

TEACHING TIME

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Introduction

TIME

Time is one concept that is used by human beings on a daily basis, and perhaps in an instinctive way by animals and plant life too! The cock knows when to go 'cock-a doodle-doo'. Flowers know when to open their petals. Trees know when to shed their leaves.

Children get exposure to the concept of time organically, well before they come to school.

Yet the teaching and learning of time poses peculiar challenges. Time is an abstract concept. It involves measurement of something that is invisible and intangible.

Consequently, challenges arise in understanding the concept of time. Learning the mechanics of reading time can also be a difficult task. It is therefore important to build the scaffolding carefully and match the activities to the children's level of understanding.

Here are some challenges which arise in the mechanics of reading and recording time:

- Reading of time on an analogue clock: The hour hand on the analogue clock does two complete turns in a day. This can be conceptually difficult to understand. Children also need to register the direction of the turn (clockwise). There needs to be an understanding of half turn and quarter turn. The fact that the numbers on the clock are written as 1 to 12 but read as multiples of 5 (to count the minutes) increases the difficulty. It becomes necessary to ignore the second hand which can be a source of distraction to children.
- Conversion of one unit into another: Time conversions do not follow the metric system. An hour is 60 minutes, a minute is 60 seconds. While a week is fixed at 7 days, a month could be 30 or 31 days. The number of days in February varies.
- Multiple ways in which time is described: 12:30 can be 'half past twelve'; 9:55 can be '5 minutes to 10'; 5:45 can be 'quarter to 6'. It takes time for children to understand the equivalences of these statements.
- Conversion from 24 hour clock to 12 hour clock and vice versa: AM and PM have to be taken note of while using a 12 hour clock.

Apart from the above, it takes a long time to develop a sense of time: of a second, a minute, five minutes, ten minutes, one hour. Perhaps many adults lack it too. When somebody says, "I will be back in 5 minutes", we all know that it could extend to 30 minutes!

Keywords: Measure, time, unit, activities, timer, non-standard, standard, clock, analogue, digital

At the outset one needs to take note of the fact that all time activities should be related to the personal experiences of students. They should relate to real life situations.

TEACHING TIME TO 3 to 5 Year olds

Objectives:

- Use and understand vocabulary related to time (daytime, night time, yesterday, today, tomorrow, morning, afternoon, a long time, a short time);
- Use after and before with respect to an event;
- Sequence events in their daily routine;
- Associate events with yesterday, today and tomorrow, and sequence them;
- Become familiar with the passage of time.

Three-year olds who enter nursery school already associate time with their daily routine. They associate brushing and bathing with morning time, lunch and nap with the afternoon, outdoor play with evening, and darkness with bed time. But one cannot assume that they are familiar with time related vocabulary. Children may use a word like yesterday to refer to an event which happened weeks ago. They may not have a sense of time and prepare to go home before the school day is over.

Development of time related vocabulary will help students sequence events of the day.

Teachers should frequently refer to the time as well as the passage of time in their conversations: "It is 9 o'clock now; assembly time." "We have games for one hour in the afternoon."

ROLE PLAY ACTIVITY

Young children love to enact role play! They can be divided into two groups. One group can be asked to act out daytime actions (bathing, going to school, riding a cycle). Another group can be asked to act out night-time actions (going to bed, watching TV, reading a book).



Children could follow up the role-play by making drawings of these activities. The teacher can paste these on a chart paper making two categories (daytime and night-time activities).

In the same way, the children can draw pictures for morning activities (assembly and particular classes) and afternoon activities (lunch and games) which happen in the school.

EVENT TRAIN ACTIVITY

Frequent usage of 'after' and 'before' by the teacher with respect to events helps children to sequence activities. "After assembly we have story time." "Before games we have a music class."



The teacher can help the children make a set of cards which depict the activities which children perform over one day in the school: assembly, storytelling, recess, art, lunch, games, ... They can sequence these cards and fix them on the bulletin board.

Similarly, the teacher can ask the children to illustrate the activities they perform at home and help them to sequence them in the right order.

