# UNIT 4 SCIENCE AND RELIGION

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### 4.0 OBJECTIVES

The unit attempts to bring in the contemporary discussion on the relation between the science and religion which was seen as opposing each other in the modern period.

#### 4.1 INTRODUCTION

The subjects of science and religion are getting more important to man in the modern age. They are two great disciplines which, when relied on separately can be counter-productive, but when combined harmoniously can being about an all-round expression of human genius and total fulfillment. The literal meaning of the term religion is traceable to 'Religare' which means bind together. Religion is the outcome of man's age for freedom. It is the outer manifestation of this great hunger for the infinite. Different religions represent different aspects of that struggle, but the whole of mankind, consciously or unconsciously, is moving towards that goal which is the end of religion. For Swami Vivekananda religion is realizing the divinity already in man. But majority of people go to church or temple or mosque for various favours of God and Goddess. There are rituals associated with religion and worship. There are two types of devotion to God: devotion without any motive and devotion for particular ends. But to-day, religion is used by some misguided youth for disrupting social harmony. We see tensions between Muslims and Jews in the Middle-East, Protestants and Catholics in Northern Ireland and Muslims and Hindus in the Indian sub-continent. Though religion is blamed for the evils of the society, really religion is not at fault. Persons misuse religion for their selfish gains either in the domain of politics or even in the domain of religious organizations.

# 4.2 THE JOURNEY FROM PRE-SCIENCE TO SCIENCE

In ancient times, conditions were not conducive for the development of scientific thought. Uncertainty, danger from natural forces, from wild animals and poisonous insects plagued the early man everywhere. He had neither an assumed home nor an assured food supply. He almost knew nothing as to why events around him happened the way they happened. Thousands of years must have passed in this scared and bewildered conditions of human mind. The conditions around early man confused him more than giving him knowledge. His explanations of the phenomenon around were actuated by unscientific wish-fulfilling and egoguarding aims. Since knowledge was scant, imagination dominated the then explanations. Behind every natural process was posited an invisible deity. There came up wind-god, fire-god, river-goddess, mountain-god, death-god and so on. The sun, moon and the shining bodies in the sky, each one, became a deity to be feared, praised, prayed to and worshipped for favours. People started worshipping these deities out of fear and also for favours. Such worships became a regular routine and were even passed on to the following generations. All this is more a religion than a science. Yet we must accept that at that time those were the only explanations available and people were even satisfied with them. The rudimentary religions later on developed into ritualistic religions. The people were submissive and loyal to such religions. Religions came up much earlier to sciences.

The ancient religions had the following common features:

- 1) The invisible deities govern the visible
- 2) The invisible is better, more real and more virtuous than the visible
- 3) The invisible deities are omnipotent and anthropocentric conception of God was prevalent in those days.
- 4) The gods have heavenly existence and will curse human beings if they are angry and bless them when pleased. So the Vedic way of worship focused on worshipping the natural forces such as Agni, Varuna, Vayu etc to please them.
- 5) Rituals and traditions were followed to propitiate these deities
- 6) The religious person must surrender to the will of the God.
- 7) Any deviations from established religious tradition is the worst crime and to be severely punished.
- 8) Since God and religion control every activity of ours (individual soul), before death, after death, one must be faithful to such a God.

If there has to be science, the individuals must liberate themselves from God and religion. This liberation may not always be absolute. In science we search for natural antecedents as the cause of any natural event. But such a thinking cannot even arise as long as we intensely believe that in the world everything is caused and governed by God. If we believe that every event is caused by the will of God, then scientific explanation of natural events is not possible. If in religions the transcendental explains the natural, in sciences we search for a natural explanation of the natural events. Unfortunately, even this seemingly obvious development did not take place for thousands of years. The Lokayatas who tried

