



KEO, THE ARCHEOLOGICAL BIRD OF THE FUTURE

**EDUCATIONAL TOOL
addressed to the professors**

September 2001

CONTENTS

Context.....	2
Our intentions.....	3
The plan.....	4
Part 1: Presentation of the satellite.....	5
Part 2: The KEO generation.....	6
Object 1: fertile soil.....	6
Object 2: air.....	7
Object 3: water.....	8
Object 4: blood.....	9
Object 5: fresco of human faces.....	10
Object 6: glass disks.....	11
Object 7: universe and time.....	12
Part 3: An invitation to write.....	13

CONTEXT

In the year 2003, the satellite KEO will be launched into space for a long journey around the planet Earth. It will return to its native soil after a period of 50,000 years.

KEO will carry with it messages that the habitants of our planet Earth wish to send to their faraway descendants. It will also carry with it the sum of the knowledge of our geopolitical, historic and biological situation..... and many significant archeological gifts that have a symbolic value.

This satellite sparks off a technical challenge and a humanistic ambition. At times technical and at times poetic and universal, KEO is a wonderful tool for reflecting on ourselves, on our society and on our history and past. The final goal of KEO is to trigger off an introspection that is successively intimate and collective. In the same way that our descendants would be able to analyze our messages, we too would be able to proceed with this analysis and thus be in a better position to reply to the question: "who are we?".

Circulated after the launch of the satellite, through the support of the media, the universities, the schools, this analysis could also give birth to a desire to know about the person next door, to consider our cultural and local differences as a wealth that needs to be shared for the general benefit of mankind.

We could thus also be able to share our questions our doubts, our preoccupations and our expectations and perhaps be able to collectively reflect on our common future, on our responsibilities towards tomorrow's generation at a time when our technical and organizational know-how permits us to match powers with the forces of nature for the worst and the best and for example to act upon our collective destiny.

OUR INTENTIONS

The KEO satellite turns out to be an excellent learning tool that will permit the students to deal with all questions relating to science, technology, community and philosophy.

We address our pedagogic ideas and concepts towards those professors who choose to reply to KEO's educational appeal.

To understand the world from a global outlook

We have chosen to place ourselves at an indispensable level of reflection, a prerequisite for writing your message to KEO.

Our desire is **to open the doors to understanding the world**, to encourage reflection on the human society, to develop capacities of analysis and to critically evaluate the society and through that to enable the young people to assume their role as citizens of the world. Our universal ambition is to allow them **to seek their right place in the world**.

To adopt a transversal approach

As the disciplinary approach divides our knowledge, we urge you to adopt a **transdisciplinary project** that aims at **reuniting the sum of all our knowledge and know-how**.

To seek a diverse aptitude

In order to encourage the students to work actively, it would be interesting to tap their conceptual, sensorial, emotional and physical faculties.

To juxtapose the marvelous and the questions on society

It is not only important to kindle the student's attitude to question but also to encourage his spirit of wonder and marvel: art, beauty, poetry have their place right beside science, technology and social debates.

The vision of an artist is ahead of his time and he can play the role of a visionary in our society.

To facilitate the work of the teachers

As the subjects and themes boarded will be transversal, all teachers can use this pedagogic thought process irrespective of their stream of teaching (scientific, technical, literary, sociologic, historic, geographic....).

Each teacher, according to the subject dealt by him, can successively develop the ideas which are closest to his domain of expertise. The subjects can also be related to those of the teaching program. Examples of extension and continuation are proposed to those teachers who wish to be involved in a much larger pedagogic project as KEO can be the opportunity to develop a class project with teachers from other streams.

PLAN OF THE DOCUMENT: PEDAGOGIC TARGET

This document is divided into 3 parts:

Part 1: Presentation of the satellite

Part 2: The KEO generation

Part 3: An Invitation to write

PART 1: PRESENTATION OF THE KEO SATELLITE

◆ **Objective:**

To assist in understanding all the dimensions of Programme KEO (teachers can avail of a press package on simple request. It contains all the essential information needed to understand Programme KEO).