NEWS TIME ACTIVITY

Teacher can use the time immediately after assembly for sharing information and personal stories. It can be used to familiarise children with the usage of 'yesterday', 'today' and 'tomorrow' through various contexts. "Yesterday we had our music class. Did you like the song you learnt?" "Today is library day. Let us borrow a book on dogs." "Tomorrow is the indoor games day."

Help children to relate stories about their lives. "What game did you play yesterday?" Children may talk about some event which they remember from the previous day. "I bought a toy yesterday." "My dog jumped on me yesterday." "I went to my aunt's house yesterday."

YESTERDAY	TODAY	TOMORROW
LIBRARY CLASS	GAMES CLASS	MUSIC CLASS
		

Sequences can also be prepared for yesterday, today and tomorrow, naming the events specific to those days. Children can then display this information on the bulletin board.

ACTION CARDS ACTIVITY

Create a set of picture cards showing activities which take a short time and which take a long time.

Prior to the activity, help children develop an understanding of spans of time (a short time, a long time).

Pose questions:

“Which takes a longer time – brushing teeth or having a bath?”

“Tell me some things you do in school which take a long time.”

“Can you string 100 beads in a short time?”

Prepare a set of action cards and let children sort the cards under two categories: long time and short time. Follow it up with a discussion.



WALK AND TALK ACTIVITY

Teacher can take the children for a walk in the school area. Talk about time and the passage of time while visiting places.

“It is 9 o'clock now. Let us first go to the assembly.”

“We spent ten minutes at the assembly. We will now go to the Library and spend an hour there.”

TEACHING TIME TO

5 to 7 Year olds

Objectives:

- Learn phrases such as 'day before yesterday' and 'day after tomorrow';
- Sequence events of one day and events over many days;
- Learn the days of the week and order them;
- Learn the months of the year and order them;
- Become familiar with the calendar;
- Read and write the time to the hour;
- Understand that durations of events can be compared;
- Learn how to measure time using non-standard units;
- Learn how to say 'half an hour' as 'half past';
- Learn how to say 'quarter past an hour' (quarter to an hour is challenging);
- Read and write the time corresponding to the half hour and quarter hour.

DISPLAY BOARD ACTIVITY

DAY BEFORE YESTERDAY	YESTERDAY	TODAY	TOMORROW	DAY AFTER TOMORROW
SUNDAY DECEMBER 18	MONDAY DECEMBER 19	TUESDAY DECEMBER 20	WEDNESDAY DECEMBER 21	THURSDAY DECEMBER 22

Create a display board in the class for illustrating phrases and words such as day before yesterday, yesterday, today, tomorrow, and day after tomorrow, to keep track of the days and the date. Children can relate this display to the calendar. They could also enter any special event of that day.

GROWING UP ACTIVITY

Ask children to bring photographs of their baby days at various years. Let them sequence the photographs and put them up on the bulletin board. Have a discussion about growing up.

"Find out at what age you walked, at what age you talked." As a side activity it is great fun to play a guessing game using the photos. "Who is this baby?"

DIARY ACTIVITY

Help children create a small diary for the month. Each day they can enter the date and the day at the top by referring to the calendar. They could record any special events (classmates' birthdays, festivals, school functions, and interesting classes) that happened on that day.

CLAP! ACTIVITY

Choose some actions which children perform routinely – like tying one's shoe laces, solving a puzzle, building a tower. Children can work in pairs. As one child performs the action, the other claps and counts the number of claps it takes to time the action.

There will be variations in the way children clap and that can give rise to a good discussion on finding other ways of measuring time.

CLASS MADE CLOCKS ACTIVITY

Children can create non-standard time measuring units like sand timers using plastic bottles, or make candle clocks with equally spaced notches. These can be used to measure the durations of many activities.

Children of this age love to jump, to hop, do flips. They will have great fun trying to see how many flips they can perform during the time the sand runs out.