to adopt a natural and empirical position were not allowed to do that. They were harassed, condemned, ridiculed and even out cast. In ancient Greece similar attempts of Anaxagoras, Lucretius, Pythagoras, Thales, Socrates and others met with a similar fate. Religious fanaticism was an obstacle for the growth of science. Ages of faith have invariably been ages of persecution and cruelty. With renaissance, winds of free thinking started blowing. As a result of printing, knowledge became a common man's property. With the increase of travel and commerce, people became a little more broad-minded. People started realizing that independent thinking and human efforts pay more than what faith and prayer do. Then started, the trend of study at comprehensive explanation of the worldly events. The explanation of individual entities was replaced with the explanation of processes. Experimentation and instrumentation got a singe fillip. As a result, we are on the way to developing a science-founded and science oriented life. But even after renaissance the intolerant attitude of the orthodoxy continued. The priests refused to accept scientific explanations of natural events. The scientists were ridiculed, harassed and even jailed. Bruno was burnt to death for his heterodox views. The journey from pre-science to science has also been a journey of naturalisation of human outlook. As a cumulative effect of sciences over the past few centuries, the epistemology and ontology of sciences have been completely naturalised. The subject matter of the study of sources, the objectives of scientific study, the sciences of scientific knowledge obtained, theories of truth and error, concept of truth and reality, criteria of verification and falsification, methods the sciences adopt, the nature and general effects of scientific knowledge are all mundane phenomena, natural phenomena. The epistemology of science has been so much naturalized, has become so much objective in nature that the subjective element in the seekers of scientific knowledge has absolutely no place in it. There is nothing unnatural, anti-natural or super-natural in the scientific epistemology. There are three constituents of epistemology: the knowing subject, the known object and the sources and the nature of knowledge obtained. In sciences all these three factors are of natural type and there is nothing supernatural or divine in them. The knowing subject is a psycho-physical person and not the spiritual type of soul; the objects of knowledge belong to this world only and the sources of knowledge and the nature of knowledge obtained also belong only to this empirical world. For science there is no transcendental world or heavenly entities. Its epistemology as well as ontology is completely naturalized.

# 4.3 SCIENTIFIC INVESTIGATION

Investigations of the scientists differ from the mystical methods of theologians. Even religious persons claim that their statements are scientific. Therefore we should be clear in stating the conditions which must be fulfilled if some investigations can be called scientific. An investigation can be called scientific if it fulfills the following conditions: (i) The phenomenon under investigation must be of a publicly verifiable nature (ii) During the investigation scientific method is followed; (iii) The outlook of the investigator is scientific and (iv) Acquisition of knowledge should be the aim of the investigator.

Now let us take the case of the claims of astrology in India being a science. It does not fulfil any one of the conditions seen above. It believes that there are nine planets who affect our individual life in one way or the other. They are some sort of deities controlling our fate. The fate of the person is fixed by the

position of these nine planets at the time of his birth. The nine planets of Indian astrology are: the sun, the moon, the Saturn, the Jupiter, the Mars, the Venus, the Mercury, Rahu and Ketu. The assumptions of Indian astrology are not corroborated by the findings of modern science. Rahu and Ketu do not exist at all. Modern science has proved that the sun is a star and not a planet; moon is a satellite of the earth and is not an independent planet; our earth, very much a planet and affecting us the most does not find a place in the list of planets of Indian astrology. The recently discovered planets, Neptune, Pluto and Harshal do not figure in it. Moreover, science has found that these planets are masses of inert matter revolving in the sky and cannot be considered to be deities who could be appeared by our offerings. Indian astrology even now speaks in the very terminology that it spoke when it was founded centuries ago. This unchanging but defective character of Indian astrology in spite of changes in facts prevents it from becoming a science and makes it more a part of religion. Astrologers all over the world do not accept the foundation of Indian astrology. Any science should be universal in its nature and claim. It should be a definite public fact. Unlike science the religious claims of different religions differ with one another. The objects of study of sciences are universal and unanimous in nature. But in religions the views on God, soul and Heaven are not the same for all religions. The Jains and the Buddhists do not accept God. And even those who accept God, e.g., the Christian, the Hindus and the Muslims differ widely about their conception of God and liberation. Scientific conclusion does not differ with one another. Even if there are differences though further investigations and research such differences are narrowed down so that universality is maintained. An investigation can be called scientific only if the field of study is empirical, public, verifiable and objective. For any investigation to be scientific, scientific method should be followed. The scientific method consists the following stages of investigation: (i) Observation (and experimentation) (ii) Hypothesis formation (iii) Generalisation and (iv) Verification. All these steps are public and verifiable. A scientist should be liberal, flexible, relative, dispassionate and shun all finalism, absolutism and sentimentalism: Scientific investigation should he carried out purely with the intention of obtaining knowledge.