Steps :

- ◆ To present the artist's project (please refer to "Presentation of KEO in two pages" and the "Mc Kinsey " plan which retrace all the stages of Programme KEO and lend a pedagogic value to the questions concerning the management of the project and its concept).
- ◆ To explain the meaning of a satellite, an orbit, a launch, the escape velocity of terrestrial attraction.
- ◆ To exhibit KEO's technical performance and to answer the questions related to its construction and launch.
- ◆ To explain the technical parameters, the inherent dangers in a hostile environment like space, the nature and the resistance of the material, the choice of the orbit.
- ◆ To deal with the perception of geological time, the adventure of life and the human species : 50,000 years, what will all this represent?
- ◆ To create a model of the KEO satellite.

Possible extensions

- ◆ Representations of time in different cultures.

Documents furnished by KEO

- ◆ Press package
- ◆ CD-rom containing images of KEO that are free of rights
- ◆ Retroplanning of the management of Programme KEO (capsule, communication, net, network, computer management of the messages,...)
- ◆ Plan of the KEO satellite and the technical information (to come)
- ◆ A video cassette containing a 3 minute film on KEO: Jean-Marc Philippe elucidates on the KEO project

It would be worthwhile if the teacher could develop a pedagogic form describing the progress of the sequence.

PART 2: THE KEO GENERATION

Objective

- ◆ To encourage the students to reflect on the world.

Steps

- ◆ To aboard the subject with the aid of the seven symbolic objects that the KEO satellite will carry with it: water, fertile soil, blood, fresco of faces, map of radio pulsars + position of the planets on ‘the’ day, glass disks.
- ◆ To aboard a different subject with each object.
- ◆ To present the common work of the students on a planisphere as a unifying support.

Object 1	Subject
ARABLE SOIL, Fertile medium that feeds mankind	Food resources

Objective

- ◆ To be aware of **the diversity of food resources in the world and the inter-relation between geographic locations, climate, food, way of life of the varied population inhabiting Earth** (ex: the Sahara is fertile since 100,000 years, how will it be in 50,000 years?).

Examples of activities

- ◆ The students are divided in groups of 4. Each group is given 2 photographs. Each photograph represents a basic meal from a given region.
With the help of a document, the students reply to some questions that will resolve the riddles that lead them to determine: the origin of the basic material (imported or not), their cultural habits (extensive or intensive), their availability (enough or not), the energetic value of the meal....
They are then invited to compare the two cases.
Each student is given a planisphere of an A4 size format on which he has to fill in the replies (drawings, stickers...).
- The collective result of this exercise is mounted on a planisphere which is presented by the professor with the help of a overhead projector.
- In total, six countries can be studied. The choice of these countries would show the diversity of the food situation in the world.

Possible extensions

- ◆ To organize tasting sessions, pastry making competitions, table setting classes, comparisons between different food rituals existing in various cultures (constitution of festive dishes, Sunday meals, birthday treats etc), reading sessions of texts related to food...
- ◆ The students do a research on recipes of typical dishes and on farming methods of their region, the destination of the production (exportation, local markets, human and animal food).

Streams

- ◆ History, Geography, Life sciences, Earth science, Mathematics, Arts, Visual and Fine Arts.

Object 2	Subject
AIR, the breath of life	Environment

Objective

- ◆ To realize each person's **responsibility towards the quality of the environment.**

Examples of activities

- ◆ The students enact a small skit in the class to learn how a debate is floored. The students take the roles of a Mayor, a lakeside association, an industrial, a lung specialist, a journalist. Each participant of the debate has prepared his speech: a document that deals with the problem, defines the missions and develops each one's arguments. The rules of the debate are explained by the teacher.

Possible extensions

- ◆ To contact the environmental service groups of the community and to contemplate on participating in one of their projects or initiating one on their own. To observe the quality standard of air: lichen, wear and tear of the stones used in the construction of ancient monuments...

