

Adverse Factors in the Development of an Open University in Latin America

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Abstract: The article begins with a succinct description of the principal experiences in open and distance education in Latin America. It indicates the necessity to reorientate policies and objectives in this area and classify the investment priorities in higher education.

An analysis of processes of transfer of technology in open education follows. The author emphasizes that the concepts of 'open' and 'distance' education have not been correctly transferred to Latin America. The processes of creativity versus design of courses, production and

distribution of materials for learning, academic evaluation and certification in open universities receives critical treatment in the comparison of models from developed countries with those of Latin America.

The article indicates and explains variables such as financial resources, political determinants, resistance to innovation, learning styles, student population, organization and institutional structures, human resources, and communication as possible factors which detain adequate development of the open university in Latin America.

Introduction

In the last ten years a desire has grown in Latin America to renovate the structures and educational techniques which are considered obsolete in relation to the scientific advances in the psychology of learning and the rapid development of technology and systems of communication.

Within this renovation process, educational experiments have been designed at all levels, but the majority of them have not been completed or have not passed the threshold between theory and practice. In most of the cases the experiences have been reduced to isolated projects under the inspiration of guidance from developed countries, without possibilities of generalizing the experiments to the educational systems.

Within this concept of innovation, higher education has generated ideas and programmes inclined towards improvement of the quality of post-secondary education, orientating it towards areas of economic and human development to respond to characteristics and necessities for 'massification', to provide to 'he who learns' a type of individualized education which will be relevant and which will give opportunities for true access and permanence in the educational population (Escotet, 1976b).

These factors have made imperative research to find bolder educational innovations among which it is possible to emphasize distance and open educational systems, either through programmes within traditional institutions or in new projects

which are solely orientated towards this type of methodology. Some of these experiences in Latin America, which have partially or totally achieved the goals of open education, are worthy of emphasis.

The Instituto Tecnológico y de Estudios Superiores (Institute of Technology and Higher Studies) in Monterrey, Mexico is one of the first organizations of higher education which has introduced new forms of learning such as: (a) the personalized system of instruction (PSI); (b) the microlearning clinic for pedagogic improvement of teachers; and (c) the Open High Schools, founded on the experiences of the Open University in England.

Also in Mexico, the Universidad Nacional Autónoma (National Autonomous University) developed an Open University with great hopes in 1972, but diverse technical problems and educational policy problems have made it difficult to expand this innovation. The Instituto Politécnico Nacional (National Polytechnical Institute) has achieved relative success in the preparation of technicians in machine operation, tools, electricity and construction through this open modality. Also the Universidad Autónoma de Guadalajara (Autonomous University of Guadalajara) has been testing open learning through its Centros de Recursos de Aprendizaje y Educación Médica en la Comunidad (Resource Centers for Learning and Medical Education in the Community) (Garibay, 1976).

Costa Rica is currently developing a new university, the Universidad Estatal de la Educación a la

Distancia (State University for Distance Education) with the technical assistance of the Open University of Spain and the Open University in England. Student population will be limited in the first years to 1000 students, for the purpose of making an adequate formative evaluation and at the same time to reduce the risks of the experiment.

The Universidad Nacional Abierta de Venezuela (National Open University of Venezuela), founded in 1977 after a year and a half of studies, began with 10,000 students in mid-1978. The model contains characteristics of similar universities in other regions, but also has components that are unique and important in the Latin American reality. All of the courses up to this moment have been developed in Venezuela. However, external factors, the logistics of the locations of Local Learning Centers, the time limitations between the planning and execution of the teaching/learning process, insufficient curricular evaluation, lack of human resources in production, and the initial large student population, have placed in danger the quality and maintenance of this bold project.

There also exist in Venezuela other important experiences such as 'Supervised University Studies', among which it is important to point out the Free Studies of the Simón Bolívar University, the Supervised Studies in Education of the Central University of Venezuela, the Distance Studies of the Simón Rodríguez University, and the Supervised Studies of the Zulía University. All of these experiences are coordinated by a permanent commission at the national level and the student population up to this moment has been relatively small, with important annual increases. The curricular areas that are included are concentrated in general studies, education and administration. However, the distinction of being the first Venezuelan institution to administer courses through distance education is shared by the Instituto de Mejoramiento Profesional del Magisterio (Institute for Professional Improvement of Teachers) and the Dirección de Educación de Adultos (Directory of Adult Education), both divisions of the Ministry of Education.

