

## LESSON FOUR

## Scientific Thinking

4

## This lesson teaches me to:

- ❖ explain the importance of research in acquiring and developing knowledge.
- ❖ list the conditions of scientific research.
- ❖ explain the impact of discoveries and innovations on progress and advancement.
- ❖ apply the steps of scientific research in my life.

## I take the initiative to learn:

Allah ﷻ, said:

﴿وَأَوْحَىٰ رَبُّكَ إِلَى النَّعْلِ أَنْ اتَّخِذِي مِنَ الْجِبَالِ بُيُوتًا وَمِنَ الشَّجَرِ وَمِمَّا يَعْرِشُونَ ﴿٦٨﴾ ثُمَّ كُلِي مِن كُلِّ الثَّمَرَاتِ فَاسْلُكِي سُبُلَ رَبِّكِ ذُلَالًا يَخْرُجُ مِنْ بَطُونِهَا شَرَابٌ مُّخْتَلِفٌ أَلْوَانُهُ، فِيهِ شِفَاءٌ لِلنَّاسِ إِنَّ فِي ذَلِكَ لَآيَةً لِّقَوْمٍ يَتَفَكَّرُونَ ﴿٦٩﴾﴾



Wa 'Awhá Rabbuka 'Ilá An-Nahli 'Ani Attakhidhí Mina Al-Jibāli Buyūtāan Wa Mina Ash-Shajari Wa Mimmā Ya`rishūn (68) Thumma Kulī Min Kulli Ath-Thamarāti Fāslukī Subula Rabbiki Dhululāan Yakhruju Min Buṭūnihā Sharābun Mukhtalifun 'Alwānuhu Fīhi Shifā'un Lilnāsi 'Inna Fī Dhālika La'āyatan Liqawmin Yatafakkarūn (69)''

(And your Lord inspired to the bee, "Take for yourself among the mountains, houses, and among the trees and in that which they construct. (68) Then eat from all the fruits and follow the ways of your Lord laid down for you." There emerges from their bellies a drink, varying in colors, in which there is healing for people. Indeed in that is a sign for a people who give thought. (69)) [An-Nahl: 68-69].



I recite and infer:

- ✦ Aspects of the power of Allah in the above two verses.

Building houses, Taking in nectar and making honey.

- ✦ How do you scientifically define aspects of the power of Allah ﷻ, in the creation of bees?

Observation and Scientific thinking

- ✦ Why did Allah ﷻ, order us to reflect on the creation of the bees?

To Know the Power of Allah and Worship Him.



I use my skills to learn



### Scientific research – a specialization

Not only did Islam glorify the mind and encourage its followers to seek knowledge, it made it a must to specialize, research and produce knowledge. It called for scientific research, conducting studies and digging for information, each according to his abilities and interests. In this respect, Islam does not differentiate between one discipline and another; useful disciplines are those that serve a religious purpose or lead to a worldly benefit.



### Research and infer:

- ✦ the principles and foundations of scientific research from the following wise sayings:
- ✦ Wisdom is the target of the believer:

Search and investigate.

- ✦ Seek knowledge from the time you are in the cradle to the time you reach the grave:

Continuation of seeking knowledge.

- ✦ Seek knowledge even if it is in China:

- Travel seeking knowledge, surness of Informations

### **Scientific research is a religious and civilizational requirement**

Islam calls for scientific research by encouraging its followers to think and reflect on everything all over the universe in order to reach scientific facts that facilitate the lives of people and fulfill their needs in all humanistic, scientific, medical and other areas, thereby contributing to developing the individual, building the civilizational personality of society and achieving its dignity and happiness. The knowledge stressed by Islam is constructive rather than destructive.



## I recite and research:

- ✦ I reflect on the verses and indicate the field in which they call for research:

﴿إِنَّ فِي خَلْقِ السَّمَوَاتِ وَالْأَرْضِ وَأَخْتِلَافِ اللَّيْلِ وَالنَّهَارِ لَآيَاتٍ لِّأُولِي الْأَلْبَابِ﴾

Inna Fi Khalqi As-Samāwāti Wa Al-'Arđi Wa Akhtilāfi Al-Layli Wa An-Nahāri La'āyātin Li'wli  
Al-'Albāb"

(Indeed, in the creation of the heavens and the earth and the alternation of the night and the day are signs for those of understanding.) [‘Āli ‘Imrān: 190]. day and night.

