WOW! SCIENCE

Hands-on Learning in SCIENCE

Teacher Manual

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How to Classify?

The teacher has divided her students into three groups and asked them to arrange the books on different shelves. She has kept all the books together but not with the soft toys because books and soft toys have different characteristics.

Example- Pen and pencils have the same characteristic as they both are used for writing purposes. Therefore Jigyasa has put all the pens and pencils together in a pen stand on the basis of their use.

<table>
<thead>
<tr>
<th>Characteristics of Things</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shapes</td>
</tr>
</tbody>
</table>

One thing can have different characteristics!

Classify Things

When we put things into groups, we classify them. Arranging things into groups on the basis of their characteristics is called Classification.

Things are classified on the basis of their characteristics. A characteristic is the quality of a person or thing. It tells about the way something is or it behaves.

We classify things on the basis of similarities and differences in their characteristics. Shapes, sizes, colours, and uses are the characteristics of things.

Look at Jigyasa's room! It is so messy. Do you think Jigyasa can make it neat and tidy?

Jigyasa has put all the things into groups and at proper places. How does her room look now? Is it neat and tidy?

RESOURCES

- Visual and auditory aids like charts, poem.
- Craft material, scrapbook etc.
- Textbook
- Worksheets

ASSESSMENT

- Let's answer
- Worksheet (textbook)
- Worksheet 1
- Worksheet 2

OBJECTIVES

- Understand criteria of grouping things.
- Learn to classify things in different ways.
- Explore the concept of classification in daily life.
- Represent classification of things using tables and diagrams.

LEARNING METHODOLOGY

- Explanation using visual and auditory aids
- Individual and group discussions.
- Hands on activities
### Suggested teaching plan

The chapter ‘Classify Things’ is aimed at providing information and understanding to children regarding how different groups can be made on basis of the similarities of objects and their differences.

<table>
<thead>
<tr>
<th>Day</th>
<th>Topic</th>
<th>Task</th>
<th>Additional Activities</th>
<th>Teaching periods</th>
</tr>
</thead>
</table>
| 1   | Topic 1  
**Grouping things** | • Defining things into groups on basis of similarities and differences in their characteristics. | • Arrangement of pens, pencils, notebooks, water bottles and bags. | 1 |
| 2   | Topic 2  
**How to Classify?** | • Explore  
• Think Science.  
• I Wonder- Investigate | • Outdoor activity of collection of material from garden. | 1 |
| 3   | Topic 3  
**Why Do We Classify?** | • To help them understand the diversity around them. | • Visit to school library. | 1 |
| 4   | Topic 4  
**How to Show Classification** | • To draw Tables, diagrams and flowchart. | • To show modes of transport in 3 ways in Table form and act. | 1 |
| 5   | I Have Learnt | • Meaning of Classification.  
• How it can be done in different ways.  
• How it help us.  
• That it can be shown in different ways.  
• Science words. | | 1 |
| 6   | Assessment | • Assess  
• Evaluate  
• Worksheet [Textbook] | Worksheet | 3 |

### Learning Outcomes

- Understand criteria of grouping things.  
- Learn to to classify things in different ways.  
- Explore the concept of classification in daily life.  
- Represent classification of things using tables and diagrams.
Getting started

As the students have already learnt about ‘mean of transport’ in grade 2, ask them to make a list of 10 vehicles. Now ask them to divide into 3 groups, vehicles that run on land, on water and in air.

Now, ask them to group some food items such as apple, grapes, potato, cauliflower, milk and juices.

Now ask students

1. Is it necessary to group things? Why?
2. On what basis did they group food items

Warm Up

1. Teacher can ask students to read the picture story given on page number 7.

Now ask students:

- How do you clean their rooms?
- Do they do group things in your daily life activities?
- Teacher can show Videos. Video links for reference are given below
  a. https://www.youtube.com/watch?v=5bip0bcFlgo
  b. https://www.youtube.com/watch?v=vpg—e0pCdE

Now, introduce chapter name ‘Classify Things’ and tell what students will learn in this chapter.

**Topic 1**

**Grouping things**

**Discussion Pointers**

1. Do you group things at home?
2. How do you group your clothes?
3. Can you group things available in your school bag? How?

Now explain how Characteristics of things like sizes, shapes, uses, purpose, colours etc. are used in grouping things and hence known as Classification.

**Tasks**

**Activity:** Grouping of pens, pencils, notebooks

**Steps:** Students will group things as shown below
**Teacher Tips**
- Assembling of things needed for activity.
- Hint can be given on activity to make groups on basis of functions, colours etc.

