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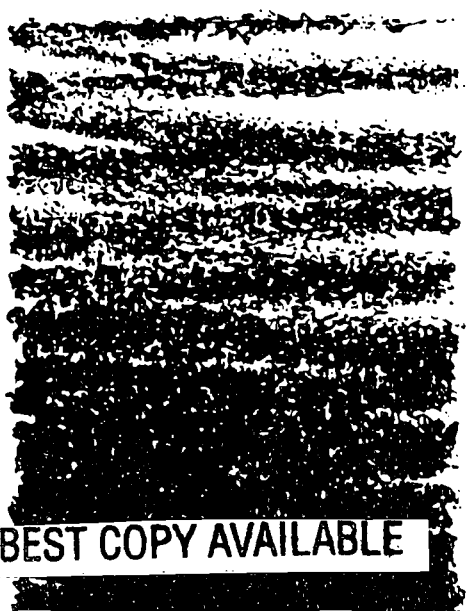
ABSTRACT

This bulletin reports on educational reform efforts in specific Latin American countries and calls for policy makers to utilize research findings on education in their decision. Five articles are included: (1) "Education Reform in Latin America and the Caribbean: An Agenda for Action" (Ernesto Schiefelbein); (2) "Uruguayan High School Graduates: Who Are They, What Did They Learn and What Do They Think?" (Economic Commission for Latin America and the Caribbean Montevideo); (3) "Factors that Condition Schooling Levels in Guatemala" (Emilio Rojas); (4) "Linking Formal and Non-Formal Education, Implications for Teacher Training" (Ali Hamadachei); and (5) "Open and Distance Learning" (UNESCO). (EH)

BULLETIN

THE MAJOR PROJECT OF EDUCATION

In Latin America and the Caribbean



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REGIONAL OFFICE FOR EDUCATION IN LATIN AMERICA AND THE CARIBBEAN

In order that this bulletin
may reflect in as complete and timely manner as possible
the initiatives and activities carried out
by each and all the countries of the region
in relation to the Major Project of
Education in Latin America and the Caribbean,
pertinent official bodies are invited
to send to
the UNESCO Regional Office for Education in
Latin America and the Caribbean
all information they wish
to have published in this bulletin

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Descriptors: Educational reform; bachelors degrees; learning; educational background; school systems; teacher education; non formal education; distance learning; Uruguay; Guatemala; Latin America.

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THE MAJOR PROJECT OF EDUCATION
in Latin America and the Caribbean

Summary

BULLETIN 37

Santiago, Chile, August 1995

Presentation

Findings yielded by a growing number of research studies, facilitate a more accurate analysis of the educational reality of the region, the problems afflicting it, their magnitude, causes and repercussions, and point to the definition of effective counter strategies. These findings become essential referents not only for decision-makers in the field of education, but for all social actors who partake of the development processes of every country.

These research findings are extremely opportune, particularly in the face of the new demands being borne by education. The mandate that calls for contributing to a more equitable economic growth - since failed efforts to contain poverty and provide more job opportunities have widen the gap - has turned education not only into a key development strategy, but additionally into the basic instrument to address these demands. This explains current concern in terms of the quality of education being imparted and how it is reflected in high rates of repetition and low academic achievement.

The consensus that the limited development attained by some countries is due to a lack of up-dated educational systems, calls for political decisions that meet these demands head on. The globalization of international relations and the swiftly changing technologies, make the improvement of educational systems a matter of extreme urgency, while it paves the way for stable and democratic agreements that enlist the participation of all social actors. This is why the Major Project of Education must make systematic use of research findings, and the reason the present issue contains a selected sample thereof.

Ernesto Schiefelbein, utilizes recent studies to describe the state of education in the region, identify key problems and possible causes. Along with an analysis of the need to complement political, social and economic progress with a labour force capable of growing, improving, and adapting itself to a changing environment, the article suggests priorities and strategies designed to enhance the quality and efficiency of education in Latin America and the Caribbean.

Uruguay's ECLAC, cautions about the critical knowledge deficiencies exhibited by second cycle Secondary Education students in this country. The study reveals that either the educational programme is not being followed by teachers as intended or that they are facing obstacles that prevent its practical implementation.

For his part, Emilio Rojas establishes that parental education constitutes a significant variable in children's education, and that the model used in Guatemala to quantify this relationship, contributes to an analysis of other regional realities.

Ali Hamadache discusses the existing relationship between formal and informal teacher training. The author explores major questions such as: is it possible to design common objectives for the training of primary school teachers, and adult-illiterate and post-illiterate instructors? Does informal education need a special category of teachers or can primary school teachers be trained to impart these programmes? Is the multi-purpose teacher conceivable or desirable?

Open and distance learning has experienced a tremendous boost at all levels - from primary to higher education - thanks to the new communications technology. UNESCO's Higher Education Division in its section on educational innovations and research includes a conceptual review of the topic, reports on major global and regional needs, identifies strategies and problem areas, and recommends international cooperation schemes in this field.

Background information on the next conference of Ministers of Education of Latin America and the Caribbean, is contained along with a list of OREALC publications.

EDUCATION REFORM IN LATIN AMERICA AND THE CARIBBEAN: AN AGENDA FOR ACTION

Ernesto Schiefelbein*

Since the 1960s, remarkable progress has been made in LAC in expanding access to education and increasing the number of days attended per year, but nothing changed in most classroom processes. In spite of governments' efforts, the majority of public schools have not been able to deliver adequate education on a sustained basis, and there is low research productivity in most Latin American Universities. However, there are many successful projects which suggest that effective reforms in quality can be implemented.

Basic inputs are a required condition for learning, but not the only requirement. Without basic inputs, little learning may happen, but basic inputs do not necessarily generate expected achievement levels. In addition to those basic inputs, teachers' classroom activities are the key condition, followed by the amount of time students are allowed to learn, materials for students to carry out their work (paper, pencils, learning guides, textbooks, and even computers) and, of course, buildings.

A reform process should be based on national consensus, therefore, it will be different in each country. Three types of reform need to be discussed during the process of reaching a social consensus: positive discrimination in favor of deprived students; use of alternatives to the frontal model, at least during part of the class time; and strengthening a tradition of empirical research. Twelve interrelated strategies, which may be especially relevant in most LAC countries (even though the strategies should be tailored to each specific reality) *are discussed in the paper.*

Latin American and Caribbean (LAC) countries now undergoing rapid economic growth are demanding better trained human resources. Although these demands are not yet being met, there is relevant evidence to trace the causes of the delay and to suggest an effective agenda for action. However, the agenda should be tailored to the social consensus reached in each country on the amount of financial effort and the specific educational strategies.

The first section of this paper analyzes the need to complement the success of economic,

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Paper prepared for the World Bank's Annual Bank Conference on Development in Latin America and the Caribbean (ABCD-LAC) in Rio de Janeiro, Brazil on June 12 and 13, 1995. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author. They do not necessarily represent the views of UNESCO or the World Bank, its Executive Directors, or the countries they represent.

Comments from Kin Bing Wu, Donald Winkler, Eduardo Velez, Juan Prawda, Juan Carlos Tedesco, Joseph Ramos, John Durston, Richard Pelczar, Ricardo Carciofi, Hans Fritzche, Ana María Corvalán, Carmen Luz Latorre, Pablo González, Rolando Sánchez, Juan Casassus, José Rivero, David Silva and Miguel Nuñez, and editing from Andrea Cirillo truly improved earlier versions of the paper.

social and political areas with a labor force able to adapt, grow and improve. Such labor force requires an improvement in education. The second section describes the state of education in the LAC region and the key educational problems. In the third section, several causes for poor educational performance are discussed and priorities are proposed. The fourth section suggests a substantive set of strategies to improve educational quality and efficiency in LAC countries.

Development, trends, demands and challenges

A new development model has helped several LAC countries to experience rapid economic growth, but further growth now depends on better trained human resources (acknowledging that exogenous factors like sudden devaluations of big countries are beyond the analysis of an educator). The new model is based on opening national economies to international competition, internationally financed investments, macroeconomic equilibria, deregulation of economies and labor markets, technological transfers (innovation) and, eventually, democratic governance and reduced inequality (ECLAC-UNESCO, 1992; World Bank, 1993; Birdsall *et al*, 1994). This model of development has taken economic activity to new levels of growth, competitiveness, and adaptability to change and uncertainty, but it has also brought new demands. There is a need to complement economic, social and political success with a labor force able to adapt, grow and improve and a need to improve equity and to reduce poverty. Free trade zones and ongoing pressures for economic integration with highly developed countries make these needs a priority for less developed partners constrained by low labor productivity levels (Table 1).

In the 1990s, many countries in LAC have put behind them a decade of economic crisis and even longer periods of import substitution, budget deficits, inflation and authoritarian rule and want to increase their ability to grow and to curb poverty (Burki and Edwards, 1995). With an annual economic growth rate of about 3.2% LAC is now the second fastest growing region in the world. But more open economies put local business in competition with societies and firms who have a long standing tradition in human resource development and are based in countries with a much richer supply of people at all levels (Coles, 1994). Private sector managers are trying to get an internationally competitive labor force, able to adapt to a continuous technological change rather than to master specific skills; to lifelong absorption of new information, methods and ideas; and to organize new functions and tasks. But productivity is still low (Table 2). At the same time, political parties and citizens are putting pressure on governments and congressmen to obtain the information and education levels required to participate in this new social context, to curb drug, AIDS, and environmental problems, and to raise access to peace, civic commitment and solidarity (Flores and Varela, 1994; Mayor, 1994; Augier, 1994; BID *et al*, 1995). All sectors –which in the past had quite different views on the role of education– now agree that the quality of education must be improved (UNESCO, 1990).

Table 1
LABOR PRODUCTIVITY COMPARISON
(Index U.S. = 100, 1992)

Country	*Steel*	*Processed food*	*Retail banking*	*Telecom*[a]
Argentina	30	52	19	55
Brazil	44	29	31	89
Colombia	15	36	30	101
Mexico	32	27	28	67
Venezuela	29	29	25	85
Latin American average[b]	37	34	29	80

Source: McKinsey, 1994.
[a] Total factor productivity shown for telecommunications, unadjusted for quality difference.
[b] Weighted by employment.

Table 2
LABOR PRODUCTIVITY EVOLUTION
(Index U.S. = 100)

Country	Steel			Processed food		Telecom		
	1985	1989	1993	1987	1992	1985	1989	1993
Argentina	25	28	37	54	52	39	32,0	66
Brazil	44	38	49	23	26	48	51,0	58
Colombia	12	12	15	35	36	57	58,0	73
Mexico	26	21	37	24	27	58	58,0	72
Venezuela	34	25	29	32	29	58	56,0	52

Source: McKinsey, 1994.
Note: During the period analyzed the U.S. industries increased their labor productivity as follow: Steel: 42% (1985-1989) and 27% (1989-1993); Telecommunications: 19% (1985-1989) and 28% (1989-1993).

Demands for better quality and distribution of education in the LAC region are also supported by the role of education in influencing successful economic changes made in East Asia; recent research on the multiple impacts of education; and international comparisons of educational achievement. The recent experience of East Asia shows that better education and reduced inequality contributed to economic growth, and how, in turn, economic growth contributed to investment in education (Birdsall *et al*, 1994). Education in LAC is growing at a slower rate than in East Asia (Londoño, 1995). The World Competitiveness Report also showed that the weakest aspects of LAC countries are related to their human resources (World Economic Forum, 1994). The growth rate over the 1960-1985 period in 98 countries is directly related to the initial human capital (Barro, 1991). Highly skilled labor and new knowledge has been related to productivity growth in OECD countries (McMahon, 1984). Other pieces of research have shown that education, especially basic education, contributes to growth by increasing the productivity of labor, by improving health, by reducing fertility, and by equipping people to participate fully in the economy and in society (Lockheed and Verspoor, 1991). For example, girls' education is associated to raising the age of marriage, use of contraceptives, and use of health care systems, thus reducing the time of sick care, or vision and hearing impairments. Furthermore, social rates of return to each educational level are higher than market interest rates throughout the LAC region (Psacharopoulos, 1993; Birdsall, 1995). In addition, education contributes to reinforcing democratic institutions (or tradition), to building national economic capacity, and to promoting fair governance. All of which are increasingly recognized as key elements in the effective implementation of sound economic and social policies. Finally, international comparisons of educational achievement suggest that the quality of education in the LAC region must be raised quickly (Table 3). For example, nearly 90% of the students in Finland performs at a higher level than the highest scoring 10% of students in Venezuela (Schleicher and Yip, 1994).

There is agreement that the possibility of sustained economic growth is associated to the rate of accumulation of new knowledge and the pace of technological change and, therefore, to more frequent job changes (within the firm or moving to other firms) during one's life (World Bank 1994a; 1994b). Successful private firms continually learn and adapt through the effort of "all" the workers (Montero, 1995). This context has three important implications for education: future workers should be able to readily acquire new skills, which increase the importance of basic competencies learned in primary and secondary schools; continue expanding the stock of

Table 3
DISTRIBUTION OF STUDENT ACHIEVEMENT SCORES IN READING. POPULATION A
(9-years old level)

Country	Mean score	Standard error	Percentile points of the distribution						
			5%	10%	25%	50%	75%	90%	95%
Belgium (French)	507.7	3.3	366	393	446	503	562	612	638
Canada	499.0	3.4	355	390	441	499	560	610	631
Cyprus	479.8	3.3	341	369	417	480	539	585	620
Denmark	472.3	3.9	256	312	383	479	560	613	641
Finland	577.4	3.4	436	470	524	578	627	677	695
France	534.0	4.3	409	436	475	530	583	631	663
Germany (ft FRG)	502.6	3.2	357	387	437	489	556	613	645
Germany (ft GDR)	498.0	4.7	350	380	433	483	549	609	643
Greece	506.1	3.8	370	402	448	507	559	607	643
Hong Kong	513.0	4.1	395	421	464	522	571	614	637
Hungary	499.7	3.7	361	387	441	500	561	611	634
Iceland	521.0	0.1	344	390	456	525	580	627	650
Indonesia	381.3	3.2	293	311	338	375	422	474	508
Ireland	510.2	4.0	360	396	447	506	564	614	642
Italy	533.7	4.5	374	413	471	533	587	634	667
Netherlands	483.2	3.9	351	379	425	478	536	582	612
New Zealand	532.2	3.5	367	406	469	537	594	644	675
Norway	527.6	2.9	339	388	460	536	590	638	665
Portugal	475.3	4.1	348	376	426	479	529	578	606
Singapore	517.1	3.1	376	404	455	511	564	611	638
Slovenia	498.1	2.7	361	389	436	500	562	613	641
Spain	504.3	2.9	366	396	448	507	566	615	643
Sweden	544.8	3.3	354	402	479	550	610	660	698
Switzerland	512.4	3.0	360	390	441	507	569	626	655
Trinidad and Tobago	445.5	3.8	313	336	383	440	507	568	598
United States	552.8	3.0	410	441	484	551	602	653	679
Venezuela	369.3	4.0	218	275	331	375	422	469	495

Source: Scheicher, Andreas and Yip, Jean. "Indicators of between-school differences in reading achievement". IEA, New Jersey, May 1994.

knowledge, largely the role of higher and graduate education; and retraining opportunities must be available throughout one's working life (World Bank 1994a; 1994b). The basic competencies are language, mathematics and, increasingly, communication skills, but also the development of attitudes necessary for responsibility, creativity, and team work in the work place (Kamii *et al*, 1994). Further education and training then consists of acquiring the ability to apply principles of logic or scientific thinking, to define problems, collect data, establish facts, and draw valid conclusions.

New management styles are also demanding changes in school teaching and learning processes. Priority attention to client demands, interactive learning, systematic use of conversation for closing business or work deals, confidence in on-time arrival of inputs of standard quality, law abiding, and fulfilling commitments also require new and innovative education (Montero, 1995).

In a region where more than half of the population is not able to effectively communicate in writing –the lower half of the socioeconomic distribution is functionally illiterate–, these economic and political changes present an unprecedented challenge to educational systems. This challenge involves a change in the culture, mainly attitudes, of the population and its lead-

ers (Coles, 1994) and is linked to the larger income inequality that should be included in the analysis of problems and in the design of strategies. Few educational systems are equipped for their new missions. Thus, reforming the LAC educational system is critical to realizing the opportunities that the 21st century is now opening to the region (ECLAC-UNESCO, 1992). Governments have given strong verbal commitments to educational reforms and increased human capital investment. Now is the time to implement effective reforms.

The state of education in LAC

Since the 1960s, remarkable progress has been made in LAC countries in expanding access to education and increasing the number of days attended per year, but nothing changed in most classroom processes. The majority of public schools have not been able to deliver adequate education on a sustained basis and in Latin American universities research productivity is low. However, there are many successful projects which suggest that effective reforms can be implemented.

More children than ever attend the educational system, and access to basic education is almost universal (Table 4). Primary school access jumped from 60% in the early 1960s to more than 90% in the 1990s (Table 4 shows that the average enrollment of the 6-11 age group is 87.3%, but enrollment at the age of 9 is close to 95%). Students attend, on average, more than six years of schooling, even though students pass only four grades. Income inequality has not been a constraint for enrolling in primary education, but for reaching minimal levels of learning and continuing into secondary education. Secondary education enrollment is now equivalent to over two thirds of the related age group population (UNESCO, 1995). Between 1960 and 1990, higher education enrollment ratios increased from 6 to 25% in LAC. Several countries established a comprehensive structure for advanced training, however, the actual research produced by universities has had very little impact on the economies (World Bank, 1994a).