### 4.4 SCIENTIFIC AND RELIGIOUS OUTLOOKS

- 1) Theologians criticise the empirical knowledge of the scientists. According to them, the scriptures cannot be disputed. Only the scriptures are infallible and not the conclusion of the scientists. But the scientists are not rigid in their outlook. For them the scientific quest is a continuous process that will go on for ever. All the scientific truths are only provisional. If the future findings invalidate the present truths, the scientific truths will also change accordingly. There are no permanent and absolute truths in science. But religion does not accept relative truths.
- 2) Scientific attitude is an open-minded approach. It is always open to correction. But a religious approach is a closed-minded approach. If two scientists argue about something, they will have enough common ground. But in a debate when different religions are arguing their case, no one will yield to the others even an inch of ground. They will not hear what the others are saying. They will go on insisting upon their own point. The scene will be full of emotional out bursts coming to no understanding.

- 3) Religions hold that complete truth had been given to us by the prophets, they are always looking backward to the past; but scientists look to the future possibilities for human welfare.
- 4) Scientific and religions attitudes are distinguishable not from the contents of the beliefs but from the manner in which the beliefs are held. If they are held passionately and expressed emotionally, the outlook is religious. If the beliefs are held dispassionately and are expressed in a cool way, the outlook is scientific.
- 5) The scientific outlook treats facts as its ultimate authority and not certain persons or scriptures. It is concerned with what is true and false. It does not think that "our" truth is higher than "their" truth. Truth according to it is universal and common to all.
- 6) Scientific outlook is a rational enquiry attempting to find out cause-effect relations among events. Any scientific hypothesis must be verifiable.
- 7) In religions we are told that one who has faith will benefit and are also warned that one who doubts will perish. In the field of sciences the case will be just the opposite. Here one who only keeps faith and does not enquire any further will perish while the one who keeps on doubting and examining the current explanations, his knowledge will improve and will be benefitted.

Check Your Progress I	
<b>Note:</b> Use the space provided for your answers.	
1) Demonstrate the evolution of science from pre-scientific era.	
2) Briefly explain the Scientific investigation.	

# 4.5 SCIENTIFIC PERSPECTIVE OF TRUTH

In the process of acquiring knowledge there is a tripartite unity between the knower, the known and the knowledge. The truth according to the scientists is Matter or the objective world. For religion, the truth is God which is both immanent and transcendent. Since the scientists don't consider the trans-empirical

existence as real, they don't accept God for the object of study. We can find the scientific approach to Reality even in ancient India and Greece. The great and original thinkers like Kapila, Gautama, Kanada and others worked out their empirical systems entirely based upon methodical knowledge and scientific analysis. As for example, modern science has discovered that various forces of nature like electricity, light, heat motion gravitation etc., are so many expressions of eternal cosmic energy. The atomic theory states that matter can be reduced to ultimate particles called atoms. It was first discovered in India by Kanada, the author of the Vaisesika philosophy and in Greece by Democritus, Leucippus and Lucretius. It is said that many Greek philosophers from Democritus onward had also imagined matter to consist, in the last resort, of hard indivisible pellets and those pellets were at first called "atoms" which were incapable of being divided. Anaxagoras maintained that those pellets possessed in itself all the characteristic properties of the substance to which it belonged. After a long time John Dalton, Lavoisier, Maxwell and other scientists made experiments on atom and considered it to be an essential ingredient of physical science. The physicist of the 19th century found that all matter is possessed of inertia and is capable of motion. They said that energy is matter, or is in atom which can exist in a number of forms and can change about almost endlessly from one form to another, but it can never be utterly destroyed.

In 20th century Dalton's atomic theory was disproved. His theory that atom cannot be divided was rejected by the scientists. Their theories proved that atoms can be divided into sub-atomic particles such as electron, proton, neutron, positron, meson etc. Albert Einstein proved that matter can be transformed into energy through the following equation:  $E = mc^2$  where 'E' is energy 'm' is the mass of the object and 'c' is the velocity of light. The credit for rejecting Dalton's atomic theory goes to Crookes, Lenard and J.J. Thompson. In 1897 Thomson showed that the fragments of atoms were identical no matter what type of atom they came from; they were of equal weight and they carried equal charges of magnetic electricity. On account of this last property they were called "electrons". In 1911 Ernest Rutherford through his experiments revealed the architecture of atom; the atom to be constructed like the solar system, the heavy central nucleus playing the part of the sun and the electrons acting the parts of the planets. Rutherford's experiments were afterwards extended by Niels Bohr and others. Modern science believes in the law of conservation of energy according to which the total amount of energy present in the universe is constant. Therefore the atoms and sub-atomic particles of the atoms are indestructible. However the scientists are unable to provide the causal explanation for the existence of matter in the universe. Matter and energy present in the universe are taken for granted by the scientists. To the question, 'who created the matter' (which is the Truth for the scientists) there is no satisfactory answer from the scientists.