**Homework**
1. What will happen if things are not kept into groups and at proper place?
2. Evaluate - Long answer type questions, Q1 and Q 2, Page no. 12

**Activity** – WOW Science Textbook, I Wonder - Investigate, Page No. 13

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**Topic 2**

**How to Classify?**

**Discussion Pointers**
1. Name the places, in your school/home, where you have seen the things classified?
2. On what basis the classification is done?

**Tasks**
- Take students outside the classroom.
- Partner the students.
- Have the pairs collect at least 5 objects such as flowers, leave, stones etc.
- Students need to classify the objects based on various characteristics and share them in the classroom.

**Assessment:**
Ask questions to check what they have learnt.
- Why you have classified the objects the way they did.
- Which characteristics will you choose to classify them?
- How many different characteristics can you list?

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**Topic 3**

**Why Do We Classify?**

**Discussion Pointers**
Ask few questions to initiate discussion.
1. What will happen if your mother does not fold yours clothes and keep it proper on the racks?
2. What will happen if books are not kept on the racks labelled, in library?

Now, explain the need to classify is to help us to understand the diversity around us. It makes things easy to find, identify, talk about, and study.

**Tasks**
- **Activity:** Visit to school library
  Ask students to observe the classification of books and make an observation table for the same.

**Teacher Tips**
Plan it in advance, discuss with library incharge and take permission.
**Topic 4**

**How to Show Classification?**

**Discussion Pointers**
Is it possible to classify a set of objects in more than one way?
Now, show them how to draw table, diagrams and flowchart - WOW Science Textbook Page no. 11

**Tasks**

**Activity:** Show classification of 'means of communication'.

- Give students a list of 'means of communication'.
- Ask them to classify into different groups.
- Guide them to show the classification using tables and flowchart. eg.,

![Diagram of Means of Communication]

**Homework**

- List at least 5 living thing and 5 non-living things in the classroom
- What do you think are the similarities and differences in the living things and non-living things you have listed above?

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**Topic 5**

**Assessment**

**Answerkey of Worksheet 1 (Textbook)**

A. 1. She should classify things.
   2. It is because Chinmay has classified properly.

B. Group 2- toys- teddybear, ball
   group 3- Stationary- pen, pencil
   group 4- Animals- dog, turtle

C. a. Classification - Arranging things into groups on the basis of their characteristics is called classification
   b. Characteristics - A quality of a thing that makes it different from other.
   c. Diversity - The wide variety of things is called diversity.
Worksheet 2

Classify the following objects that belong to same group under the heads given in table:
Refrigerator, Screw, Bus, Banjo, Blackboard, Television, Hammer, Casio, bed, Eraser, Saw, Violin, Car, Desk chair, Scooter, Nails, Cycle, Pencil, Harmonica, Utensils

<table>
<thead>
<tr>
<th>S.No:</th>
<th>School</th>
<th>Vehicle</th>
<th>Tools</th>
<th>Musical Instruments</th>
<th>Home</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Blackboard</td>
<td>bus</td>
<td>Screw</td>
<td>Banjo</td>
<td>Refrigerator</td>
</tr>
<tr>
<td>2.</td>
<td>Eraser</td>
<td>Car</td>
<td>Hammer</td>
<td>Casio</td>
<td>Television</td>
</tr>
<tr>
<td>3.</td>
<td>Desk chair</td>
<td>Scooter</td>
<td>Saw</td>
<td>Violin</td>
<td>Bed</td>
</tr>
<tr>
<td>4.</td>
<td>Pencils</td>
<td>Cycle</td>
<td>Nails</td>
<td>Harmonica</td>
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Answer key

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<td>Cycle</td>
<td>Nails</td>
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</table>

A. Objective type questions.
1. Classification  
2. Both of these  
3. Classification

B. Short answer type questions.
1. a) Characteristics  
b) classification  
c) diversity
2. Things are classified on the basis of similarities and differences of characteristics such as shapes, sizes, colours, uses purpose etc.
3. Three characteristics are- Shape, size and colour. For example we can arrange our books according their size if we have different size books.

C. Long answer type questions
1. shape, size, colour, uses and and purposes are used to classified things.
2. Arranging things into groups on the basis of characteristics is called classification. Example- pen and pencil have same characteristics as they both are used for writing purpose.

D. HOTS
1. These are classified on the basis of their price
2. They can be classified on the basis of their colour and uses.
OBJECTIVES
- Describe the diversity of things as living and non-living.
- List the characteristics of living things.
- Classify the objects as living and non-living things.
- Compare plants and animals as living things.
- Explain why the given object is considered as living.