Primary and secondary education

In spite of the expansion of student enrollments and multiple reform attempts, the quality and relevance of the education that students receive are inadequate in most countries of the region (Schiefelbein and Tedesco, 1995). In addition to lineal expansion (more of the same), countries have enacted curricular reforms and constitutional provisions for minimum budgets or free education; launched educational radio and TV programs and adult literacy campaigns; organized nuclear grouping of schools; given grants to projects prepared by the school staff; tried bilingual education and mainstreaming; integrated schools and created comprehensive secondary schools; trained teachers on-the-job; decentralized decisions and changed administrative structures; and more recently launched testing programs (Oliveira, 1989). However, testing programs have shown that the average student is learning roughly half of the expected levels (achieved by students in private schools) and that only half of the fourth grade students are able to understand what they read (Chile, 1995; Argentina, 1994). Even the elite private schools only perform close to the average of developed countries (Luna and Wolfe, 1993; Wolff *et al*, 1993). International comparisons carried out by IEA show that cognitive achievement in Trinidad and Tobago and Venezuela – that are representative of the best systems in the LAC region (Arancibia and Rosas, 1994)– is closer to the levels of Africa than East Asia (Table 5), and that there are serious equity problems (Schleicher and Yip, 1994). Even in the case of Chile, that has improved most inputs and effectively implemented structural reforms, achievement scores remained constant in the 1982-1990 period for each socioeconomic group (Table 7) and the lowest 5% of schools has not improved their student achievement in the 1982-1994 period. Conclusions

Table 4

LATIN AMERICA AND THE CARIBBEAN: ESTIMATED ENROLMENT AND ENROLMENT RATES

Level	1960	1970	1980	1990	1992	Average annual increase (%)				
						60-70	70-80	80-85	85-90	90-92
Pre-school										
Number of pupils	983	1 728	4 739	10 663	11 244	5.8	10.6	11.7	5.2	2.7
Rate of coverage[a]	2.4	3.3	7.8	16.7	17.4					
Primary school										
Number of pupils	26 653	46 576	65 327	75 689	77 168	5.7	3.4	1.5	1.5	1.0
Net enrolment rate for the 6-11 age group[b]	57.7	71.0	82.9	87.1	87.5					
Gross enrolment rate[c]	72.7	90.7	104.5	106.7	106.3					
Secondary school										
Number of students	4 085	8 107	16 967	22 376	23 155	7.1	7.7	3.9	1.7	1.7
Net enrolment rate for the 12-17 age group[b]	36.3	49.8	62.9	66.2	68.0					
Gross enrolment rate[c]	14.6	25.5	45.3	52.5	53.2					
Higher education										
Number of students	573	1 640	4 889	7 413	7.924	11.1	11.5	5.3	3.2	3.4
Net enrolment rate for the 18-23 age group[b]	5.7	11.6	24.1	26.9	25.4					
Gross enrolment rate[c]	3.0	6.3	13.6	17.1	17.7					

Source: UNESCO. Statistical Yearbook 1994; CELADE.

[a] 0-5 age group.

[b] Number of students (regardless of grade) divided by population of same age group.

[c] Total enrolment in grade (regardless of age) divided by the population of age group corrresponding to grade.

Table 5

COMPARISON OF THE IEA AND THE OREALC STUDIES OF READING LITERACY, 1992-1993

IEA study, 1992		OREALC study, 1992-1993[a]	
Finland	569		
United States	547		
Hong Kong	517		
Singapore	515	Argentina	361
Spain	504	Bolivia	284
Ex Western Germany	503	Costa Rica	381
Indonesia	394	Chile	366
		Dominican Republic	308
Trinidad and Tobago	451	Ecuador	303
Venezuela	383	Venezuela	383

Source: Elley, W. B. "How in the World do Students Read?". International Association for the Evaluation of Educational Achievement, 1992: Arancibia Violeta and Rosas, Ricardo. Medición de la calidad de la educación en América Latina. Resultados de siete países de la Región. Vol III, REPLAD-UC. Santiago, Chile, 1994.

[a] The average score of Venezuela in the OREALC study (60.2) was increased in 383/60.2 to express it in the scale of the IEA study. The same coefficient was used for each of the other six countries.

should take into account the usual problems associated with interpreting international comparisons (Goldstein, 1995)

Low cognitive achievement levels, inequality and passive learning are serious constraints to growth according to the East Asian experience (Birdsall *et al.*, 1994; World Bank, 1993). As detected in the IEA study, achievement scores of students in public urban-marginal and rural primary schools (especially in the Aymara, Guarani, Quechua, Maya and other areas of indigenous people) are usually equivalent to half of the scores of wealthy students (Wolff *et al.*, 1993; see Table 7 for detailed comparisons). Poor public schools also have a shorter school year and daily schedule that, in many cases, give students less than 800 hours per year of potential learning opportunities (compared with 1200 or more hours offered to student in good private schools which is close to the average in developed countries). This limited amount of time for learning (Table 9) is usually due to both use of public school space in double shifts and lack of teachers' time, even though the latter is mainly related to poor allocation of the public teaching staff in countries with a students/teacher ratio below 30 (Oliveira, 1989; ECLAC-UNESCO, 1992). In poor schools, a substantial amount of time available for learning is, in fact, wasted in unproductive activities such as roll call or controlling silence (discipline) and disruptions (Filp, 1987). Multigrade schools are a particular concern because they represent from one fifth to three quarters of all schools, and teachers assigned to them have been given neither special training nor appropriate material for their challenging assignments. Inequality is usually difficult to curb, and in LAC even more so because most public system managers send their children to private primary and secondary schools and then switch to free universities. Therefore, their children are not affected by poor achievement in public shools. However, even the students in the 10% best private schools in LAC countries are performing near average of developed countries (Wolff *et al*, 1993; Table 6).

Above all, poor quality of the public system is linked to a vicious circle, perpetuated by complex social factors resistant to reform. Few high school graduates are interested in a teaching career as a result of low professional satisfaction, generated by low salary levels and poor student achievement levels. Therefore, few teachers select teaching due to its intrinsec interest, but most teachers end up teaching because they are not accepted in more prestigious careers. This negative selection bias is especially detrimental given that "teaching is a complex form of work that requires high levels of formal knowledge for successful performance" (Rowan, 1994; Buchmann and Floden, 1993)). The difference between the required and actual levels of training, tend to raise demands for salaries because all teachers assume they meet the required standards for teaching, given that there are no effective methods for assessing the individual ability of teachers (Hatry *et al*, 1994). Salary demands are also affected by gender and time schedules because more than two thirds are female and all teachers have a part time schedule, but the expected salary level is the salary of a full time male teacher. The problem in the public system is more serious because the best teachers tend to move to better jobs in other sectors or in private schools where salaries may be 5 or 10 times higher than in the public system. Thus, there is continuous pressure for better salaries in the public sector. The presure involves annual strikes, because public school teachers are a large share of the civil servants, organized in powerful unions and backed by congressmen and political leaders; and some teachers are leading local figures who play a critical role in election times. However, salaries have not increased, strikes have eroded achievements levels, and unions have not led to improvements in teaching methods.

Most teachers use a "frontal" or "whole class" teaching method, neglecting learners' needs and distorting key educational objectives. Some 80% of Chilean secondary teachers dictate their classes to students (Cox, 1995;

Table 6
THE TIMSS PILOT STUDY OF ACHIEVEMENT, 1992

Country	Mathematics				Science			
	1	2	3	4	1	2	3	4
Latin America and the Caribbean								
Argentina	50	41	33	29	45	43	37	28
Colombia	66	32	27	35	47	29	36	37
Costa Rica	72	59	44	43	66	59	50	50
Dominican Rep.	60	41	29	31	52	38	29	29
Venezuela	44	29	55	33	55	38	37	35
Other countries			National average				National average	
Thailand				50				55
United States				52				55

Source: Luna, E. and R. Wolfe "A feasibility report on the appraisal of mathematics and science education in Latin America". Mimeo. Technical Department, Latin America and the Caribbean Region". Word Bank,1991. Scores for Thailand and the U.S.A. from: Garden, R. and Robitaille, D. 1989. "The IEA study of mathematics II: Contexts and outcomes of school mathematics." Oxford: Pergamon; and D. Postlethwaite, T.N. y Wiley, D. 1992. "The IEA study of science II: science achievement in twenty-three countries." Oxford, Pergamon.

Note: 1. Elite private schools.
2. Lower class private or Upper class public.
3. Lower class public.
4. Rural public.

ECLAC, 1995). Furthermore, frontal teaching implies: acceptance of the authoritarian teaching structure; the need to learn by rote; the single correct answer and no opportunity to discuss divergent answers; lack of peer group discussion and no opportunity for learning to reach social consensuses; and failure to link teaching with the local context.

Secondary education has additional problems dealing with selectivity, tracking and teacher preservice training. The range of net enrolment rates in secondary education is much larger than in primary education (Table 13) and countries must define a clear expansion policy (Crouch, 1995). Countries must also define when and which type of technical education should be supplied (how to combine with training institutions like SENAI or SENA). Finally, a balance on subject and pedagogical training should be reached in the curriculum of teacher training institutions and a hands-on approach must be developed. Solutions should take into account the huge gap between youngsters expectations and the present supply of secondary education.

In summary, improving primary and secondary education requires better educated people, but, at the same time, change must be introduced without relying on additional voluntary time spent by teachers or recruitement of better trained replacements (Schiefelbein *et al*, 1994; World Bank, 1994). These are tough conditions, but have been fulfilled in a few successful projects that will be addressed later on.

Higher education and research

Massive expansion in higher education enrollment and reduction in public spending triggered a growing variety of higher education institutions and generated wide differences in the quality of their graduates (Brunner *et al*, 1994; Schwartzman, 1995). In fact, universities are no longer the only institutions carrying

Table 7
CHILE: FOURTH GRADERS ACHIEVEMENT SCORES IN SPANISH, 1982-1988

Type of school Socio-economic level	*Size of city*	*1982*				*1988*			
		Sample	*Gross score %*	*Net score %*	*Per-centage*	*Sample*	*Gross score %*	*Net score %*	*Per-centage*
Paid-private									
High	Metro	4 822	81.3	72.0	100	6 928	79.5	69.3	100
	Large	1 961	80.7	71.0	100	3 613	80.1	70.2	100
Mid	Metro	2 445	77.0	65.5	96	1 929	75.2	62.8	93
	Large	3 693	75.2	62.8	92	2 448	73.7	60.6	90
Subsidized-private									
High	Metro	1 172	69.2	53.8	79	800	70.5	55.8	83
	Large	1 304	74.7	62.1	91	1 802	76.3	64.5	96
							0.0	0.0	0
Mid	Metro	15 361	62.0	43.0	63	15 162	63.6	45.4	68
	Large	10 569	64.4	46.6	69	14 002	66.7	50.1	74
Low	Metro	6 555	56.6	34.9	51	24 900	55.5	33.3	49
	Large	2 081	54.0	31.0	46	12 114	54.1	31.2	46
	Rest	4 673	51.5	27.3	40	4 894	50.5	25.8	38
Cat D	Metro	0	0.0	0.0	0	472	45.7	18.6	28
	Large	0	0.0	0.0	0	865	45.1	17.7	26
	Rest	0	0.0	0.0	0	1 542	37.6	6.4	10
Municipal									
High	Metro	605	72.7	59.0	87	0	0.0	0.0	0
	Large	1 382	67.6	51.4	76	0	0.0	0.0	0
	Rest	507	65.7	48.6	71	0	0.0	0.0	0
Mid	Metro	19 749	58.5	37.8	56	5 053	60.8	41.2	61
	Large	14 481	61.8	42.7	63	13 752	63.2	44.8	67
	Rest	40 340	58.2	37.3	55	1 640	58.1	37.2	55
Low	Metro	25 049	54.0	31.0	46	32 072	50.8	26.2	39
	Large	14 071	56.2	34.3	50	56 395	51.7	27.6	41
	Rest	33 042	51.1	26.7	39	33 690	46.1	19.2	28
Cat D	Metro	0	0.0	0.0	0	196	49.2	23.8	35
	Large	0	0.0	0.0	0	3 429	44.2	16.3	24
	Rest	0	0.0	0.0	0	9 071	42.6	13.9	21
Total		203 862	58.6	37.9	56	246 769	55.0	32.5	48

Source: Data tabulated by SIMCE, March, 1985.
Note: To calculate the net scores is used the equation NS=0.5+3/2 GS. If GS is 100 the Ns is 100. If GS is 33 the NS is 0.
Information of cities with less than 20.000 inhabitants is included in "Rest".

Table 8
COMPARISON OF FOURTH GRADE ACHIEVEMENT SCORES.
AVERAGE OF SPANISH AND MATHEMATICS, ANNUAL NATIONAL TESTING, 1982-1994
(Percentage of correct answers)

	1982	*1988*	*1990*	*1992*	*1994*
A. 5% Schools with best scores	77.49	75.83	80.87	87.63	86.80
B. 5% Schools with worst scores	48.35	43.41	40.45	46.45	49.12
C. Difference (A-B)	29.14	32.42	40.42	41.18	37.68
D. Percentage: 100*B/A	62.40	57.25	50.02	53.01	56.59

Source: 1982-1988, table 7 and data from CPEIP and SIMCE; 1990-1994, Mineduc, División de Educación General, 1995 (published in El Mercurio, May 14, 1995, p. E-20).
Notes: No special changes are identified in methods, teaching, or facilities for the 5% of best (mainly private) schools, therefore it is possible to assume that scores are constant over time;
The estimates for 1982 and 1988 correspond roughly to the best (and worst) scoring schools with an enrollment near 5% of the total number of the students (rather than 5% of the total number of schools). This change of units should be taken into account for the analysis and conclusions;
Tests for 1982 and 1988 are equivalent and can be compared in absolute values, while tests for 1990 to 1994 can only be compared in relative terms (using the average scores of the best schools as the base).

out research. The size of the university system has increased and there are some 8 million university students to 1 million faculty (Table 4). In such a massive system, goals of concerned parties are no longer homogeneous; dimensions of the higher education system become bureaucratic; and pressures from teachers and students unions must be taken into account (Schwartzman, 1993). The rapid increase in enrollment has been fiscally unsustainable and generated a sharp decline in quality. The performance of higher education has also been affected by the decline in academic standards of high school graduates, given that rapid growth of high school enrollment involves increased access for traditionally less privileged populations. At the same time, standards are difficult to maintain when resources per student dwindle (Winkler, 1990). Only 20% of the faculty has doctoral training (Schiefelbein and Apablaza, 1993), and half of the faculty has supplemental employment including a large share of "full-time" faculty. Furthermore, the distribution of higher education accross socioeconomic levels remains unequal and the reduction in public resources per student has not improved such distribution. The wealthiest quintile of the population receives nearly half the public subsidies to higher education (Table 10), while the poorest quintile receives just five percent (Puryear and Brunner, 1994).

The massive increase in enrollment forced governments to control the product (rather than the traditional control of process) and triggered a variety of higher education institutions. Careful monitoring of processes that could be carried out in a few elite institutions has been replaced by attention to quality of graduates (Neave, 1988). At the same time, the growing social demands and changing labor market needs have encouraged the development of private and non-university institutions. Two-year technical centers and four-year professional institutes are now operating with high enollments in several countries. These new institutions have been a counter balance to the highly politicized nature of the public Latin American University or at least introduced flexibility in higher education policies. On the other hand, applicants are not fully aware of differencies between institutions; more public relevant information should be made available for students and parents to

make rational decisions when selecting the institution and career that will consume their time and money, and also for the employers that will hire the graduates.

Research is mostly concentrated in a few universities, but also in an increasing number of public and private research institutes and even in large enterprises. Selected universities play a major research role in most countries, but their research is constrained by faculty lacking doctoral training and lack of incentives, especially financial, for conducting research. Consortia between doctoral programs, research projects and fellowships for doctoral studies are minimal, even though there are some successful examples of joint university, public and private sector research projects (Schwartzman, 1995). It is difficult for young researchers to plan a long term career that will provide a reasonable rate of return (and standard of living) to the total cost of becoming a researcher. Therefore, Latin America still has a extremely weak position in producing and using knowledge. The percentage of GDP allocated to research and development is only one fifth of the proportion allocated by OECD and barely one third of the East Asia newly industrializing economies (Table 11). However, externally reviewed research project funding is now increasing and recently some countries have started to reimburse university overhead costs and to gradually increase funding levels.

Government efforts, financing, and innovations

The consistent interest of LAC countries in education is reflected in the amount of resources allocated to education and in the amount of successful projects implemented in the last decade, but both the efficiency in its use and the total amount should increase. There has been a relatively high constant public spending in education in spite of inefficient use of those resources. LAC government spending in education was 3.7% of GNP in 1990 – which represents a slightly larger share of GNP than in East Asia (3.4%), but lower than Africa (4.7%), even though in terms of US dollars the relationships are inverse– and another 1.0% of GNP was spent by the private sector (World Bank, 1994b; ECLAC-UNESCO, 1992). The financial crisis of the early 1980s cut public spending in education by 30%. Spending levels in education have recovered to the 1980 levels, but these levels are still much lower (in US dollars) than those of developed countries. Furthermore, the increase in financing education (by recovering the 1980 levels) was mainly used to reduce the students/teacher ratios in primary education from 27 to 23, rather than increasing teachers'salaries, extending the daily schedule, distributing learning materials, or developing research and graduate training. Reducing students/teachers ratios and reducing salaries has proved to be a very ineffective policy according to international research findings that suggest as an alternative to increase both the number of student per teacher (up to a certain level) and the salary level with the same total cost. A high number of repeaters also reflects the inefficiency of LAC educational systems: 29% of students in basic education are repeaters. Annually, of US$ 7.5 billion of public expenditure on primary education, US$ 2.5 billion (nearly one third) is spent on primary education repeaters. Similar figures are observed in secondary and higher education (ECLAC-UNESCO, 1992; Wolff *et al*, 1993; Schiefelbein, 1994). However, human costs in terms of time wasted and frustration accumulated are even larger than the cost of attending repeaters.

