



**Fundação Brasileira para o
Desenvolvimento do Ensino de Ciências**

MOBRAL PREPARES A REVOLUTION

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FOREWORD

Since its creation, FUNBEC (Brazilian Foundation for the Development of Science Teaching) is dedicating the best of its efforts to the improvement of science teaching and has been gathering a deep experience in the elaboration of teaching projects in all levels of education.

MOBRAL (Brazilian Literacy Movement) - a government institution which is dedicated mostly to teaching adults how to read and write but that is also concerned about the total development of individuality, as it has been shown through several attitudes towards the literates - was interested in taking advantage of FUNBEC's know-how for the elaboration of teaching materials as well as for counselling in the area of sciences.

In August, 1973 FUNBEC signed an agreement with MOBRAL. One of the most urgent requirements was the elaboration of a Science Project for a course of Integrated Education, corresponding to an intensive elementary school course. MOBRAL's movement is aimed at literates as well as at people who have abandoned regular elementary schools. Around one and a half million of students attend these courses throughout the country.

This work for MOBRAL was a true challenge for FUNBEC's people, as the population to be reached was totally different from those with which FUNBEC usually dealt with. In order to develop this program, a specialized team of professors was gathered together, as well as counselling from sociologists, psychologists and pedagogues was obtained. Besides this group, that could be called the "creative team", evaluation and visual programming experts were included.

The first step was to define the objectives of the program, as well as strategies to be adopted, contents and characteristics of the material to be produced, taking into consideration all information that could be gathered about the population to be reached, cost of project application, as well as its adaptation to the outline of the already existing Integrated Education course.

Two areas of general interest were chosen for a preliminary experience: "Electricity" and "Sanitary Education", which are connected with the student's experience or easy to be experimented.

Besides the experimental material, which is simple, -
unexpensive, durable and demanding low replacement
items, a Science Manual for the student and a Teacher's
Manual were prepared, with the necessary instructions
for the development of classes.

If you are interested in further information about the
above described material and program, please write to

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"MOBRAL" PREPARES A REVOLUTION

Free translation of a
newspaper article by
J. REIS

May be this will mean the beginning of a true revolution in the elementary teaching of our country, in the area of sciences - a box with didactical material and two booklets that FUNBEC (Brazilian Foundation for the Development of Science) has prepared for MOBRAL. MOBRAL ? Yes, that is it. In FUNBEC's last report some information had already been given on this project for the teaching of science in MOBRAL's class-rooms. Now we have the set, that many people call "kit" (the mania of English language) and the books for pupils and teachers. What a fight for IBEC and FUNBEC to succeed in implanting an active science teaching despite the fact that the former has the prestige of UNESCO's name, which they represent in Brazil ! How many wars in some corners of bureaucracy, to make difficult the acceptance of the creative material, simple, adequate to individual and small group work, instead of the

shining and expensive material for teacher's demonstration, as has been the usage to supply the shelves of so many school laboratories for such a long time, sometimes just for the sake of it ... Some people even murmured to the authorities in secrecy that that material - developed, designed and manufactured - here in Brazil, represented an interference of foreign people who intended to invade national education ...

ONE STEP FORWARD

Actually decided to innovate, MOBRAL analysed all projects that IBEC of São Paulo and FUNBEC were fighting for during a long time. It was not difficult for them to realize that one of the projects was the germ of a true revolution, necessary to proceed with the process of mass literacy.

MOBRAL recruited teachers to follow the project and thus implant it with efficiency. A phase of evaluation, pilot-test and finally a large scale application were duly planned. They were about a few thousand at the beginning, around 100.000 later on and millions of science boxes afterwards, in the hands of people who will not stay at the ABC stage but will learn the taste for asking questions and the possibilities of science application. Through this means MOB

may succeed in renovating a teaching area that in so many points and for manifold reasons, presents signs of fossilization in Brazil and in many other places around the world.

This does not mean only the magnificent intention of giving some oxygen to the teaching to make it more exhuberant and useful. It means also the recognition, by a group of high intellectual and didactical capacity, of the value of this type of work, performed with great sacrifice by IBECC (Brazilian Institute of Education, Science and Culture) - São Paulo Department - and by FUNBEC. A rare and pioneer work of research and development in education, as we have already explained some years ago in an article published in "Science & Culture", a magazine edited by the Brazilian Society for the Advancement of Science. This Society has been giving support to both organizations since their implantation, programming their activities in the Society's Annual Meeting. Considering the financial support that another FUNBEC's project has got from BNDE (National Bank for Economic Development - which does not supply funds to unrealistic plans but only to plans firmly fundamented on the reality and the interest of the country), we may foresee in MOBREAL's attitude more

than an isolated trend of one public organization. We can see in it the understanding of the high federal political and administrative command of an educational investment that will produce something different from merely literate on one side or doctors on the other. Something that will result in multitudes of people whose elementary culture will be fundamented in useful experiments, that will teach reasoning, thus avoiding the loss of all literacy efforts.

We are right in thinking that a true teaching revolution is being implanted by MOBRAL.

