Explore the World

SCIENCE -3

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Scribbling page

Introduction

Millat Foundation for Educational Research and Development (MFERD) is an organization conceived with the vision of providing a common platform for the networking, co-ordination, collaboration and co-operation among Muslim educational institutions, thereby complementing the efforts of individuals and organizations in achieving excellence in education within the boundaries of Islamic Shariah. MFERD aims to address the various challenges faced by these institutions and find solutions through research and development.

One of its major program is to design a value based curriculum for school to nurture and culture our future generations with excellence.

Curriculum is the sum total of all learning experience a child undergoes including academics, activities, learning environment, assessment and interaction with teachers, students, parents all together from the moment a child walks in the school until he/she steps out.

After years of research in child psychology, education from Islamic perspective, and review of various curricula, a value based curriculum has been designed in accordance with National Curriculum Framework and International standards to focus on all round development of the children so that they identify their identity, realize the need and become leaders of tomorrow.

This curriculum is comprised of:

- **Objectives** - as per Islam psychology, education and stakeholders
- **Syllabus** - as per age group and government standards
- **Methodology** - child centric and appropriate to the subject and objectives
- **Resources** - including teacher training, teaching aids manuals and more
- **Assessment** - formative, summative, self, co-scholastic, behavioral and long term
- **Activities** - curricular, co-curricular and extra curricular with guidelines for events
- **Scheduling** - calendar, day-year plans, workload, period split and competitions
- **Observation -** feedback and research

Central Academic Development department has been setup to plan, train and monitor the implementation of this curriculum in various schools at all the levels.

Preface

Explore the world Environmental studies is an integrated book of science and social studies. It is based on the methodology of 'Learning by Doing'. Children at this age need to explore the world around them. They need to comprehend What's being taught, What's happening around, What's expected of them; take clues from it and understand on their own.

Greater the understanding of the details, greater the child will appreciate Islam. Science coexisted, infact flourished in the Islamic era. Islam teaches mankind to observe and learn from the nature. This book prepares young minds to appreciate the importance of environment in a holistic manner, to get them familiarized with the surrounding and to view it with a sense of care and responsibility. It imbibes in children the values of love and respect for nature and its laws.

The Alif Laam Meem Series aims at promoting this idea among the mankind. It also aims at training the learners to locate and comprehend the relationship between the natural, social and cultural environment to develop an understanding based on observations drawn from life experience.

The language is simple, clear and within the comprehension of the students. There is an attempt towards building up a scientific aptitude and temperament in the learners. Besides making them realize the existence of Allah and His creations, this book teaches them to be thankful to Allah for all His bounties, refrain from inhumane acts and to develop reasoning that leads to the correct path destined for us.

The salient feature of the book:

- Introduction of the lesson through motivational activities.
- Group discussion to break the monotony of the class and to develop interpersonal skills
- Arouse curiosity among the children through various interactive and interesting activities.
- Promote independent work.
- Quranic verses and Hadees: To prove the laws of nature laid by Allah.
- You will learn about: Gives an idea of what the child will learn from each lesson.
- Quick Look : Recapitulation made easy with keywords and quick look.
- Science corner: Learning by doing to develop observation data collection and inferential skills.
- Arts in science: Develop aesthetic values and to make learning a joyful experience.
- Math in science: To develop reasoning and logical thinking.
- Writing in science: To develop and encourage students for scientific writing.
- Take home activity: Activities given to make the child apply his knowledge in day to day life and promote independent work.

We strive to keep our standards high and continually improve the Alif Laam Meem Series based on your feedback and our research. Therefore, we request you to kindly send in your valuable suggestions to us and help this mission be successful.

We wish and pray for the wide spread use of this syllabus and inspire other experienced hands to come forward and do such work or better.