The financial crisis of the early 1980s caused public spending (on higher education and on research and development) to decline or to level off. Lack of additional resources for expansion has provided strong incentives for public universities to improve internal efficiency, to obtain resources from student fees (coupled with well designed student loans mechanisms), selling services, or to hire individuals with expertise in university administration rather than strong political skills (Riggs, 1964). When

Table 9

DISTRIBUTION OF FIRST GRADE STUDENTS BY DAYS ATTENDED DURING THE SCHOOL YEAR BY TYPE OF SCHOOL AND URBAN LEVEL

Type of school	Department and area	Number of attendances (in percentage of enrollment) 0-110	111-130	131-150	151 and over	Enrollment
First grade enrollment[a]						
Public	Montevideo	9.0	8.6	26.4	56.1	17 569
	Maldonado Urban	8.6	5.4	16.3	69.7	1 525
	Total Urban (Three Dpts.)	9.3	7.3	22.2	61.2	9 198
	Tacuarembó Rural	5.5	9.9	29.8	54.8	473
	Total Rural (Three Dpts.)	7.5	7.7	27.4	57.4	1 592
Private	Montevideo	1.7	2.4	23.9	72.0	6 309
	Interior	2.7	2.9	24.2	70.1	3 268
	Total	2.0	2.6	24.0	71.4	9 577
Total enrollment[b]						
Public	Montevideo	5.3	4.8	20.8	69.1	99 614
	Maldonado Urban	7.0	2.9	12.7	77.3	8 300
	Total Urban (Three Dpts.)	5.2	4.1	17.4	73.4	51 314
	Tacuarembó Rural	6.6	6.9	27.9	58.6	2 806
	Total Rural (Three Dpts.)	4.2	4.7	21.9	69.2	8 599
Private	Montevideo	1.1	1.7	17.8	79.4	34 745
	Interior	1.3	1.8	18.3	75.6	17 319
	Total	1.2	1.7	18.0	79.1	52 064

Source: ECLAC. Montevideo, on data of the "Annual Statistical Summary" of public schools of Montevideo, Canelones, Maldonado Departments and all of the private schools (qualified and authorized) existing in the country, from CEP-DIPE.

[a] Information about 591 public schools and 227 private schools is included.
[b] Information about 643 public schools and 227 private schools is included.

these new sources of financing are added, the "experience of a few developing countries, such as Chile, indicates that it is possible to achieve a growing higher education system even as public spending per student declines" (World Bank, 1994a). But an increase in coverage does not mean better quality. Expenditures in research and development remain near half of one percent during the 1980s, while East Asian newly industrializing economies have increased and are now spending three times more (Table 12).

In spite of the gloomy aggregate state of education in the LAC region, there are a number of successful programs and policies that suggest a sound potential for improving education (UNESCO, 1993b; ECLAC-UNESCO, 1992; Oliveira, 1989). First, there are many examples of good schools and universities, mainly run by the private sector, that cater to students from the elite. Second, vocational-technical on-the-job training delivered by institutions like SENAI (Brazil) and SENA (Colombia) and dual-education programs have been well rated by private industry. Third,

Table 10
INCIDENCE OF PUBLIC EXPENDITURE FOR EDUCATION BY EDUCATIONAL AND INCOME LEVEL IN SOME COUNTRIES OF LATIN AMERICA AND THE CARIBBEAN
(Percentages)

Country	Primary education			Higher education		
	40% poorest	*40% middle*	*20% richest*	*40% poorest*	*40% middle*	*20% richest*
Argentina	57	32	11	17	45	38
Brazil	15	80	5	...	...	48
Chile	59	32	9	17	32	52
Costa Rica	57	35	8	15	42	43
Dominican Rep.	59	37	4	32	35	33
Venezuela	45	39	16	23	43	34

Source: Joint ECLAC/UNIDO Industry and Technology Division, based on figures from the World Bank, Social Spending in Latin America: The Story of the '80s, Report No. 8450, Washington D.C., 18 December 1990.

massive changes in primary and secondary school processes have been implemented by Escuela Nueva (Colombia) and P-900 (Chile) –using self learning materials as Korea did in the 1960s with support from Florida State University (Huh, 1992)–, massive use of computers and Escuelas Líderes (Costa Rica), Programa Nacional de Educación Bilingüe (PRONEBI, Guatemala), Instructores Comunitarios (Mexico) and Reforma académica de Rio Grande do Sul (Brazil). A national innovation network has successfuly operated in Colombia (Toro, 1993) and common core (minimal) curriculum has been implemented in Argentina (Braslavsky, 1995). Research capability and use of findings in education have been developed through the regional exchange network REDUC (Oliveira, 1989). There are attempts to provide comprehensive funding for graduate programs that include research and doctoral fellowships and externally reviewed research project funding. Finally, there are successful regional colaborative programs in key areas such as biology and biotechnology (UNDP, 1995). Massive implementation of selected successful programs can improve achievement levels and help society to gradually increase teacher salaries to levels that can neutralize the vicious circle commented in the sub chapter Primary and secondary education.

Summary

The description of the LAC educational system also allows the identification of key causes of problems. For example, the description of primary and secondary education shows poor quality and inequality linked to six mutually related causes: (i) limited overall learning time, including homework (ii) lack of basic inputs including learning materials and trained teachers, (iii) poor selection of future teachers, (iv) policies in conflict with research findings, (v) negative allocation of inputs for poor (including indigenous) students, and (vi) lack of incentives for improvements. Low salaries can be included as a seventh cause that generates the low attraction of the teaching career, but increment in salaries have now only long term effects. The relationships between poor quality, inequality and these (and other) causes are analyzed in the next section.

The description of higher education shows the need to strength the research tradition; provide competitive salaries for the research elite; to launch national programs for training at doc-

toral levels; to increase externally reviewed competitive research project funding; to support effective accreditation; and to develop public information systems that can reduce the uncertainty associated with the long term lagged effects of higher education training (Cobweb equilibria).

It is necessary to carefully identify causes and interrelationships in order to assign priorities and design effective strategies. Such strategies should also take into account recent developments that have the potential to effectively reform education (Brown, 1994; Hatry *et al*, 1994; Slavin, 1991; Levin, 1989). Note that finance in itself is not yet included as a cause (given that in some countries the resources required to buy time and basic inputs can be obtained from reallocating resources; improving efficiency; dismissal of "ghost" teachers; or private sector financing) nor as a problem of intrasectoral allocation given that rates of return of all levels are higher than the market interest rates (Birdsall, 1995). Financing will be addressed in the final section in order to analyse both the feasibility of implementing strategies to raise quality and curb inequality, the ways to reduce the regressive nature of public expenditures on education, and the long term effects on quality generated by reasonably higher or competitive salaries.

Causes of poor performance

Even though little is known about effective educational innovations, there have been important advances in the analysis of educational systems that help to identify relevant causes of poor quality and inequality which differ from those considered by conventional wisdom (Tedesco, 1994). These causes should be discussed on national level to promote consensus and implement long term educational policies. The little we know about effective innovation is illustrated by the analysis of the twelve most relevant educational innovations carried out in the US. The analysis shows that research findings are inconclusive, but recommends that learner-centered instruction –not quite news in education– and the active role of the learner in constructing meaning should be emphasized. It also states that the traditional role of the teacher, "to instill truths and to transfer knowledge", should be abandoned, at least during part of the teaching time (Ellis and Fouts, 1993; Arnold, 1995; Diez-Hochleitner, 1995).

Analysing required and sufficient conditions for effective learning processes may help to dispel myths built by conventional wisdom. Basic inputs are a required condition for learning, but not the only condition. Without basic inputs, little learning may happen, but basic inputs do not necessarily generate expected achievement levels. Key inputs are teachers' classroom activities, the amount of time available for learning, materials for students to carry out their work (paper, pencils, learning guides and textbooks, or computers) and, of course, buildings (World Bank, 1994b). Some school feeding and health programs should be added for deprived students (but are not commented in detail in this report, because they should be analyzed together with the whole set of health strategies). However, provision of these (and other) basic inputs with suitable financing does not guarantee that the expected level of learning is generated in the classroom as observed in the USA and Chile (Chubb and Hanushek, 1990; Doyle, 1994; Tedesco, 1994). On the other hand, multigrade teaching without learning guides will be a failure. Without these guides, which complement the learning process, learning will be drastically reduced (Arnold, 1995).

To generate learning, some specific activities, which are currently absent from the LAC classrooms should be carried out in the daily teaching-learning routines. Learning is generated when students discuss among themselves the proposed task; when the task is related with their context or expectations; when enough time to learn the task is available; or when formative evaluation is given to students that have not fully learned the educational task (Brown, 1994; Kamii *et al*, 1994; Augier, 1994;

Schiefelbein, 1991). All these activities are simple, but require well trained and committed teachers. The 40% of students repeating first grade can only be explained in terms of poor teaching techniques, temporal dropping out, and lack of gradual preparation through preschool training. In fact, it has been detected that most teacher training institutions provide theoretical training (structural grammar, linguistic or learning models), but do not train future teachers in specific strategies for teaching (OREALC, 1993). There is a need for providing teachers with those skills. In fact the problem is far more serious. Unfortunately LAC teachers are trained in the so called frontal teaching model: in this model lessons consist of oral instructions and information tailored to the average student for the class group to memorize in order to reproduce the content in the exams and receive a good evaluation score. This method is less damaging in private schools or in university where students are similar in age, culture, family support and motivation, and good materials are available for each student (that is, when there is little variation in the student body as in East Asian countries). But the frontal method generates poor learning in a classroom where the teacher has insufficient training, materials are scarce, and the group of students is heterogeneous, as it happens with primary and secondary students from urban-marginal and rural areas, when only a fraction of the group attended preschool, or especially when students speak a language different from the national language and widely differ in ages (Table 13). Heterogenity may be an asset for a good teacher, but a problem for a frontal teacher. By definition, all students below the "average student" level (subjectively chosen by the teacher), will eventually repeat. Frontal teaching seems to be the main cause contributing to student repetition (30% in LAC countries) and to inequity: more than half of the students who repeat are in the lower half of the socioeconomic distribution (Amadio, 1995; UNESCO, 1993). Repeating a grade also increases the odds of dropping out (Roderick, 1994; Gargiulo and Crouch, 1994), but does not negatively infuence problem behavior (Gottfredson *et al*, 1994). Furthermore, the frontal teaching model proves to be especially traumatic for first grade students (even if they have attended preschool) who must sit through classes motionless and silent in rows of benches (Landesman and Ramey, 1994). In summary, the current teaching style and the role of teachers in primary and secondary education are key elements of the quality problem, rather than of its solution (Tedesco, 1994). The critical question is how to change this style given that it is rooted in well entrenched traditions.

Reforming the traditional teachers' role and teaching style could involve changes in the global social context. These linkages should be understood in order to reach national consensus required for long term educational reform. LAC educational systems are rooted in a society developed from colonial and indigenous traditions (Coles, 1994; Oliveira, 1989), which contributes to a highly imperfect educational market where the magnitude of enrollment depends on demographic trends. The colonial legacy includes lack of incentives for improvement and a legal structure based on how people ought to behave rather than on how they actually behave (Riggs, 1964). Market imperfections –such as too general education brand names, long term lagged effects, geographical monopolies, supply subsidies, or too many bureaucratic regulations– are reflected in underinvestment in education, poor allocation of resources, and use of inefficient technologies (Schiefelbein, 1995). Fortunately, demand for lineal expansion in education has slowed down in most LAC countries (Table 4) due to reduced demographic growth rates (as a result of universal primary education), but in some countries demand has been displaced upwards. Reduced pressure for further lineal expansion of the educational system frees resources for improving inputs or expanding the next level. However, once the vicious circle of negative selection into the teaching career

Table 11
SCIENCE AND TECHNOLOGY INDICATORS FOR GROUPS OF SELECTED COUNTRIES
(*Different years between 1988 and 1990*)

Indicator	*Latin America*[a]	*OECD countries*[b]	*East Asian newly industrializing economies*[c]	*Southern European countries*[d]
Per capita research and development expenditures (US$)	10	448	23	44
Percentage of GDP allocated for research and development	0.5	2.5	1.4	1.0
Research and development expenditures per engineer or scientist (US$)	34 858	141 861	50 160	60 647
Engineers and scientists per 100 000 economically active persons	650	115	185	
University graduates per 100 000 inhabitants [e]	156	592	478	191
Percentage of university graduates in engineering and technology (%)	19.5	15.6	19.6	17.5
Research and development expenditures by source (%) [e, f]				
i) Public sector	78.8	43.1	35.6	46.4
ii) Entrepreneurial sector	10.5	52.5	61.4	49.5
iii) Funds from abroad	3.4	0.4	2.9	3.9
iv) Other	7.3	4.0	0.1	0.2
Research and development expenditures by activity (%) [e, g]				
i) Basic research	20.9	14.1	21.1	19.0
ii) Applied research	52.4	26.5	30.4	39.7
iii) Experimental development	26.7	59.5	48.5	41.2

Source: Joint ECLAC/UNIDO Industry and Technology Division, on the basis of official information.

a ALADI countries plus Cuba.
b Excluding Spain, Greece, Portugal, Turkey and Yugoslavia.
c Including Hong Kong, Korea, Singapore, Filippines and Thailand.
d Includes Spain, Greece, Portugal, Turkey and Yugoslavia.
e Data for the mid-1980s.
f Data do not include Turkey.
g Includes only Argentina, Cuba, Mexico and Venezuela; Spain and Portugal; and the Group of Seven, except Canada in their respective regions.

started operating, it is difficult to stop. Increasing teachers' salaries will only improve quality of the education in the long run because the same staff will continue teaching (with constant training and ability), and no incentive systems have yet been successful (Hatry *et al*, 1994). In summary, improvement of the social context may be required for an effective educational reform: for example, changes in the incentives and legal context (principals or teachers should not be liable for loss or damage to books, because this liability causes books to remain on boxes or shelves in the principals office), or in educational markets may be preconditions for serious decentralization or privatization processes; or more suitable information should be provided to parents and students for making the right choices about educational options. Furthermore, the strategy will be different from country to country.

Coherent and consensual reform is critical to efficiently improving education. Frequent and inappropriate changes in strategies resulting from the personal objectives of each newly appointed Secretary of Education –rather than through agreement with all concerned parties,

Table 12
LATIN AMERICA AND THE CARIBBEAN: EXPENDITURES FOR RESEARCH AND DEVELOPMENT

Subregion and country	Percentage of GDP		Dollars per capita	
	Early 1980s [a]	Late 1980s [b]	Early 1980s [a]	Late 1980s [b]
Large countries				
Argentina	0.47	0.44	24.2	12.6
Brazil	0.58	0.61	9.3	14.3
Mexico[c]	0.27	0.50	6.1	8.2
Andean countries				
Bolivia	0.07	...	1.1	...
Colombia	0.15	0.37	1.6	4.4
Chile	0.41	0.63	8.6	10.6
Ecuador	0.13	...	1.5	...
Peru	0.30	0.22	3.7	2.4
Venezuela	0.43	0.38	16.8	11.7
Other South American countries				
Paraguay	0.12	...	1.5	...
Uruguay	0.20	0.20	4.4	3.7
Central America and Panama				
Costa Rica	0.16	0.26	2.2	4.1
El Salvador	0.10	0.16	0.7	1.4
Guatemala	0.22	0.50	2.1	3.7
Honduras	0.10	...	0.6	...
Nicaragua	0.10	...	0.7	...
Panama	0.18	...	3.3	...
Caribbean				
Cuba	0.72	0.93	19.8	23.0
Jamaica	0.10	0.03	1.0	0.3
Dominican Republic	0.35	...	0.7	...
Trinidad and Tobago	0.10	0.08	4.4	5.1

Source: ECLAC/UNIDO Industry and Technology Division, on the basis of official data and Francisco Sagasti and Cecilia Cook "La ciencia y la tecnología en América Latina durante el decenio de los ochenta", Comercio Exterior, Vol. 37, No. 12, December 1987.

[a] Verious years 1978-1984.

[b] Various years 1984-1990.

[c] Data for early 1980s are estimates based on science and technology expenditures as a percentage of GDP.

or based on evaluation of past projects or research findings– have produced an impasse to reform and have hindered educational improvement (Tedesco, 1994). This inconsistent reform style is compounded further by the lifestyle of educational high officials and the training of planners or advisers. Most high officials usually send their children to private primary and secondary schools, rather than to the massive public system, but they do send their children to free public universities that attend less than 25% of the corresponding age groups (Table 4). Thus, the high officials are not personally affected by the outcome of their decisions on the performance of public primary and secondary schools, but only from decisions concerning the university level which is one key reason for the efficient performance of public

university education (Oliveira, 1989). In addition, the average LAC educational planner does not take into account current research findings in their analysis, explaining why inappropriate policies were implemented during the economic crisis of the 1980s; a time when countries reduced teachers' salaries because they wanted to further decrease the students/teacher ratios in spite of reduced resources (Schiefelbein and Wolff, 1995). Neglecting to use research findings will hold back any effective decentralization process. At a time when high rates of return are estimated for all levels, it should not be difficult to convince the public, congresspersons and Secretary of Finance officials of the need for reform by using reliable research findings (Birdsall, 1995; World Bank, 1994b; Psacharopoulos, 1994). Also, large savings can be obtained by curbing repetition through improved achievement levels resulting from proven educational strategies that can be massively implemented at low cost. Research findings also suggest that cost sharing at the university level, will generate resources for education, will reduce regressive distribution of subsidies (together with scholarships), and will raise quality in lower levels. On the other hand, it is urgent to strengthen research and development, given that so little is being done in this area (Winkler, 1990). In depth discussion of these problems in relation to successful experiences would be a positive step in reforming education and research.

Discussing educational issues would make the public realize that education can be improved to a substantial degree and facilitate the social consensus required for setting up long term policies (including increment in salaries). However, countries lack the mechanisms required for this discussion (Toro, 1994). Such mechanisms would imply a short term loss for political parties in power, but a net gain for the democratic game: to carry out a serious analysis of what causes educational problems, and strategies for change. A serious analysis of the global system may dispel simple explanations like "too low per-pupil expenditures", "internal change can be generated based on teachers' creativeness", or "improvement may only depend upon family demands".

In summary, not enough time has been devoted to identifying, understanding, and defining key educational problems, especially those that happen at the classroom level in primary and secondary education and those related to the development of a tradition of empirical research at the university level. Conventional wisdom has prevailed and too much time has been spent in solving irrelevant problems. Therefore, the design of an effective strategy for educational reform should start with an analysis of the real nature and causes of the poor quality observed in LAC countries as well as the sequence of (probable) effects of reform (in most cases reform means deep gradual complex changes, rather than drastic simple changes). Even though everything seems to have been already tried out in LAC education, the effective fight for quality reform is just about to start.