The creation of heavens, earth and alternation of P

﴿فَلْيَنْظُرِ الْإِنْسَانُ إِلَى طَعَامِهِ﴾ (٢٤) أَنَا صَبَبْنَا الْمَاءَ صَبَابًا (٢٥) ثُمَّ شَقَقْنَا الْأَرْضَ شَقَاقًا (٢٦) فَأَبْيَثْنَا فِيهَا حَبًّا (٢٧) وَعِنَبًا (٢٨) وَقَضْبًا (٢٨)

Falyanzuri Al-'Insānu 'Ilā Ṭa'āmih (24) 'Annā Ṣababnā Al-Mā'a Ṣabbāa (25) Thumma Shaqaqnā Al-'Arđa Shaqqāa (26) Fa'abatnā Fihā Ḥabbāa (27) Wa 'Inabāan Wa Qadbāa

(28) (Then let mankind look at his food - (24) How We poured down water in torrents, (25) Then We broke open the earth, splitting it with sprouts, (26) And caused to grow within it grain (27) And grapes and herbage (28)) [‘Abasa: 24-28].

Food, water, earth splitting and Planet.

﴿وَالْأَنْعَامَ خَلَقَهَا لَكُمْ فِيهَا دِفْءٌ وَمَنْفَعٌ وَمِنْهَا تَأْكُلُونَ﴾

Wa Al-'An`āma Khalaqahā Lakum Fihā Dif'un Wa Manāfi`u Wa Minhā Ta'kulūn) "

And the grazing livestock He has created for you; in them is warmth and numerous benefits, and from them you eat.) [An-Nahl: 5].

Animals Uses like Food and transport.

﴿أَوَلَمْ يَرَوْا إِلَى الطَّيْرِ فَوْقَهُمْ صَافَّةً وَيَقِضْنَ مَا يُمْسِكُهُنَّ إِلَّا الرَّحْمَنُ إِنَّهُ بِكُلِّ شَيْءٍ بَصِيرٌ﴾

Awalam Yaraw 'Ilā Aṭ-Ṭayri Fawqahum Ṣāffātin Wa Yaqbiḍna Mā Yumsikuhunna 'Illā Ar-Rahmānu 'Innahu Bikulli Shay'in Baṣīr'

(Do they not see the birds above them with wings outspread and sometimes folded in? None holds them aloft except the Most Merciful. Indeed He is, of all things, Seeing.) [Al-Mulk: 19]

## The creation of birds.

### Science is theory and practice

Abu Al-Dardaa رضي الله عنه, said: the Messenger of Allah ﷺ, said: Read

"How will you be, O Owaymir, when it will be said to you on the Day of Judgment: 'Did you have knowledge or were you ignorant?' So if you respond: 'I had knowledge', it will be said to you: 'What did you do with your knowledge?' And if you say: 'I was ignorant', it will be said to you: 'What was your excuse for being ignorant? Did you not try to acquire knowledge?'"

[Musnad Al-Harith].



### I think and indicate:

- ✦ In the hadith what refers to the responsibility of both the ignorant and the learned.

Responsibility of the ignorant: Acquiring knowledge.

Responsibility of the learned: Teaching what he learnt

- ✦ What indicates my responsibility before Allah ﷻ.

Seeking knowledge and transfer it after  
Practice what I learnt.

### Experiment is the path to scientific knowledge

The Holy Qur'an expressly called for reflecting, thinking and using one's mind.

Allah ﷻ, said:

memorize

﴿أَفَلَا تَعْقِلُونَ﴾	(‘Afalā Ta`qilūn)	(Then will you not reason),
﴿أَفَلَا يَتَدَبَّرُونَ﴾	(‘Afalā Yatadabbarūn)	(Then do they not reflect)
﴿أَفَلَا يَعْقِلُونَ﴾	(‘Afalā Ya`qilūn)	(so will they not understand)
﴿أَفَلَا تَتَفَكَّرُونَ﴾	(‘Afalā Tatafakkarūn)	(Then will you not give thought)
﴿أَفَلَا يَرَوْنَ﴾	(‘Afalā Yarawn)	(Did they not see)
and ﴿أَفَلَا تُبْصِرُونَ﴾	(‘Afalā Tubshirūn)	(Then will you not see)

to establish the role of man in producing knowledge, developing science and opening the door wide for scientific experiments to reach the best and most accurate scientific results in all fields of life.



