THE ATHENE PROJECT OR INTRODUCING MICROCOMPUTERS IN SPANISH EDUCATION

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Spain

The name of the Greek goddess of wisdom has been chosen by the Spanish Ministry of Education and Science to label its pilot project intended to introduce microcomputers in Spanish education step by step. At the time of writing this project remains more or less unknown to the great majority of teachers and educators. Just a few journals have disseminated certain ideas concerning the guidelines of this project, but on the other hand no one knows how it will be possible to spend 500 million pesetas (US $ 2,7 million) in the present year when if public opinion has not yet received adequate information. And that in the same year when unemployment has risen to more than 21 per cent of the total active population.

Let us remember that, as it was pointed out some years ago, Spain is different. In other words, these facts cannot be surprising in a country like ours. Several reforms concerning university education, teacher's training, relations between State and private schools have been announced to the audience - i.e., university students and professors, teachers and so on - just a few days before their approval. (Note "few days", not weeks or months.) To some extent this procedure cannot be criticised and should be examined like a political device: a change for Spain, a change as rapid as possible. Nevertheless, undoubtedly, returning to our starting-point, more than a project, law or political device must be kept in mind when discussing, and deciding, the technological and educational future (and, to some extent, the economical future) of a country wishing to get out of a very critical situation.

In any case, however, the Athene Project is running. It is worth while revealing some of its top secrets at least.

General outline

During the next five years, including 1985, the Athene Project
will be running in those provincias and autonomous territories where there is no full autonomy yet in terms of educational policy. The Project includes three main sections: school equipment with adequate hardware, software, and teacher training. In fact, it has begun in those schools previously selected as pilot centres for the secondary education reform. This reform project includes microcomputers at this level, but considered as a subject matter with optional status. Those autonomous territories, with previous relationships with the Ministry of Education and Science (MEC) in order to develop educational software and to train teachers, will be prioritary.

Total investments are as follows: 4,777 million pesetas, 67 per cent devoted to equipment; 19.6 per cent, training courses; 7 per cent, meetings; 6.7 per cent, general costs; and 3 per cent, educational material. During the following five years it is hoped to achieve the necessary material provision for 1,843 schools (1,185 in primary and lower secondary education, 414 in upper secondary education, and 274 in technical secondary education). This represents 9,215 microcomputers, 685 training courses for teachers - some 1,300 will be specialists and another 5,530 just general teachers -, and 34,844 seminars and workshops.

But those persons involved in the final drafting of the Project feel that those investments are not enough, specially if compared with those devoted to the introduction of other technologies or with those necessary to maintain within reasonable limits the deficit of some public enterprises. They believe that, when evaluated after the first two years, more investments than initially designed will be needed in order to raise the number of schools equipped with microcomputers. It must be kept in mind that there are more than 14,000 primary and lower secondary schools in Spain now, so that the last school will receive its microcomputers in 1999 if investments are not increased.

On the other hand, five microcomputers per school does not seem an adequate ratio when considering the high pupils/classroom ratio existing in Spain. Presumably, ten or fifteen microcomputers per school could be a more effective ratio; yet it would represent of course two or three times the actual amount of investments.

Comparative Considerations

Supposedly, these new ratios will allow to introduce microcomputers in Spanish education in a European form. For example, in Britain there are microcomputers per school at secondary level
and one at primary level. Another example: France also has a project for introducing 20,000 microcomputers per year in colleges, lycées and schools. In 1988, as expected, there will be 100,000 microcomputers in schools, this is to say one per 50 pupils. Britain and France, the two countries selected as models by the Spanish MEC, also have a very good production of educational software, some 1,000 programmes every year. But, can we compare the British, French and Spanish experiments at this moment? Obviously not, because the Spanish experiment is an unexisting one. At the time of writing, nothing of practical value has been done in Spain in order to introduce microcomputers in education. As an example, it was expected that in November (1986) the MEC would have selected some twenty educational units for teaching sciences, but it has not done it yet.