Defining priorities for reform through consensus

A reform process should be based on national consensus, therefore, it will be different in each country. Consensus can be built by convening a representative group, providing relevant background papers, and then asking the group to discuss diagnostic findings and long term objectives and strategies (Connell, 1994). The group should be composed of representatives of political or religious tendencies, geographical regions, sectors of activity and parties concerned with the educational system including teacher, student, and parent leaders, former senior policymakers, education scholars, practitioners, Congresspersons, and political party specialists. A consensus is now feasible for such a heterogeneous group given the agreement on educational demands made by economists, political leaders, and educators. In fact, a consensus has been reached by representative groups in Chile, Ecuador, Mexico, Dominican Republic, and other countries, where old consultative mecha-

Table 13
LATIN AMERICA AND THE CARIBBEAN: TOTAL ENROLLMENT BY AGE AND GRADE. PUBLIC AND PRIVATE SECTOR, 1988
(In thousands)

Age	1	2	3	4	5	6	I	II	III	IV	V	VI	TotalPopulation	Enroll-ment rate (%)
6 y -	5 614.8	450.3	8.5	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6 074.0	10 563.6	57.5
7	4 544.3	3 599.6	476.7	9.4	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8 630.7	10 382.1	83.1
8	2 473.0	3 143.8	3 063.1	476.5	10.8	0.5	0.0	0.0	0.0	0.0	0.0	0.0	9 167.7	10 202.2	89.9
9	1 470.7	1 914.9	2 711.9	2 678.3	467.2	12.5	0.7	0.0	0.0	0.0	0.0	0.0	9 256.3	10 020.9	92.4
10	969.1	1 255.5	1 735.4	2 396.9	2 376.7	419.0	23.0	0.3	0.0	0.0	0.0	0.0	9 175.9	9 850.0	93.2
11	610.5	845.1	1 169.6	1 548.3	2 113.3	2 153.4	484.6	23.8	5.5	0.0	0.0	0.0	8 954.0	9 703.9	92.3
12	453.1	596.0	847.5	1 102.4	1 487.7	1 809.7	1 860.5	403.7	17.0	0.0	0.0	0.0	8 577.5	9 572.3	89.6
13	251.3	397.4	551.4	735.1	1 047.6	1 211.2	1 482.9	1 591.0	358.5	11.3	0.0	0.0	7 637.8	9 439.6	80.9
14	150.7	213.2	341.7	434.0	685.9	830.5	973.9	1 276.2	1 442.0	275.8	8.9	0.0	6 632.8	9 292.3	71.4
15	111.4	104.4	147.0	206.0	408.4	524.7	616.1	817.1	1 192.6	1 095.5	216.5	6.1	5 445.8	9 180.5	59.3
16	58.0	71.4	83.5	110.0	257.9	294.3	358.6	470.6	783.2	944.4	859.9	149.5	4 441.4	8 978.7	49.5
17	1.3	37.9	57.0	63.5	157.4	194.6	221.6	268.6	453.8	612.0	741.3	594.1	3 403.1	8 789.5	38.7
18	0.9	1.5	30.1	43.0	96.9	122.9	154.5	171.9	270.1	340.0	480.4	512.2	2 224.2	8 618.4	25.8
19	0.8	0.9	1.4	24.5	71.7	83.5	89.9	105.5	160.7	192.7	266.9	331.9	1 330.2	8 515.5	15.6
20	0.7	0.8	1.1	1.5	39.0	49.8	56.8	68.8	109.2	117.1	151.2	184.4	780.4	8 404.8	9.3
21	0.0	0.0	0.9	1.1	1.1	26.3	41.4	39.0	65.8	75.6	91.9	104.5	447.4	8 233.3	5.4
22	0.0	0.0	0.0	0.8	0.7	1.1	19.0	29.6	39.3	49.1	59.3	63.5	262.4	8 057.5	3.3
23	0.0	0.0	0.0	0.0	0.0	0.7	1.6	13.6	29.1	30.2	38.5	41.0	154.8	7 878.6	2.0
24	0.0	0.0	0.0	0.0	0.0	0.0	0.8	1.0	14.0	22.7	23.7	26.6	88.9	7 695.3	1.2
25	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.8	1.5	11.3	17.8	16.4	48.4	7 502.9	0.6
26+	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.9	18.4	27.3	7 315.3	0.4
Total	16 710.6	12 632.7	11 227.0	9 631.6	9 222.8	7 734.5	6 386.7	5 281.5	4 942.4	3 777.5	2 965.2	2 048.6	92 761.1	188 197.3	49.3

Net school enrollment rate for 1988 — 6 grades (7-12): 85.3 — 12 grades (7-18): 73.3
Gross school enrollment rate for 1988 — 6 grades (7-12): 112.8 — 12 grades (7-18): 81.3

Source: UNESCO/OREALC, SIRI Survey, 1989.

nisms for setting up educational policies were used to carry out the consensus building process (Tedesco, 1994; Oliveira, 1989).

The state of education and the causes of poor educational performance in LAC countries usually require three types of reform to be discussed during the process of reaching a social consensus: (i) positive discrimination in favor of deprived students (Oliveira, 1989); (ii) use of alternatives to the frontal model, at least during part of the class time (UNESCO, 1993); and (iii) strengthening a tradition of empirical research (Winkler, 1990; World Bank, 1994a). Specific strategies must be eventually defined by the same representative group that reached consensus or by technical advisory task forces. Some strategies will involve additional resources (for example, long term salary increases), but other strategies will only involve reallocation (for example, use of self learning and group materials rather than traditional textbooks), or more efficient use of resources, or legal and procedural changes. Twelve interrelated strategies (to be used as a checking device) that may be especially relevant in most LAC countries (even though the strategies should be tailored to each specific country reality) are discussed below (Wolff *et al*, 1993; MEC *et al*, 1994).

1. Extend the annual amount of time for learning in order to raise achievement levels. By extending 160 effective school days to 200 and 4 hour daily schedules to 6 the region should reach a minimum similar to developed countries (1200 hours per year). In fact, many rural students only have 100 or 120 school days and a three hour daily schedule in basic and secondary education with a total of 300 or 400 hours per year (ANEP-ECLAC, 1990; Table 9). On the other hand, the minimum in the best private schools of each country is similar to the total time available in developed coun-

tries. The required increase in time for learning can be partially financed by reallocation of resources or by getting rid of "ghost" teachers. For example, in 1994 public primary education in Chile had 21 students per teacher for a half day of classes. In schools with such an average size in two parallel classes, the daily schedule can be doubled if one teacher works in the morning with 42 students and the other teacher works with the same group in the afternoon. This extension of time should increase achievement according to research findings (Lockheed and Verspoor, 1991; Schiefelbein and Simmon, 1979), and could be gradually implemented. Initially these changes would benefit the most deprived students and eventually would reach the whole system. There are many alternative allocation of resources that depend on the initial situation, for example, the time can be extended to 50% and teachers' salaries can also be increased to 50% with no increase in the total amount of resources allocated to education. In countries with over 35 students per teacher ratios (and no excess staff or "ghost" teachers that can be transformed into real teachers) the extension of time for learning involves a substantial increase in financing. For example, one additional week represents an increment of 2% in the total cost of the corresponding level (and to extend a 4 hours daily schedule to 5 may cost 20 to 25% more), that can be negotiated in the next teachers' salary bargaining as a reduction of vacation time.

2. Even though teacher incentives have not improved students test scores (Hatry *et al*, 1994), frontal teaching can be gradually transformed into active and participatory learning experiences by using well developed self learning and group work guidebooks. The amount of time most teachers spend giving routine information and instruction in a loud voice can be reduced by producing and distributing well tested learning guidebooks –like modules or scripts that Korea asked Florida State University to produce in the 1960s (Huh, 1992). This type of material has been tested in several LAC and developed countries and proven to be easily used by teachers with limited on-the-job instruction (Arnold, 1995; Castro, 1995). In those experiments, teachers were not intimidated by proposed changes (as in traditional curricular reforms) because the use of such material does not demand further theoretical background or professional preparation (Osses, 1995; Colbert *et al*, 1990; Schiefelbein, 1991). Teachers ask the students to use the guides during less than one third of the teaching time, and the more their students use the material the more the teachers are trained in the design and implementation of active and participatory learning. Successful use of this material –by teachers volunteering to try out the materials– usually leads to gradual diffusion to neighbouring schools, where other teachers become aware of the increase in teachers' professional satisfaction (and student achievement levels) when this material has been used. Self learning materials also help in reducing class time now wasted in non learning activities. The material can be easily adapted by bi-lingual teachers to the needs of ethnic groups, because the modules should encourage use of the local context and family traditions. This type of material helps teachers to become prepared for future computer usage as part of the regular learning process and can also be easily adapted to interactive computers. Learning the basic reading and writing skills can be much easier with the use of computers given that the learning of the triple relations of sign, meaning (or sound) and handwriting, is reduced to relate only sign and meaning (Ferreiro, 1993). It must be noticed that active and participatory learning is especially suited to the 5% of students that are now attending regular schools even though they need special attention (UNESCO, 1993; Scruggs and Mastropieri, 1994), and are probably wasting their time and constraining the rest of the class (Smelter *et al*, 1994; Baines *et al*, 1994). The cost of providing written self-learning and group work materials is relatively low. In fact the guides do not add to the cost when they simply replace traditional free text-

books periodically distributed. At most the guides add some 2% to the unit cost when no materials are previously distributed to students, or when unit cost only includes the annual teacher salary. Cost of computers (wholesale price under US$400) can add another 3% to the unit cost assuming one computer per 10 students and six years of use.

3. Preschool education must be extended to prepare children for primary school, especially for urban-marginal and rural students who go through a shocking transition to the first grade, where the frontal teaching model requires them to remain silent and motionless (UNESCO, 1993). By enrolling at the right age (allowed by lower demographic growth) together with improvement in quality, the number of repeaters tends to be reduced, particularly in the first grade (and to have a stable class size in upper grades). Some schools may free space in initial grades for preschoolers. When active and participatory learning prevails, in primary education, it is possible to integrate preschoolers into regular schools when space is available. TV programs like Sesame Street, parent training, and mass media campaigns on early stimulation can also be used to complement (or substitute) preschool education (CENECA, 1995; Bus *et al*, 1995). Preschool education can be initially delivered with partial assistance from the mother or relative. This help keeps the cost of preschool projects similar to the cost of primary education at least until reaching universal preschooling (preschool classes need to be of small size and the unit cost can easily be twice as much the unit cost in primary). Eventually, preschool education should reduce repetition in public primary schools (and free part of the huge amount of resources now wasted in repetition) and also increase the average number of grades passed (closing the present two-year gap between the six years of schooling and the four grades passed). Increase in coverage also involves an increase in resources for education, given that private supply cannot expand unless subsidies (for example payment per child-day attended) are available.

4. Learning experiences in high schools should be linked with everyday life and the working world to complement the gradual introduction of active and participatory education and to ease transition to the labor market. High schools should give special attention to communication skills, mathematics and science that are common to many job opportunities or further education. Participation of the local business community, opportunities for dual technical education as well as internships should be actively pursued. Opportunities for work (or even play) with computers should be encouraged. A detailed analysis of teaching and learning of foreign languages, including the pros and cons of a few-hours per week versus short time full "immersion" should be carried out because there are pressures for continuing with present schedules. In addition to developing the ability to handle computer languages, there are role games (for example, "Build a City") that stimulate the ability to: create alternatives, make decisions under uncertainty, programme use of resources, take into account complex relationships with environment and development problems, and to motivate participants to persevere for long hours playing the game. The fight against drugs and AIDS can benefit from extracurricular activities and youth programs offered in high schools and from community libraries operated in close relation to or even in the high school itself. Even though these strategies involve a substantial reallocation of resources, there is also a need for additional resources (in addition to those already considered in strategies 1 and 2 involving additional time, guidebooks and computers).

5. The teaching staff should be reallocated according to changes in school enrollment and, at the same time, class size may be raised (for example, up to 30 or 40 students) to increase salaries. Enrollment changes are brought about by higher levels of economic activity that increase labor mobility, and by reducing the number of repeaters especially in initial grades through increased quality of education. So that

the enrollment pyramid would be broaden in the upper grades. Therefore, the teaching staff should undergo an annual reallocation to adjust to those changes in enrollments. Negotiation of teacher contracts should include (if it is politically feasible) flexible allocation of teaching staff, although employment can be guaranteed by increasing the daily schedule (if necessary). The experience of Rio Grande do Sul (Brazil) showed that better allocation of teachers enabled the system to expand enrollments and, at the same time, to increase teachers salaries without increasing the total budget. The long term salary strategy must be related to a short or medium term strategy for extending teaching time (and operate with a reasonable class size). Both strategies should be consistent over time. The long term salary strategy clearly involves a substantial increase in resources for education (ECLAC-UNESCO, 1992)

6. Educational reform should be implemented by teachers now working in LAC countries (an elite of good teachers and millions of poorly trained or untrained teachers) that cannot be replaced or retrained (within democratic rules of the game). Some 20% of LAC teachers have no professional training at all (UNESCO, 1992). In addition, most future teachers are now trained through frontal teaching methods. However, it is possible to improve the selection and training of future teachers and to gradually reform traditional frontal teaching methods (see point 2 above). Research has reported that teachers' formal upgrading and on-the-job training have not increased student achievement (Arancibia, 1994; Schiefelbein and Simmons, 1984; see also Table 7) and that teacher incentives have not improved performance (Hatry *et al*, 1994). Even teachers well aware of the need to attend to the students' learning needs want to move their class as a group through a curriculum (Lash and Kirkpatrick, 1994). Some research shows that a teacher's interest in teaching (for example, measured by priority assigned to becoming a teacher when enrolling for the first time in higher education) can offset low scores on achievement tests or poor grades in pre-service training. Follow up studies should be carried out to identify the weights to be assigned to "interest in teaching" and "academic grade averages or examination scores in pre-service training" in order to build an index to be used as an admission selection criteria. At the same time, the use of student guides for active and participatory learning experiences, and monthly local workshops for teachers to exchange comments on the use of such materials (or any other innovation teachers want to try out) should improve teaching by replacing frontal teaching methods. Finally, better teaching strategies for reading and writing should be included in pre-service training (UNESCO, 1993) and mentoring should be a key part of teachers' pre-service programs. In summary, selection mechanisms to raise commitment and incentives for improving long term teachers' pre-service training should be coupled with new learning approaches to create internal change and to overcome the training deficit in present teaching staff (Tedesco, 1994). Even though the teaching performance is a key element of the educational reform, this strategy involves reallocation of resources (and political will), rather than new resources (even though the long term salary strategy should play a role in getting support for the change).

7. Decentralization and local participation should be encouraged, because centralized education management has not been successful. However, by no means can this process guarantee an increase in the quality of education, and in several countries the decentralization is implemented for political, financial or administrative reasons not linked with education. Evaluation of the decentralization experiences in Chicago and Kentucky is at most only encouraging (David, 1994; Bryk *et al*, 1994; Walberg and Niemiec, 1994). Decentralization in LAC has yet to prove that quality can be improved, even though poor centralized administration may benefit from this process (Palma, 1995; Malpica, 1994; Prawda, 1992;

Winkler, 1991; Oliveira, 1989; Noah and Sherman, 1979). In the case of Chile, decisions were decentralized, but the subsidy per student (voucher) is established at the central level. However, there are "municipios" (counties) of similar size with very different bureaucracies (for example, Providencia with 6 and Antofagasta with 74 officials). On the other hand, coverage of additional demand by private universities in Brazil, Colombia and Chile has been very successful (even though poor quality institutions eventually go into bankrupcy). Decentralization is an area where follow up studies should be carried out in order to learn from experience. Community involvement is an attractive policy element, but it is difficult to implement in a class-stratified society (it will be difficult for groups from lower socioeconomic levels to play an effective role or for deprived regions to reach really good results). The fact that makes decentralization an attractive policy, makes its implementation a difficult task (Oliveira, 1989; Ogawa, 1994). For example, the 1980 decentralization in Argentina dismantled the statistical system and legal norms were only enacted in 1993. The decentralization strategy mainly involves reallocation of resources.

8. Testing and information should be further developed in the LAC region to help monitor the quality of education and its causal factors, inform public opinion about key educational issues, and build a social consensus and increase accountability of the use of educational resources (Puryear, 1995). However, simple correlation analysis between inputs and student achievement should be avoided as misleading, because student achievement level is a complex function of many interrelated factors including past achievements, socioeconomic background, urban development level, and selection at entrance or at the end of each school year (or, even compulsory acceptance of all children demanding enrollment). For example, students from private schools usually have higher achievement scores than students from public schools. But, the difference is sometimes fully explained by the different socioeconomic background of students' parents, or the fact that private schools can expel poor achievers, while public schools must accept all applicants. Policy makers should be aware that testing becomes, in fact, the real curricula of the system, therefore, items should reflect the true objectives of the educational system and high level skills should substitute traditional recalling. Costs of testing and information programs are about 0.1% of the annual cost per student and results should be widely distributed through mass media for parents and other parties concerned to make informed decisions and for society at large to be able to make authorities accountable for the use of education resources.

9. Production and use of education research findings should be subsidized to increase the efficiency of the educational system. Production of research is part of the development of graduate education, but use of research involves the continuous development of the regional exchange network REDUC and also of national networks. Available research findings should be used in diagnosing educational problems on the national and local levels, in identifying causes and alternative solutions or successful projects, and in designing policies. Otherwise, conventional wisdom will continue to be the main source informing decision making in education and, in turn, the number of examples of inappropriate policies, above mentioned, will grow. Given that benefits from educational research cannot be appropriated by researchers, there is a need for public subsidies to this activity. Some 1% of the educational budget should be allocated through externally reviewed project funding.

10. Graduate education programs should be expanded to stimulate research and to train the future staff of university professors. Less than 20% of university professors have doctoral training, therefore, university students are usually trained by rote learning from a synthesis of outdated books. This low training level is related to low university professor salary lev-

els and to limited opportunities for national (or international) graduate studies. Even though university faculty salaries have been declining in real terms and cannot be substantially raised for the whole faculty (in the short term), salaries can be raised for the small elite of senior researchers of international standing that can staff graduate programs (and are at risk of moving abroad). This elite is about 10% of the university faculty. The cost of a program involving research grants for such an elite group (including the required complement of salaries) and doctoral fellowships should be near 20% of public financing of the university (undergraduate) programs. Expansion of the undergraduate level usually can be made by the private sector if subsidies (through vouchers or loans) to students from low socioeconomic groups are provided (Becker, 1995). The recovery from loans should be limited to a maximum percentage of future income and a maximum number of years.

