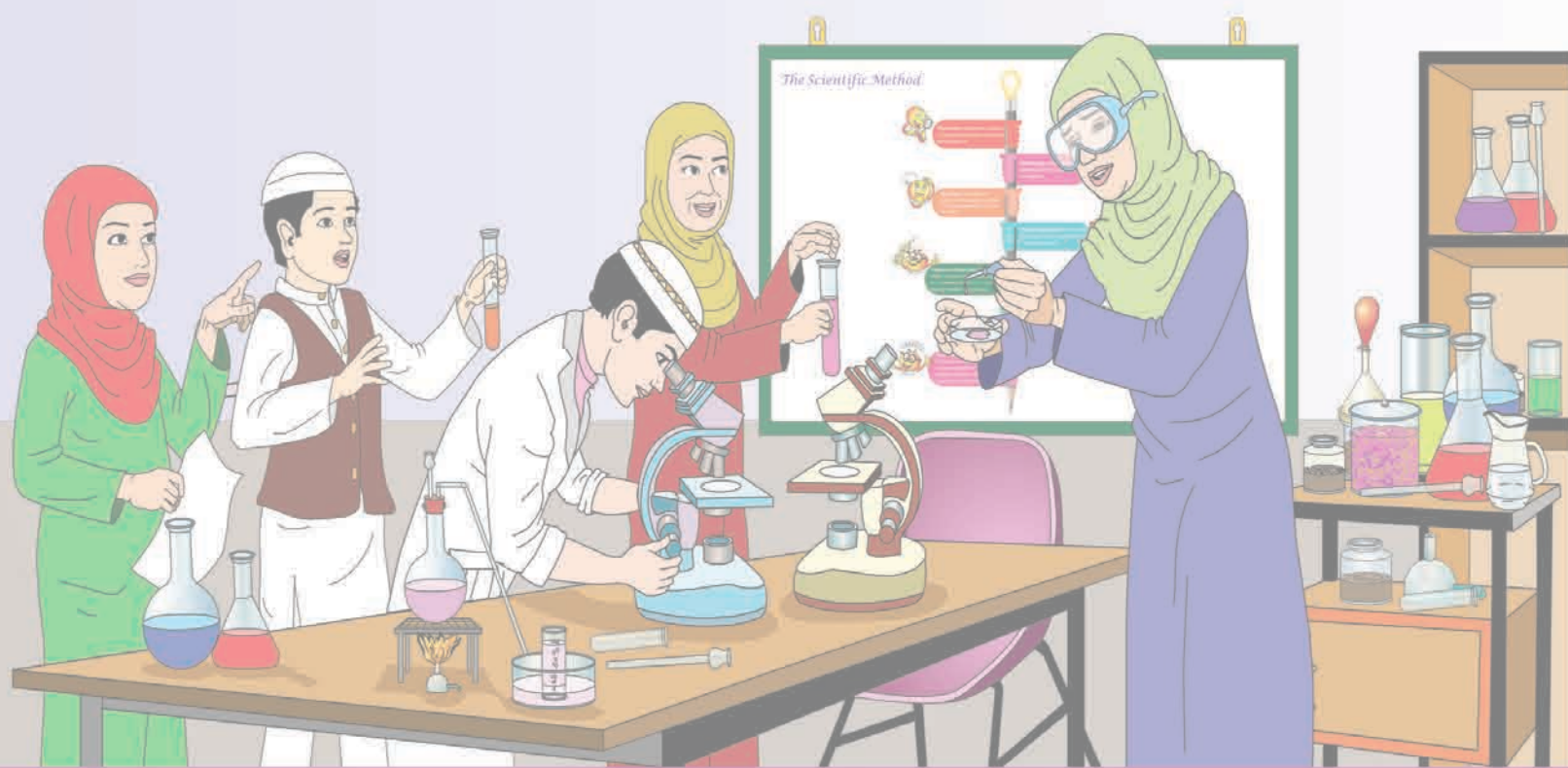




# Explore the World

# SCIENCE

# 4



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# Introduction

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Millat Foundation for Educational Research and Development (MFERD) is an organization conceived with the vision of providing a common platform for the networking, coordination, 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