To know the truth in science, the scientists depend upon sense perception and experimentation. The scientific method has the following stages: (1) observation (2) Hypothesis (3) verification and (4) scientific law. The intellectual analysis of the data collected through observation and verification of the hypothesis helps the scientists to arrive at conclusions. The scientists don't consider mystical intuition or insight to arrive at conclusions. The scientists don't consider mystical intuition or insight as the valid methods to arrive at conclusions.

### 4.6 RELIGIOUS PERSPECTIVE OF TRUTH

Truth according to religions is God. The truth which is absolute is called Brahman by the Vedantins. The Vedantic conception of Brahman is impersonal and the Hindu religion believes many personal gods. For the Vaisnava sect the God is Vishnu who incarnates as Rama, Krishna, Narasimha etc. For the Saiva sect, the God is Siva who appears as Ardhanareeswara (the dual form of Siva and Parvathi). The seekers of truth follow the method of meditation if the goal is self-realisation. Those who believe in personal God follow the paths of *Jnana*, *Bhakti* and *Karma* to have communion with God. However *yoga* and meditation are conducive in realizing the goals where the goal is spiritual union with the Brahma or communion with God. The Hindu religion believes in the Immortality of Soul, *Karma* and Rebirth which are interrelated with each other. Therefore whether the truth is Absolute Brahman or personal God, there is no disagreement among the believers about the interrelatedness of the Immortality of soul, *Karma* and Rebirth.

#### **Taoism**

The Chinese looked upon Tao as the Absolute Reality, anterior to and higher than heaven. It existed even before manifested God arose and before time began. It is the first cause of all existence, manifesting itself in the creator and the created universe. It is the eternal, unchanging and all-pervasive principle from which all things proceed, the goal to which all things tend. Only one who is eternally free from earthly passions can apprehend the spiritual essence of Tao. Out of Tao comes the one which produces the two primary essences, the 'Yang' and the 'Yin', the male and the female, light and shade, which give birth to heaven, earth and man. The interactions of yang and yin result in the production of all creatures. Tao is in man though it is generally unmanifested. If we are to regain our tranquility, we should set out on the quest of Tao. The Tao is potentially available to all and so each one has to treat others with sympathy.

#### Judaism

The religion of the Jewish people is called Judaism. The Jewish doetrine believes in God who is both immanent and transcendent. He is greater then the world and separate from it and yet he works in the universe by means of his "wisdom" which is an emanation from him and yet has no separate existence from him. God is in heaven and yet the earth is his footstool. The universe is one uninterrupted revelation of the Divine. Only angels can come into relations with the holy God and not the impure men. Only through deep spirituality and prayer men can bring about changes in the material world.

# **Greek Religion**

There are two currents of thought in the ancient Greek religion, the Homeric and the Mystic. According to Plato the end of life is "to become like God". True piety is to be a fellow worker with God. Like Hindu Pantheon wherein there is a god each for fire (Agni) air (Vayu), Rain (Varuna) etc, in the Greek mythology too there are goddesses for prosperity, underworld, love etc. The Dionysiac mysteries are marked by wild ecstasy and several barabaric rites. The Orphic societies were generally attached to the workship of Dionysus. Those who were eager for communion with the Divine and anxious to attain peace of mind and

position of hope and confidence were attached to the mystery religious. According to Plotinus, the Supreme in beyond existence, beyond life. It abides in a state of wakefulness beyond being. We cannot call it good; it is perfection. It is beauty, not the beautiful. The God whom we worship is the revelation, not the revealer. The source of revelation cannot be revealed. The goal of the intellect is the One, the goal of will is goodness; the goal of love and admiration is beauty. We can know the Absolute because we are ourselves, in the ultimate spirit not through discursive reason, but by some spiritual contact. The ecstatic state is a rare phenomenon gained only at the summit of spiritual development.