In 1986 the first microcomputer arrived in a British school. In the following decade most teachers were concerned with CAI and the Technological Educational Council set out the National Development for Computer Assisted Learning Programme, intended for postgraduate students and following American methodology. But, like in America, the lack of effectiveness - big machines, high costs - led this programme to a downfall. The microcomputer revolution was more or less rapidly assumed by the British government: the Microelectronics in Education Programme was announced in 1986; its main purpose was to promote awareness of new technologies, both in education and society, and also to increase teaching effectiveness. Two governmental departments are concerned: the Department of Education and Science, and the Department of Trade and Industry - as it occurs in Spain. The former copes with the design and updating of the project, and the latter with school equipment. The MEP has five sections. The first one is related to the understanding of technology. Children need some expertise and knowledge about it. This section begins with nine or ten year old children, and initially has a theoretical character, supplemented with some practical possibilities. The second section deals with computer science, its material and logical aspects. In this respect, MEP has developed adequate resources to the children (hardware plus software), prepared tests, booklets, videotapes which illustrate and facilitate good understanding of computer procedures. The third section is devoted to Computer Assisted Learning, developing programmes for almost all ages and subject matters. This section has acquired an increasing importance. The MEP has given funds to a great number of centres producing software, and cooperated with industries to develop new educational materials. The fourth section, perhaps the most important one, has the responsibility for information and documentation. Applications such as word
processors and other systems are also introduced in schools.
Obviously, data formats very depending on the pupil's age, e.g.,
children between four and five years old use information
supporting images, but between nine and ten years old they can
elaborate and process information. The last section is devoted to
special education—a missing section in Spain at the moment—,
looking for applications to difficult children.

But there are also problems in Britain. The most important one
has been to organize the system in order to allow more than
400,000 teachers to update their knowledge and skills. An im-
portant role has been assigned to the 109 LEA, who have a
certain autonomy in their relationships with the MEP Central
Committee.

Ten years after the introduction of the first microcomputer in a
British school, the National Ministry of Education of France set
up an experience at the Lycées level. In those years, computers
tended to mean a certain kind of centralism and social control;
some of those problems have survived. Between 1978 and 1976, 58
Lycées received equipment, also a few hundred teachers were
trained, most of them specialised in scientific subject matters.
Meanwhile some criticism appeared: a new knowledge order? would
it be necessary to change the educational system? what kind of
shock does the microcomputer produces in pupils? Some educators
compare microcomputers to audiovisual equipments: bound to fail.
Then, in 1978, the microcomputer revolution required a solution.
A new project was then designed: 10,000 microcomputers were
assigned to Lycées, in a context of technological revolution with
an appearance of autonomy and self-sufficiency. In 1983 this
project is extended: 100,000 microcomputers, 100,000 trained
teachers before 1988. Nevertheless, current surveys show some
lack of adjustment, specially related to teacher training.
Presumably, in Lycées there will be plenty of machines and
nobody will know how to use them.

Problems in Spain

Several of the problems mentioned above now exist in Spain, at
least in some minds. Of course, issues are not only focused on
investments. In this connection, probably the main problem will
be teacher training and it is reasonable to suppose that more than
a 19.6 per cent of costs need to be devoted to this aspect. A
recent Fundesco survey showed that in Spain more teachers than
expected are absolutely convinced that microcomputers will
substitute them in a near future; others compare microcomputers
to encyclopaedias; some others finally believe that, if asked, a microcomputer must know teacher's and pupils' names. These cases, unfortunately more than expected, reveal how necessary it is to promote the adequate information of teachers, and then train them wherever possible. Risks of underutilisation of microcomputers, or misunderstanding its educational implications must not be forgotten.

Table 1 shows a chronological evolution of investments and actions to be for the period 1985-1989. As it can be seen, teacher training does not receive as much care as required by international standards. Generally, in other countries the amount of money invested in equipment is also the same in the case of teacher training. On the other hand, MEC authorities have said that pre-existent structures and schemes could reduce costs. But what kind of them do exist in Spain and not in Britain or France?

In fact, at least in an early stage, teacher training is conceived as a general understanding of some information concerning the basic use of microcomputers or, so to speak, the domestic use. There is a very simple reason: microcomputers will come to schools in a near future - some enterprises are waiting like the big bad wolf -, so it is absolutely necessary to prepare a minimum number of teachers rapidly to use them. Not very qualified teachers, of course, but at least, let us say, basic beginners. These trained teachers will be appointed as instructors, whose responsibility will consist in training other teachers who will rapidly become instructors of other teachers. The same procedure was used in Britain, but it is necessary to consider differences in context between the two countries; traditionally, Britain has been, at least in the recent past, more open to technological changes.

So, it seems that the Athene Project takes a too optimistic view of the future. For the moment, most teachers refuse to accept computers, not as a new technology, but as a technology they must introduce to their pupils in their classrooms. No special actions have been foreseen for the rural areas. However, those teachers who supposedly have an attitude against this new technology and its implications in their classrooms know almost nothing about Athene, what kind of microcomputers will be used, who will teach training courses, nor even if they will receive a microcomputer the next month.

And it is not a strange thought. The MEC has not decided yet really nothing, except the general features of the system. But there is another question: software. There are hundreds of
Table I: Athene Project, a chronological evolution of investments and actions to be done. 1985-1989. Costs are expressed in million pesetas.