LEARNING METHODS
- Group activity
- Explanation using visual auditory aids
- Hands on activities

RESOURCES
- Visual and auditory aids like charts, poem.
- Craft material, scrapbook etc.
- Textbook
- Worksheets

ASSESSMENT
- Let's answer
- Worksheet (textbook)
- Worksheet 1
- Worksheet 2
## Suggested teaching plan

The chapter ‘**Living things and Non-Living things**’ is aimed at providing information and understanding to children regarding how different things in the surrounding can be organised into these two categories.

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</table>
| 1   | Topic 1  
**Things around us** | • Recap | Video link for reference | 1 |
| 1   | Topic 2  
**Living Things** | • **Recognition of Living Things.**  
• **I wonder- Investigate** | Video link for reference | 1 |
| 2   | Topic 3  
**Non Living Things** | • **Defining what are non-living things**  
• **I wonder- suggested activity** | Outdoor activity for recognising things in their surroundings. | 1 |
| 3   | Topic 4  
**Characteristics of Living and Non Living Things** | To help students understand the features which can differentiate the things into living and non-living things  
• **Science Talk**  
• **Teacher's Note**  
• **Assess**  
• **Info bit**  
• **Think Science** | Activity | 1 |
| 4   | I Have Learnt | What is our surrounding made of?  
Meaning of living things and their characteristics.  
Meaning of non- living things and their characteristics.  
Science words. | | 1 |
| 5   | Evaluate | • **Page number 22-23**  
• **Worksheet(textbook)** | Worksheet | 3 |
Learning Outcomes

- Describe the diversity of things as living and non-living.
- List the characteristics of living things.
- Classify the objects as living and non-living things.
- Compare plants and animals as living things.
- Explain why the given object is considered as living.

Getting started:

1. As an introduction of the topic ask the students if they are living or non-living. Further ask them if their pets at home are living or non-living.
2. Ask students what they need to survive.
3. Explain to students that today they will be learning about living and non-living things.

Warm Up activity:

Teacher can show a video to understand about nature and the things around us. Video link for reference is given here: https://youtu.be/nSbHhSx_sa4

Ask students few questions about the video:

1. What is the video all about?
2. Make a list of things we saw in the video?
3. Are all the things in the video alike or different?
4. What do you think is the reason of showing the video?

Topic 1

Discussion Pointer

1. Name 10 things which you can see around you.
2. Are all of them similar?
3. in what ways some of them are different?

Tasks

Ask students to read the conversation given on page number 15 of Wow Science Textbook.

Chacha, I have a teddy and Chinmaya has Bunny, a rabbit. My teddy does not need food and water but Bunny does. Also, her teddy cannot do things which my Bunny can. This is because your Bunny is alive but her teddy is not alive.
Based on conversation ask few questions.
1. What does ‘alive’ mean?
2. Have you seen any animal which look like teddy?
3. In what any this animals (bear) is similar to teddy?
4. In what any this animals (bear) is different from teddy?

Discuss about living and non-living things based on their previous knowledge as they have already studied in grade 2.

**Topic 2**

**Living Things**

**Teacher can show a Videos using following links as a reference**

a.  https://youtu.be/giWqEPNLtBo
b.  https://youtu.be/7oYTNFNvqO0

**Discussion Pointers:**

- Living things need food to grow- If we do not give food to our pets, what will happen?
  **Answer:** they will fall ill and may die in few days.

- Living things need water to survive- If the plants are not watered regularly, What will happen?
  **Answer:** they will wilt and then die in few days.

- Living things need air to live- If we close a butterfly in an air tight container, what will happen? it will die in few hours.

- Living things respond- if we touch any hot surface, what happens?
  **Answer:** we withdraw our hands

- Living things produce new babies.

**Activity:** WOW Science Textbook, I Wonder - Investigate, Page no. 24

**Teacher Tips:**

Assemble the things needed for the activity in advance.
Topic 3  Non-Living Things

Discussion Pointers:

- Do we give food to our toys? (Non-living things do not need food to grow)
- Does your teddy drink water? (Non-living things do not need water to survive)
- Do your books feel uncomfortable when packed in bags? (Non-living things do not need air to survive)
- When you write in your notebook, does your pencil hurt your notebook? Non-living things do not respond

Can you get a new car from your old car? Non-living things do not produce new babies.

Topic 4  Characteristics of Living and Non-Living Things

Discussion Pointers and An activity/quiz or any other interactive method:

1. Talk about the difference between living and non-living things.

2. **Group activity**: Make small groups of 3 or 4 students. Pass out sets of pictures to each group. Ask students to think of a way to sort all the pictures into just two groups (things that are living and things that are non-living) and paste them on the chart.

3. **Science Talk**: Page no. 19 Help students to answer it.