Excerpts from National Curriculum Framework 2005

An overall summary of the National Curriculum Framework 2005

The fact that learning has become a source of burden and stress on children and their parents is an evidence of a deep distortion in educational aims and quality. To correct this distortion, the present NCF proposes five guiding principles for curriculum development

(i) connecting knowledge to life outside the school;
(ii) ensuring that learning shifts away from rote methods;
(iii) enriching the curriculum so that it goes beyond textbooks;
(iv) making examinations more flexible and integrating them with classroom life; and
(v) nurturing an over-riding identity informed by caring concerns within the democratic polity of the country

National Curriculum Framework 2005 on the perspective of education

Education must be able to promote values that foster peace, humaneness and tolerance in a multicultural society.

The National Curriculum Frame document seeks to provide a framework within which teachers and schools can choose and plan experiences that they think children should have. In order to realize educational objectives, the curriculum should be conceptualized as a structure that articulates required experiences. For this, it should address some basic questions:

(i) What educational purposes should the schools seek to achieve?
(ii) What educational experiences can be provided that are likely to achieve these purposes?
(iii) How can these educational experiences be meaningfully organized?
(iv) How do we ensure that these educational purposes are indeed being accomplished?

National Curriculum Framework 2005 on the Guiding Principles of education

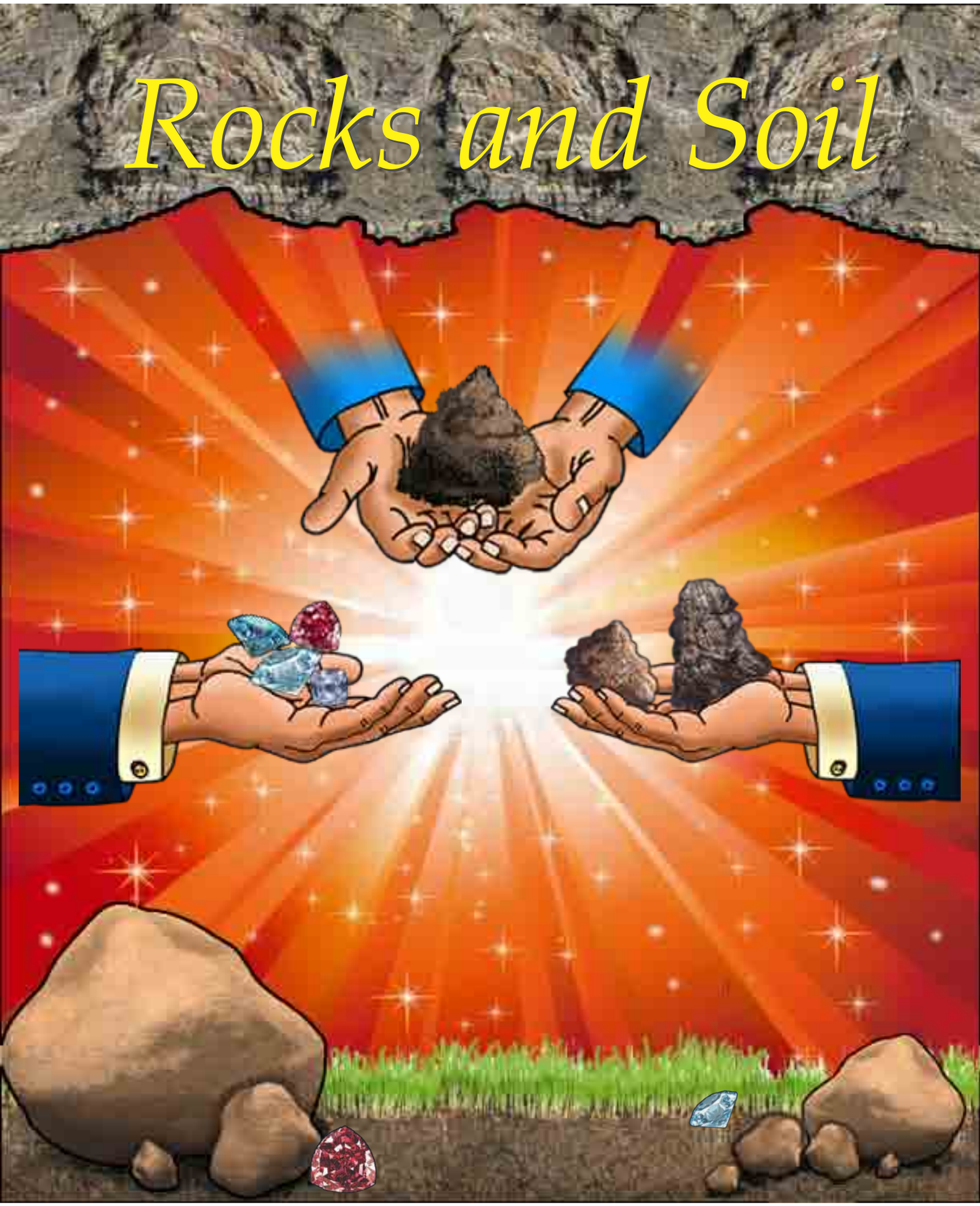
Children acquire varied skills naturally while growing up in their environment. They also observe life and the world around them. When imported into classrooms, their questions and queries can enrich the curriculum and make it more creative. Such reforms will also facilitate the practice of the widely acknowledged curricular principles of moving from 'known to unknown', from 'concrete to abstract', and from 'local to global'.

