

## Have We Been To Lunch Yet? Helping Young Children Conceptualize Time

When teaching time concepts to young children, most teachers focus on their state standards to address the content they need to teach. One problem with this is that many standards are written to address content only, and don't always take into consideration the developmental abilities of young children. Busy teachers get ideas for addressing these standards from teacher resource books and create "fun" teaching activities, but often are not aware of cognitive development research for understanding and facilitating the conceptualization of time (Burris, 2005; Arcavi, 2003; Piaget, 1971). Teachers can foster children's mathematical development from the youngest ages by providing environments rich in language, where thinking is encouraged, uniqueness is valued, and exploration is supported (NCTM standards, Pre-K-2 overview). As identification can still lack conceptualization, it is important to have a clear understanding of related terminology in order to facilitate conceptualization and understand how suggested activities will foster understanding of the target concepts.

### Understanding Time

The understanding of time takes the coordination of relationships between what is going on around children and what they are aware of within their surroundings. These "relationships are created by the child within, and not taught by someone else from the outside" (Kamii, 1982, p. 29). A math standard such as "Tell time to the hour by using analog and digital clocks" (SC standards, [www.myschools.gov](http://www.myschools.gov)) encourages teachers to think about teaching children the concept of time by reading various pictures of clocks. Although this knowledge may be important to function in today's society, many skills and ideas must be developed first in order for children to actually understand what they are reading and being asked to interpret. While they may answer every question correctly, they may not have an actual *conceptualization* of what their answers mean. Teachers must understand the basic terms and ideas in the child's understanding of time to deal with this potential problem.

In *Child's Conception of Time* (1971), Piaget separates time into two interwoven areas: physical time and psychological time. *Physical time* is the actual passing of time—seconds, minutes, hours, etc. *Psychological time* is more personalized, or, how it *feels* to the individual. For example, waiting for the doctor might feel like an hour when it may have been only fifteen minutes. *Relativistic time* is when one is able to coordinate the two realms of time. This is when one thinks waiting was an hour, but knows realistically that the actual time passed was only fifteen minutes.

To reach this coordination, children must understand related concepts such as *reversibility*, *succession*, *duration*, and *simultaneity*. *Reversibility* is the ability to conceptualize past, present, and future; or yesterday, today, and tomorrow. Children must not only be able to use these terms, but understand

when and how to use them. *Succession* is the order in which things occur. This can be seen in a young child's understanding of his daily schedule. Children who understand succession see daily activities in their proper order: we wash our hands first, then we eat lunch, then we have rest time. These activities are understood to come in this order, but no social times (e.g., 10:50, 11:30) are attached to them in the mind of the student. *Duration* is the length of an activity. Children can refer to their daily schedules and see that washing hands takes the shortest amount of time, eating takes longer, and rest time takes the longest. No social constructs of time complement this duration. *Simultaneity* is the bridge that brings the above ideas and the true conceptualization of time together. Duration and succession, understood together in a situation, requires the child to coordinate his or her thoughts to see the daily routine in this way:

*We wash our hands first and it takes the shortest amount of time;*

*We eat lunch next and it takes longer than washing our hands;*

*Last we have rest time and it takes the longest.*

**—The understanding of time takes the coordination of relationships between what is going on around children and what they are aware of within their surroundings.—**

This type of thought requires children to synchronize succession and duration while organizing their thoughts. When reversibility is added to the schema, children are then able to think in this way:

*Last we have rest time and it takes the longest;*

*Before rest is lunch; it is shorter than rest time (and longer than washing hands);*

*The first thing we do is wash our hands and it takes the shortest amount of time.*

Using terms such as "before" and "after" encourage children to think of the sequence of events in relativistic time (Burris, 2005). Children now understand the order and length of events and also think through the activities in the past. Once they understand the basic components of time concepts, *reversibility*, *succession*, *duration*, and *simultaneity*, then they can accurately and consistently understand the concept of time, when it occurs and how it passes. They must construct *succession* and *duration* simultaneously, and be able to reverse these processes, before they can relate to time represented through clocks.