Streams

- ◆ Life sciences, Earth science, Civics, Technical education, Physical sciences.

Object 3	Subject
WATER, culture and tradition, symbols and myths	Man's relation with water

Objective

- ◆ To realize the importance of this natural element, water, in man's life, biologically, culturally, symbolically. (For KEO water is more precious than gold).

Examples of activities

- ◆ The students will work in groups of 4.
Each group is given a board of pictures of the entire world (the first irrigation of the Mediterranean region/of the terraces/ the aqueduct) where the subject is water: some are advertisements, some are religious engravings, others are artistic representations, scenes of daily life, images of natural calamities. The students have to classify the images and regroup them according to the function of water shown in the photo: water for health, water for survival, water for a physical need, downpour of water... This activity leads the students to analyze the given pictures, arouses strong emotions by the force and the beauty of certain images, forces one to reflect on his concept of water, attains the universal, the local and the exotic.
Each student will be given a planisphere of an A4 size format on which he has to fill in the replies (drawings, stickers...).
- ◆ For the group activity, the students place their images on the planisphere, discuss the 'function' of water expressed in the image and historically classify the documents if necessary.

Possible extensions

- ◆ To contact the companies that distribute water (Vivendi?) and contemplate on participating in their projects or initiating one on their own.
- ◆ To inquire about the ways of preserving water reserves in the region.
- ◆ To observe the biotic standard of the quality of water: algae, plants, larvas of Arthropods, fishes...
- ◆ To photograph fountains, waterspouts, aqueducts. To research their history and the myths attached to them.
- ◆ To listen to music pieces related to water.

Streams

- ◆ History, Geography, Visual and Fine Arts, Civics, Arts, Music.

Object 4	Subject
BLOOD , the common signature of mankind	Uniqueness of the individual, each one belongs to the same human species

Objective

- ◆ To understand simultaneously that each individual is unique and that each one belongs to a common species. An excellent pretext to relate to another person, at times so similar and at times so different.

Possible extensions

- ◆ To scan the group snaps of the class, to create a genealogical tree...

Streams

- ◆ Life sciences, Earth science, French, Civics...

Object 5	Subject
THE FRESCO OF HUMAN FACES	Differences, the wealth in diversity

Objective

- ◆ To discover other cultural worlds and to be aware of the diversity and the relativity of aesthetic values.

Examples of activities

- ◆ The students are given a playing card with representations of canonical faces. These representations cover different epochs and different cultures.
The pupils play in teams of 4. Each team picks a card, takes its turn and a trial card replies to a predetermined questionnaire: who is represented, which epoch, which artist, which country, which part of the face symbolizes beauty, which finery is added to enhance the effect, what sentiments are expressed by the face?
A document lends indications of the artistic trends.
The cards are replaced according to their origin on the planisphere.
The activity could end with a discussion on the relativity of aesthetic values, a discussion directed by the professor.

Possible extensions

- ◆ To organize a game on the sentiments expressed by the face: a folded form conceals the name of an emotion that the students have to mime.
Ex: the universal attitude of man (ex: an inclined head which symbolizes an openness towards another person).
- ◆ To organize a mini exhibition of portraits and silhouettes sketched by the students and to exhibit finery originating from different countries (if there are students in the class whose parents have foreign origin).
To organize a competition on the theme: the fashion in the 520th century. To organize a fashion parade.

Streams

- ◆ History, Geography, Visual and Fine Arts, Civics, Arts.

Object 6	Subject
GLASS DISKS	Communication technology

Objectives

- ◆ To evaluate the technical progress made by the different communication mediums and to study the evolution of exchange that they have brought about.
- ◆ To lead the students to discover the various stages in the development of writing (signs, alphabets, different media, printing works, digital works, questions concerning the life span of the media, relation between the quantity of information and the mass of the media support (each side of the glass disk of KEO contains 20 tons of A4 size paper).