✦ Between discoveries and inventions in the following table:

Aspect	Discovery	Invention
Definition	Found something was already exist	Found a new thing
Examples	Planet, gravity	Plane, Camera
Scientists	Newton,	Ibn Al-Haytham



I cooperate and search:

✦ For the youngest UAE inventors, explaining the field in which each of them excelled.

- \* Adeb Al-Blueshy in medical Field.
- \* Fatima Al-Ka'by in robots Field.

### Contributions of Muslims to scientific discoveries

Muslims in various Islamic countries in both East and West established scientific centers that focused on scientific research and its applications. These include the Mosque of Kairouan (AD 670), the Mosque of Córdoba (AD 785), the House of Wisdom in Baghdad (AD 830), the University of Al-Karaouine in Fez (AD 859) and then Al Azhar university (AD 970). They all contributed to supporting scientific research and encouraged discoveries and inventions.

memorise (3)

Scientist	Experiment	Field
Abbas bin Firnas	Flying in the air	Aviation
Ibn Al-Haytham	Camera	Optics
Jabir bin Hayyan	Making medicines	Chemistry and pharmaceuticals
Ibn Al-Nafis	The pulmonary circulation	Medicine
Al-Idrisi	He made the first globe	Geography



I research and investigate:

✦ the following:

1. The main research centers in the UAE and their specializations.

- Zaid Ibn Sultan Centre For medical scientific
- The national centre For water.
- \* The Emirates Centre for energy and environment

2. How to be successful in my studies so that I become creative and innovative like great scientists.

- Seeking knowledge in different fields.
- Reading.
- Follow the way of great scholars.

**Scientific research is a national responsibility** <sup>Imp</sup> UAE role in developing scientific <sup>Thinking</sup>

The educational system in the United Arab Emirates is based on varied educational methods with the aim of building the student's integrated scientific personality.

Experiments in scientific subjects are included as means of illustration for students, because theoretical knowledge is not sufficient on its own. Experiments develop as the level of students becomes higher. Universities that offer scientific programs have laboratories that are equipped with the latest equipment for conducting experiments, in addition to scientific institutions that are designed to facilitate experiments and inventions to encourage researchers to complete their scientific projects and provide them with varied experience in different fields.

✦ I learn by experimenting:

- Success of its results.
- Encourage students to scientific research.
- Know the importance of scientific research.



