



Explore the World

SCIENCE



4



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 - Science is a 'brain based learning' book designed to address the curiosity of this age group along with hands-on experimentation. It is based on methodology of 'Learning by Doing'. Children at this age needs 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 encouraging learners to believe in the Almighty and also believe in the self, develop skills and become confident while enjoying the content of this book. They wear the Scientists' hat and tread on the journey to explore the world. 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 and clear to comprehend. There is an attempt towards building 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:

- ❖ Test the knowledge of the child through '**I know**' section so as to involve them.
- ❖ Encourage scientific thinking through '**Have you thought**' section.
- ❖ Arouse curiosity in learners through various interactive and interesting activities.
- ❖ '**Young Scientist at work**' to promote independent work and develop observation, data collection, inferential, mathematical, linguistic and other skills.
- ❖ '**Skills acquired**' to help the learner realize his/her learning and growth.
- ❖ '**Mind Mapping**' to summarize the lesson through memory techniques.
- ❖ '**Self Assessment**' to ensure learning takes place; and includes **Assessment** to help the students get familiar with **CCE system**.
- ❖ **Quranic verses and Hadeeth:** To prove the laws of nature laid by Allah.
- ❖ **Multiple intelligence :** Using arts, language, logic, rhythm in science to implement multiple intelligence.
- ❖ **Take home activity:** Activities given to make the child apply his knowledge.

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 Framework 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

Unit IV

MATERIAL

- | | | | | |
|-----|-----------------|----|---|----|
| 9. | Fibre to Fabric | 1 | - | 13 |
| 10. | What is Matter? | 14 | - | 26 |

Unit V

MOVING THINGS

- | | | | | |
|-----|------------------------|----|---|----|
| 11. | Force, Work and Energy | 27 | - | 38 |
|-----|------------------------|----|---|----|

Unit VI

NATURAL PHENOMENA

- | | | | | |
|-----|------------------------|----|---|----|
| 12. | Our Solar Family | 39 | - | 53 |
| 13. | Air, Water and Weather | 54 | - | 67 |

Unit VII

NATURAL RESOURCES AND ITS IMBALANCE

- | | | | | |
|-----|-----------------|----|---|----|
| 14. | Our Environment | 68 | - | 80 |
|-----|-----------------|----|---|----|

9

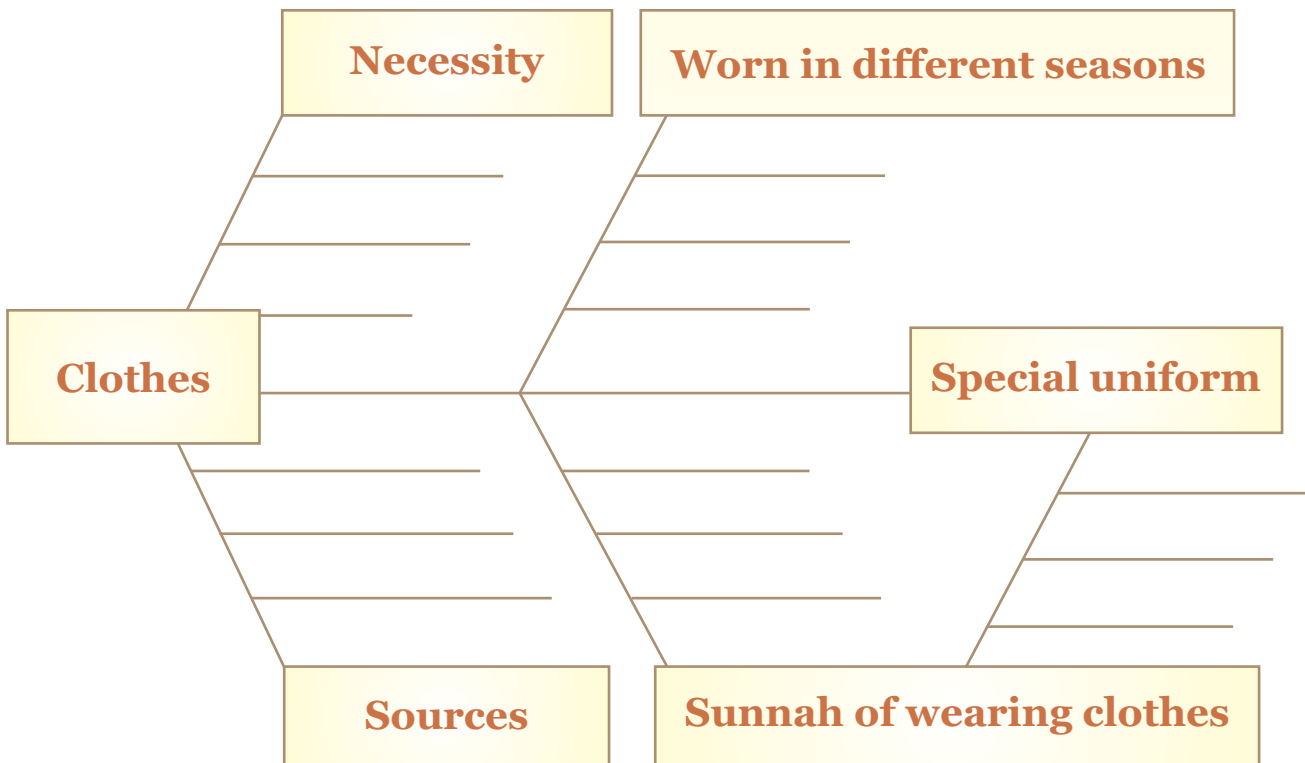
UNIT - IV MATERIAL

Fibre to Fabric



I know

Complete the following by giving examples or reasons wherever necessary.