**Activity**: Compare the characteristics of living and non-living things.

**Material**: a green real plant, a green artificial plant, 2 pots with soil.

**Steps**:
1. *Place the real plant in one pot and artificial plant in another pot.*
2. *Leave them in a dark room for 24 hours. Do not water them.*

**Observation**: Real plant start wilting but there would not be any effect on artificial plant.

**Conclusion**: Non-living things do not need water or food to survive.

Ask students to make a table and compare the properties of living things and non-living things.

<table>
<thead>
<tr>
<th>Living Thing</th>
<th>Non-Living Thing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Need water</td>
<td>Do not Need water</td>
</tr>
<tr>
<td>Need air</td>
<td>Do not Need air</td>
</tr>
<tr>
<td>Need food</td>
<td>Do not Need food</td>
</tr>
<tr>
<td>Respond</td>
<td>Do not Respond</td>
</tr>
<tr>
<td>Reproduce</td>
<td>Do not Reproduce</td>
</tr>
</tbody>
</table>

4. **Teacher’s Note:** Teacher should discuss the questions given in this section, page number 19.

**Answer:** 1. We perspire on hot days because we have sweat glands that removes toxins from our body in the form of sweat.

**Answer 2:** It is because, in our body amount of water decreases.

**Homework:** 1. Ask students to solve ‘Assess’ section and write it in their notebook.

2. Think Science - WOW Science Textbook, Page no 21

### Topic 5

#### Assessment

**Answer key of the Worksheet 1 Textbook.**

1.

- It has thin but hard stem.
- It is a flowering plant.

#### Rose
- both are plants
- both are living

#### Climber
- It has soft and weak stem.
- It is a non flowering plant.

2.

<table>
<thead>
<tr>
<th><strong>Living Things</strong></th>
<th><strong>Non-Living Things</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dog</td>
<td>Cloud</td>
</tr>
<tr>
<td>Rabbit</td>
<td>House</td>
</tr>
<tr>
<td>kids</td>
<td>Water</td>
</tr>
<tr>
<td>Cat</td>
<td>Building</td>
</tr>
<tr>
<td>Horse</td>
<td>Stone</td>
</tr>
<tr>
<td>parrot/birds</td>
<td></td>
</tr>
<tr>
<td>plants</td>
<td></td>
</tr>
</tbody>
</table>

**Reason:** Dogs, rabbit, children, cat, horse, birds and plants need air, water and food to stay alive.
Worksheet 2

Write Yes or No under the heads given in table:

<table>
<thead>
<tr>
<th></th>
<th>Does it breathe?</th>
<th>Does it reproduce?</th>
<th>Does it need food, water and air to survive?</th>
<th>Does it grow and change?</th>
<th>Does it move all by itself?</th>
<th>Living/Non-living</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cycle</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No-need push to move</td>
<td>Non-living</td>
</tr>
<tr>
<td>Ball</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No-need push to move</td>
<td>Non-living</td>
</tr>
<tr>
<td>Dog</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Living</td>
</tr>
<tr>
<td>Lizard</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Living</td>
</tr>
<tr>
<td>Plant</td>
<td>Yes</td>
<td>Yes- through seeds</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes-through roots and branches growth</td>
<td>Living</td>
</tr>
<tr>
<td>Cutlet</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>No</td>
<td>Non-living</td>
</tr>
</tbody>
</table>

Answer key:
Evaluate Answer Key

A. 1. b. cat 2. b. plants 3. b. donkey

B. 1. They can breathe, they can grow, they can move, they can reproduce.
   2. a) The animals which do not have legs can move by using other body parts.
      b) Plants do not have mouth but they need food to perform various functions.
      c) Cows do not lay eggs like hens but they reproduce by giving birth to babies.
   3. Apple plants germinate when their seeds are sown in the soil.
   4. The sunflower bends towards the sun.
   5. a) They grow
      b) 170 cm at the age of 25 years
      c) milk and soft food (mashed fruits)
      d) Their weight also increase.

C. 1. **Difference:** Flowers of a potted plant are living beings whereas the flowers in a garland are non-living.
    **Similarity:** Both are flowers and their origin is the same i.e. plants
   2. Two similarities between a rose plant and a pigeon:
      a. Both are living thing.
      b. Both need air, water, and food to stay alive.
   Two differences between a rose plant and a pigeon:
      a. Rose is a plant whereas pigeon is a bird.
      b. A rose plant can make their own food but a pigeon cannot.
      c. A rose plant cannot move from its position but a pigeon can fly to different places.

D. a) Air, water, food and sunlight
    b) In sunny place so that plant can make food
    c) Yes
    d) (i) No change
       (ii) All living things will die