11. Financing of education should increase over time (in spite of potential savings due to higher efficiency) mainly due to a long term strategy for increasing salaries, preschooling, graduate programs and research. However, the private sector should mobilize a larger share, and the equity of resource distribution should also increase. In response to the high social rates of return of all educational levels, public and private financing of education in LAC countries should increase (Oliveira, 1989; ECLAC-UNESCO, 1992; World Bank, 1994; UNESCO et al, 1994; Birdsall, 1995). However, additional financing should be related to some clear evidence of promising educational improvement trends (not for "more of the same"). When half of the fourth grade students are not even learning to "understand what they read" it is difficult for Congress or Secretary of Finance to increase the public flow of resources to education unless improvements can be foreseen. The reform strategy should implement successfully tested educational strategies and start with low cost changes (Wolff *et al*, 1993). As discussed in the ten previous strategies, there are many possibilities for improving the quality of education through targeting resources for socially agreed specific purposes. In a long term strategy, the flow of public resources should be gradually increased as improvements in education can be objectively described (measured if possible) and communicated through mass media (to strength social support). At the same time legal norms should be ennacted to increase cost sharing as much as possible, and use of international cooperation and financing should be improved (McMeekin, 1995).

12. There is a new role for the Secretary of Education, particularly when the educational system is decentralized or private (Tedesco, 1989). Six tasks should be highlighted: (i) improve efficiency by identifying promising programs (educational and management), financing of their evaluation, and widely distributing the results; (ii) support accountability by financing and monitoring testing systems (even though they could be implemented by universities, NGOs or private groups), and publishing the results; (iii) help individual decision making by launching or strenghthening accreditation mechanisms, especially, for the higher education level; (iv) support research by operating through semi-autonomous academic groups externally reviewed project funding; (v) improve equity by collecting and pricessing information that help to identify groups that need special norms, subsidies or incentives in order to reach socially agreed educational levels; and (vi) support social consensus by convening consultative mechanisms, supporting their work and further discussing and spreading their reports at local levels to encourage participation from parents and teachers. Since these are intellectually and politically extremely challenging tasks, a flexible public sector personnel policy enabling recruitment of dynamic leaders into the sector, high level consultants, and continuous professional development of sector staff are essential to ensure success.

These twelve strategies are presented as a starting point for discussion in each country,

and should ensure the feasibility of reaching the required levels of quality. They are mutually related and, for example, the pressure for preschool expansion will be reduced when frontal teaching is quickly complemented by active and participatory learning, enhanced through the use of well tested student guidebooks. Discussion of specific strategies among educational leaders outside the government, former senior policy-makers, and representatives of all parties concerned, should be able to prepare an effective agenda for action (Toro, 1994).

Reform should be developed in stages (as part of a long term strategy rather than as a drastic process) because attention should focus on selected objectives of each stage (not all problems can be fought at the same time). Poverty and socioeconomic deprivation constraining student achievement levels cannot be erased unless huge resources are movilized (Wells and Crain, 1994). To reduce segregation USA implemented "busing", and LAC also have similar segregation levels. In some countries, more emphasis will be assigned to mobilizing private resources. In other countries, the emphasis may be given to compensating deprived students (privileging preventive rather than remedial treatment) or professionalizing teachers. In each country an adequate set of incentives and a carefully crafted monitoring system should be worked out for implementing the selected strategy (Castro, 1994). However, the set of strategies and incentives to improve the quality and efficiency of education eventually must be the object of a national consensus in each LAC country willing to implement a long term educational policy that effectively improves the learning processes at the classroom.

Conclusions

The twelve recommendations given in the previous section are not of equal importance, are to a large extent closely linked, and aim to common goals. Below is a brief description of the goals to be reached through those recommendations.

Educational reform must be inclusive. There is a need for substantive education reform. Since many stakeholders are affected by such reform and since teachers, in particular, will play a critical role in implementing reform, the reform process must be inclusive of all important interest groups. The result of the process should be a national consensus on strategies to raise the quality of schooling, especially for the poor.

Each child should be guaranteed a minimum basket of educational inputs, including materials for group and personal learning, textbooks, other instructional materials, and, most importantly, a guaranteed number of hours of instruction. The length of the school day and the length of the school year both need to be extended, with important implications for teacher salaries and the teaching profession.

Extra resources should be targeted to the children of low-income families. Improving the income distribution in Latin America will require significantly higher investments in the human capital for the poor. These investments include increased access to pre-school, subsidized school lunches and school materials, the best rather than the worst teachers, and longer school days.

Change the teaching of teachers. Aside from the student, the teacher is the most critical input to improving the classroom process to raise learning in the school. The quality and style of teaching must be improved, and this will require better teacher training, stronger mentoring and group learning, and changing the reputation of teaching as the career of last resort. University departments and other teacher training institutes will themselves have to be reformed, while teacher salaries will in the long run have to be increased to attract and retain good teachers.

Improve the tradition of empirical research. Strengthening doctoral programs and research should gradually increase the training of the faculty and raise the quality of the higher edu-

cation. Institutional arrangements should be worked out to create critical mass, uses scarce resources, coordinate activities with native talent working abroad, obtain first class peer review, and retain young talent in each country.

Education reform, efficient use of resources and increases in public education budgets should be clearly linked. The quality of schooling cannot be improved in a sustainable way without increasing public and private education expenditures and improving the use of those resources. On the other hand, for most countries in the Region, public expenditures should not be further increased in the absence of education reform.

Educational policy based on good information and good analysis. Education policy makers and decisionmakers need to increasingly use data and the results of research in formulating policy. Parents and teachers require information on their school's performance relative to others especially in decentralized systems. The capacity of university faculty to produce and disseminate high quality educational research must be strengthened to inform policy analysis.

The education ministry should play a key role in reforming education and raising quality. Among the important tasks are to convene consultative mechanisms, obtain national support for reform, identify and evaluate innovative programs, and to ensure relevant information on school performance is collected, processed and widely disseminated to students, parents and teachers.

Of course, the effort that each country should do in order to reach these goals will be different given that the base line will be different. Therefore the strategy for reform should be tailored to local needs. Each society has to decide on the educational level required to live peacefully in a democratic regime and to reach a sustainable economic development through international competition. "Non Scholae, sed vitae discimus" (not learning for the school, but for life).

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URUGUAYAN HIGH SCHOOL GRADUATES: WHO ARE THEY, WHAT DID THEY LEARN, AND WHAT DO THEY THINK

ECLAC* Montevideo

*Having evaluated the learning skills of students taking the Diversified High School Programme (DHSP)**, based on a battery of Mathematics and Language tests, two major problems that bedevil Uruguay's Second Cycle of Secondary Education, were brought to the forefront: the first area of concern has to do with a lack of student skills, such as the inability to handle basic instruments, and clearly reveals that the educational targets defined in 5th. and 6th. grade programmes, are not being attained; second, poor results seem to indicate that teaching –as intended in the respective programmes– is either not being delivered or it has been carried out in various and contradictory modalities, with one undesirable end result; the programme is not being met.*

At the risk of rehashing data already discussed in the Report, let us succinctly recall the conditions of the teaching evaluated and those of participating students. Briefly, it should be pointed out that:

The evaluated students were DHSP students attending their last month of classes, that is to say, they comprised a very special and privileged sector of uruguayan society, who not only received nine years of compulsory education, but an additional three years for good measure. These students account for a little over one third of initial enrolments within their age group, while those who took the test represent about one fourth of their generation.

Those who took the test did so voluntarily. Thus, it seems reasonable to assume that the knowledge base of those students who chose not to participate was weaker than those who did.

The sample used is perfectly representative of Montevideo's public and private school day students, and of public schools of provincial capitals.

On the whole, test results reveal insufficient knowledge among members of the country's cultural elite, that is to say, among those who aspire to move on to higher educational levels or take over positions that require organizational and management skills.

Approximately 25% evidenced severe deficiencies. These are the individuals who made an average of one mistake per line in the composition test and who, additionally, proved unable to solve simple arithmetic operations typical of beginning grades.

Another sector (accounting for 45% of the total), scored less than 50% in the Mathematics and Language tests, showing insufficient knowledge in these areas, despite having been

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* Economic Comission for Latin America and the Caribbean. Montevideo. Conclusions and Recommendations of the Research "Uruguayan high school graduates: who are they, what did they learn, and what do they think.

** For Uruguayan students, the last years of high school constitute preparation for a university career. (15-18 years old) At this point, students will have chosen their area of interest (Biology, Science, Humanities), hence the use of the term "diversified".

evaluated –it is important to keep in mind– somewhat leniently, under the premise that it was better to keep the level of demand too low rather than too high.

As regards students with marked deficiencies, it is hard to imagine how they managed to wade through twelve years of study knowing as little as they did. Their continued presence in the school rosters, seem to indicate that evaluation and promotion mechanisms are plagued by inconsistencies, and that there is an urgent need for standardized evaluation parameters.

Because the sum of low achieving and deficient students comes to two thirds of the total, it may be concluded that what is actually being taught and learned, falls very much short of the academic goals set forth in educational plans and progammes. There would seem to be a theoretical and a practical –hidden– curriculum, that far from guaranteeing the positive homogeneity of learning skills, reveal the differential operation of each sub-system wherein acquired knowledge decreases as a function of the students' social and cultural position.

Levels of quality

Four mayor level of educational quality are evident:

- Private schools that enjoy high social and academic prestige, founded on a tradition of cultural and institutional excellence based on knowledge; these are the schools that receive youths from culture-oriented families who expect a sound education, and are prepared to meet the level of demand in return for solids results. Within this learning sub-system, learning skills are a cut above those found in all other sub-systems, although poor performance under such ideal conditions would be indicative of curricular and teaching methodology shortcomings.
- A second group consists of private schools that –by contrast to the former– lacking the institutional tradition, stress the quality of the infrastructure, discipline, the transmission of values, and the uniformity of teaching practices. Attending students belong to upward-moving social groups with somewhat lower formal education; academic results are not comparable to the previous group's, being more closely associated with those recorded for public schools.
- The third group is represented by public schools from the various provincial capitals. These institutions include a student body characterized by a very low social and cultural profile; terrible –if not the worst– material and socializing conditions; a teaching staff which is the second most numerous in terms of veteran professionals –just under private type A schools– but it is also the sub-system that in the last five years has recruited the lowest number of IPA (Instituto de Profesores Artigas) graduate teachers, a fact that speaks of a swiftly deteriorating academic environment. Although compared to provincial public schools they still show stricter evaluation criteria, their rate of school failure is among the highest.
- Finally, the sub-system made up by public schools of provincial capitals. The co-existence of students from highly educated and poorly educated families, results in an extremely polarized student group. Professional training levels among the teaching staff are extremely low, and tests reveal, more often than not, that learning deficits may be attributed to faulty teaching methodologies.

Although the problems affecting the quality of education still reflect the social and cultural component –whose presence is very intense at the primary education level and somewhat milder in the basic cycle of middle education– when it comes to DHSP students the most evident problems, can be related to the structure and development of secondary education.

Students are not aware that they don't know. This state of "blissful ignorance" constitutes a further indication that the system has failed to provide clear signals in terms of the differences between true and false, culture and lack

of culture, knowledge and ignorance. This information vacuum may give rise –within a segment of the young generation– to a feeling of failure, when high expectations are confronted to insufficient knowledge. But, it may also have unsuspected repercussions on a society trying to accommodate a generation of youths whose demands are inconsistent with their skills.

Broadly speaking, secondary education seems to exhibit symptoms of "anomia". First, since teaching objectives are not realistic, practice is not consistent with theory, and passing does not depend on the amount learned, the gap between what ought to be and what the daily practices reflect, undermines the existence of a genuine educational system; the concept of what should be taught, how it should be taught and how to guarantee an evaluation that may introduce a degree of homogeneity into the system, has been long lost.

Second, a social system –in this case, a teaching system– presupposes a definition of the roles of those participating in it, as well as interaction guidelines for the various roles; during basic cycle, youths are unable to assume student roles which imply discipline in terms of attendance, study habits, and their relationship with knowledge. Later on, when facing the DHSP they are forced to adopt these norms belatedly, and usually, conflictively. For its part, the teaching responsibility is increasingly falling to the hands of individuals who were not trained to perform as teachers, have no inkling of what the teaching process involves, and have learned that the salary a professional teacher commands is no larger than a high school graduate's. This anomic situation became more severe with the establishment of the Common Basic Cycle which, in its zest for obtaining the highest possible number of passing students, ostensibly lowered academic requirements. End result, studying or not studying became dissociated with passing and, as a logical outcome, for educators teaching or not teaching became irrelevant.

It is hard to pinpoint the causes of such a complex situation. Despite this difficulty, this report lists multiple causes that may help explain why students learn as little as they do when taking the DHSP. These factors fall along two main dimensions: "inefficiencies of the current teaching system" and "shortcomings of the system itself". Concerning causality, it is essential to understand that although some of the decisions stem from policies or institutions dating back half a century, they are still regarded as organizational paradigms of education. Another aspect to keep in mind, is that the problems ailing secondary education cannot be detached from those that have stricken uruguayan society. Since the 60's, the country has been beset by the social model crisis, confrontations, an authoritative government, transformation of the economy, a tough transition back to democracy, and a recent economic adjustment phase. In terms of guidelines and recommendations on how to deal with reforms to secondary education, it may be recalled that in previous ECLAC's assessments, multiple reflections on changes to be introduced to primary education and the basic cycle of middle education, have been set forth. Because education is a process of growing complexity, particularly in the case of middle education, and, specially during its closing cycle, a reform that does not consider changing preceding stages, is unthinkable. To reiterate, educational transformations do not happen overnight, nor do they constitute a "once-and-for-all" Reform.

The suggestions presented below, following a review of the main factors that play a critical role in the present situation, are intended to elicit a discussion on what to do in addition to helping to identify the horizons that will guide long term educational reform.

Lastly, every observation included here, is grounded on the conviction that in order to assume a policy of educational transformation, what is needed, first and foremost, is an attitude of change that springs from within the system, a systematic training effort by all actors involved, and a critical analysis of the educational practice. All this means, that the first mandate education must bear in mind is, "heal thyself".

Inefficiencies of the current teaching system

The following aspects deserve mentioning:

In general, secondary education enrolments and, in particular, DHSP enrolments, have boomed. During the return to democracy stage, the country has undergone expansion along various axes: horizontally, covering small cities and rural areas; an even higher participation by women in terms of enrolment in terminal courses, and the incorporation of a lower cultural and economic strata into secondary education, a first for many of these families. This expansion took place so swiftly –in less than ten years– that the physical, conceptual and human resources required proved either ill-prepared to absorb it or simply did not exist. The necessary outcome of this lack of insight, was that massive enrolments led to a serious drop in the quality of education delivered.

The process that will permit regaining the quality of education will be long-drawn, and will require –among other things– identifying the cultural problems of new generations of learners, elaborating methodologies that ensure successful teaching-learning processes, and establishing specific policies designed to cater to the low-performing student sectors. Furthermore, all this implies, that the establishment of teaching cycles and grades is contingent on the training and planning of human and material resources, without which the expansion of educational supply becomes merely a ritual that will eventually lead the system to a blind alley.

This expansionary cycle occurred as the country stumbled from the impact of the external debt crisis, and the subsequent stringent fiscal adjustment programme. Under these circumstances, the funds earmarked for education were slashed, despite a desire on the part of government officials and political parties, to do exactly the opposite. Financial restraints had an adverse effect on the quality of education through curtailed investments on infrastructure and equipment which, consequently, could not keep up with the expansion exhibited by enrolments. As a result, the physical setting where the teaching-learning process unfolded, fell into a deplorable state of precariousness. An important fact to remember is that fifty thousand students, at an average of 30 students per room, would require 1.600 classrooms, in order to attend school.

Before the bluntness of these data, a general heightening of awareness is called for, relative to the magnitude of the effort the country must undertake –under any administration– in order to meet the needs generated by such a remarkable increase in enrolments. Educational investments programmes must be legislated by the Legislative Branch of government, for ten-year periods so as to maintain the continuity of policies dealing with building activities, purchase of equipment, audio-visual elements, books, etc. Such an investment policy requires a national political agreement.

The cutback affecting resources, along with various other factors that will be discussed in later sections, also had a negative impact on the quality of teachers. Because primary and secondary teachers –taken individually– comprised the largest Public Administration sector, any raise in salaries meant tying up a sizeable portion of resources at a time when reduction of the fiscal deficit was to be accomplished largely through freezing expenditures, rather than through restructuring the State–including under this concept issues such as the role of the armed forces, a streamlining of the State's administrative personnel through training and updating initiatives, etc.

The long cycle of deteriorating income, that started two decades ago under the military dictatorship, has had a profound structural effect on the permanence of the better qualified teachers. A portion of teachers who had graduated from IPA or held professional degrees left the profession in search of greener fields. Others, used early retirement as a mechanism of reinsertion into the labour market, while still others reduced their teaching hours in public schools, to a bare minimum.

These very same reasons defused the enthusiasm for recruiting IPA students, and for com-

pleting teaching courses leading to a degree, both in this institute as well as in Teacher Training Institutes located in the country's provinces. Consequently, in terms of number of graduating teachers, their volume would barely fill the vacancies left by those seeking retirement. As a result, the percentage of degreed teachers among educators entering secondary school, has plunged in the last five years. Moreover, recruitment has tended to polarize between the capital's type A private schools and public institutions, since the former recruited 80% of their new staff among degreed professionals while, in the case of public schools, this figure amounts scarcely to 20%. This paper shows that a substantial percentage of students who are planning to study at IPA or at provincial Teacher Training Institutes, performed rather poorly in tests given by ECLAC.

If the country fails to implement a gradual recovery of teachers' salaries through a mechanism which takes into account the possession of a teaching degree, and professional training and seniority, all other measures will be useless, because the key to educational reform lies in the quality of teaching, and this will not be attained as long as the salary being paid to an individual with fifteen or sixteen years of academic studies, is comparable to the remuneration of an unqualified person.

The permissiveness of the teaching and evaluation systems which began with the implementation of the Common Basic Cycle in 1986, can also be identified among the inefficiencies of the system. As demonstrated in ECLAC's Do students in the Basic Cycle of Middle Education learn?, the number of class-days per year and class-hours per day was reduced, while the number of study subjects was simultaneously increased. The repercussions on learning outcomes were disastrous. Likewise, the motivational strategy that took the form of remedial courses and passing with failed subjects, meant that, except serious discipline problems or prolonged unjustified absences, students would pass to a higher grade and even complete basic cycle, with extremely low academic requirements. Shortly after publication of this report, the educational authorities embarked on a series of praiseworthy adjustments intended to place reasonable demands on grade passing. Nevertheless, the secondary system is still plagued with a "drive forward" notion which causes basic knowledge to be pushed to advanced level courses, while the student is never under any academic pressure until the time comes to confront the DHSP, and then only partially.