Colombia has had various experiences in open education, with the most important and earliest innovations in this field being the project of the Proyectos de Universidades Desescolorizadas (De-Schooled University) at the University of Antioquía in Medellín and the programme called Distance University of the Javeriana University. These projects include areas of educational psychology, mathematics and Spanish. Also recently, the Universities of Del Valle and Los Andes have included in their general programmes some open education elements. On the other hand, since 1975, the Instituto Colombiano para el fomento de la

educación superior — ICFES (Colombian Institute for Promotion of Higher Education) has developed a distance project, but as of this year, political and financial factors have impeded its implementation.

Brazil has various isolated experiences in distance education and currently the Ministry and the Council of Presidents of the Brazilian Universities are proposing the creation of an open university with national coverage, which, given the tremendous population and geographic extent of Brazil, could constitute a project which will function at an appropriate economic scale and would achieve success in educational promotion, particularly for adults.

Educational television has achieved certain developments in Chilean universities, especially in the Catholic University of Santiago, the University of Chile, and the Catholic University of Valparaíso. Probably Chile has the best level of advancement in educational TV in Latin America, although open education has not had any decisive projects.

Argentina has developed an important experience with the Luján University, teaching people agriculture and cattle raising through distance education, but actually the model has been distorted. On the other hand for many years the University of Buenos Aires has included in its programmes 'Free Studies', but the conception of these has been traditional and adjusted to the European lines of free studies in the university.

In Bolivia, there are programmes of tele-education such as the one at the Gabriel René Moreno University with a nonsystematized audience of 40,000 persons in education for the home, health, hygiene, and environmental cleanliness. The Cochabamba University has 10,000 students in courses of diffusion, compensation and enrichment.

After the reformation of the Peruvian education system, this country developed a project called De-Schooled Higher Education at the University of Lima and a pilot plan for an open university at the National University of Education and the Center of Teleducation at the Catholic University. The system 'extraordinary professional qualification' is a form of de-schooled education *sui generis*, orientated to the updating and training of the working class in Peru.

This rapid and incomplete look at distance and open education in Latin America allows us to infer that there is a great deal of interest in this educational modality. However, corroborating our initial impression, the majority of the experiments are isolated, are appendices to traditional institutions and are in the very beginning stages of experimentation. It is necessary to classify policies

and objectives, to form technical groups for planning, to pay close attention to and take decisions about priorities in investment in higher education (Serna, 1976).

Maybe the success of these systems, as Carlos Tunnermann would say (1976), will depend as much on our efforts as on our imagination, loosening the veins which tie us to the traditional systems and allowing the imagination to take flight.

Transfer of technology in open education

Open education is particularly characterized by the removal of restrictions, exclusions and privileges; by the accreditation of students' previous experience; by the flexibility of the management of the time variable; and by substantial changes in the traditional relationship between professors and students. On the other hand, *distance education* is a modality which permits the delivery of a group of didactic media without the necessity of regular class participation, where the individual is responsible for his own learning (Universidad Nacional Abierta, Comisión Organizadora, 1977a).

However, there exists a similar use of both terms as a result of the transfer to Latin America of the concept which originally was produced in England, derived from the term 'University of the Air' and reinforced by other concepts such as 'lifelong learning', 'permanent education', 'continuous education', etc. The transition which the English leaders made with the terms university of the air and open university is a product of a reorientation of the objectives and media of this institution. At the beginning, the objective was orientated towards university extension and the main media were radio and/or television, but as the idea of the university began to crystallize, it orientated the development towards providing university education for adults, promoting equality of education opportunities and using all communication media (Perry, 1976), and the concept was transformed into the open university. This term orientates it in four directions: open to the population, to geographic locations, in terms of methods, and in terms of ideas.

We have here then the beginning of the transfer of technology in open higher education for Latin America through the educational bridge with Spain, because of the creation of the Universidad Nacional de Educación a Distancia (National University of Distance Education) which comes closer to a unidirectional system (written media) at a distance than an authentic 'open' education.

All kinds of projects begin to appear in Latin America which indiscriminately use the names 'distance' or 'open' without considering the objectives, goals and media which have generated

the project. This overgeneralized use of the two terms has produced confusion in both modalities with negative consequences in the administrative and philosophic framework. While open education is a strategy opposed to traditional education, distance education may or may not be the main difference; the only difference it has from existing universities is in the mode of delivery of learning. Through distance education we are going to form the same individual who might have been instructed in the regular university, but with open education the strategy of learning is different, not only in the media but also in its objectives and processes, which carry with it a different meaning in professional formation.