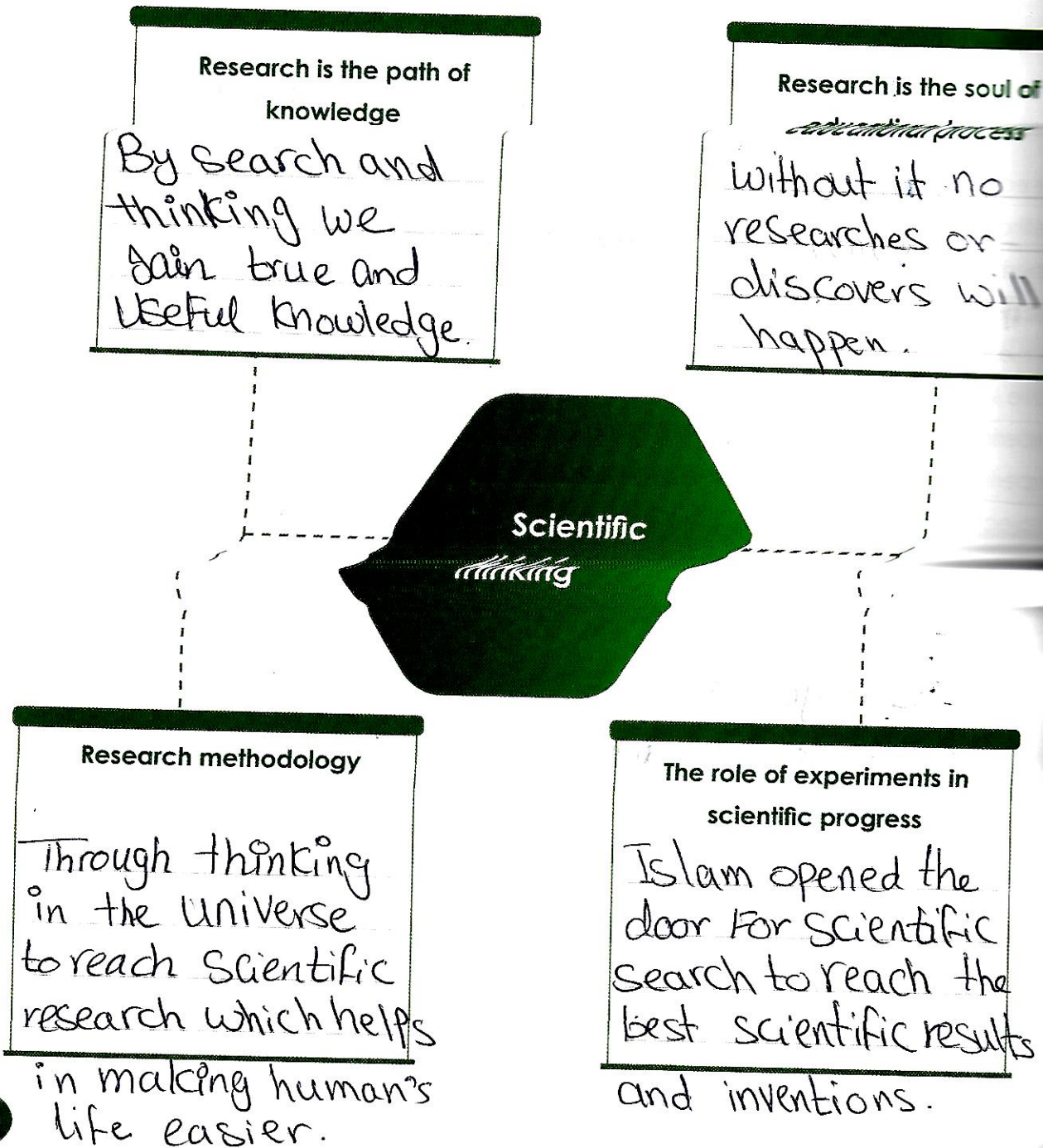




I organize my concepts:



✧ I complete the following conceptual chart:





## My Imprint:



✦ I participate in some scientific clubs to develop myself and acquire scientific experience that will help me in my life and enable me to contribute to the scientific development of my country.



The Right Way  
(Surat Al-Mulk 15-24)



## Student Activities



I answer by myself

1. Explain why the Holy Qur'an directs us in my verses to reflect and reason.

To establish the role of man in producing knowledge and developing science ..

2. Classify the following terms into the appropriate column:

Reflect	Read	Laboratory	Library	Laboratory materials
Tools	Study	Criticism	Reading	Scientific encyclopedia
Means of research		Means of experimenting		
		<ul style="list-style-type: none"> <li>- laboratory</li> <li>- laboratory materials</li> <li>- Tools</li> </ul>		

H.w

The Messenger of Allah ﷺ, said:

*"Man's feet will not move on the Day of Judgment before he is asked about his life, how he spent it and his knowledge, what he did with it ..."* [Narrated by Al-Tirmidhi].

- ✦ Explain the significance of bringing man to account for what he did with his knowledge.

Sincerity of his knowledge to Allah.

Avoiding hypocrisy.

Use my knowledge to teach others.

#### Enriching my experience:

- ✦ I cooperate with my classmates to prepare a presentation with photos that highlights the UAE's efforts in the field of scientific research.

#### I assess myself:

- ✦ To what extent do I apply the values presented in the lesson?

S	Aspect	Level		
		Always	Sometimes	Rarely
1	I am interested in scientific research.			
2	I participate in experiments in the classroom.			
3	I believe in the importance of scientific research for the progress of nations.			
4	I respect scientists.			
5	I participate in scientific clubs.			