The educational system must get rid of its inherent permissiveness, demand from itself a teaching role, and require from students work routines that enable them to perform as students, and pass the course with adequate knowledge.

Shortcomings built-into the system

Apart from inefficiencies, questions should be asked about how relevant the model for secondary education really is, in a stage of massive enrolments.

Perhaps one of the first points that deserves attention, is the persistence of an artisan model of secondary education in the face of a large-scale mobilization of students, teachers, administrators, and groups generally associated with educational activities.

The model, that may be traced back to the old secondary section of the Universidad de la República, and has –in fact– prevailed up to the present –although formally it was only in force until 1936– was based on an artisan type relationship between a self-taught teacher specialized in a subject matter, and a group of students. Needless to say, establishing a rapport with the class took a considerable amount of prowess on the part of the educator. As the number of students increased, so did the number of teachers, all of whom followed in the footsteps of their predecessors. The assumption was made that the country now had an important number of self-made, high level teachers. This not the case in Uruguay, nor in any other country. Actually, the country is faced with the inability to generate and transmit knowledge on a large-scale basis, a proc-

ess that is known as the "knowledge factory" in the United States.

Massive education must pursue two basic goals: ensure that all participating teachers receive suitable training leading to enhanced professional performance, and provide the necessary learning objectives, goals and instruments for each subject in every grade. This presupposes establishing specific areas of knowledge to be attained at every level, the availability of methodological manuals that will facilitate this task, guidelines for teachers to follow point by point, and textbooks that address the topics to be taught, clearly and accurately. Last but not least, all this material as well as the audiovisual aids and computers to be used, should be provided in sufficient numbers to go around.

Within the elitist model described above – the IAVA being its most illustrious exponent– and given the high quality of their staff, the nature of the study programme was never a source of concern. What mattered, was that the student learned by osmosis through the quality of the research or secondary teacher who, in turn, was a university professor. What was significant then, was the development of the student's mind before knowledge presented by a renowned educator. Neither did it matter if the teacher's lectures were limited to a single topic in the study programme, since the key element was "how" he presented this information. Hence, in terms of learning, students were given an insight into the workings of an analytical model.

Within this scheme, evaluations did not enter into the picture, neither the teachers', nor the commonplace, objective evaluations of the students. As regards teachers, one might say that most of them were "beyond evaluation" for, who would have dared evaluate such eminent professors? With respect to students, since each group developed under the aegis of a teacher, not unlike medieval times, it made little sense to subsume the various teachings imparted by professors into a common melting pot and, hence, a collective test lacked any logic.

Although it is obvious, it should be recalled that secondary education –both cycles included– involves better than 200 thousand students and over 10 thousand teachers. There is no such thing as 10 thousand self-made "teachers" and, what is worse, the current number of professionally trained teachers is not even enough to cover the existing number of classrooms. At the national level, the class-hours imparted by degreed teachers fluctuate between 16% in Mathematics and 57% in History, this observation being devoid of any judgmental intent as to the quality of their training. Moreover, participation by degreed teachers has been decreasing steadily since 1986.

Massive teacher training

The teaching dilemma becomes critical in the provinces, where the percentage of class-hours covered by teachers drops alarmingly: figures for Mathematics and Literature (one of the subjects with higher coverage) are 7 and 47 per cent, respectively.

The various strategies adopted to increase the number of teacher graduates from IPA or provincial Teacher Training Institutes, have not improved things appreciably, and the country now faces a secondary education system blighted by a declining production of teachers and, hence, a quality of student training fated to worsen in time, even if other negative aspects improved markedly.

Massive education entails massive teacher training programmes. To attain the level of professionalization primary education has exhibited since the 30's, some minimal conditions would be needed:

- A remuneration level enticing enough to cause young people completing secondary education, to consider that investing four additional years of study to become teachers is an economically viable alternative. This would imply that the income to be earned must be comparable to that obtainable through other activities that claim an equivalent number of years of professional training.

- A teacher training service supply adequately distributed across the national territory, accessible to residents of the mayor urban areas, whether they aspire to practice their profession locally or elsewhere.
- A very high quality teacher training service, which would imply a modern infrastructure, state of the art educational technology, and specialized studies in the country or abroad for those interested in becoming teacher trainers.
- A greater homogenization of the teaching profession, particularly at the basic cycle, in the sense that teachers should cover an area of knowledge not a specialty within it. Teachers are professionals who can teach the first six grades at rural and urban schools, while professors are specialists in one of the 20 to 30 subjects offered at the various grades of secondary education. On occasions, their knowledge proves insufficient to handle the more specialized disciplines contained in the DHSP. A rationalization of the relationships between professional supply of teachers and demand broken down by areas, would necessarily imply a redefinition of the field of knowledge, as well as a restructuring of the teachers' work schedule.

Therefore, there is a need for basic cycle teachers trained to teach Mathematics, Language, Social Sciences, Natural Sciences, Physics-Chemistry, and English. This new category of educator would work a full shift in a school specialized in a few study subjects, providing continuity and depth to the type of cognitive integration the school offers, while his task would be regarded as a specialized stage in the education and socialization of adolescents.

There is also an urgent need to establish two or more high quality institutions specialized in the training of secondary education teachers. These schools would be located in the provincial area and serve as poles for the existing Teacher Training Institutes.

The implementation of a teacher training system that measures up to the quality of education needed, necessarily implies regaining some of the excellence that inspired the creation of the Instituto de Profesores Artigas (IPA). The idea is not to return to the past, but to design a new type of centre, backed solidly by educational research, generously furnished with audio-visual aids and computer hardware, so that new generations foster the use of self-learning instruments. In this environment, the teacher would be acting over a global system not as an isolated specialist. Such a centre should define two main training modalities, making the distinction between basic cycle and DHSP teachers, but providing the appropriate links to facilitate mobility from one category to the other.

Ranking a higher education system would require the intervention of a specialized unit, perhaps a Council, made up by prestigious figures of the educational world.

Lack of learning objectives

The lack of learning objectives for each of the main areas of knowledge can also be traced to the built-in shortcomings of the model. As mentioned earlier, within the IAVA's elitist model, learning objectives were unnecessary, and conditions did not lend themselves to demand that the different "teachers" transmitted the same contents or established common learning indicators. Conversely, in massive educational systems –characterized by the simultaneous intervention of thousands of teachers and the implementation of outsized programmes which include dissimilar, and variegated themes which clearly call for different approaches– coherent functioning becomes impossible unless both teachers and students are provided with a minimum set of teaching and learning objectives to attain. Current systems lack this and, moreover, teachers are evaluated on the basis of "programme fulfillment" regardless of the amount of learning processed by the students in each of the topics making up that particular programme.

Thus, for example, the basic cycle Spanish Language programmes include the teaching of

various predicates. However, upon completing their mother tongue education, many students cannot tell the subject from the predicate. If this were one of the main learning objectives, teachers would be giving their students plenty of exercises to ensure this knowledge, and would not spend their time and energy reviewing the various predicative groups.

Basic learning objectives should be determined for each of the programmes in every subject matter, or, to put it differently, that knowledge and information deemed essential learning must be identified so that once achieved, the skills of the learner may be developed further. Such a definition, would not only guarantee that the student effectively possessed such essential knowledge, but, additionally, it would help identify those subjects that constitute deadwood and those that are missing from current programmes. Obviously, once basic knowledge has been achieved, teachers should be given certain freedom of choice, although this leeway cannot be exercised at the expense of the rights of students to have the minimal cultural bases.

Another element that should be considered is the lack of common and objective evaluations. Prior to the testing conducted by ECLAC at the request of CODICEN, there was a total dearth of representative data on what students learn in each grade. Such a lack of information, had kept the system's foibles hidden and, as a result, no technical or material support had been given students and teachers, from low performing areas, schools or subjects. Common evaluations make possible a democratization of the system; currently some units teach while others engage in some kind of ritual, but those attending the classrooms are not informed of what they are not learning and, clearly, a democratic system that is denied access to information –particularly that related to the moulding of new generations– is simply unthinkable. Evaluations also allow setting up a system of common learning objectives since families and teachers, once they know what will be evaluated, will make sure that these particular skills are taught and learned.

Periodic and objective learning evaluation tests applicable to students at the closing of Primary Education and Basic Cycle of Middle Education as well as at the DHSP level, should be implemented nationwide. The scores obtained, would provide the basis for determining the capacity of an individual to proceed or the advisability of resorting to remedial courses. In the light of observed results, a quality enhancing system should kick in which –furnishing all the necessary resources to the under achieving units– could help it materialize the needed transformations.

Human being's relation with the space

The curriculum reinforces the unsuitability of the current model. It could be argued that secondary education is pervaded by the old preuniversity curriculum, and that the main difference stems from the increased number of schools and the volume of enrolments, but not from its conception. Over 80% of the eligible population attends basic cycle, and better than 50% DHSP. Meanwhile, the number of subjects has increased and programmes –beyond attempted revamping efforts– continue to reflect the knowledge classification logic, characteristic of specialized studies. This means that disciplines such as History, Geography, Civics, Sociology, etc., are still being transmitted to students as oversimplifications of specific areas of the knowledge that is imparted at universities. Conversely, it may be claimed that a common basic education for the population at large, would require presenting the relationship that binds humans with space, in time, and as creators of values, norms, and institutions which govern living as well as social interactions, and draw inspiration from material, scientific and technological bases.

The curriculum should undergo a change process so that it no longer reproduces at the secondary level the division of knowledge that is found in universities. For example, if the

country is considering a policy of integration with powerful neighbours, it might rethink the concept it wishes to pass on to the new generations, beginning with the notion of "common space", and teaching –not as separate subjects– the history, geography and natural resources of the sub-regional countries along with their social and economic structures. The extended territory analysis could run parallel to an examination of the other cultures, of development in other regions, and of what is in store for them. All of this requires experimentation, substantial doses of innovation, as well as knowledge integration and acquisition processes, that only thorough teacher training and didactic material production programmes, could bring about.

Currently, there are nearly 360 thousand primary students, almost 250 thousand secondary students, approximately 60 thousand technical students and, roughly 5 thousand higher education students (Instituto de Profesores Artigas and Teacher Training Institutes), under the supervision of the National Public Education Administration. Obviously, there are no enterprises or public services that handle even a fraction of such a population, or that carry out their work with a total number of employees – taking into account teaching staff, administrative and service personnel– of barely 50 thousand persons.

For students, primary education and the first cycle of middle education are part of a common sequence of basic and compulsory education, which was supposed to represent, towards the close of the century, that original primary school when first conceived. However, the authorities of three Councils which in the final analysis answer to ANEP's CODICEN, converge on this cycle. When defining basic cycle guidelines, one sector of the service is seen to include teachers, neighbourhood schools, and integrated curricula, while in the other two competing organizations pursue differentiated objectives namely, technical and secondary education, neither one of which relates to basic education.

Clearly, the technical-administrative authority must reside in a teaching cycle defined in terms of objectives, duties and the vital cycle of the learner. Numerous countries entrusted the extension of the basic cycle to the same jurisdiction responsible for primary education, while others opted for a specific jurisdiction to handle adolescents. A few, Uruguay among them, chose to overimpose a new social and cultural model of education on the administrative organization of yesteryear.

The basic cycle would seem to require a specific authority that caters to its peculiarities, conceives education in the light of that particular biological and emotional stage the learner is experiencing, and produces an educational concept that reflects the cycle's compulsory nature. So far, the mistakes made, stem partly from provisions adopted by authorities that simultaneously administer stages prior to higher studies –a case in point, Secondary Education– or aspire to link this cycle to technical-manual education –illustrated by the Universidad del Trabajo-.

While the structure of primary education has been designed for massive, nationwide education, and its organizational scheme relies on departmental supervisory units, the other two branches of education –in the total absence of a decentralized authority– are supervised from Montevideo.

Detached management

Hence, middle education management tends to become detached from the people and from the very problems that haunt education, and through the implementation of an archaic bureaucratic practice, risks isolating the educational process entirely. Next to the public squares of most uruguayan towns and cities, it is not uncommon to see a primary, a public and a technical school, whose organizational administration and teaching structures emanate from different authorities.

The learners are the same, however, when passing from sixth to seventh grade, both the

educational authority and the organizational parameters change. Part of the teachers also remain unchanged reflecting a growing trend, since all of them share a common, national training found in every department of the Republic.

Many thousands of schools are managed from the capital where problems are no less complex. Here, all decision-making lies in the respective Council rather than in units with a limited territorial range that could, ideally, benefit from the input of school principals, teachers and families.

An important part of the poor academic achievement observed, may be attributed to an inefficient and ineffective bureaucratic web which, from a considerable distance to its users and actors, imposes arbitrary limits to the educational process. Again, this is but another evidence of a persisting artisan system which grows increasingly more incompatible with the need for closeness between the authorities and policy implementers. Thus, policies that should have a technical and national nature become entangled with a management and administration function that should have a local, common base for all educational levels.

Modern management incorporates a technical design and orientation, an evaluative criteria, and all the regulatory guidelines –associated with the substance of a specific organization– of operational management –associated with the daily implementation of activities–. First, it must have a technical and national nature to ensure integration, guarantee technical rationality, and allow emulating the designs of more advanced countries. Second, it must be "close to the people", which implies that the decision-making body ought to be physically close, and must constitute not a bureaucratic institution, but, an organization that oversees the region's entire educational process. In the provinces, the student and teacher population is homogeneous or move from one institution to the next, after tolerating the bureaucratic red tape imposed by the various Councils located in the capital. This implies the need for a Departmental Supervisor for Primary and Middle Education –several supervisors in Montevideo– who works under one of CODICEN's Operational Divisions and is responsible for daily management activities, ranging from personnel administration –including teachers– to maintenance, and the extension of infrastructure for the various services.

The educational system is also seen as severed from modern communication technology, exemplified by audio-visual and computer media, having previously failed to establish a universal link to the textbook. At the core of the artisan model, was the face-to-face relationship between the teacher and his students; he possessed an important portion of the world's knowledge available at the time and, through his words, delivered information that could not be had unless sought in rare volumes or remote libraries.

This self-same model continues to define the secondary education system, despite the fact that teachers are no longer the "professors" of yesterday and knowledge is readily available not only through books –a library service for general use would amount to a small portion of public expenditure– but also through an assortment of audio-visual aids such as videos, computer programmes –which blend words, symbols and images– or, even, some that add sound and film images such as CD Roms. In foregoing chapters, it was shown that the least efficient learning method, note-taking, is the main instrument students use for preparing written tests and examinations. It should be noted that out of 1645 six grade students surveyed, 6.2% did or read nothing in preparation for their last written test on their major of choice, while 43.2 % studied only the notes they had taken in class. This shows that half of the students do not resort to books when preparing for their major's most important test.

Educacional system v/s audio-visual aids

In actual fact, the educational system continues to wage a battle against the scarcity of audio-visual aids. In October 1992, 1452 Mon-

tevideo's public school students shared one video unit; this figure in provincial capitals rose to 1686. The same ratio was true for television sets. For their part, half of the students in provinces, almost two thirds of Montevideo's public school students, and four fifths of private school students, have a video at home. The number of home computers is no less significant, with values of 25% for the overall secondary school population, dipping to a minimum of one out of six in the provinces, and reaching a maximum of one out of two among private type A schools. Secondary education authorities have recently provided computer rooms for a limited number of public schools as part of an experimental project not yet scheduled to offer computer science training.

A teaching system along the lines of a "knowledge factory", necessarily includes self-learning activities via direct communication between the student and a unit that broadcasts information, knowledge and entertainment.

In the past, technology could only be found in teaching centres; these centres harboured all the books, laboratories, physics' instruments, as well as those specialists whose lectures constituted the main knowledge transmission instrument. Today, computers, video programmes, CD Roms- even those produced internationally by teams of specialists who have access to an infinite supply of material and cognitive media –have become the instruments of a technological system of knowledge transmission. Geography can be taught using the inexhaustible stock of National Geographic videos, Literature through the magnificent CD Roms that offer the best from Shakespeare, readings from famous actors, critical reviews from renowned literary specialists, and literature pieces presented in a historical context, accompanied by the corresponding images and music. The teaching of English has been greatly changed not only by the audio-visual laboratories, but also by amazing software capable of translating in a non-literal fashion. Similar mechanisms could be implemented towards the teaching of geography, economics, history, national literature and folklore. An attempt could be made to mobilize the top-notch human resources available in the country in the areas of acting, music and film-making. In synthesis, the idea is to set up an up-dated teaching system that incorporates a great deal of technological instruments so that students may systematically enjoy in the privacy of their homes and with their families, didactic programmes that they will later discuss in class guided by their teachers. This modality would allow to: extend the time of exposure to cultural activities by bringing "home-time" into the educational process; disseminate throughout the country "cutting-edge" international skills; make teaching an enticing activity, and reinforce teachers'labour with the support of "standardized" products comparable to those offered by the most exclusive educational systems of developed countries.

The entire secondary education system, should benefit from top quality didactic material which may include school libraries stocked with videos in the areas of Geography, History, Science, etc.–and their corresponding discussion and exercise manuals– that may be enjoyed by the learners and their families. Furthermore, the country needs to make a tremendous effort to incorporate computer technology into schools which, given today's hardware and software prices, would not constitute such an outlandish proposition if formulated for students in their last year of basic cycle. For example, business enterprises and organizations could be asked to collaborate, giving computer training to the children and relatives of employees. Likewise, educational organizations, along with NGO's, could also cooperate in this massive effort particularly through the integration of computers as a teaching language, taking advantage of the various technical alternatives available today.

Intrinsic contradiction

The current educational system suffers from an intrinsic contradiction. Its specialization is

production and, fundamentally, the transfer of knowledge. Modern knowledge has a limited life span which means that teachers, particularly in scientific areas, could be transmitting obsolete information, from past epochs, to young people who are studying now, and plan to become active citizens of the 21st century. Under these circumstances, it could be said that an educational system devoid of a department, division or institution dedicated exclusively and actively to permanently up-dating teachers, must be considered an anachronic system. Once again, the continuity of an artisan concept of education, rears its ugly head.