#### Zoroastrianism

Zoroastrianism is the religion of the Persians (Iranians). It has many common elements with the Vedic religion of the Indian Aryans. The Avesta's asha and the vedic rta are two variants of the same word and the underlying thought was fully developed in the period before the Indian Aryans and the Iranians separated. The highest principle is 'Ahura-Mazda' which acts according to changeless laws. It is believed that Zarasthura was born in response to the appeal of Mother Earth to help mankind to overcome evil. Ahura-Mazda is the Supreme being, the Lord of life and matter, the Cosmic Lord Iswara from whom have sprung 'Purusa' and Prakrti'. The cosmic process is progressing towards the fulfillment according to the law of asha. Only those acts done out of love for the Supreme give us happiness and not those which are performed for one's own good. Unselfish work is the way by which human individuals attain their spiritual welfare and help the progress of the world. Love in Zoroastrian religion embraces the animal world also. Zarasthura promises those who follow his teaching everlasting life. To know the Supreme Ahura-Mazda and act according to his law asha one has to perfect one's nature through prayer and meditation. When we reach the goal we realize peace and unity.

#### **Buddhism**

Buddhism was founded by Gautama Buddha. The Buddha speaks of bodhi or enlightenment. It is an immediate, non-discursive, intuitive relation with Absolute Truth. It is not theatrical knowledge. It is knowledge that cut the roots of desire and is the result of concentration on the nature of Being. Since Buddhism preaches the philosophy of change it doesn't believe in a permanent soul. Man is ignorant and forgets his real nature and identifies himself with what he is not. He must get to know the truth beyond all phenomenal existence. Prajna is consciousness that transcends subject-object distinctions. The path to Nirvana is ethical path (eight fold path) Adopting the method of reason, the Buddha declined to answer certain ontological questions which he considered to be useless. His position is termed as Agnosticism. He rejected the rituals of Vedic religion and inequality in the society. He rejected the principle of authority, for truths accepted on authority and not ascertained and realized by personal effort are of no avail. In Mahayana Buddhism, the relation of the devotee to the absolute is medicated by faith and prayer and the devotee is helped by the grace and guidance of the divine Buddha. In all types of Buddhism, methods of concentration of thought are emphasized.

#### Christianity

Jesus Christ, the founder of Christianity was in disagreement with the teachings of the prophets of Israel. His reforming views over the Jewish religion made him the messenger of God. Jesus's personal experience is a supreme example of

direct knowledge. His acts and utterances are penetrated with a feeling of fellowship with God. Jesus demands an inward renewal, and inner change. The Kingdom of Heaven is not a place in space but a state of mind. The Kingdom is present, here, immediate. "Repent, for the Kingdom of Heaven is at hand". It is the attainment of Truth which makes for freedom or liberation. Jesus refers to the inner perfecting, the possible evolution of man. When he asks us to "repent", he means not penitence or regret but inward revolution. True religion is the remaking of the soul by contemplative prayer and ascetic practice. The popularity of Christian religion in the world is due to its Mysticism which includes the "service to humanity" as its essential theme.

#### **Islam**

The central feature of Islam is the worship of God and acknowledgement of Him as the Absolute Lord. Muhammed, the founder of Islam rejected the worship of men and idols, of stars and planets on the principle that whatever rises must set, whatever is born must die, whatever is corruptible must decay and perish. For Muhammed, God is an infinite and Eternal being without form or place. God is what remains when we abstract from the unknown. He is present in our most secret thoughts, exists necessarily of his own nature, and derives from himself all moral and intellectual perfections. Quran is the sacred book of Islam. The Sufi tradition of Islam lays stress on personal experience of God. The human soul is a part of the absolute. God and man become one in the perfect man, the prophet is the final cause of creation. Unlike Hinduism, Islam lays stress more on ethical teachings than on metaphysics. The mysticism of Judaism, Christianity and Islam regards the theistic conception of God as determinate and inadequate.