With this we do not wish to indicate that the projects of distance education that exist in Latin America are forming human resources similar to other institutions. That will depend on the modality of learning; more, some of the 'distance' programmes perhaps should be called 'open' and, vice versa, projects labelled 'open' education are possibly strategies for 'distance' education. It is precisely in this confusion that we establish our thesis which is that we have not seen a transfer of the concepts; rather we have seen a rather liberal or free translation of the title 'Open University'.

Another fundamental aspect of the transfer of the open education technology is in the processes of creativity of course design, the production of learning material, the distribution of the material, academic evaluation and certification.

The process of creativity and course design

There are courses which have high and low levels of cultural content. For those in which social/cultural variables do not particularly enter into the contents, such as mathematics, the process of adaptation of the courses is simple and only requires the use of universal terms.

Those courses which contain extensive interpretative content, even when cultural variables are not essential, such as logic and physics, require a semantic and conceptual adaptation. This implies the use of transcultural techniques, such as the semantic differential of Osgood which measures and defines the equivalence of those most important concepts in the original materials and their adaptation to specific cultures.

At the same time it is absolutely necessary to conduct a nominal evaluation process which involves the establishment of particular and general criteria such as the use of the same techniques of formative evaluation which are used in the original material, measurement of the social/cultural differences, linguistic development, learning style of the potential students of both cultures and the

transformation of the examples, tables, etc., to the reality of the country which is transferring this learning material (Escotet, 1977b). This process of nominal validation in the case of transfer of instructional modules is more difficult and costly to prepare than it was originally because it requires formative evaluation, and because although the original programme required formal evaluation, it did not require nominal evaluation which includes both. The studies of Díaz-Guerrero and his collaborators in the evaluation of *Plaza Sésamo* (Díaz-Guerrero *et al.*, 1975) determined that it was necessary to transform many of the scripts because, even though they were cognitive and intellectual stimuli for Mexican children, they did not produce the same effect as they did in North American children and on many occasions they distorted certain behavioural guidelines which were considered positive for the Mexican culture.

On the other hand the design of the instruction, although it is a neutral technique, invariably requires studies of the necessities and styles of learning of the population which will determine the form and content which is best for the instructional material in relation to that population. What are the differences between the youth and the adult in the same culture? What are the learning styles between the different socioeconomic levels of the population? What differences exist between these variables and the cultural characteristics of the two countries (the exporting country and the importing country)?

As an example let us suggest the research on personality development which was done at the National Autonomous University of Mexico and the University of Texas (Holtzman, Díaz-Guerrero and Swartz, 1975), which indicates as an important datum that while the North American student is competitive, the Mexican student is cooperative, and the two cognitive styles are indirectly related to the cultural guidelines of behaviour and to the educational system.

Could it not be that the design of instructional materials in the United States generates more competition between students? Is this one of the objectives of Anglo-Saxon education and therefore a part of the objectives of their designers? What is the relation between pace of learning and time for learning and the increase or decrease in competitive behaviour? Is it possible to create transfer of instructional material from these countries with the required nominal evaluation that would reduce cooperative behaviour in Latin America? These are only some of the many questions which have not yet been investigated, but which obviously constitute factors that are important for the use of course materials produced in highly developed countries for open education in Latin America.

Those courses which have high cultural content such as sociology, psychology, languages, etc., cannot be transferred unless we are interested in the transformation of the more fundamental values which define us.

A fact which reinforces the suggestions which we have discussed refers to the introduction in Latin America of procedures of evaluation during the decade of the 1950s and 60s, which came from competitive systems in industrialized countries and were appropriate to the characteristics of limited demand in the labour market in those countries. From there came the scales of evaluation based on Gauss's curve of probabilities with which knowledge is measured in terms of the group and not in terms of motivation, capacity or individual efforts (normal curve). In spite of the fact that this curve is excellent as a medium to produce an individual who is well formed, the scale produces competitive individuals: a fact which is considerably distant from the generally cooperative attitude which has always been one of the most positive characteristics of the Latin American culture (Escotet, 1976b).

Production of learning material

The form of presentation of the instructional modules in written and audiovisual media is another factor which generally is transplanted without effecting a transfer which involves nominal and formative evaluation.