In the past, qualified professors maintained personal contact with the universal academic system which unfolded gradually making special up-dating efforts painless. At present, teachers do not have an equivalent training level– in better than fifty per cent of the cases they lack a university degree– and because of their small salaries, sometimes, they cannot even afford to buy a simple trade journal. This state of affairs, makes for individuals very much in the dark as far as national and international educational information is concerned. The old idea of creating a budgetary item to enable teachers to purchase books, has become a testimonial of the artisan system. Today, the idea is to establish an information system by incorporating the educational system's units into a computer data network on cutting-edge discipline development and new teaching technologies and methodologies. However, these formulas that constitute the basis of a regular up-dating mechanism, are quite unfathomable for those who lack a minimum knowledge foundation on which to build.

The creation of an aggressive training system that combines from intensive professional training initiatives, during a specific period and in a specific place, to regular instruction production systems dealing with specific teaching strategies for a given subject matter, passing through the capability of gathering, synthesizing, and retransmitting the best analysis put out by informatics journals and communication systems on education, is urgently needed. A special programme devoted to current teachers of rural schools and small urban centres– whose replacement is out of the question – intended to provide in-service training and validation as a strategy to keep education going in these localities, should also be given top priority. Additionally, it should be borne in mind that, based on the above-mentioned recommendation, the implementation of an audio-visual and informatics support system would mean a quantum leap in terms of the training received by such teachers and, consequently, in the quality of education received by students.

Another point to consider, is the system's capacity for evaluating itself, its educators and officials, and orienting management. As mentioned earlier, overall management is archaic and fragmentary owing to the presence of three Councils –governed by their own norms and managerial provisions– that splintering the educational process, funnel every last issue, including trivia, through the nation's capital. Such a gargantuan machinery –the largest in Uruguay– lacks training units for supervisors, managers and administrative department heads. Training for Educational Administration specialists is unknown in the country, even when critical management problems beset an institution that provides service to 600 thousand students, and employs a tremendous number of people.

The system does not have an operating capacity for project elaboration, neither at the micro –be it the "school" or the "national language improvement" unit– nor at the macro levels, understanding as such the educational development of a region or the development of a sectorial activity like, for example, teacher training. Project elaboration presupposes having the ability to analyze the system in terms of its operative, technical, administrative, and financial aspects, and the capacity to submit a new proposal based on the socioeconomic characteristics of the region or the serviced clients, and on a certain familiarity with the labour market. However, the concept of what educa-

tion is, what kind of scientific knowledge is relevant to it, how is transmission achieved from a pedagogical point of view, how is a new proposal elaborated and assessed with respect to its viability, desirability, cost, etc., is knowledge that must also be present.

Creation and qualification

The capacity to create and qualify technical teams at the management and middle management levels, able to manage such a gigantic service apparatus, has yet to be established. The normal tendency has been to recruit teachers –who may be very highly qualified in their area of specialization– and assign them to activities that require knowledge other than pedagogical. The system is guilty of incestual practices when filling executive posts, a fact that renders it old-fashioned and intrinsically inefficient from the modern viewpoint of Administration Theory.

The ANEP should create an Educational Management Technical Training Centre, if possible with international support and scope, to train first, administrators of an operationally decentralized education and, in general, the executive educational management team. At the same time, the entire system should be given a statistical-informatics potentiality as well as guidelines and manuals to standardize a management process that involves thousands of students.

Nor can we ignore the weakness of efforts directed towards educating and training school management and supervisory personnel, particularly in areas concerned with academic achievement evaluation, and policy formulations intended to provide the new generations with an education inspired on a well-defined set of knowledge, regulations and values. In all fairness, however, the Catholic University does offer post-graduate studies in Management of Educational Centres –no graduate students as of yet– and in the public sector traditional training for primary education administrative and supervisory personnel continues to be imparted by the Instituto Magisterial de Estudios Superiores. As regards this last institution, it should be noted that this training is only offered in Montevideo, and that the temporary relocation of provincial teachers to attend this institute of higher education, has not been foreseen.

One of the consequences of this process, is that programmes –that respond to the initiatives of the respective supervisory units– reflect the academic image of the discipline as conceived in a university setting or under the universal theory and, in many instances, lack any vinculum with teaching practices. The majority of secondary education programmes have not been designed on the basis of their teaching viability, nor is there a mechanism devised to evaluate programme applicability in terms of the ability, on the part of students, to incorporate concepts and information and turn them into knowledge, before they become final and compulsory.

The supervision of secondary school subjects follows an artisan orientation, which means that the supervisor evaluates classroom dynamics, the links between the knowledge imparted and the various knowledge hypotheses, programme fulfillment, and the pedagogical characteristics of the teacher-artisan. Each teacher is given a performance score which will have an ulterior effect on his/her professional standing, but, neither the teacher nor the inspector knows whether the students are capable of learning what is taught or whether they actually do learn. It is as if surgeons were evaluated exclusively for their surgical skills, without regard for patient survival, a datum that would not be included in his performance records.

The absence of academic evaluations promoted from within Supervisory units by schools or departments, or the lack of proposals for common evaluations for written tests or examinations within a single school to ensure a common standard, even in disciplines as easily quantifiable as mathematics, constitute another proof of the statement made above.

Management decentralization, as it implies an important transfer of decisions to school principals, and reinforces the supervisory function giving it power to control and define the quality levels teaching practices ought to have, presupposes specialized training in both areas, since qualifying in a specific subject, is no longer valid. Guidelines for executing these important functions, should also be provided.

Basic scientific knowledge

A twelfth observation regarding system inefficiencies, has to do with the academic organization of the DHSP. A sixth preuniversity year, is still being dragged along, despite insistence –by university deans themselves– that basic scientific knowledge, rather than preuniversity knowledge, is more desirable. After more than half a century of separation between secondary education and university training, options such as Law, Economics, Medicine, Agriculture, Architecture, Engineering, and many others –whose enumeration would probably surprise secondary school students of developed countries– can still be found in the former. At any rate, if the last year of secondary education were to be a preuniversity year, its current organization would prove detrimental to the newly-created careers such as Sociology and Political Science, among many others, which not being represented in the secondary school preuniversity year, would have to find among the existing options, a close equivalent. Each of these options still offers subjects that are only meaningful for a particular career –for example, introduction to Law– and others that observe time-honoured traditions –such as the belief that Italian is necessary for law students, therefore it constitutes a specific subject rather than a second or third alternative language in their study programme–.

This scheme of academic organization shows the strong inertia of an educational system in the face of social transformations and changes in its own enrolment rates. An elitist curricular organization –barely 5% of the population had access to the last year of secondary education in the 40's– has prevailed, even when gross and net enrolment rates for sixth grade students hover at 40% and 30%, respectively. Fifty years later, only the fifth year of "preparatory" studies, was stripped off its preuniversity status.

In connection with the above, but pointing to a more general issue, the question arises; what should be included as content in a second cycle secondary education programme, when it is only seen to benefit 50% of the country's youths? The current organizational scheme compels fifth year students to choose among three options, Humanistic, Biological and Scientific, and in the following year among the six already mentioned. The question is; should all young people within a society follow these particular paths, and, given a large-scale educational system, is it legitimate to narrow down the field of studies to this extent, and, finally, should we not respect the progressive differentiation in terms of activities and knowledge, that defines a modern society? The current concept is markedly intellectualist and universitarian, while nowhere is it written that all human beings must fit into this concept or that everybody is fated to go to college.

The tremendous development of modern genetics has allowed us to discard Darwin's survival of the fittest theory as well as those that linked us to the lower species, and presuppose equality among individuals. By virtue of the genetic codes we receive from both parents and their subsequent cross-over, each living creature inherits not just specific traits, but also predispositions, intellectual abilities, and highly individualized sensitivities and perceptions. Human specificity then, explains the complexity of contemporary society particularly when attempting to impose common norms and values while simultaneously encouraging individuality and honouring the individual choices of millions of its members. Conversely, uruguayan education seems to be an extension of the French Revolution's Jacobinism which claims

that all human beings are alike, and advocates that the educational authority as representative of a collective "we" –the people, the nation– has the right –and must discharge the duty– of establishing a single standard of education.

Young people are unmotivated and bored by this model of secondary education, particularly when the media offers them richness of information, wealth of emotions and multiple knowledge categories. Moreover, the technological challenge posed by the so called "electronic super-highways" of developed nations, is the creation of an option menu in terms of information, dialogue and entertainment, so that every household has no less than a thousand possibilities right at its finger tips.

Vinculum with working world

By contrast, the country continues to live under the notion that secondary education represents grooming before accessing the lofty heights of intellectual culture, seen as opposite to everyday culture and, basically, to the culture characteristic of modern technology and to the work of a differentiated society. Young people decry the lack of vinculums between education and the working world, while it is important to remember that most secondary cycle students do not go on to higher studies.

This analysis does not exclude technical DHSP's. associated with the Technical-Professional Educational Council which, having started with a modest enrolment rate, now shows a significant growth. The assessment requested by CODICEN, excluded research on the operation of this sub-system's specific modalities (professional training, technical courses and technical DHSP's special courses, etc.). In spite of this, we cannot talk of institutions vieing with each other but rather complementing one another, since in the working scheme of modern service sectors the distinction between what is technical and what is intellectual, is no longer tenable.

There are reasons –beginning with technological change and economic and cultural globalization– to reflect on and try other forms of DHSP's which include specializations such as Technological, Informatics, Language, Art, Audio-Visual Communication Media, Tourism, and MERCOSUR high school programmes, just to mention a few possibilities. There are numerous youths, and individuals in general, who possess extraordinary language potentials, while the country is in dire need of individuals who can handle several of them. Their training would require a high school programme strongly centered on languages and their associated cultures. Likewise, it may be assumed that a country that has undergone the historical change implied by becoming integrated with two large nations –ten and fifty times larger than Uruguay– both of which have a different historical and cultural evolution and unlike economic and social organizations, should offer simultaneously a high school programme where the economy, geography, culture, and so on, of Argentina and Brazil, are also taught.

There are also very good reasons that justify an informatics high school programme, wherein the various skills are learned and processed in the informatics language so that students besides operating a computer, can also partake of the culture associated with this instrument.

These observations intend to show the wide variety of high school programmes that are possible, and point to the two risks that should be avoided at this level of education. One of them, is the naive belief that just a few extra class-hours devoted to a specific field of human endeavor or technical knowledge, will ensure initiation in that particular area; even as a high school graduate, just getting started in a complex field –say informatics– entails years of study and a specialized teachers. The second one, is attributing teachers the ability to teach every kind of knowledge. If we are dealing with tourism, for example, the systematic cooperation of tourist businessmen and entrepreneurs would be necessary, at least at the teacher training stage, and permanently to ensure professional practice sites.

This multiple high school programme pro-

posal should not be liken to the creation of privileged paths towards higher academic studies and other labour-market oriented objectives. Quite the opposite, the assumption is made that out of a diversity of cognitive development strategies, those that are aligned closer to a working experience, contribute novel and valuable mechanisms that may facilitate continued academic studies.

Education and society

A last comment to be presented in this review of mayor shortcomings of the current model of secondary education to reach the boundaries of universal knowledge, and to contribute to the development of uruguayan society, has to do with the links between education and society's main actors. The future of the country, is intrinsically linked to the pertinence and competence of its educational systems, for its development opportunities, both within MERCOSUR and international markets, call for highly skilled human resources who can cope with an environment of permanent change, much like the 21st century promises to be. For this reason, and because secondary education trends towards the globalization of the educational system, it can no longer be exclusively handled from the viewpoint of teachers. The country should call on all those working on their own fields of expertise, all those who have experienced the working world and its requirements in terms of knowledge, mental skills and attitudes –not strictly limited to the area of professional competence all those others who have specialized on occupational recruitment and training, as well as all those who can bring from without, an image of which are the cognitive bases currently held in high regard, and together analyze the future of education.

If, in order to reform education, all we had were the viewpoints of those who teach, it could be ascertained that, in the long term, education would no longer renew itself, because the main role of the educational system is to transmit, not to generate new knowledge, technologies or sensitivities.

This implies spurring a wide debate on the role of education; questioning young people as to their demands; calling on farmers who use state of the art technology, industrialists who promote uruguayan export products, technicians who bring finely honed skills to product innovation, leaders responsible for the quality of the work produced, the well-being of workers, national and foreign scientists, in other words, on all those who seek development through the use of intelligence and the dynamics of permanent change, to contribute ideas about the perceived failings and strengths of secondary education graduates. The fundamental idea, is to bring education to the forefront of national priority.

FACTORS THAT CONDITION SCHOOLING LEVELS IN GUATEMALA

Emilio Rojas*

This paper attempts to specify and assess the relative weight of those factors which are said to condition the schooling level of children.
The existing relationship between these factors (variables) and the schooling level observed in children, was determined by the "multiple lineal regression" method which, in turn, provides the mechanism to generate the corresponding equation. The selection of variables used in this equation, was obtained by testing the lineal relationship between the individual and the dependent variables.
Recent national Home Surveys conducted in various Latin American countries,[1] served as the statistical base. The objective of the study is to determine what factors define the educational level attained by school age children and youths, of participating countries. Thus far, the surveys submitted by El Salvador, Guatemala, Colombia and Chile, have been duly processed. This article summarizes the preliminary study elaborated for Guatemala.

Basic Assumptions

The study's basic premise is that: "The educational level attained by children, is strongly influenced by family traits and the surrounding social and economic environment".[2]

Some of the most significant family traits[3] are:

1. Parent's education level,
2. Family income,
3. Number of children in the family unit,
4. Race,
5. Presence or absence of one of the parents.

In terms of the social and economic environment (data not available for Guatemala), the key characteristics would be:

1. Degree of educational supply,
2. Degree of health services supply.

Other variables that greatly influence the attainment of a specific educational level have to

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1 For details see: "Guatemala, Encuesta Socio-Demográfica (ENSD) 1986-1987". ECLAC: División de Estadísticas y Proyecciones. Banco de datos de Encuestas de Hogares.

2 The assumptions used in this study are inspired in the Human Capital Theory. See: "El Capital Humano. Un análisis Teórico y Empírico Referido Fundamentalmente a la Educación." Gary S. Becker. Spanish Edition, Alianza Editorial, S.A. Madrid, 1983.

3 Note that the method used to define regression equations, is based on the "minimum squares adjustment method", hence, the values plugged into the equation are average values of variables or traits of the families comprising the statistical universe under study. Therefore, since the equation represents the average characteristics of this universe, it constitutes a model in itself.

do with the children's personal traits and include intelligence (IQ), skills, and sex.

The foregoing assumptions, are probably not the only ones that explain educational level or achievement, since they do not include, for example, factors inherent to the educational system itself which, depending on their nature, could be highly conditioning elements indeed.

Main variables.

The variables used in the equations are the following:

EDPAM, total number of school years passed by both parents; XINCAPH, family's per capita income. Total family income divided by the number of individuals comprising the family unit; HIRES, total number of children living in the home; RACE, Indigenous = 1; Non Indigenous = 2. PARENTS, one parent = 1; two parents = 2. SEX, Man = 1; Woman = 2.

Two ancillary variables were also defined:

HSUMA, total number of school years passed by children ages 7 to 24. HSUME, total number of school ages of children between 7 and 24.

The dependent variable was defined as:

XEDHI, ratio between HSUMA and HSUME. Educational achievement times a unit of time. Traditionally, Educational Achievement. Lastly, a stratification variable was defined:

XPROED, average potential school period, quotient between individual family's HSUME value, and the number of school children in that particular family.

Models

Four multiple lineal regression models were produced. The first such model, has a comprehensive nature being based on all of the sample data, that is, it represents a nationwide model. Elaboration of the other three models required arranging the sampled families in terms of years of marriage, assuming that both family characteristics and the demands imposed upon them, change in time. In this case, the years of marriage indicator corresponds to the "average potential school period" (XPROED) which, in turn, depends on the "average age of the family's children". Thus arranged, the families were subsequently divided into three successive strata which represent the mayor stages lived by a family during their children's school age (7 to 24). The strata are: 2 to 5.4 years; 5.5 to 8.5 years; and, 8.6 and over. Based on these strata, the three groups were denominated Young, Middle and Older families. Tables A through D, give a summary of the above mentioned model representative equations and indicators.

Discussion and interpretation

The study of Tables A through D, reveals that:

1.- The three stratified models are more elucidative as compared against the national model; 42, 46 and 44 per cent, versus 39 per cent. The highest level of explanation and the maximum number of elucidative variables (5) correspond to the Middle Family model. This is not surprising, since XPROED's average value (7.22) as well as the average values of all intervening variables, are contained within its validity interval (5.5 to 8.5). Furthermore, stratified models –given their fairly reduced universe– are less heterogeneous, a fact that would argue for its greater adjustment level and, consequently, higher R2's. Finally, the elucidation percentages shown by these models should be considered excellent, if one bears in mind that model variables belong to a single group of causes that explain schooling, namely, family traits. Neither individual nor socio-economic variables nor those which characterize the School System have been used. Although the elucidative power of these groups is unknown, the fact that a single group can explain more than 33 per cent of the total variation of the dependent variable –as in the case of the national model with 39%– would guarantee a reasonable level of explanation.