The MFERD books are designed to adhere to the guiding principles laid down in the National Curriculum Framework 2005. We want the followers/students to abide and fulfill the educational objectives framed by the NCF so that they not only become honest and faithful citizens but also to be a part of the ever growing global world and economy. We sincerely believe that by following this curriculum the students will develop their personality which will be a beacon of light for others to reflect and ponder and be like one.

For MFERD's approach to address these perspectives please refer to the back cover page.

Contents

Rocks and Soil



Get active!

List a few historical monuments and complete the table.

Name of the monument	Name of the city	How old is it?	Who built it?	Which stone is used?
    				

Inference

Different _____ were used for constructing these monuments.

7 Rocks and Soil

You will learn about :

- *Rocks, uses of rocks*
- *Soil, formation of soil*
- *Kinds of soil, layers of soil*
- *Constituents of soil, uses of soil*

And in the mountains are tracts, white and red of varying shades and [some] extremely black. *(Surah: Fatir chapter 35 verse: 27)*

Allah made hard rocks for the benefit of human beings. These rocks are of many types and colours. We use these rocks for constructing buildings, roads and places of worship.

Rocks

The earth is made of rocks. Rocks are formed by the cooling of magma. Rocks are found everywhere. Some are under the ground and some under the sea. Some stick out of the earth to form mountains. Most rocks are very hard but some are soft. Diamond is a hard rock. Granite is also a hard rock. Chalk and graphite are soft rocks. These rocks break easily.

Minerals

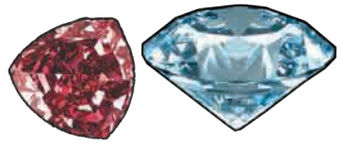
Some substances are taken out of the rocks and used by us. These substances are called minerals. Some rocks are made of just one mineral, some have many. Diamond and graphite are rocks. These are made of only one mineral called carbon. Granite is a rock. It has several different minerals.


Rock


Coal rock


Chalk


Granite stone


Diamonds

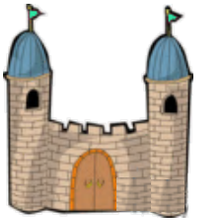
Uses of rocks

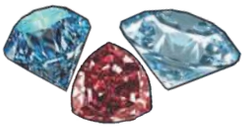
Rocks are useful to us in many ways.

Marble stone is used to make flooring and buildings.

Granite stone is used to make flooring and buildings.

Sand stone is used to make houses and buildings.





Some rocks like diamond, ruby and emerald are used in jewellery.

Soil

What is soil ?

Soil is the top layer of the earth where plants grow. Soil is very important for plants. Plants stay fixed to the soil with the help of their roots. Soil also provides water and minerals to the plants.