For example, studies in Venezuela (Escotet, 1972) determined that Venezuelan learning style is idiosyncratic and idiochromatic, that is to say, learning through representation and colour. This implies that the adaptation or elaboration of written or audiovisual materials should reinforce these factors in order to obtain better cognitive stimulation. Perhaps in other countries this will not be as relevant.

On the other hand those visual representations which include stimuli which are not directly related to a specific culture, for example snow in the tropics or a Nordic typology in the Caribbean, block identification of the learner with the material and in some cases cause his rejection of the material. From there, animated audiovisual material or unstructured figures are more appropriate for a universal representation and therefore more easily transferable from one culture to another (Díaz-Guerrero *et al.*, 1975).

Obviously other materials exist which are not landscapes, geography, etc., which do not require a complicated transfer process except in soundtracks and one or another reinforcing stimuli which can be added for the culture to which they are being transferred.

Distribution of the material

The transfer of systems of distribution of the learning material can be reduced to certain universal administrative processes, but it is obvious that in each area each university will have to generate its own system in accord with the communication characteristics of the country. In the case of Venezuela the mail system is quite deficient, in contrast to the English or North American systems. This has meant that the organizers of the open universities must use the infrastructure of their local centres at the national level to process the distribution. On the other hand there are other systems which are more effective than the mail, for example, the newspaper distribution agencies, private distribution services, and even the distributors of soft drinks.

The transfer or reproduction of the distribution system is only justifiable when both cultures have very similar communication services.

The use of radio and television will depend both on the feasibility of the emission and coverage as well as the receptivity which these media have with the students. While in the highly developed countries television is an article of first-level necessity, in underdeveloped countries it is a luxury for the majority of the people. The schedule of transmissions of programmes, the number of receivers which exist in each household, the competitive programmes from other channels, etc., are factors which can only be studied in the culture where the project is being developed.

Academic evaluation

The processes of evaluation of students' achievement can be done at a distance or on site as the final part of the teaching/learning process. It is here where an open system should be completely synchronized with its users. However, the majority of the experiences to which we have referred in the introduction of this work have reproduced forms of evaluation without the corresponding research to verify the learning styles of the students.

On the other hand it is logical to think that if the coming material has not had nominal and formative evaluation, the process of student evaluation will be distorted even more.

If the mechanization of this process is essential to provide services to large numbers of students, an effort must be made to relate it to the group of academic counsellors who will intervene in the evaluation process. When the student does those things in order to achieve the academic objectives and a relationship between students and teachers is established through experiments, lectures, consul-

tations, study groups, use of audiovisual media, etc., the process of evaluation begins and this is where we find one of the characteristics which significantly differentiates *open* education from *distance* education.

For this reason the degree of independence or dependence of the study of the students will have an effect upon the assistance strategy both in the frequency of student/teacher contacts and in the style of the contact.

We can see that in many cases it is a fallacy to try to suggest that there will be a reduction of costs in the authentic open university in relation to the traditional university, but that is not necessarily the case with distance education.

Here also we see an interesting case of inter-institutional rather than intercultural transfer. This consists of transfer of processes from one institution to another of different instructional modality in the same country. The case of the Javeriana University of Bogotá is appropriate. The terms of evaluation are by semester, as a repetition of the academic periods of most universities in Colombia and other countries. However they did not take into consideration the fact that distance processes are more complex and slower. This then obligated the university, after the first experience, to use an annual period so that it could bring about a nominal evaluation process because it was impossible to do it in a shorter time (Tunnenmann, 1976).

Finally, the preparation of the objective tests requires a process of validation, reliability and fidelity, but even if this is transferred from one culture to another, it implies the application of *transcultural methods* and the analysis of semantic and conceptual equivalence of the instruments in the involved cultures. It has been demonstrated that the lack of application of these procedures produces results which are inconsistent with and different from the objectives (Sears, 1961).

Certification

The majority of the programmes of higher open education in Latin America have been inspired by the Open University of the United Kingdom. The academic success of this institution has inspired many countries to test this educational modality. It would appear that the analysis of this university which has been done by Latin American specialists has concentrated on the process of design and administration and not on the requirements for professional certification.

Study of the systems of certification will permit us to conclude that the requirements for graduation are completely different in the Latin American

cases, and are also different from the bachelor's degree of the United States.