The above account of Truth portrayed by different religions are like various languages in which God has spoken to man. Western forms of religion are inclined to hold that one definition is final and absolute and others are false. In India, each definition represents a *darsana* or a view point. If religious truth is seen by different groups in different ways, it is not to deny that truth is ultimately one. It is wrong to exaggerate the doctrinal differences, overlooking the common basis, the universal fact underlying the historical formulation. The diversity of dogmatic interpretations tends to diminish as we climb up the ladder of spiritual perfection. The variety of religious symbolism is due, not to the nature of the experience as such, but to the prevailing theological or metaphysical conception of time and place. If any one tells us that his view of the Supreme is final, it is only human judgement which need not be taken as infallible.

## 4.7 REASON AND FAITH

Science and religion as subjects of study focus on the two essential concepts: Reason and Faith. There is no science without reason and there is no religion without Faith. Attempts to synthesis reason and faith were made as early as 13<sup>th</sup> century by the Franciscan school men of Christianity. Franciscans were less orthodox than Dominicans. Between the two orders there was keen rivalry. St Thomas gave his proofs for the existence of God by using Aristotle's logic and argument. There are there ways of knowing: by reason, by revelation and by intuition. Therefore even in matters of faith, logical reasoning and sense-perception played a vital role in medieval period. Scholasticism as a school of philosophy paved the way for bringing reason closer to faith. The very fact that

St. Thomas accepted a posteriori proof of God's existence reveal that reason and faith cannot be separated. Among the five proofs for the existence of God the first there proofs proceed directly from the given facts of experience.

- 1) First, proof is from motion
- 2) Second, the series of efficient causes
- 3) Thirdly, from the series of contingent causes.

According to Aquinas there is fundamental difference between man and God. Man is finite and a creative of God whereas God is infinite and the creator of man. He transcends both the world and the man. Human intellect can know God through sensible objects.

From the Indian perspective faith becomes the very basis of rational investigation. But this faith (*Sraddha*) is different from that usual idea of faith as mere static *visvasa* or belief, swallowing everything that is said by any authority without subjecting it to evidential tests. We can see the scientific and rational and human aspects of *sraddha*; and all physical science, all religion, and all human life itself needs this type of *sraddha*. What does *sraddha* means in the physical sciences? It means a faith in the meaningfulness of the universe. A scientist cannot investigate into nature unless he has a prior feeling that nature is worth investigating. Without that faith he cannot get even the impulse to undertake his scientific inquiry. Viewing faith from the point of view of scientific reason, Sir Arthur Eddington (The philosophy of physical science, p.222) says: "In the age of reason, faith yet remains supreme: for reason is one of the articles of faith".

ck Your Progress II
: Use the space provided for your answers.
How do Religions approach truth?
Critique on role of Reason and Faith in quest for truth.

### 4.8 LET US SUM UP

Albert Einstein in his essay on, Science and Religion says, "Now, even though the realms of religion and science in themselves are clearly marked off from each other, nevertheless, there exist between the two strong reciprocal relationships and dependencies. Though religion may be that which determines the goal, it has nevertheless, learned from science, in the broadest sense, what means will contribute to the attainment of the goals it has set up. But science can only be created by those who are thoroughly imbued with the aspiration towards truth and understanding. This source of feeling, however, springs from the sphere of religion. To this there also belongs the faith in the possibility that the regulations valid for the world of existence are rational that is, comprehensible to reason. I cannot conceive of a genuine scientist without that profound faith. The situation may be expressed by an image: "Science without religion is lame, religion without science is blind". The above passage from Einstein's book, of My Later Years, reveals that he is in agreement with the Indian view that Faith and Reason are complimentary to each other. The conflict between Reason and Faith can be overcome in Spiritual life according to Vedanta.

# 4.9 KEY WORDS

**Sraddha** : Faith which is dynamic.

**Visvasa** : Belief which is static.

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5.	Changes in the counseling schedule were communicated to you on time					
7.	Examination procedures were clearly given to you					
3.	Personnel in the study centers are helpful					
€.	Academic counseling sessions are well organized					
10.	Studying the programme/course provide the knowledge of the subject					
11.	Assignments are returned in time					
12.	Feedbacks on the assignments helped in clarifying the concepts					
13.	Project proposals are clearly marked and discussed					
14.	Results and grade card of the examination were provided on time					
15.	Overall, I am satisfied with the programme					
	Guidance from the programme coordinator and teachers from the school					

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