ELECTRIFYING

When the FUNBEC-MOBRAL box is opened, a lot of simple, carefully disposed devices are found. Covering them, a folded piece of cardboard. Its front part corresponds to the façade of a modest house, with one entrance door and one window. This cardboard is to be put standing, held by a small wood beam, in which there are two cuts to fit into the lateral wall and hold the insulating pegs for the wires. Thus the house stands up firmly.

The material inside the house consists of the necessary

apparatus and devices to complete an electrical installation at home and also of devices for sanitary health learning, about which we will talk later.

The electrical material is unsophisticated, but the necessary for the installation and many other experiments. Electric batteries, change-over switch, wires, screw-driver, lamp socket and the lamp.

The student's text book is divided in 13 activities. A few lines and much illustration in each page. Clear pictures and large letters. Each activity covers several pages, which are very similar to comics magazine. The first activity is "Let's turn on the lamp", the second "Let's turn off the lamp", "Let's make the lamp shine stronger", "Let's switch on two lamps", "Let's see whether two lamps shine stronger in a series connection or in a parallel connection", "Let's begin an electrical installation" "Let's finish the electrical installation". A true comics story shows the mistakes which can be incurred in an electrical installation - "Mr. John's repairs". And so finishes the first part of the text book, dedicated to electricity. At the end of each story or each activity, there are a

series of exercises to test whether the student has learned effectively.

The second part of the text-book deals with the sanitary health. In the box you will find a medicine-dropper, small glasses, a piece of web, small sticks, a small can to collect material, specially feces, a simple lens and a microscope. Do not be surprised. Microscopes are no longer a privilege of doctors. By the way, the great pioneer of microscopy, Leeuwenhoek, was only one step above an illiterate. Looking carefully through the lenses he himself polished, during a long time, he ended by discovering a lot of important things that startled the wisemen of London's Royal Society.

Leeuwenhoek was a very peculiar character. Dobell, one of the world's greatest scientists, wrote a large book to tell his biography. Leeuwenhoek was a very simple man and as he was not a doctor, he had to change to a back seat any time a doctor entered a carriage he was in, generally a doctor in philosophy, literature, theology, because there were no science doctors in those times as we have today. But he did not mind. As he liked to polish lens and this was a

fashion in those times - he made them more perfect than anybody else. Looking through them at manifold things like leaves, spit, catarrh, everything he found, he designed and described in his faulty language all that he discovered in the unknown or almost unknown world of microorganisms or of structures invisible to naked eye. All that he saw and observed was put on the paper writing letters to London's Royal Society. In the beginning the British wisemen were suspicious of that strange literature coming from the humble Dutchman, but decided to verify all that he affirmed and as a result he was elected a member of their Society !

HEALTH

Let us go back to the FUNBEC-MOBRAL's box, in the part relating to health. Everything that is inside the box has a practical objective, as in the case of electricity. It is not enough to know the theory it is necessary to put it to work.

In this case the text book is also divided according to activities. The first is just an introductory talk about the water from a well. The following are easy

experiments to perform: "Seeing magnified things", "Making a lens with water", "Using the Microscope", "Observing a piece of onion under the microscope", "Seeing colorful onion skin under the microscope", (there are liquids for colouring in the box), "Observing an ink line under the microscope". Then comes another activity, directly linked with health: "Studying worms", "Seeing dog's feces under the microscope". As in the first part, this one also brings a comics story - "Joãozinho" ("Little John"), between the 9th and the 10th activity, which is "Seeing the water of the well under the microscope". The 11th activity is "Seeing the earth kept on the leaves of a plant". The 12th is "Studying why we have worms" and the last one is "Building a cesspit and a water-closet". Each activity consists of a simple guide to the experiment, a short reading text, exercises and a blank space in which the student designs what he has observed.

The text book and the box are planned in such a way that the user can perform everything without the aid of a teacher, once he is literate. If the teacher is of the motivator type, so much the better, of course. There is a second book for the teacher, with longer explanations, so that he can be prepared to guide the pupil.

This is just one more among many science boxes prepared by FUNBEC in order to render easier the teaching of sciences. With the material inside of it a series of other activities can be imagined.

Now won't you agree that this is a promise of a true educational revolution ? Nothing new, will say some skeptical people versed in pedagogical literature.

Measures like these have been recommended a long time ago, and so on and so forth. One thing is to preach (of course preaching is useful and necessary) and another is to put into practice what is preached. As Italians say, between saying and doing there is the sea. An what a sea, when education is involved ! Those who have tried to pass from word to action should say.

It is not improbable that MOBREAL will meet problems with their own teachers. To deal with feces ! No, I cannot. Microscopes in the hands of recently literate people, what a crazy idea ! No comments about the group of "What's all this for ? Everything has been all right with the ABC and nothing else !" But these MOBREAL people, by adopting the project, have already proved that they are not of the inertia group.

With the project, such a revolution may be created in the teaching, involving millions of people and creating such a "momentum" that it will be impossible to go back. Let's go forward, MOBRA L ! If there are many unpractical ways in the Brazilian education, due to the bush let grow by inertia, let us open new ones. Education indeed means investment.