Formation of soil

Long ago, there were huge rocks on the earth. Allah gave such might to rains, wind and sun's heat, that they broke the rocks. Slowly, the rocks broke into smaller and smaller pieces. Dead plants and animals also got mixed with these tiny rock pieces. This continued for many years. Finally the tiny particles could not break any further and soil was formed. This soil was formed by the breaking up of rocks. It takes thousands of years to form a small amount of soil. Soil also contains humus. Humus is made up of rotten leaves and decayed bodies of animals and plants. Humus is dark brown or black in colour. It is very good for the growth of plants.

Soil collected from different places have different colours, some are light brown, some are dark brown. In some places the soil is red.

Kinds of soil

Soil in different places is different in nature. There are three types of soil.

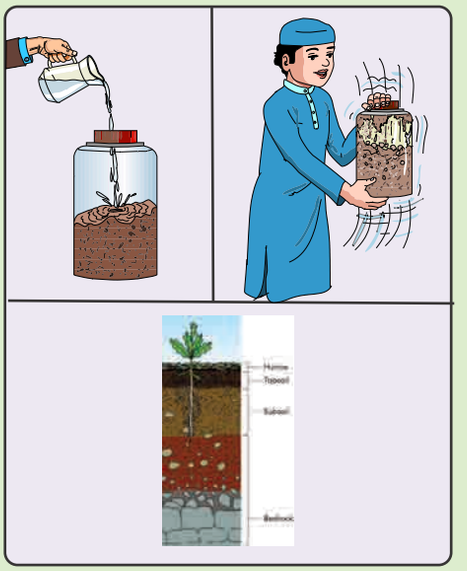
Sandy soil : Sandy soil is mostly found in the desert and on the seashore. Sand particles are big. There is a lot of air in the space between these particles. Sandy soil does not hold much water. Only thorny bushes and cacti grow in the sandy soil.

Clayey soil : Clayey soil is sticky and is mostly used for making pots and toys. Clay particles are very fine. There is no space for air between the particles. This soil can hold a lot of water.

Loam soil : Loam is a mixture of sand and clay. It can hold both air and water. Loam is the best soil for plants because it contains air, water and humus. Humus makes the soil fertile.

Activity

Pick some garden soil. Put it in a glass jar and pour some water into it. Shake it well and leave it undisturbed for sometime. You will notice different layers of soil in the jar.



Layers of soil

Soil is a mixture of sand, clay and humus. It is found in layers. Most soils have three layers.

1. Topsoil

The uppermost layer consists of loose soil. It contains roots of plant and grass in it. Plants grow in the topsoil.

2. Subsoil: The soil beneath the top layer consists of closely packed layer of soil containing some rock pieces. This is called subsoil. It is harder than top soil.

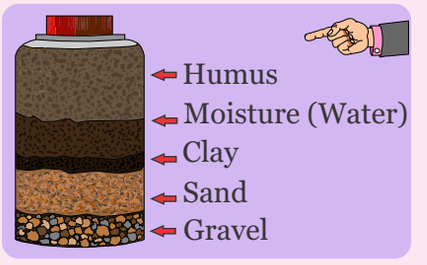
3. Bedrock : The layer below the subsoil consists of soil which is harder. It consists of rocks. This layer is called bedrock.

Constituents of soil

Different places have different types of soil. The soil that you see in the road is different from the soil you see in the garden or in a field. The type of soil depends upon the kind of rock from which it is formed. Soil differ in the size of the particle, its colour and also the constituents present in it. Most of the soil contains. **1. Gravel 2. Sand 3. Clay 4. Moisture (Water) 5. Humus**

Activity

To study the constituents of soil put some garden soil in a jar. Fill in the jar with water. Cover it with a lid and shake it well. Leave the jar undisturbed for sometime. We find four layers.



Gravel : At the bottom of the jar we see the layer of gravel. It is the layer of heavier particles.

Sand : Above the layer of gravel. We find the layer of sand.

Clay : Above the sand, we see fine grains of soil. This is called clay.

Humus : The water above the layer of clay is not clear. Dead leaves, twigs and parts of dead insects float on the water. This is called humus. This being lighter than water floats on it.

Activity

Soil contains moisture.

EXPERIMENT: Take some soil in a container. Now cover the container with a lid. Heat the containers for sometime. Remove the lid and observe it.