In this lesson you will learn:
A step by step planning of an activity.
To identify the main and detailed sequence of steps activity.
To follow step-wise instructions for any activity.

Tejas and Jyoti are making various objects with paper as Moz walks in.

Moz: This is interesting. Please show me how to make the cap that you are wearing.

Jyoti: The cap can be made by folding the paper. Paper folding is called origami.

Tejas gives the step wise instructions shown below. Moz makes a cap with the paper.
Moz: Thanks. The step wise instructions really helped in making the cap. Did you know that we often use such step-wise thinking in many activities?

Jyoti: Really! How?

Moz: Let us plan a picnic to the water park. What should we do?
Jyoti: Book tickets and go.
Moz: Is it possible to book tickets before collecting the names?
Tejas: No, because we do not know how many tickets to buy.
Moz: Right. So what should be the steps for the activity?

Steps to go for a water park picnic.
1. Make announcement about the picnic.
2. Ask students to give their names.
4. Travel to the water park.

Every activity has a sequence of steps that need to be followed.

Moz: Let us now look at another of your activities.
Tejas: Moz, We are participating in a play. Shall we look at the steps of this activity?
Moz: Yes. Let us list them down.
Moz lists the steps as Tejas and Jyoti narrate them.

Tejas: Teacher told us about the play. In the play there are 15 types of animals.
Step 1: Narration of the play.

Jyoti: The children who wanted to act in the play gave their names to the teacher.
Step 2: Collect the names of children who want to act in the play.
Tejas: The teacher assigned each one of us the role that we will play.
Step 3: Assign roles to the children.
Jyoti: We went to practice for the play. The teacher made us act out one scene after the other. She also helped us in doing our actions correctly. We practiced everyday for half an hour.

Step 4: Practice the play with the teacher’s help regularly.

Tejas: The teacher gave a list of names of children and the role that they will play to the costume supplier. The costume supplier took our measurements.

Step 5: Prepare a list with names of children and their role to be given to the costume supplier.
Step 6: Costume supplier takes measurements for the costumes of children.

Jyoti: Two days before the play we got our costumes and we wear to check the dresses are comfortable.

Step 7: Wear and check costumes received a few days prior to the performance of the play.

Jyoti: Our final rehearsal was a dress rehearsal which was today!

Step 8: Do a dress rehearsal.

Moz: That was a good example. Looks like an interesting play. You missed the last step!

Jyoti: Oh! The last step is our performance of the play on stage before our parents, teachers and friends tomorrow.

Step 9: Perform the play.

Moz: Suppose you have to describe the activity in 3 steps. What are they? Tejas and Jyoti discuss and write the three steps.

Step 1 - Prepare for the play.
Step 2 - Practice for the play.
Step 3 - Perform the play.

Moz: Very good. Now list the previous 9 steps under each of these 3 steps. Tejas and Jyoti take each detailed step and list it under the appropriate broad step.
Prepare for the play
Step 1: Narration of the play
Step 2: Collect the names of children who want to act in the play.
Step 3: Assign roles to the children.
Step 4: Prepare a list with names of children and their role to be given to the costume supplier.
Step 5: Costume supplier takes measurements for the costumes of children.

Practice the play
Step 6: Practice the play with the teacher’s help regularly.
Step 7: Wear and check costumes received a few days prior to the performance of the play.
Step 8: Do a dress rehearsal.

Perform the play
Step 9: Perform the play on stage before parents, teachers and friends.

Moz: Good. Now, can you give more details for “Perform the play”.
Jyoti: Reach the hall, where we will perform, on time.
Tejas: Wear the costumes and put on the makeup.
Jyoti: Perform the play as practiced.

Moz: Good. What you have done is

- list detailed activities of an activity
- list main steps of the activity
- list the detailed steps under the main steps of the activity.

Moz: Now let us take another task and first list the main steps. The task is to get the pen that is on the table and give it to me. Give the three main steps for this task.

Tejas and Jyoti demonstrate the understanding of the broad steps that are required for the task.
Steps to pick up the pen and give it to Moz.

Jyoti: I will give the steps to Move to the table.

Moz: Now I will make it a little bit more difficult. Give more detailed steps for each of these three steps.

Jyoti: I will give the steps to Move to the table.

Moz: Good. Now give the steps to give the pen to me.
Moz: Good.

**CONCEPTS**

An activity has a sequence of steps. First list the main steps of the activity. For each of these steps give the detailed steps.

Moz: Can you change the sequence of steps in this activity?
Tejas: No we cannot. Unless we walk to the table we cannot pick up the pen.
Jyoti: Only after picking the pen can we give the pen to Moz.
Moz: Correct. Now let us look at another activity.

**CONCEPTS**

In some activities the sequence or order of the steps cannot be changed.

Moz brings out an aeroplane making kit.
Moz: Will you please join the different parts to make an aeroplane for me?
Tejas and Jyoti: Oh yes!