### Activities for Facilitating the Conceptualization of Time

1. Teachers need to provide as many opportunities for succession and duration as possible. One good opportunity is through daily routines such as having consistent schedules. Children need the visual representation of a schedule and it should be

referred to on a consistent basis. This helps children to understand succession through predictable routines. The following schedule is an example:

<b>7:45- 8:15</b>	Arrival, attendance, lunch count
<b>8:15- 8:45</b>	Morning meeting, Journal Time
<b>8:45- 10:00</b>	Centers and theme work
<b>10:00- 10:30</b>	Recess
<b>10:30- 11:00</b>	Mathematical games
<b>11:00- 11:30</b>	Lunch
<b>11:30- 12:00</b>	Shared Reading-
<b>12:00- 12:30</b>	Art, Music, Physical Education
<b>12:30- 1:15</b>	Physical knowledge activities
<b>1:15- 1:45</b>	Rest time
<b>1:45- 2:00</b>	Afternoon group time
<b>2:00- 2:20</b>	Dismissal

A workable schedule provides a sense of security and stability through daily routines. Children begin to form a system of events that helps them conceptualize the process of succession. Any change in the routine such as a special activity, e.g., art, music, can be discussed at morning meeting time, thereby not interrupting the successive events in a child's schema. When a child asks a question such as "Have we been to lunch yet?", the teacher can refer the child to the schedule where the routine provides the answer, rather than giving an explanation of exactly what time of day it actually is.

2. Children can also learn time concepts through games involving the concept of duration, e.g., children can be given "jobs" in the classroom. The teacher can discuss these jobs with the class and then use non-standard units of measure, such as toe-tapping, to time the jobs. Students represent the duration of a job by the number of taps it takes to complete the task. The tasks should be relatively short to make a time connection to the duration. Comparisons can be done to determine the amount of time each job takes, thereby forming an idea of duration. When the children have an understanding of the tasks, changes can be made to the units of measure, such as using an egg timer rather than toe-tapping. This allows for building upon established relations and patterns formed.

3. Teachers need to also use larger periods of time to build upon the succession and duration concepts to include reversibility. This can be done by recording days as they pass in a journal. Discussing the day and writing that date arbitrarily in a journal provides only a socially constructed measure of time. But, discussing the day and recording that day by some additional action, such as a journal entry, begins to provide a connection when used in relation to other days recorded. For example, on a Monday, a child can record the day and date and record some

other information on that page. The next day, the child can continue the process of recording the day and the date, but a connection begins to build as the child sees that Tuesdays always follow Mondays, that a larger unit of time passes (as opposed to the shorter units of time via the jobs tasks), and that the days follow a pattern. Saturday and Sunday should be included so that the pattern is complete and consistent (Piaget, 1927). Children can add socially constructed concepts to their developing schema, providing a logical mathematical connection to succession and duration. As they recall the events that pass in their lives (e.g., birthdays), they can go to that space in their journal to recall information about that of time, building upon the concept of reversibility.

4. Always provide responses about lapsed time in ways children can understand, e.g., a favorite television show, like *Spongebob Squarepants*. Each episode of the show lasts for approximately 15 minutes. If the teacher is doing something like traveling on a field trip, and a child asks "How much longer until we get there?", the teacher can respond by saying "We'll be there in about one *Spongebob* episode." The child can think of how long that is in familiar terms.

5. Encourage parents to create family schedules through the workweek and post them at home on the refrigerator or bathroom mirror. This way, children understand that, after they get out of bed in the morning, they have specific things to do like brushing their teeth and eating breakfast before getting dressed. Once they are dressed, they then put their shoes on, and, finally, a coat or mittens, before leaving for school. A routine is continued at school and a relationship is constructed.

Each of these concepts needs to be taught simultaneously and consistently for children to adequately construct and conceptualize the concept of time, and to be able to use it appropriately in their daily lives.

### References

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