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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 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.*

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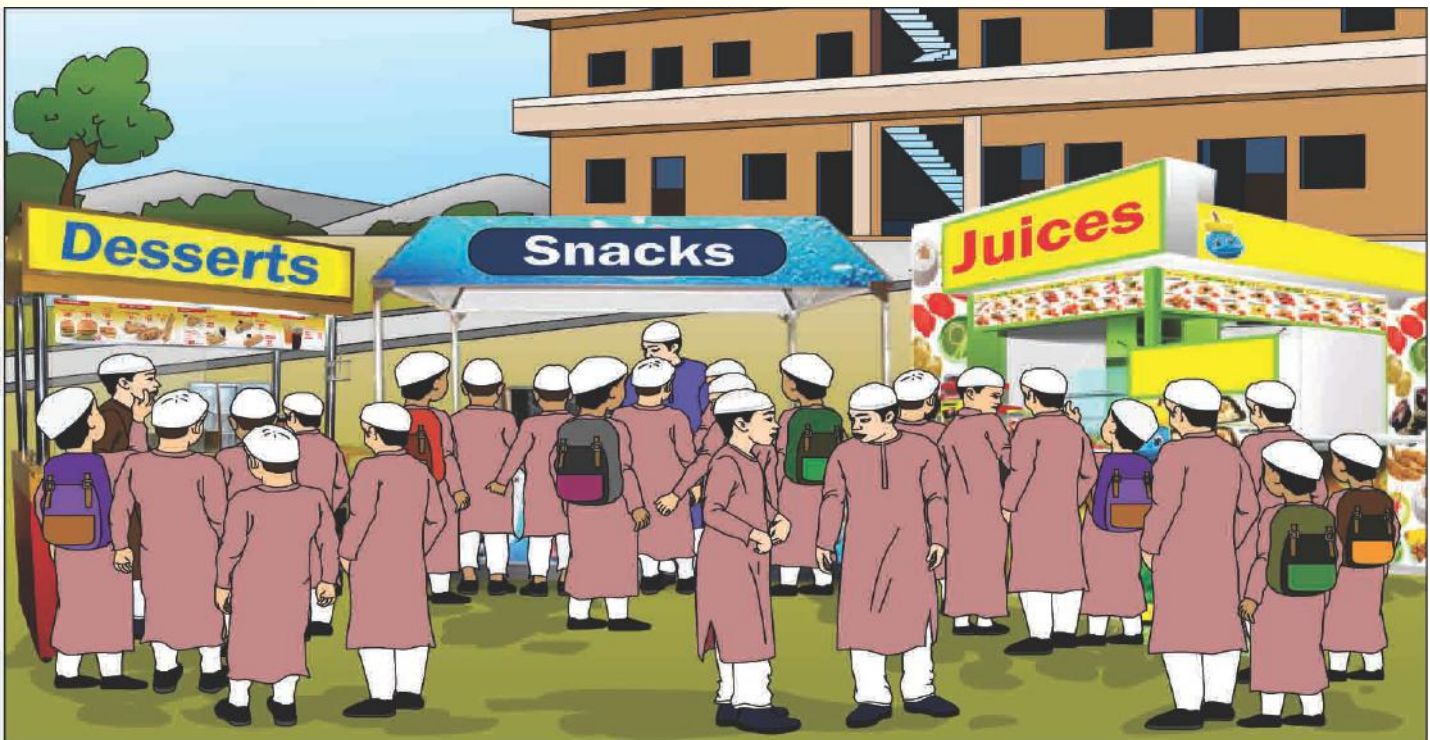
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# Science Process Skills

It is 'Food Festival' in the school. All the students are enjoying it. There are different stalls with mouth watering snacks and desserts for the students to enjoy.