First of all, the Open University does not authorize professional degrees (engineers, administrators, economists, psychologists, etc.) but rather certifies studies of education or general studies similar to an academic course in the Latin countries, equivalent to two-and-one-half years of study, which they administer in two years, in two courses per year during five years with a dedication on the part of the student of ten hours a week (Perry, 1976). Secondly, the student can graduate with six annual credits (each credit is equivalent to six semester credits, approximately) or what would in Latin systems be between 36 and 50 semester credits.

However, Latin American systems require the *licenciatura* or professionalization in a determined speciality, and the successful completion of a minimum of approximately 140 semester credits for the authorization of the title. To this one must add the intensive workshop and laboratory practice which is required for professionalization and which the Open University does not need because of the type of certification which it authorizes. The Open University uses micro-laboratories which are sent to each student to do simple experiments similar to those which are done in our basic courses of science and technology.

Even if the process of transfer could be done, the fact that the objectives differ dramatically would make difficult the implementation and maintenance of an open university, accredited along the lines of certification which are common in Latin America. Up until this time there is not an experience in the world which has produced engineers, doctors or physicists through distance or open education.

The error which has been committed has been to transfer the concept and technology of a system of general education to a system of specialized education which requires full-time dedication on the part of the student. What guarantee exists that the process would not suffer approximation towards the traditional system when it begins to offer professional studies? Will it then be possible to achieve the principles of massification, democratization, and optimization of the investment, the educational innovation and institutional complementarity which justify to a great extent the existence of this modality?

This rather significant factor carries with it a suggestion that the transfer of technology in education should be seen within the context of a *gestalt* perception, and not as one of parts or a specific transfer of technology. The Open University of Venezuela has fallen, in our viewpoint, into this narrow perception and will have to transform

or reduce its expectations in order to not suffer a collapse in the execution of its programmes. Alternatively, it will have to redefine its original principles, especially in terms of cost and methodology of instruction.

Other adverse factors for the development of open universities

The limitation of time and space only allows us to mention some of the external factors which interfere in the creation and development of open universities in Latin America. Some of these are as follows:

Financial resources

To put into practice a university of this type, and to provide its initial maintenance, requires a strong investment of capital which significantly increases the budget of higher education at the national level. Except in a very small number of countries, the majority of Latin American nations have difficulties with their budgets and the order of priorities of financing is orientated to consolidate existing institutions and to keep up with immediate necessities and obligations. An example of this factor is the postponement of the creation of the Distance University in Colombia.

Political factors

As was suggested by Latapí (1978), the university and the existing power structure constitute conflict areas to the extent to which there is a bigger intervention of political power in the specification and achievement of university objectives. The financing of the university by the State, and the possibility that this will generate cultural forms opposed to the dominant social forces, constitute a common source of permanent conflict in Latin American systems. This happens with even greater intensity in educational innovations, which by their nature have intrinsic obligations to generate changes and transform patterns of behaviour. On the other hand institutionalized or established power gives more value to institutional dominance than to the generation of knowledge. In Latin America, where qualified human resources are scarce, no political party, not even any ideological tendency, could fill up a university or other institution with qualified personnel of only their political party, even when the pressure to do just that is constant and permanent. Therefore, in many cases nonqualified personnel interfere in institutional development, placing more importance on political power than intellectual power. Any educational innovation requires a concentrated effort of all the political tendencies to guarantee its natural evolution.

To these factors we must add the personal positions of political leaders and, even more grave, the lack of knowledge about the type of innovation and the tendency to take advantage of 'circumstantial power' in trying to transform or even eliminate innovations.

Resistance to the innovation

These factors, working against what we have presented so far, are not so much in the population as in the incapacity of the institution to reduce its resistance. Fishbein and Ajzen (1975), through their model of the relation between beliefs and attitudes, show that the resistance to an innovation is generated on the one hand by lack of information in the population, and on the other hand by reinforcing the resistance by the same people who wish to reduce it, because their programmes do not attack in the correct direction the beliefs about this innovation which the population maintains.

Learning styles

Each culture has learning styles which are highly correlated with the didactic procedures in the formal education system and with the general guidelines for social behaviour. Education in Latin America has reinforced styles of dependency in learning of induced discipline and not self-discipline and has emphasized other characteristics such as memorization.

An open system of learning requires an independent student with self-discipline, with a high capacity for analysis and synthesis. Many programmes have tried to reduce this gap between formal education and the independent studies through propaedeutic courses and introductory courses of short duration. However, the percentage of desertion has reached 90 per cent in some cases and it would appear that this is one of the most adverse factors to the possibilities for use of open or distance education in Latin America.