Have you thought

1. How are clothes made?
2. Why do we wear different types of clothes in different season?
3. What are the materials used in making clothes?

Humans are the best of the creations of Allah. Besides the brain and thinking ability, the modesty and behaviour distinguishes humans from the rest of the creations. Another difference is the clothing which is exclusively for humans.

Clothing is also a blessing that was given to prophet Adam (ﷺ) and Hawaa (ﷺ) in Jannah.

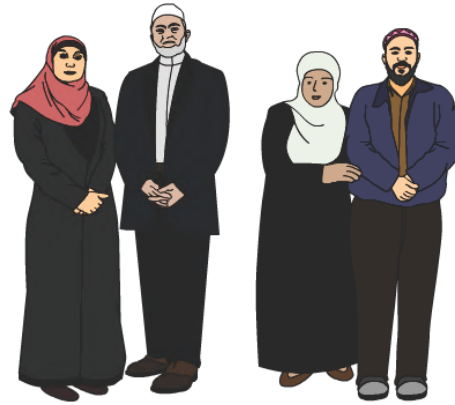
When Adam (ﷺ) and Hawaa (ﷺ) were sent on earth their bodies were covered with leaves. As time passed by, the children of Adam used leaves and later the skins of animals. Both these presented with their own difficulties. Leaves became dry and withered. Skin of animals smelled rotten when they were wet and when the skin dried it became stiff and hard causing difficulty in movement.

Finally Allah showed prophet Idrees (ﷺ) how to make clothes. Clothes are therefore a boon to humans. There are plants and animals created by Allah that are the sources of raw materials.

‘O children of Adam we have sent down to you clothing for hiding your shame and for good appearance, and clothing that guards (against evil), that is the best. These are of the signs of Allah that they may be mindful. (Surah: Aaraf chapter 7 verse : 26)

1. Physical clothing to cover, protect and beautify our body.
2. Spiritual clothing to protect us from sins and helps us to follow the commands of Allah.

Physical clothing is not only a human need to cover but also protects as well as beautifies our body.



Purpose of physical clothing

To protect us from heat and cold.

- To feel comfortable and look beautiful on different occasions.
- To protect us during wars.
- To protect from insect bites.
- To protect from sun burns.

Spiritual clothing is not a cloth but a shield that guides our actions.

Purpose of spiritual clothing

- It brings us closer to Allah.
- It strengthens Imaan.
- It protects us from evil.

Spiritual clothing comes from taqwa (piety). Taqwa is achieved through dua, sincere intentions, modest behaviour and righteous actions.

Clothing also signifies differences in religion, culture, gender and occupation of a person.

Therefore, abstain from wearing clothes

- For arrogance.
- That resembles the opposite gender.

Ex: women should not wear clothes of man and vice - versa.

- That resembles other religion.

As we see different kinds of clothes we wonder how they are made. The clothes are made of thin, long thread called fibres. The process of making clothes involves four steps:

Fibres to Fabric



Self Assessment

Tick (✓) the correct answer.

- Spiritual clothing strengthens _____.
 - a. imaan
 - b. actions
 - c. behaviour
- Clothes protect us from _____.
 - a. sleeping
 - b. insect bite
 - c. cooking
- Clothes are made of thin, long thread called _____.
 - a. fabric
 - b. fibre
 - c. silk



Young scientist at work

Divide the class into groups. Distribute a few samples of different cloth material to each group. Ask the student to identify the material and write its sources.

Sample	Types of Material	Type of fibre (Natural/Synthetic)	Source
Sample 1			
Sample 2			
Sample 3			
Sample 4			

Discuss

1. How did you guess the material ?
2. What properties of the cloth are used to group them?
3. Which senses did you use?



Skills acquired

I have acquired observation, classification and prediction skills.

Types of fibres

There are two different types of fibres.

(i) Natural fibres

(ii) Synthetic fibres

And (it is) Allah (Who) has made your houses as places of rest for you and He has made for you houses (tents) from the skins of cattle which you find light to carry on the day you travel and on the day you halt (camp), and of their wool and their fur and their hair (you make) things of necessity and (it is) a provision till a time. *(Surah: Nahl chapter 16 verse: 80)*

Natural fibre

Natural fibres are fibres that are obtained from nature i.e plants and animals.



Cotton



Cotton Plant

Cotton Shirt



Jute



Jute Plant

Jute Bag



Wool



Sheep

Sweater



Silk



Silk worm

Silk



Leather



Alligator

Belt

Synthetic fibres

Synthetic fibres are fibres that are made from chemicals in factories. These are also called man - made fibres.

Ex: Nylon, Rayon, Polyester



Nylon fibres are used in making athletic dress, carpets, heavy duty curtains, fishing lines, dental floss and safety belts.

Polyester is used in making tents, sleeping bags, rain coats and umbrella.



Rayon is used to make sweaters, dresses, textiles and surgical products.

