



Professional Learning Module
Mathematical Thinking: Rethinking Calendar Time

Overview of Rethinking Calendar Time

“Calendar time must Die,” Amy Parks posted on myNCTM (National Council of Teachers of Mathematics).” After spending time in early childhood classrooms, her concerns are around how much prime, instructional time calendar time takes and the fact that the mathematics addressed rarely changes and is often out of sync with the needs of children.

Maybe it doesn’t need to “die” responds a Pre-K teacher, “it just needs to be done in a more developmentally appropriate way.” Sara Smouse talks about how she uses the time as a social studies lesson, briefly discussing events of the month or activities that may be highlighted that week.” (*Calendar Time Must Die*, Amy Parks posted on myNCTM (National Council of Teachers of Mathematics))

Review the full text: <https://my.nctm.org/blogs/amy-parks/2018/01/30/calendar-time-must-die>

The purpose of this module is to take a closer look at both of these views on calendar time. First, exploring what is traditionally included in a calendar time activity and understanding the math around calendar time. Then, thinking about the instructional practices and asking the question, “Is this an efficient use of time and an effective experience for children?” Finally, how to “rethink” this first meeting of the day with ideas that would better meet the needs of children more efficiently using developmentally appropriate practices.

What does a traditional calendar time look like?

Calendar time is typically a whole group instruction practice where children do “calendar math.” Often a wall or poster is set up with an elaborate display of calendar related materials with a 31-day calendar for the present month with possibly a weather bear or even a graph to record windy or sunny days. Months of the year and days of the week posters may also be displayed.



Usually children respond in unison to the questions and possibly one or two children will be selected to answer the question and do the activity. The activity may go something like this:

- What is today?
- What was yesterday?
- What is tomorrow? (Move a marker to indicate the day.)
- Let’s sing our song, “Days of the Week”
- What is the date?
- Can you find that number (numeral)?
- What is that number? Child responds or class responds
- What is this month? Child responds or class responds
- Let’s sing our month song, “January, February....”
- Today is _____
- Let’s count the days that we have had so far in this month.
- What would go next in the shape pattern?
- Can you find that shape?
- What color is that shape?
- What is the weather like today?
- How many sunny days have we had this month?

Understanding the Math

In this calendar time activity example, many important math concepts and skills are being addressed such as number sense, patterning and geometric shapes and are included in the *Florida Early Learning and Developmental Standards: Birth to Kindergarten (2017)*. The question is, does this activity effectively teach these math skills? Here are a few of the math related concepts or skills that may be used in a calendar time activity.

Temporal (time-based) patterns – hours, minutes, days of the week, etc.

Understanding of temporal patterns (time-based) doesn't emerge for children until around third grade. In reviewing Kindergarten through third grade math curricula, Ethridge and King, (2005) discovered that often in calendar math, the same "script" is used in K-3. This implies that even authors of math curricula do not believe that children will "get" *today, yesterday and tomorrow* before third grade. Children in the pre-operational stage of development (ages 2-7) can think about past and future events but have difficulty in labeling them with yesterday or tomorrow. Their reality of time is more like we have a snack before going outside and eat lunch after story time.

Number Sense – is the ability to recognize quantity, count and construct sets. In the calendar time example children are asked to count, identify or write a numeral. The following addresses these concepts:

- Rote counting is reciting the number names in order from memory. It is important for children to know the names of numbers to identify a quantity. Rote counting has its place in the process of learning to count, however reciting in unison may leave some learners behind and frustrated with the process.
- "The main problem with the calendar is that the groups of seven days in the rows of a calendar have no useful mathematical relationship to the number 10, the building block of the number system." (National Research Council 2009, p.241)
- Preschoolers will better understand the repetitive nature of counting if a chart is displayed demonstrating the base-10 structure of our number system.



Our Hundreds Chart									
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Patterns – A pattern is an arrangement of things that are in order and repeated.

In order to recognize or extend a pattern it must have at least three iterations, ABABAB (three units of repeat). It isn't possible for children to recognize the repeating nature of a pattern when the pattern is displayed on a 7- day calendar grid.

Geometric Shapes – Geometry is a natural and intuitive part of mathematics. Children understand the spatial world by knowing shape, structure, location and transformation of objects in space (Copley, 2009 pg. 99). Children need to be able to recognize and name a shape but the experience is best learned through hands-on investigation of shapes and answering questions about what makes a square a square.

Asking children to name colors or graphing the weather are all very good activities but those experiences could be addressed another time during the day since calendar time is becoming very lengthy.

Teachers may argue that the calendar time activity is not a lesson to introduce math concepts and skills rather an opportunity to practice and reinforce them. The assumption being that mathematical thinking concepts and skills are being introduced and planned throughout the day. Good for them! The question then becomes, "Is the most effective instructional practice being used during the calendar time activity? Does it meet the needs of all learners?"

Instructional Practices

Teacher-directed instruction during a whole group setting typically implies that most of the time, children are sitting, watching and responding when prompted. There are times when whole group instruction is acceptable and provides a balance of learning opportunities. However, this type of instruction should be limited to no more than 10 minutes at the beginning of the year and 15-20 minutes at the end of the year. Even though teachers may think children are participating and engaged, research supports that children are not paying much attention after about 10 minutes, or less!

In the calendar time activity, most of the time children are responding as a group, i.e. providing a choral response. Again, this type of learning has a place, for example, when repeating a nursery rhymes or doing finger plays. During a choral response, teachers hear correct answers and assume most children understand the concept or skill. However, in most cases, only a few are answering, others are parroting answers if they are participating at all.

Children learn best by doing, in this activity children are mostly watching their peers engage in a routine exercise that repeats daily. They may get a turn to be the math captain but that may be every few weeks or even just once a month. Most of the time during the activity, children are sitting, waiting and responding when prompted. This example would not be the most enriching learning opportunity for children.

What is the long-term impact on children when they engage regularly in an activity they do not fully understand? They may lose confidence in their intellectual powers and give up hope of understanding many of the ideas teachers present to them. (Beneke, et al, 2008, p.15)

Rethinking Calendar Time

Can the mathematical concepts and skills be presented in more effective ways throughout the day in a developmentally appropriate setting? YES! Here a few suggestions from educators.

- Deborah Stewart, a preschool educator and director expressed her views, *Why I say goodbye to Calendar Time* on her website: <https://teachpreschool.org/2016/09/10/say-goodbye-calendar-time/>. She decided the calendar time activity wasn't the way she wanted to begin the morning routine and decided on a more effective way of setting the tone for the day.
- In the book, *Big Ideas of Early Mathematics* by the Erikson Institute's Early Math Collaborative (2014) the authors explain that the 10-20 minutes spent on calendar time would be more productive if teachers put the number structure and patterns into children's bodies by including counting games, songs and movement. The book provides an alternative way to see how the number of days grows and mark upcoming events by using a linear timeline which can become a class timeline and support children's memory and understanding of time.
- In another article (Beneke, et al. 2008) the authors provide several evidence-based practices that would be more effective than calendar activities in presenting time concept to young children including, picture schedules, classroom journals, documentation displays and linear representations.



After spending time reviewing this professional learning module, a reflective teacher may begin questioning the tradition of calendar time and wonder if it is a meaningful and valuable use of time and think about how calendar time can be improved or changed to meet the needs of all learners.

For additional information please go to the following sections of this module:

- * PowerPoint presentation: Understanding the Math.
- * Instructional Resources.
- * Content Resources.