Examples of activities

- ◆ The students will work in teams.
Each team will receive an envelope containing a message. These messages are exchanges between famous people belonging to different time epochs: Caesar and Cleopatra, Gengis Khan and the czar of Russia, Leonardo di Vinci and the pope, England's order for spices and silk from India, Bill Gates and the Abbé Pierre (these names are evidently chosen at random).
The text of the message should be a maximum of 15 lines, reflecting the style of that epoch (writing style, vocabulary) with references to the well known clichés; the tone may be serious, humorous, passionate or affectionate.
Each team has to provide documents on the protagonists, the contexts and the means of transportation that existed during that epoch as well as the existence of the post, the path that the missive should follow, the time taken for it to reach its destination.
Each team presents the fruits of their efforts by specifying the epoch, the persons, the places, the means of communication and the time taken by showing the path on the planisphere.
- ◆ **Other possibilities:** to propose two fiction stories to the class.
First story: it revolves around the act of saving the Library of Alexandria from a fire and transferring it to Rome.
Second story: the Library of France is digitized and then sent through the Internet to Kourou to be put into orbit by the air rockets aboard the KEO satellite.

All the teams will compete together : they have to prepare documents to answer questions concerning how the works will be transported. It is necessary to calculate the volume of the documents transmitted, to determine the means of transportation, the path and the duration of the transfer.

Possible extensions

- ◆ To work on the traces left back by the other cultures with the passage of time, on the evolution of the memory supports, on the coding of information (Morse code, telegraphy of Chappe...)
To organize sessions of writing ideograms, to reproduce inscriptions seen on monuments, to reconstruct a Rosetta Stone, to create coded messages, to study the art of numeric coding. To compare the volume of the masterpieces of Mozart on a vinyl disk and on an audio CD.
The representations of the different writings accompanied by their signs could encourage the students to prepare a research documentary.

Streams

- ◆ History, Geography, Mathematics, Technology, Arts, Music.

Object 7	Subject
UNIVERSE AND TIME	History of the universe, notion of time and space

Objective

- ◆ To find their way in time and space.

Examples of activities

- ◆ **Time:** The students are provided with images describing each stage in the history of the universe. Time is represented by a cord, suspended in the class, which symbolizes the long chord of time (5 billion years). The students place the images on the cord after having calculated their correct position on the line of time. The significance and the importance of the events are specified at the time the cards are placed on the cord.
- ◆ **Space:** The students are furnished with a diagram sketching the solar system where the diameter of the stars and the distance that separates them is indicated. The pupils transcribe these values on a scale that is either given to them or on one that they find on their own. They have to indicate the position of the sun, the first planet, the Earth and the first star on a map. They can present a part of the diagram in the college campus by making use of different objects (oranges, marbles, poppy seeds).

Possible extensions

- ◆ To create models of the planets, tellurics, and gaseous planets on the same scale (to show that the Earth has an ideal position that allows it to hold its water).
- ◆ To create and exhibit drawings on the history of the universe.
- ◆ To study the different calendars.
- ◆ To construct a sundial.
- ◆ To design another world with reference to the images of the surface of Mars. To work on the medium of time.

Streams

- ◆ Physical sciences, Mathematics, Life sciences, Earth science, Visual and Fine Arts, Technology.

PART 3: AN INVITATION TO WRITE

Objective

- ◆ To work on **writing the message**.

Steps

- ◆ To thus invite the students to write their personal message (as human beings living on planet Earth, their dreams, their aspirations, their revolts, their way of life).
It is preferable that the student writes his message by himself with complete liberty. As an exercise that is non sanctioned, the student will relate what his life is about. He should not be forced to show it to anybody, thus respecting the principle of liberty of expression and confidentiality propagated by Programme KEO.

Possible Extensions

- ◆ To exhibit the texts at the city library

Documents furnished by KEO

- ◆ One page explaining the formula for sending your message on the KEO website.

Production

- ◆ To post your text on the KEO web site, www.keo.org, in the form reserved for messages such that it can be embarked on the satellite.