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How to Offer *Today* the Ways of Teaching *Tomorrow's* Culture : the Need for Educational Project Management

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Abstract : The article looks at the tremendous advances which have been made in the field of industry and services by using a properly structured approach to information and communication technology, and considers how educationalists, faced as they are with a critical situation and with ever growing manpower problems, can profit from a properly studied and structured use of technology using educational project management.

Introduction

What sort of crystal ball do we need to be able to see what teaching equipment and apparatus there will be in the 21st Century ? And what exactly does the idea of 'lifetime' mean for education ?

Technical progress and the search for innovation as an economic driving force have involved developed societies in a fantastic acceleration in the evolution of the methods of action and of thought, and other societies have been similarly involved, although in a more heterogeneous and progressive manner.

Not so with education ! This is highlighted by the fact that we can still see all around us that the *Socratic* model still dominates of the teacher who speaks and the pupil who listens and writes. This is in spite of the great number of attempts at innovation which have been carried out since the second world war, and in spite sometimes of the technological enticement that has been brought into play. How long must it be before printing techniques — which date from the 15th Century — penetrate into our schools, and before the photocopier will allow the teacher to personalize their use ?

Let us be provocative ! Let us remember that the time span for education is the same as that for forestry, and it takes just as long to teach and train a pupil as it does to watch an oak tree grow. We must do this...

But let us get back to what we are concerned with here : *using technologies in education*. We can see looking back at what has happened over the last 50 years that the introduction of new technologies into education comes up against a brick wall. This is not so much because of those who should be using it — who always show considerable potential for good will and enthusiasm — as for the time it takes for these same users to adapt to these techniques. One example will illustrate my point. At the time of that famous plan 'Computers for All', which provided all primary and secondary schools with micro computers (mainly what were then called 'nano-machines'), an original concept was developed : that of the nano-network. A host compatible PC used by the teacher was tied in to the working stations of the students (nano-machines), which made up a fairly simple 'network' compared to the systems which exist today. But we maintain that it is only now, as the machines are wearing out one after another, that teachers are getting round to making the best use of the latent capabilities of this equipment. Do they know how to transfer this knowledge to today's equipment, and can they do it ? That is what we are about today.

This inertia can be explained I believe by, amongst other things, the persistence in calling technologies 'new' which are as old fashioned as television, video and informatics.

If we look at it this way, and if we realize the extent to which time is a fundamental element in any strategy for introducing new technologies, we can fairly pragmatically accept it as an established fact that the techniques which will be in fairly common, if not in general, educational use at the beginning of the 21st Century, already exist today, and no crystal ball is therefore necessary.

Technologies of the 21st Century

What then characterizes these technologies ? CNDP's long and considerable experience in this field has led it to the four following propositions and to develop and activate the concept in a global approach called 'education project management', which we summarise later. What are these four propositions ?

1. The problem is not one of experimenting but of making more general use

The position in France (but I am quite sure that none of this is peculiar only to France) is characterized by a succession of many experiments at all levels which have produced no dividends. So much so that a sort of paradox of innovation has arisen : education lags behind and keeps bypassing these technological revolutions (an idea just as widespread amongst decision makers as amongst ordinary people) although it has always been a pioneer in technological matters.

If this is indeed a false idea, it is certainly that of a stubborn educational system whose mind is closed to technical innovations. The first closed television circuits and the first non-professional video recorders set up in France were for education. The first teaching machines, precursors of the modern micro computers, were introduced at the beginning of the 1970s. Furthermore, those industrialists who gave top priority to the educational interest of all new technologies, totally incorporated the concept as soon as it appeared.

Meanwhile, it must be said that, if on the one hand there were many experiments which were diverse in their nature and their scope (look at the experimental colleges, the self-teaching centres, the integrated equipment, the resource centres, the *computers-for-all* project, etc.) there was, on the other hand, never a balance between experiment and development. Although there had been much innovation, rarely did anyone take the trouble to evaluate the experiments and to draw lessons from them.