WHICH TAKES A SHORTER TIME? ACTIVITY

Choose any three activities which can be performed in the class. Examples: solving a puzzle, erasing the board, sharpening a pencil. Let children start all three activities at the same time. Using measuring devices like the sand timer, they can find out which activity takes the least time, and which one takes the longest time.

12 HOUR CLOCK FOR DEMONSTRATION ACTIVITY



The teacher should use a demonstration clock (preferably one that is large) and make the children familiar with the hour hand and minute hand. In the initial stages, let the focus be only on the hour hand, with the minute hand fixed at the '12' position. Let the children know that the hour hand tells us the hour of the day and that when it is an exact hour, the minute hand points to '12'. Without going into the way the minute hand works, one can tell children the purpose of the minute hand – that it indicates the time between two hours.

LIVE CLOCK! ACTIVITY

It is great fun for children to act out a clock. A group of 14 children can demonstrate a live clock. A large circle is drawn on the floor. Mark the centre. Children sit around the circle in places corresponding to the hours 1 to 12. Each child holds up a placard to show the number. The remaining two children, preferably one taller than the other, act out the hour hand and the minute hand. The child demonstrating the minute hand lies flat from the centre pointing to '12'. This may need some explanation on the part of the teacher. When the teacher calls out 'morning break time' the hour hand child lies flat from the centre pointing to '10'. Onlookers (other children) can verify whether the clock is working properly!

By age seven, as the lessons progress, children can also demonstrate half past 5, quarter past 4, quarter to 10, etc. The child acting out the minute hand will need to point to the appropriate place. While introducing half past an hour, it is important to repeatedly stress on the position of the minute hand. In a similar manner, children can later be shown quarter past and quarter to an hour.



PLATE CLOCKS ACTIVITY



While learning how to read time, it is good for children to have their own paper clocks. (Thermocol plates are available in the market but they are not environmentally friendly; it is best to avoid them.) Teachers can guide children to prepare clocks with paper plates. A paper clip and strips made from stiff card paper can be used to show the hour hand and minute hand. The strips should be movable. Help them to first mark 12, 3, 6 and 9 on the clock. They should be able to write the other numbers after that. At this point the clock will have marks only for the hours. It will not have the finer lines drawn between consecutive hours.

The teacher can use a real clock to show how the short hand points to the hours. She can name some activity, say breakfast time, and let the children turn the hour hand to the appropriate hour. Many activities can be tried out to give practice to the children.

It would be also interesting to do this in the reverse way. One child can turn the hour hand to a certain time. Other children can name the activity that they do at that time.

As the teacher slowly turns the hour hand from one hour to the other, children can call out the sequence of the day's activities.

HOW OLD ARE OUR PLANTS? ACTIVITY

This activity will help build a sense of how long a week is.

Children can plant some seeds in a pot and keep track of their growth in terms of time. They can make drawings of the plant to show how it looks in the first week, the second week, the third week, etc. They can record the week in which the first bud appears, the day it flowers, the day it sheds a leaf, etc.

TEACHING TIME TO 7 to 9 Year olds

Objectives:

- Read and write the time to the minute;
- Understand the purpose of the seconds hand;
- Understand the relationship between analogue and digital clock;
- Read time from a 12 hour clock and a 24 hour clock;
- Understand the need to use AM and PM;
- Understand that the day is divided into hours;
- Develop a sense of durations such as one minute, one second, one hour;
- Understand the relationship of hour to minutes and minutes to seconds;
- Understand the usage of calendar and leap year;
- Register the number of days in each month;
- Understand the sequencing of dates on a number line.

READING HALF HOURS ACTIVITY



Teacher should use a real clock for teaching half hours and quarter hours. Children should be able to see the complementary action of the hour and minute hands. Help the children to notice and verbalise the observation that when the minute hand makes a half turn of the circle from 12 and reaches 6, the hour hand is halfway between two hours. Repeat this several times resetting the clock each time.

Let children guess at some activities that take about half an hour to complete. Children can now use their paper clocks to show timings specified by the teacher. Check that they have turned the minute hand to the correct place.