**Saad:** Wow! Look at those yummy snacks! They look so delicious.

**Inaam:** Hmmmm!

**Saad:** Where are you lost? What are you observing so keenly?

**Inaam:** I am observing the variety of food here.

**Saad:** So you are using your observation skills.

**Inaam:** Yes, indeed I am using my observation skill which is in fact the first science process skill.

**Saad:** Do you know all the inventions and discoveries are the result of this particular skill that is observation skill.

**Inaam:** Yes! we should always be alert and watchful like a true momin and use all our senses.

**Saad:** Ha!Ha! But for this food festival, only eyes, nose and tongue will be used.

**Inaam:** The next science process skill is communication.

**Saad:** What! Communication is another skill! How?

**Inaam:** After observing you need to communicate by using words or graphic symbols to describe an action, object or event.

**Saad:** Here we can ask these people how they liked the food or even tell them about the taste or aroma.

**Inaam:** The third science process skill is classification.

**Saad:** I know this, we can classify based on the taste, sweet, sour or tangy.

**Inaam:** It takes careful measurement of ingredients to prepare each dish. It has to be in the exact proportion or the taste will be lost.



**Saad:** I understand, we are using the fourth science process skill i.e. measurement.

**Inaam:** Indeed this is very very important.

**Saad:** Let's assume that a particular ingredient is added extra. What will happen?

**Inaam:** Either the taste will change or the dish will be spoiled. This is my prediction. It is stating the outcome of a future event based on a pattern of evidence. This is the fifth skill, prediction.





**Saad:** So these are five science process skills.

**Inaam:** Wait! It is not over yet. There is one more skill left which is inference.

**Saad:** What is that?

**Inaam:** As per science process skills 'inference' is making an educated guess about an object or event based on previously gathered data or information.

**Saad:** How can we apply this here?

**Inaam:** Well based on the feedback of all students, we can infer that this food festival is successful.

**Saad:** How excellent!

**Inaam:** In our daily routine we use two to three skills at any given time. It depends on the individuals curiosity to explore.

**Saad:** From now onwards I will be more observant. May be this will help me discover and invent new things and some day I will also become a great scientist.

**Inaam:** Ha! Ha! All the very best my new young scientist.

**Saad:** Jazakallahu Khair!

**Inaam:** Wa Iyyakum!

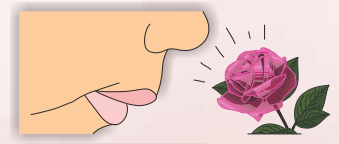


### Mind map

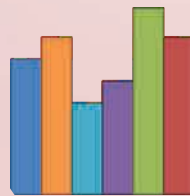


# Science Process Skills

**Observation:** Use senses such as eye, ear, nose, touch to observe and note information about an object or event.



**Communication:** Using words or graphic symbols to describe an action, object or event.



**Classification:** Grouping or ordering objects or events into categories based on properties or criteria.





**Measurement:** Using both standard and nonstandard measures or estimates to describe the dimensions of an object or event.

**Prediction:** Stating the outcome of a future event based on a pattern of evidence.

**Inference:** Making an 'educated guess' about an object or event based on previously gathered data or information.



## Assessment A

1. In a classroom the teacher allocates places to the students according to their heights. Which process skills are applied?
2. In a party, return gifts were given. Children were anticipating and guessing what would be in the gift box. Which skill is applied?
3. Find the skills used by the children to divide the marbles among themselves and guess who would win the game.
4. Blindfold a child and ask him to identify a few objects. Which skills would he use?
- 5 Look at the picture and write what skills are being used.





## Assessment B

### I. Answer the following questions.

1. Define (a) Observation (b) Classification
2. List out the measuring tools that are used for measurement.
3. If you are visiting a bakery how will you classify the items.
4. How is communication skill represented?

### II. Fill in the blanks.

1. Stating the outcome of a future event based on a pattern of evidence is \_\_\_\_\_.
2. Using measure to describe the dimensions of an object is \_\_\_\_\_.
3. \_\_\_\_\_ is an educated guess about an object based on previously gathered data.

### III. Correct the jumbled words.

1. sclsaicfiation
2. epridciton
3. mmoucinatction
4. sbroevanito
5. seamruenemt
6. nifreenec