the day on which the holiday occurred because this provided many more opportunities for the students to attend to the actual days and dates on the calendar. For example, on Wednesday, December 19, Laura asked me, "How many days is it until Christmas?" I responded, "It is next week on December 25th. Can you find the 25th on the calendar?"

After Laura found the 25th, she pointed to it with one hand and counted the number of days from the 19th to the 25th. She called two of her classmates over to tell them excitedly that she knew there were six more days until Christmas. I then asked her, "Can you tell which day of the week it is on?" She was not sure, so together we pointed to the Sunday, December 23rd block on the calendar, and I began by saying, "Sunday. OK, then what comes next?"

Laura pointed to each successive block on the calendar and continued, "Monday . . . Tuesday! It's on Tuesday!" she announced proudly. "Christmas is on Tuesday!" She then decided to "back up" to begin reciting the days of the week from today (Wednesday) through the 25th. She pointed at each, saying, "Wednesday, Thursday, . . ." and on through the following Tuesday. Laura eagerly shared this information with several more students, who by now had all moved over to the calendar with her to "recite" the remaining days until Christmas. This recitation of the days of the week was both spontaneous and meaningful to the students. It also represented an authentic opportunity for using one-to-one correspondence skills, as Laura pointed to each block on the calendar while her classmates called out the days.

On another morning, I heard Isaac wondering

The students were making clear connections



how long until “Santa comes.” I suggested that he count how many days until the 25th. He was unsure what the number 25 looked like, so I wrote it on a small sticky note and he compared the numbers on the calendar with his note until he found a match. I pointed to “today’s date” (the 21st) while he posted his note on the 25th; then he counted the number of days back to the 21st. We then talked about how many times (nights) he would “go to sleep” before Santa came. This was useful for Isaac because it provided him with a *sequence of known events* (bedtimes) that could serve as a reference point for him to begin to develop the more complex conceptual understanding of *intervals*.

Leona decided to make a birthday card for her brother, Eugene, one morning. I responded, “Do you think that we should put Eugene’s birthday on our calendar?” Leona enthusiastically agreed. We wrote the birthday on a sticky note, and together we located the day and date for posting it on our calendar. Leona was certain that Eugene’s birthday was “this Saturday.” On the following Monday, I asked Leona about the party for Eugene that had been planned for the weekend. She replied that it was not on Saturday after all, and she thought that it might be “next Saturday.” I soon realized that for our calendars to be accurate, we would need parents to provide correct dates for birthdays and family events. So I sent a note to parents explaining our calendar activities and asking them to return a list

of family members’ names and the month and date of their birthdays (no year). Parents were asked to “include grandparents, siblings, and any other close friends or relatives who would be important to your child.” Parents were also asked to list “any other significant dates, such as family outings, planned trips, vacations, etc.”

We used the parent responses in several ways. The information was helpful in verifying correct dates for birthdays when a student wanted to post information on the calendar wall. The responses were also very useful in serving as a means to pose questions to students who might not initiate ideas on their own. Jeremy listened to Leona share her information about her brother’s birthday but did not seem to remember that his grandmother’s birthday was coming up in two weeks. From the information provided by his parents, I was able to ask him about his grandmother’s upcoming special day, and he replied, “Oh yeah, my grandma is coming to visit and we’re having a party for her.” He posted his grandmother’s birthday, and after doing so, each morning when he arrived he went promptly to the calendar wall and counted the days remaining until his grandmother’s arrival.

Conclusion

The calendar wall generated many opportunities for my students to talk about time and to begin to connect abstract temporal concepts with actual events in their lives. The students were able to spend time actively engaged in temporal ordering and sequencing as a result of their discussions about activities that occurred *before* and *after* the events on our calendars. For example, we discussed the items we had gathered *before* we made the pasta and the extensive messy clean-up we needed *after* we made the pasta *four days ago*. We had not only an appropriately referenced temporal sequence but also a clear connection to how that “point in time” was represented on the calendar.

Our calendar wall also gave us many opportunities to discuss the “experiential” nature of time as we waited with eager anticipation for our special days to arrive. Posting our special events also provided us with many authentic, exciting counting opportunities as the children regularly counted the number of days *until* or *after* particular events. For example, one day in February, Aaron asked, “How many days until my birth-

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day?" His birthday was in August, and he counted 199 days until his big day. "That's a lot of days," he observed. He put a note on the calendar marking his birth date and regularly continued to "count down" to his birthday almost weekly until the end of our school year. We often posted a note on our calendar wall after Aaron completed a new count, updating the number of days until his birthday.

I noticed that we began weaving discussions about time into many of our conversations, which gave the students numerous opportunities for using mathematical language in authentic ways. Surprisingly, I realized that because of our calendar wall, we were spending much more time involved in calendar-related mathematics even though we had "removed" the daily calendar routines from our morning activities.

I believe that by replacing our daily "routine" calendar activities, the mathematics learning for the children was clearly more "active, rich in natural and mathematical language, and filled with thought-provoking opportunities" (NCTM 2000, p. 77) than ever before in our class. The children were experiencing mathematics related to concepts about calendars and time in ways that made sense to them. The children began initiating their own calendar connections. So when I heard one child ask another, "Do you know what's happening next week at my house?" I knew that it was time to celebrate their learning!

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