READING QUARTER HOURS AND THREE QUARTER HOURS ACTIVITY



In just the same way, demonstrate 'quarter turn' and let children observe and verbalise the observation that when the minute hand makes a quarter turn from 12 and reaches 3, the hour hand is one quarter the way between two hours. When the minute hand makes a three quarter turn from 12 and reaches 9, the hour hand is three quarter the way between two hours.



SKIP COUNTING IN 5'S ACTIVITY



To develop understanding of the minute hand, let the children count time in steps of 5 (0, 5, 10, 60) as the teacher turns the demonstration clock from 12 back to 12.

This can be repeated in various ways for practice. Help the children to read from 3 to 9 (15 to 45) or between any other pair of numbers so that they begin to associate each number with a certain multiple of 5. This can be repeated in the reverse way. 60, 55, 50...

Once the children have mastered this, the teacher can use a real clock to read time.

It is important not to rush children while they are learning these skills. It is a slow process and needs repeated reinforcement and practice over the year.

READING TIME TO THE MINUTE ACTIVITY

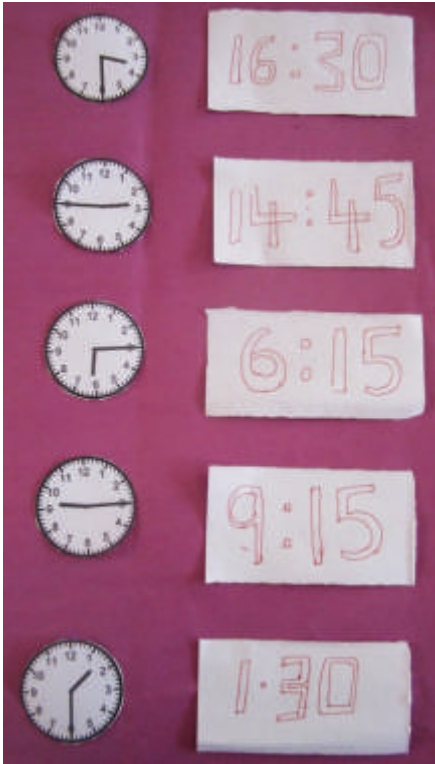
The teacher uses a real clock to draw children's attention to the small markings (minutes) between 12 and 1, between 1 and 2, etc. Practice can now be given to help them read to the minute.

ANALOGUE AND DIGITAL CLOCKS ACTIVITY

At this point it will be necessary to have both digital and analogue clocks in the class to show how time is displayed in digital clocks as compared to analogue clocks. In particular children need to observe how the display changes in the digital clock when the minute advances to 59. Also while reading analogue clocks children need to understand that 0 is used as a placeholder, e.g., when the time is 2:05. It is read as 'two-oh-five'. Students must be given regular practice both with analogue and digital clocks.

Let children observe both the clocks to see how the change in the digits of the digital clock corresponds to the change in the minute hand of the analogue clock.

GAME : SNAP! (CAN BE PLAYED BY A GROUP OF STUDENTS)



Prepare a set of matching cards (10 pairs) which show analogue clocks with time and digital representation of these. Children should open two cards at a time. If they match, whoever says 'Snap!' first gets a point. If they are wrong, they are out of the game. The winner is the one who gets maximum points.

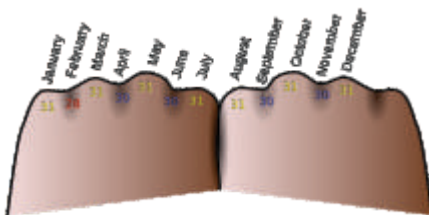
24 HOUR CLOCK ACTIVITY



Build another ring of numbers around a clock face to show the p.m. hours in 24 hour time.

Help children to understand that the inner numbers are used to read time from midnight to noon and the outer numbers are used to read from noon to midnight.

REGULAR CALENDAR ACTIVITY



The classroom should have a real calendar which shows all the months on one page. Discussion can happen around the calendar itself. Calendars have many interesting patterns which are worth exploring.