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<td>Schools to be equipped</td>
<td>200</td>
<td>217</td>
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<td>586</td>
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<td>Equipments to be acquired</td>
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<td>Cost</td>
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<td>358</td>
<td>361</td>
<td>967</td>
<td>1,025</td>
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<td>Training courses</td>
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<td>93</td>
<td>96</td>
<td>200</td>
<td>206</td>
<td>685</td>
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<tr>
<td>Cost</td>
<td>96</td>
<td>111</td>
<td>123</td>
<td>281</td>
<td>324</td>
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<td>Number of meetings</td>
<td>1,664</td>
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<td>40</td>
<td>40</td>
<td>105</td>
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<td>Cost educational material</td>
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<td>37</td>
<td>37</td>
<td>31</td>
<td>31</td>
<td>142</td>
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<td>Teachers to be trained</td>
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<td>651</td>
<td>657</td>
<td>1,785</td>
<td>1,863</td>
<td>5,530</td>
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<td>Teachers to be specialized</td>
<td>280</td>
<td>280</td>
<td>280</td>
<td>224</td>
<td>224</td>
<td>1,288</td>
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<tr>
<td>Total cost per year</td>
<td>500</td>
<td>589</td>
<td>617</td>
<td>1,467</td>
<td>1,663</td>
<td>4,777</td>
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educational programmes on the market, but at the moment nobody in the Ministry knows how to assist teachers in their evaluation of materials: no special regulations have been announced or issued.

As it can be seen, there are a lot of problems concerning the Athene Project and, above all, timing. What has been done in 1985? What is wrong in the Athene Project?

Results of a lack of a definite policy

Last March the definitive project was finally published: the Athene Project. A proposal for a rational introduction of new information technologies in basic and secondary education. It is important to note that in a technical sense this project is well planned. Its main sections are as follows: objectives (basic computer information, computer user training, the computer as a pupil’s tool, the computer as a teacher’s tool), curricula changes, teacher training, educational logic, the computer as a school management tool, computer equipment, supplementary activities, organisation strategies, evaluation, etc. But in another sense this project seems to be a technocratic one, this is to say, a project conceived as a mere strategy to introduce, perhaps too rapidly, microcomputers in education. There has not been a previous study on the real implications of this technology in a Spanish context. So, in other words, it is intended to answer some practical or technical questions, but probably not the main ones: Why is it necessary to introduce microcomputers in Spanish education? Of course, assertions like “Computers have a huge impact on some basic aspects of our culture like language and communications”, or “Computers will bring a greater protagonism to pupils in schools”, or “Teacher’s objective must be to use computers as a means for easier learning, so that the teacher can arrange his time in order to assist slower or difficult pupils” could be read in the final project. But, what about Spanish pupils? Spanish teachers? Spanish homes? Does an ideal Spain exist in MEC experts minds? What is needed is a reflection the impact of new technologies in a Spanish context.

Perhaps it will be easier for readers to consider some questions stated in a Ladislav Cerych’s Report on Computer Education in six countries; policy problems and issues (1982). Most of them have been answered in the Athene Project, if not all. There are definitive policy choices as, for example, “Should computer education remain an optional subject?” or “How can nation-wide transferability of software be ensured?”. Yet these questions, and almost all questions included in Cerych’s Report, could be seen as related to a basic, technical level. It is assumed that there is a
Previously existing contextual framework - a framework previously analysed.

Obviously this is not the case. Between Cerych's questions and Athene's policy outlines an immense space is completely empty. What the Athene Project represents is not a definite policy but a series of technological choices which subsequently establish a vaporous policy. Presumably the main result of such a lack of (general) policy will lead to a complete failure. Clearly, today's six year old children will at least experience some microcomputer possibilities. Undoubtedly they will come to Spanish schools? But what about Spanish education system/society relationships? Will a new educational system emerge? Will the same educational system improve its status in Spain?

An impossible conclusion

The Spanish educational system is now faced with several problems. Some of them could be examined as a heritage of ancient ages, especially Franco's régime. But some others are as old as the Spanish educational system is. One of them is inadequacy of the link between life and school. Another one is teaching staff - perhaps the most crucial. There is no space to describe the Spanish teachers' situation with the necessary accuracy, nor the high schools dropout rate. Let us simply say that, as a matter of fact, the main actual challenge to Spanish education should be different from promoting a new generation of teachers and retraining the existing ones. Yet these are just the author's desires. In any case, what Spain needs is a complete reappraisal of its educational system. Perhaps in this reappraisal, when done, a great deal will be devoted to new technologies. At the moment, however, rapid issues are not true responses.