Student population

The recent survey which was done by the National Open University of Venezuela concerning characteristics of the student population and their potentials determined that around 82 per cent are working adults interested in this institution. At the same time the majority come from lower and middle classes where the environmental conditions are not the most desirable and the material resources for learning are limited.

If we consider the city of Caracas, for example, the typical student in the Open University will work eight hours every day, spend two hours travelling to and from work, two hours eating,

and two hours resting, which brings us to 14 hours a day of occupation with the aggravating situation that the conditions of housing and family do not offer an environment which has the minimum requirements for independent learning. Also, the work and communicational effort make it difficult to be in a psychological and physical condition appropriate to carry a demanding academic load of half time.

On the other hand there are few studies done in Latin America about learning styles of adults. The majority of the materials designed for learning have been prepared for a young population whose only significant work has been that of studying.

In cases such as England we must not lose sight of the fact that the learning styles of the student typically are different from Latin styles and that the academic load which he has is a maximum of two courses per year in general education.

The rapidity with which it has been necessary to plan the innovation has been one of the factors that have been self-destructive of educational experiments. The majority of the projects on open education in Latin America have begun without an empirical study of the potential population and their general behavioural patterns.

Organizations and institutional structures

A considerable part of the open and distance education programmes were generated in traditional institutions whose goals, organization and structure have limited the expansion of the innovative experience. Many of them reproduce the same structure of the conventional institutions in the innovation.

Even when they have created universities destined only for open education, political factors and conservative decisions have transplanted the organizational schemas of the typical Latin American university, generating conflicts between the assignment of responsibilities and the execution of specific tasks of an organization unique in its objectives and processes.

Another factor relates to the development of work teams. An open university is an integrated system made up of subsystems of design, production, distribution and administration of the teaching/learning process and its evaluation. Each subsystem comprises a group of complex tasks which requires an interdependent coordination with the other subsystems. This is what we could call a system of academic management. If the teams are not completely beyond the differences and the convergences of their members, this can create an institutional collapse when any one of the subsystems fails for some reason because of the

cycle of decision and the interrelatedness of the subsystems.

Finally the logistic and administrative capacity of an open or distance system is the cornerstone where the success or failure of the system lies. The management of large quantities of material, its production, storage and distribution to the local learning centres, are businesslike tasks and are precisely those kind of tasks where educators have not shown themselves to be very good.

Human resources

The open university and the modality of instruction which it requires are something that have recently been developed. Even in highly industrialized countries, the human resources for this type of education are limited. Even though the in-service training of such resources is a solution, lack of personnel remains a grave problem, not only for the development of creativity in the courses, but for the production of these courses and for the execution of the academic tutoring process.

Communication media

The communication systems in Latin America do not have the experience and the service available in the developed countries. It is precisely this characteristic which is one of the indicators differentiating between countries that are developed or 'developing'. On the other hand communication media not only transmit ideological content but also develop conditioning through vocabulary, conceptual categories and attitudes. These media generate norms, values, ideologies that are explicit or implicit, which tend to relate to the dominant cultural model of participation in a social power structure, although of course they can generate changes in the actual cultural model.

In this manner the skills in the competition of radio and television programmes are much more highly favourable for media which are external to open universities. They probably will compete in the same time schedule as the educational programmes, but cannot displace the programmes which are more desirable and which at the same time are reinforcing for the population. The ideal period of transmission for a student who works is the time period after his working day and this is the period during which his family will select programmes which are more interesting and reinforcing for them. Even in England, which possesses one of the best systems of communication, this has been a factor which has required that 90 per cent of the materials use written media as the strategy of instruction.

Conclusion

Higher education in Latin America should renovate itself and should look for audacious strategies for improving its qualities. However in this search one must experiment with new forms of learning which are consistent with the environment and the permanent values of the culture, and not fall into improvisation which, besides generating irreparable damage in the target population, can also make future educational innovations more difficult.

Research, transfer and reproduction of educational models should be backed by scientific investigation as the only tool in the generalization of the processes and the proof of educational hypotheses. While it is true that in this article we have only mentioned adverse factors for open education, that does not mean we do not believe that, empirically controlling the various factors and with the appropriate doses of audacity and imagination which are necessary to combat adversity, it would be possible to develop a revolutionary strategy that could generate an authentic equality of educational opportunities.

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