Ideally, calendars should be used throughout the year. While teaching months of the year one should ensure that they should be related to the children's world. Children carry vivid memories of summer holidays, rainy season, festivals like Diwali and kite flying. Association between these festivals and months should be made.

Number of days in the month can be taught by making children use the two fists together. From left to right, the knuckles and valleys (leaving out the thumbs) are matched with months. Those which match with knuckles have 31 days while the others have 30 days, except for February. The children will also need to be taught that in a leap year, February has 29 days.

SCHOOL CALENDAR! ACTIVITY



Creating a school calendar at the beginning of each month can be an exciting educational activity for children. Children can draw the grid on a chart paper, label the columns, and enter the dates in the correct space using a ready-made calendar as reference. They can now mark the birthdays of their classmates, any school events, and favourite activity days.

POCKET CALENDAR ACTIVITY



Let children design a pocket calendar for the class bulletin board which can hold information about the date and day. This can be changed every day. It is much more readable than a regular calendar and helps to build an understanding of the sequence of days, months and dates.

SENSE OF MINUTE, SENSE OF A SECOND AND TEN SECONDS, SENSE OF AN HOUR ACTIVITY

Ask students: 'How long is a minute?'

'What can you do in a minute?'

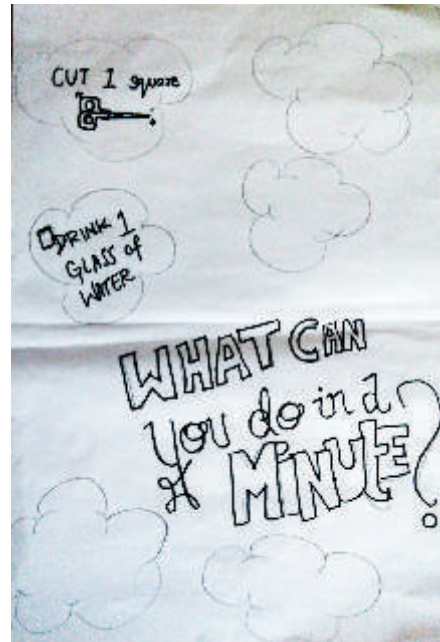
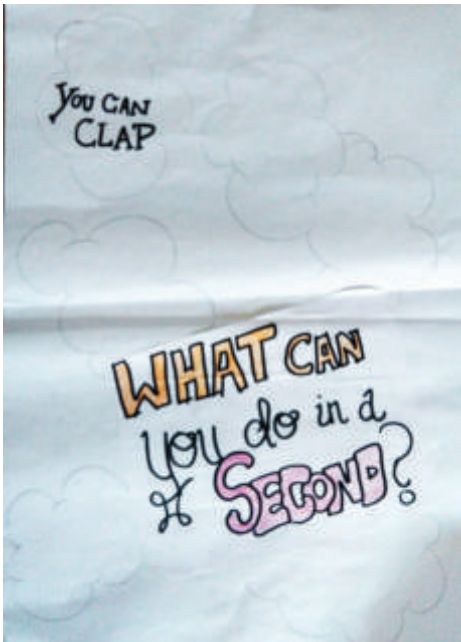
'Can you jump ten times in a minute?'

'Can you run 50 metres in a minute?'

In a similar manner, let children check the number of seconds it takes to count numbers, say from hundred and one to hundred and ten. They can try to guess how many actions (e.g., push ups) they can do in ten seconds. Students can make a guess first and then try out the action.