As an example we can cite the setting up of experimental cable links between establishments in the sixties, an example which it would be fruitful to compare to the fashionable discussions on *communicating establishments and networks*.

From this point of view, what we are concerned with is the development in a more generalized way, of those projects which are initially conceived in a grandiose style, even if their implementation must be progressive so as to allow for any necessary adjustments and reorientations.

2. We must rely on those technologies which have already found their market

We must be allowed to use, as intelligently as possible, materials which are as standardized as possible. In fact we believe that, apart from certain exceptions such as language laboratories, there is no such thing as a specifically educational market. All attempts at dedicated materials, the odd rare bird, the phoney good idea, or some other futuristic prototype, have always led us up blind alleys. The nano-machines of the *computers-for-all* project were, alas, nothing but the descendants of a long line of rather strange devices.

If we are thinking about *more general use*, education, with its effects on a wide spread of population, calls for mass production, and therefore — the financial consequences of large numbers being what they are — low cost materials, that is to say having access to a widespread developed market. The problem with education, then, is that of using widely distributed materials under conditions, and with needs, which are very different from those of the general public.

Two examples will illustrate this. The first example is a historical one and concerns schools. In the middle 1970s different institutions in France undertook to develop the local creation of super-8 films in the schools or in their associated areas. All those taking part were faced with two problems : on the one hand, the extreme complexity of the equipment which had to be got together to make the sound montages corresponding to the pedagogical or communication needs ; on the other, the extremely short life of the cameras which were developed more or less as trifles for recording memories of the

family or of holidays, ie for a simple use, needing to operate for only a few hours during several years of use. So it was that, for the children to produce their unique result, it was sometimes necessary for several cameras to have to be used.

The second example : local establishment computer networks. Their use began to appear in secondary schools because the PC compatible micros became commonplace since they were so cheap ; at the same time, the use of computer networks was developing within companies, making the cost of these devices more affordable. But what enormous differences there are between the ways that these are used !

In the company, each operator is provided with an individual work station furnished with the necessary software with a fairly homogeneous inventory of material. Depending on the number of machines and information sources, and according to a standard refined proportion, human, technical and financial resources are assigned to the management and supervision of the network.

The *educational usage* is characterized, on the other hand, by a central software resource library, a heterogeneous inventory, users of different abilities, and a number of pupils who must share common machines ; it is also characterized by a very homemade administration of the network, sometimes to the absolute limit of 'do-it-yourself'.

Looking at the complexity of the problems which arise for educational establishments compared to companies, and at the much higher level of the functional constraints, this second example seems to me to be characteristic of this educational use, which is intensive and exacting, and where the materials or equipment are widely scattered. As such, it shows the importance which must be attached as much to previous experience, which can only be provided by means of specialized structures, as to the advice and assistance which must accompany the application of these technologies.

3. The pattern of the evolution of the technologies are already known

In a field in which rich innovation is ever present, and in which, as a consequence of very strong economic competition, the effects of advertising are increasing and cloud the perspective, weighty trends exist. It is not inappropriate to recall here the dates when some of the tools we now class as 'modern' first made their appearance. The video cassette recorder *U-matic* dates from 1971 ; the *VHS* from 1976 ; and, on the more recent models, we can view cassettes which were recorded on quite old fashioned machines. The *Betacam* video recorder, a 'must' for all professional television organizations, dates from 1981, the same year in which the *IBM Personal Computer* (PC) appeared.

Putting these weighty trends into perspective is the function of technical oversight and of the skills on which it is based. In this field, we must never forget that the key to evolution is the market. If it is difficult to envisage the rhythm of this evolution in the long term, the pattern can be seen here and now. We may cite here several instances : the *digitization of animated images* and, as a result, the feasibility of multimedia which have been made, and which are flexible and efficient to use, thus fulfilling a need that teachers have had for a long time ; the *exchange of computerized resources* in the context of a highly marketable network, which has completely turned upside down the problems of storing and access to resources ; the *user-friendliness* of forms of man-machine language and the development of *natural searches* (hypertext, hypermedia, etc.).