Tejas and Jyoti take the parts and the instruction sheet from the box. They make the aeroplane using various parts given in the kit, after reading the instructions.

Tejas: The wings, wheels and tail have to be attached to the body of the aeroplane.
Jyoti: These parts can be assembled in any order. We can attach the wheels first. We can also attach the wings first.

**CONCEPTS**

In some activities the sequence of some of the steps can be interchanged.

1
2
3
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1
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3
4
Moz: Now, let us look at a toy which can do some tasks.
Tejas: It has a remote controller and the instruction sheet.
Jyoti reads the sheet which has step-wise instructions to start the robot and the instructions on “How to play with the robot”.

Jyoti: The remote controller has buttons to start, stop, make the robot dance, exercise and also to move the robot in four directions.

Tejas (tries out the buttons): Each button has an action. When I press “walk” it keeps walking and does not stop even if there is a wall. We have to press “stop” and then it stops.

Moz: Yes. The robot understands a limited number of actions that are in the remote.
Jyoti: That means the robot cannot do anything on its own.
Moz: No. Using the limited number of instructions you can make the robot do some tasks.
Jyoti: Can a computer do an activity on its own?
Moz: No. It cannot. Similar to a robot a computer needs detailed step by step instructions from us.
Jyoti: Oh! If we want to build a game of our own on the computer then we have to give all the detailed steps.

Moz: You are right. Giving these step-by-step instructions is called Programming. You will learn more about it as we go along.

Chin Chinaki...
1. Number the pictures in the proper step by step order, from the beginning of the day. Check with your friends if they have written the same.

2. Here are some day to day activities you do every morning before going to the school. Number them in the proper order.

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- You wear your shoes say bye to everyone and go to your school!
- You eat breakfast and talk with your family members.
- You take bath and get ready with your uniforms.
- You get up with a smile, see everyone in the house and first brush your teeth.
- You drink some milk
- You make sure all your books are in your bag.
6. Help the thirsty crow to reach the water.

7. A whole picture might look difficult but it can easily be made in steps.
   Example: Step by step drawing of a hut.

Fill in the missing steps of the following drawings:
4. Neha is celebrating her birthday, number the pictures in the correct order. Check with your friends if they have written the same order.
5. We all know the story of the thirsty crow. The pictures given here are jumbled, number them properly. Check with your friends if they have written the same.
1. Hex a hop: Your goal is to break all the green tiles by jumping on them. They will crack when you land on them and break when you jump off. Click on tile you would like to move, use backspace to undo a mistake. You should avoid getting trapped and jumping in water.

2. Tower of Hanoi: Drag and Drop the top pieces from one peg to another, to reproduce the tower on the left in the empty space on the right. You have to obey the following rules:
   1) only one disc may be moved at a time
   2) no disc may be placed on top a smaller disc

Move the entire stack to the right peg, one disc at a time
Group Activity

a. Divide class in 2 groups, have one group to name an activity and the other group specify the steps of the activity. For example, one group gives the task of drawing a portrait. The second group lists the steps required to do the activity. The roles are reversed in the next round. Following this discuss if the sequence of the steps can be changed or not.

b. Act like a robot: Divide the class in to groups of five students each. In each group one member acts as a robot and the other members give the instructions to do the activity. Some of the activities that can be given are i) writing on a black board ii) doing the exercises for hands and wrists iii) getting a glass of water.

Explore!
1. What is the set of tasks that you do before travelling to a place?
2. List some tasks in which the sequence of steps does not matter.
This module can be conducted in the classroom or if possible take the students to the playground. This will raise the energy levels in the students. You can play a game with them, say fire in the mountain. Then gather them together and ask them what are the steps they followed to play the game. You may take them to the classroom and continue the module. Alternatively, you can give students craft paper and ask them to make a boat and later question them on what steps they followed to make it.

Ask them to give other examples where they follow steps to do an activity. Give them examples to explain that several activities involve different steps to be followed. For instance, ask them to plan a birthday party for their classmate. What things are required? Ask them to arrange all the activities they need to do in proper sequence so that your party turn out to be well organized.

Give them an assignment of making a daily timetable, so that they divide their time in school, study, play, sleep, eating, etc. Question them on whether they can or cannot change the sequence of the activities.

Ask the students to narrate their experience of using a remote control to watch television. They will mention pressing particular numbers to play a particular channel, sound buttons to change the volumes and so on. Now ask them how does the remote control functions and relate it to the different tools on the computer. You can also ask them to narrate their experience of playing with a remote controlled game.

Emphasize that many times we do actions without realising the different steps which we follow to do it. However, if the same action has to be done by a computer, it will require detailed instructions. Tell the students that computer cannot think on its own. A computer can only work using step by step instructions from us.

Further Reading:
http://playubuntu.com/
http://www.exploratorium.edu/explore/online.html