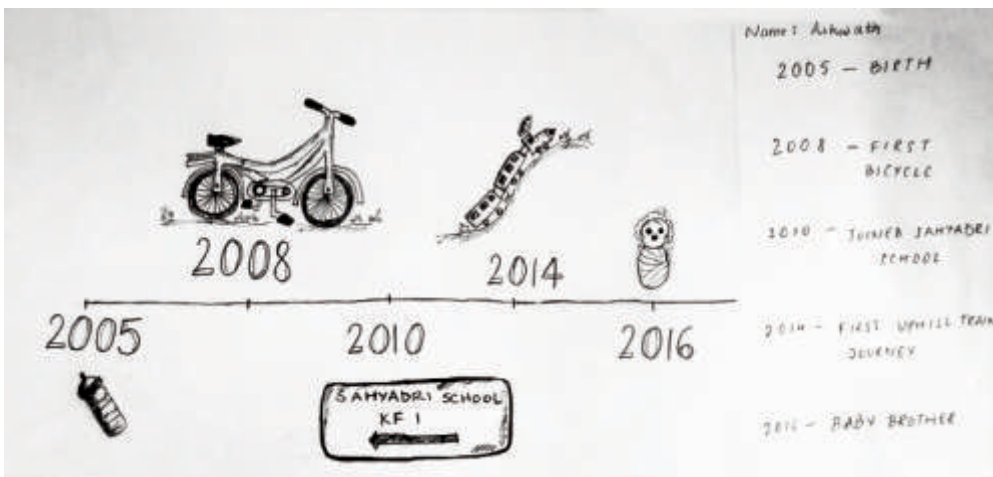
By repeatedly doing such activities children will begin to develop a sense of a minute, half a minute, ten seconds, etc. Most teaching periods vary between 40 minutes to one hour. Associating an hour with a class period helps children to build a sense of an hour. They can be asked to guess the time taken to travel from home to school, the length of their favourite program on TV, the time they spend on games, etc.

CHARTS FOR SECOND, MINUTE, HOUR ACTIVITY



Children can now make charts for each of these and write down the different things they can do in a second, in a minute. They can make a chart for an hour with three categories: things that can be done in less than an hour, that take an hour and that take more than an hour.

MY STORY! ACTIVITY






Children can build a personal timeline from their birth till now. They can record when they joined school, other schools they attended or any other major event in their lives (birth of a younger sibling, or a prize won)

CONVERSIONS ACTIVITY

Students can now be taught the relationship between hour and minutes, minute and seconds, day and hours.

Discuss usage of AM and PM as before midday and post midday and the need for using it. Often children get confused about writing AM and PM for noon and midnight. It is best to teach children at this age to write 12 as '12 noon' or '12 midnight'.

24 HOUR TIME	12 HOUR TIME	DISC clock	DIGITAL clock
10	10 AM		10:00
13	1 PM		13:00
16.30	4.30 PM		16:30

Create a table with four columns as shown, to convert time from one form into another:

24 hour clock, 12 hour clock, analogue clock, digital clock

Time estimations can be done for various activities and then measured.

COLLECTING CLIPS FROM NEWSPAPERS SHOWING USAGE OF TIME ACTIVITY

Ask children to bring cuttings of items in newspapers which show time. (TV shows, weather charts, bus timings).

Use them in the class to talk about time interval, comparing time intervals, longest program, and shortest program). While calculating time interval between two timings children can use the counting forward approach.

Example: 12:15 to 2:30 can be calculated as 12:15 to 1:00 (45 minutes), 1:00 to 2:00 (one hour) and 2:00 to 2.30 (thirty minutes). That makes two hours and fifteen minutes.

CLASS TIMETABLE ACTIVITY

Children can enter the timings for the classes on the class timetable. They can work out the times spent on various classes, hobbies, games, etc. How many minutes of physical education do we have each week? How long does our music lesson last?

DAILY TIME CHART ACTIVITY

Let the children create a personal timetable of their day. Each one can be asked to total the time they spend in studies, on games, on watching TV, in reading books, in taking food, in cleanliness, etc. Discussion about this can lead to efficient planning of activities to make better usage of time.

REFLECTIONS!

While teaching this topic, it is necessary and worthwhile to help children to reflect on different aspects of time in their lives. Here are some possible questions they can engage in:

- What is my favourite time of the day? Why?
- Why is it important to put events in the correct sequence?
- When was I late? Why? Why are some people always late?
- Why is it important to be on time? When do I have to be on time?
- Why is it important to measure time accurately?
- How do I spend my free time? What else can I do in my free time?
- How can I use my time in a better way?

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