4. There is no need to be ashamed of choosing everyday robust equipment

For the innovators there is a danger of confusing their role. There is no need, though, to hide their faces. The 'bidouilleurs', with soldering irons always at the ready in their hands, constitute an inveterate thread that runs through the world (?) of educational innovators. I cannot resist quoting the anonymous editor of the 'Bulletin de la Radio-télévision scolaire' (No 28, 31 mai/27 juin 1965) who wrote when referring to the inauguration of the first 'image network' (remember that it was then called 'closed circuit television') of the lycée de Liévin:

In short, the technologies which formerly impressed us so much are progressively

disappearing ; there remains a tool which we must learn *now* [my italics] to use to the best effect.

How modern these exorcizing words of self-persuasion sound, but how many costly experiments do they cover which have no future ?

Our metier is education ; it is certainly not looking for technological performance. Our aim is effectiveness in terms of results, of ergonomic gains, of taking time and trouble for teachers and their pupils. It is often a device which helps make proper use of the technology that is more important in determining success than the choice of the technology itself. From this point of view, Educational Project Management aims first at clarifying choices by showing clearly the contributions which technology can make and their limits, but above all it aims at facilitating their use.

But what should we be doing ?

These propositions should not make us passive, nor should we wait for things to sort themselves out. Everywhere the educational system is in a more or less grave crisis, faced as it is with a dizzy growth in manpower. It is just no longer possible to ignore the productivity gains which, first in the general and then in the service industries, have been produced by the systematic recourse to information and communication technologies. From now on *educational productivity* is a must, and this can be brought about by increasing the productivity of the teachers, tied in with the use which they can make of their tools. This cannot be done on its own, because what we are talking about is a fundamental change : from a style which is based on the Socratic model, we must from now on evolve into another style where it becomes necessary to make use of the tools at our disposal. Not, as is so often the case today, using *instruments* (in the sense that such instruments, because of their sophistication, presuppose that they are used by someone who has had long and careful training), but using *everyday common-or-garden tools*.

In order to do this, it is imperative to have a global approach and to proceed to the study of a project in *all its aspects*, coordinating and integrating the contributions of specialists in the technological, pedagogical, economic, ergonomic and organizational fields. This bringing together of the various expertises is Educational Project Management, which is, above all, a service activity which aims at facilitating teachers' work by creating for them the conditions which are indispensable for integrating the new audiovisual and informatic resources. Defined in this way, the function of Educational Project Management is to respond to the actual needs of teachers, to provide a technological and pedagogic oversight, to produce expertise, to formulate advice, to develop user guides, to suggest projects, to prepare and follow up activities, and to offer information and assistance.

This special attention leading to what we call the *context factor* (le *facteur de contexte*), that is to say leading to all the environmental problems of the use of technologies in education, leads to a coherent establishment of a group of practical actions which seem to carry on under their own steam once they have been articulated. Meanwhile there are many examples of the consequences of overlooking these actions, which I do not think I need develop further here, as readers, I am sure, will be able to draw on their own experience.

Utopia ? Not at all ! The field of museography, for instance, is the best illustration of taking account of this context factor and of the successful articulation of different approaches. Formerly, museums were quite content to put their works at the disposition of the public, which produced sometimes a most unlikely stack of rich materials ; an example is the Museum at Chantilly which has remained, according to the bequest of the duc d'Aumale, a museum... a 19th Century museum. Today when one visits Orsay, or *l'aile Renaissance* of the National Gallery, one can see all the advantages of modern museography with the management of the routes, of light and space, of the rapprochement of the stylistic schools, of the rhythm of the visit, and of the accompanying services (resource centres, audiovisuals, boutiques, etc.).

It has to be the same for educational technologies that for too long we have been content to simply 'make available'. This is the breadth of the scope of these evolutions in management. This is the route that CNDP is taking.

Biographical notes

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