2.- Based on letter d) of the tables, the significance of every model, and of each variable in particular, is nothing short of excellent. Note that the highest probability for the null hypothesis (the XINCAPH variable in Table C), is 1.43%. What this means is that this variable –per

Table A

Set: NATIONAL LEVEL

a) Equation:
XEDHI = 0.24+0.03 EDPAM+0.13 RACE-0.08 PARENTS+0.00017 XINCAPH.

b) R2 = 0.385 = 39%

c) contribution to explanation, by variable.			d) Null hypothesis probability (Significance)
EDPAM	0.33903	88.1%	0.0000
RACE	0.03421	8.9%	0.0000
PARENTS	0.00924	2.4%	0.0000
XINCAPH	0.00252	0.6%	0.0000
Total	0.38500	100.0%	

Table B

Subset: YOUNG FAMILIES

a) Equation:
XEDHI = 0.32+0.03 EDPAM+0.12 RACE-0.12 PARENTS.

b) R2 = 0.41546 = 42%

c) contribution to explanation, by variable.			d) Null hypothesis probability (Significance)
EDPAM	0.37680	90.7%	0.0000
RACE	0.02704	6.5%	0.0000
PARENTS	0.01162	2.8%	0.0000
Total	0.41546	100.0%	

Table C

Subset: MIDDLE FAMILIES

a) Equation:
XEDHI = 0.37+0.03 EDPAM+0.11 RACE-0.02 HIRES-0.07 PARENTS+0.00027 XINCAPH.

b) R2 = 0.45988 = 46%

c) contribution to explanation, by variable.			d) Null hypothesis probability (Significance)
EDPAM	0.39651	86.2%	0.0000
RACE	0.03106	6.8%	0.0000
HIRES	0.02392	5.2%	0.0000
PARENTS	0.00615	1.3%	0.0001
XINCAPH	0.00224	0.5%	0.0143
Total	0.45988	100.0%	

Table D

Subset: OLDER FAMILIES

a) Equation:
XEDHI = 0.12+0.02 EDPAM+0.16 RACE-0.00012 XINCAPH-0.04 PARENTS.

b) R2 = 0.43742 = 44%

c) contribution to explanation, by variable.			d) Null hypothesis probability (Significance)
EDPAM	0.36716	83.9%	0.0000
RACE	0.06315	14.5%	0.0000
XINCAPH	0.00440	1.0%	0.0003
PARENTS	0.00271	0.6%	0.0035
Total	0.43742	100.0%	

capita family income– has a 98.57% chance of having a lineal relationship with the dependent variable and, hence, is highly significant in terms of explaining the lineal model. The other models and variables, have even higher probabilities.

3.- Analysis of the equations themselves, reveals that the sign on all variables remains unchanged, whichever the stratum examined. In other words, the sense of the relationship is preserved, regardless of the model involved. We will use the Middle Family model, to make a type analysis of this characteristic.

According to the signs of this equation, educational achievement (XEDHI) would have a positive correlation to parent's education (EDPAM), RACE, per capita family income (XINCAPH), and a negative dependence to the number of children living in the home (HIRES), and to the presence of the parents (PARENTS).

This means that, on average, and taking all the families of the analyzed stratum into account, the higher the educational level of both parents the higher the educational achievement of the children; being non indigenous also correlates systematically to higher educational achievement; the greater the number of children living at home, the lower the level of education attained; the presence of both parents means reduced achievement only if one of them happens to be absent; and, finally, per capita income is directly proportional to education.

Some of the elucidative assumptions are given below.

4.- The EDPAM variable. The positive correlation between this variable and educational achievement in all models, confirms both theory and common sense. Letter c) of the models, shows it is by far the variable with the highest elucidative capacity, ranging from 90.7% in the Young Families model to 83.9% in the Older Families model, a decline that would also reflect the increasing autonomy of children as they grow older. In any event, these values are extremely high and corroborate that this particular variable, is the strategic variable of the children's education dilemma.

5.- The RACE variable. Quite significant in Guatemala's case with an indigenous population of roughly 40% at the time of survey. It is the second highest variable –considering all four models– in terms of elucidative importance. Curiously, its importance seems to increase along with years of marriage and with advancing education (6.5%, 6.8% and 14.5%), a fact that would indicate that this variable becomes more exclusory as one climbs the educational ladder, as confirmed by the marginal analysis presented in a later section.

6.- The HIRES variable. Ranks third in elucidative importance in the Middle Families model, being absent from all others due to lack of significance. In order to understand its behav-

iour, let us look at the other models. Within the "young families" category, the variable is not significant and, hence, it is not part of the model. The average number of children per family is 3.9. In the next model, "middle families" it occupies an important position. Its elucidative capacity is above that of PARENTS and XINCAPH, and very close to RACE's. Furthermore, its significance is optimum. In this stratum, the number of children per family is slightly higher than in the previous model (4.3). In the "older families" model, its significance again drops out of the model. The average number of children here is 3.1. The data suggests that in "younger families", where small children are the norm, their ages and the care they demand leave no other alternatives open but school, in which case their number would not be a factor in restricting schooling.[4] However, as they grow older and more numerous (middle families), and as they become more capable of collaborating in productive activities –and their consumption increases– keeping everybody in school becomes a tougher proposition. Consequently, some of them will be forced to cut down on attendance and, thus, on schooling. In this example, the number of children would be a limiting factor as the respective model shows, which would confirm the corresponding assumption. Lastly, with rising age, the number of children living at home decreases as they begin to leave home in search of occupational opportunities. At this point, the number of children ceases to be a limiting factor, as evidenced in the "older families" model where the HIRES variable carries no significance whatsoever.

7.- The PARENTS variable. This variable is located between the third and fourth place in terms of elucidative capacity, ranging in value from 2.8% to 0.6% in the Young and Older Families, respectively. Nevertheless, its most important aspect is its negative sign, which at first glance may appear contradictory. This is far from true, though. When only one parent is present (the mother or father) he/she must work, and not being able to properly care for the children, sends them off to school earlier and more assiduously than when both parents are there. Thus, it has been shown systematically that children from single-parent homes go further in school than children from normal two-parents homes. This is not always true, however, as shown by its decreasing elucidative weight, which would seem to indicate that if, in fact, it is important in the first years of education, as school life progresses and more resources are needed, this factor becomes progressively less significant. This subtlety is lost if only average values are examined. El Salvador's research, revealed average schooling to be 4.4 and 5.8 years for two-parent children and single-parent children, respectively. The variable maintained a negative sign throughout the study, as it did in Guatemala's case, so that the confidence level of this result is beyond question.

8.- The XINCAPH variable. By and large, it is the variable with the least elucidative capacity, going from 0% in the young families to 1% in the older families, an indication of its tepid contribution to explain away schooling. Once again, theoretically this is contradictory. It is very likely that this weak elucidative capacity, stems from the poor quality of data collected through the home survey mechanism. However, if we carefully examine the information given above, we will see that in the "young families" model it is not part of the elucidative variables, because it is not significant, it does not have a lineal relationship with educational achievement (null hypothesis probability is greater than 32%) and, hence, it does not contribute at all to elucidating the phenomenon under study. In the "middle families" model, it occurs at 0.5% of elucidative capacity, and when the ages of children are increased even further (older families), its value doubles reaching 1%. This is quite consistent with reality. From a cost of primary education standpoint, particularly during the first few years,

[4] In connection with the first years of basic education, the supply of this service would seem to be very close to fully meeting the demand in the countries of the region. This could partly explain why the number of children is no longer a limiting factor.

it is common knowledge that in the countries of the region education is mostly free. As education progresses, this situation would no longer apply, and an increasing amount of resources would be needed to keep children in the school system. Thus, in the older families, the XINCAPH variable is no longer ranked at the bottom, but occupies a place of higher relative importance than PARENTS.

Other reasons that would explain its low elucidative weight are its lack of variability and low absolute value.

We are referring to recently married, low income couples, which comprise a majority. Available data shows that, for this stratum, average per capita income comes to roughly 42 quetzals a month, i.e., 14 dollars. The median is 24 quetzals. This means that 50% of those married had a per capita family income between 0 and 24 quetzals. Low income, therefore, is a generalized characteristic that turns the variable into a veritable constant, a fact that would explain its lack of significance in this stratum.

9.- The SEX variable. The inclusion of this variable required the use of a special procedure designed to analyze its degree of influence on Educational Achievement. Because sex is an individual trait, it was not included in earlier models which used the family as a unit of analysis or dealt with the relationships of a family and all its children, not just one. With this end in mind, all models were reappraised this time using and individual unit of analysis, the child.

The test yielded the following results:

The relationship sense and variable structure is identical in the newer models to that established at the family level. In both models, partial regression ratios (at the national level) are remarkably similar which, broadly speaking, corroborates the shape and intensity of the established relationships. Throughout the models' validity interval, the sense of the sex and educational achievement relationship remains negative, which means that –adopting the nomenclature Man = 1; Woman = 2– being a woman is equivalent to having a lower educational achievement level. This conclusion confirms the existence of values that regard house chores and raising children as women's main activities while giving priority to the education of men, as potential breadwinners.

The elucidative capacity and the marginal effect of the SEX variable in an individual context, are not comparable with the other variables occurring in the family models, so that it becomes difficult to establish just how much would this variable contribute in terms of R2 or marginal effect to this model. In this respect, we can only observe that at the child level of the national model, its elucidative capacity is the lowest –all variables considered– which extrapolated to the family model translates into a value that is lower than 0.6%, that is to say, its elucidative capacity is probably quite low. In terms of marginal effect (discussed below), it outdid the HIRES and XINCAPH variables occupying the slot right under EDPAM. In other words, in the family model, it ranges between less than 6% and more than 0.4%. Its exact value in the child's model was 2.5%, which constitutes a good indication of the impact the SEX variable could have had on the family model, had it been possible to incorporate.

Marginal analysis

The model equations, being a function of the best possible arrangement, is satisfied by the average value of all its variables. Therefore, when substituting each variable with its average value, the average value of the dependent variable for that particular subset, is obtained. In this analysis, it is assumed that the context remains unchanged (variables, intercept and quotient) except for the independent variable, whose marginal effect is unknown. The average value of this independent variable, can be increased or reduced by one unit. The equation is recalculated on the basis of this new value and the marginal effect produced on the dependent variable is measured. Hence, it is possible to know the potential of all variables as a change factor. Table E, shows the marginal effect of each independent variable for all four models, as a percentage of the average value of the dependent variable.

Table E clearly shows that the RACE variable

Table E
MARGINAL EFFECT

Variables	Nat.Level	Young Fam.	Middle Fam.	Older Fam.
EDPAM	6.0%	7.0%	6.0%	5.0%
RACE	35.0%	33.0%	28.0%	48.0%
PARENTS	-16.0%	-22.0%	-12.0%	- 8.0%
HIRES	—	—	- 4.0%	—
XINCAPH	0.4%	—	0.6%	0.4%

has the highest marginal effect. Its values demonstrate the gaping distance between the educational level of indigenous and non indigenous individuals, a distance that widens as one moves up the educational ladder. The assumption is made that education increases along with years of marriage. Sure enough, at the national level the educational gap between non indigenous and indigenous individuals is 35% in favour of the former, and as we move on towards the older families, we see that difference swelling up to 48%.

The second most important variable in terms of marginal effect, is the presence of one or both parents (PARENTS), which peaks at the "young families" stratum (-22%), as pointed out earlier. In the following strata, the gap widens since it probably amounts to just a drag effect, although it closes with a significant 8%. If we take "young families" as an example, we can conclude –in terms of the model– that the difference between two-parent children and single-parent children, is that the former group comes in 22% lower, when measuring educational achievement.

The third most important variable, is the sum of the educational levels of the parents (EDPAM), with an average marginal effect of 6% which remains constant throughout the school age period, although it does show a tendency to dip slightly. Let us just say that parents who have taken an additional year of education, have children with 6% higher educational achievement.

HIRES's marginal effect could be calculated exclusively for middle families. This relationship shows that, on average, increasing the number of children by one, is associated with a higher educational level (4%). Consequently, this would be the marginal impact of fertility on the education of the guatemalan community.[5]

Finally, the XINCAPH variable, despite a 20% increase in its value, is still seen to have a low marginal effect on every stratum. Nevertheless, the relationship is positive and is clearly perceived in the older strata, albeit, with a reduced marginal effect (lower than 1%). All indications point to a generally undervalued XINCAPH variable, which weakens its relative importance in the model. Therefore, these results ought to be taken with a grain of salt.[6]

Conclusions

Apart from the cautiousness and common sense that should accompany any statistical result, it would seem that the models presented in this paper –bearing in mind the limitations inherent to the techniques used and within the validity intervals that characterize each model– represent a

5 In the El Salvador study, this variable was found to have a much greater impact reaching 12.7% of the average value of the dependent variable. Be reminded that fertility in El Salvador is much higher than in Guatemala, a fact that would probably explain the difference.

6 In this respect, it must be borne in mind that the effect of income is not only manifested in terms of family living, as is (basically) the intent of the general questions asked in home surveys. For the purposes of education –which is precisely what we are attempting to measure– income means being able or unable to pay for better education. We sense that quality education is extremely segmented in the market, and those who wish to access better education, must pay accordingly. More information on this subject would contribute to elucidate the role this variable plays in the model.

veritable behavioural law of the phenomenon under study. We must point out, however, that this law is only valid for this particular community.

Likewise, the observed consistency –both in terms of model structure and their associated signs, as well as the relative importance of the various parameters relative to theoretical considerations and common sense– clearly argue for the dependability of the outcomes.

Furthermore, it is our belief that in bringing into the quantitative area issues such as "the influence of family traits on the educational level of their children", we have made a net contribution to this study.

In connection with the results of the analysis, the finding that parents' schooling is by far the most important variable in terms of their children's education, and the fact that this importance was successfully quantified, are outcomes that should be stressed. Along the same lines, it should be emphasized that: in Guatemala, each additional year of education on the part of parents translates into a 6% increase in terms of educational achievement of their children; being non indigenous means, on average, a 35% greater educational achievement and that at the middle and higher levels, this difference may reach 48%; the educational achievement of children from single-parent homes, is 22% higher than that of children from regular homes, probably because school represents care and protection; each additional child means, on average, a 4% reduction in the educational achievement of the children; being a woman is equivalent to having approximately 2.5% less schooling; and, lastly, income continues to be a conditioning factor of educational achievement, although in the first years of basic school, its discriminatory impact has been dampened by its widespread gratuitousness. In conclusion, if we wish to improve the level of education –at least in the particular case of Guatemala– our policy should aim at increased schooling by indigenous people, thus lessening its tremendous exclusory impact; we must encourage two-parent families (the immense majority) to improve their children's attendance, placing emphasis on the child-care-centre role played by schools during the first years of basic education; support family planning policies and values that advocate equal education for men and women. Pursued jointly, these initiatives, beyond their direct impact, will catalyze the reaction that will raise the educational level of both parents and, in keeping with the model, propel their children's education to ever higher levels.

LINKING FORMAL AND NON-FORMAL EDUCATION. IMPLICATIONS FOR TEACHER TRAINING

Ali Hamadache*

School education and adult literacy training represent two components of one and the same action to provide education for all. Several countries have already discovered and benefited from this dual approach to the implementation of their education policies, designed to ensure the exercise of the right to education for all. It was the experimental adoption of this innovative approach by several different countries which led to the notion of an "integrated strategy" for the general introduction of primary education and adult literacy training. Some countries have formulated education policies which, while this kind of linkage is not explicitly planned, nevertheless provide for converging or parallel approaches. However, few of them have drawn the necessary conclusions in terms of teacher education.

Questions therefore arise as to the validity of this notion of integration, which in many cases does not reflect national policies or strategies, currently characterized by their great diversity. In spite of the efforts by Member States, the implementation of all integrated approach has met with more difficulties than were foreseen by planners and policy-makers. Recognition of the interrelations between primary education and literacy training for young people and adults was noted as early as 1951 by the fourteenth session of the International Conference on Education, whose Recommendation No. 32 stated that it is important that "in communities where illiteracy prevails, plans for the full enforcement of compulsory education should be accompanied by plans for the fundamental education of adults". The integrated approach was more explicitly formulated by the International Commission on the Development of Education, convened by UNESCO in 1971-1972, which stated in its report that: "Adult education assumes especial importance to the extent that it may be decisive in the success of non-adults" school activities. For children's primary education –a primordial objective– cannot be dissociated from their parents' educational levels. The rising generations cannot be properly trained in an illiterate environment... We should never set adult education against the education of children and young people: the concept of global or over-all education goes beyond the semblance of contradiction, enabling two extremes to be enlisted, parallel to each other and at the same time, in the service of common educational objectives, in the broadest sense. It follows that adult education can no longer be a fringe sector of activity in any society and must be given its own proper place in educational policies arid budgets. This means that school and out-of-school education must be linked firmly together". (Faure, 1972, p. 205).

If the concept of global education is implemented, whether intended for children, young

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people or adults, it is implicitly perceived as an integrated system, the components of which are coherent and interconnected. The planning of the co-ordinated development of school and out-of-school education favours integration to the extent that it does not limit itself to the eradication of illiteracy but is considered within the context of lifelong education and educational projects aimed not only at the promotion of access to learning but also of succeeding at school (UNESCO, 1988).

The trend towards integration also reflects the increasingly urgent need, against the back-drop of a worldwide economic crisis, to ensure the full deployment of all available financial, human and material resources. Moreover, it is acknowledged that the effectiveness of education policies (and their planning) depends on their successful integration into the overall planning of economic, social and cultural development. In many developing countries, the key priority for human development is the fight against poverty and often, the fight for survival. The aim is to achieve sustainable development, based on the rational utilization of resources, with due account taken of cultural considerations. Education is simply the means of attaining this goal. This is a clear indication that integration is not an end in itself but a strategic slant aimed at greater efficiency in the provision of education for all, and a unified approach comprising two complementary components, reflected in the theme of the World Conference on Education for All (Jomtien, 1990).

In view of the difficulties encountered in the effective application of the notion of all integrated approach, it may be worth considering whether the main problem does not lie rather in meeting basic learning needs (and, consequently, in the kind of teacher capable of dispensing the relevant knowledge). Are not such educational needs determined, or should not they be determined, by development priorities? Hence the need to define training (i.e. educational) needs which take account, in the preparation and implementation of curricula, of a common core of basic learning, fundamental skills, know-how and essential values which represent a consensus (national or regional) and the acquisition of which is considered indispensable for all members of a given society (UNESCO, 1991). This broader vision of the role of formal and non-formal education in socioeconomic development and social change was highlighted in the Declaration of Jomtien and reinforced in the Report on the Lisbon Symposium on Succeeding at School "Ensuring the success of all means first and foremost transforming the goals of education systems". It also means a move towards consistent training strategies for the different actors and agents, including teachers, involved in developtnent work, thereby leading inevitably to changes in the objectives, curricular content and methods of training teachers and their educators.

The emergence of the concept of non-formal education

The concept of non-formal education emerged some 30 years ago, though the concern which gave rise to it had been in existence long before then. It was in the 1960s, and particularly in the 1970s that more attention was focused on non-formal education. Studies and research on the subject abound, though the literature tends to concentrate on adult, and especially continuing, education, rather than on innovative approaches outside the formal education system designed to provide access to learning for children deprived of access to it.

For a better understanding of the emergence of the non-formal sector, a few observations must be kept in mind.

School is no longer considered to be the only place where learning takes place, and can no longer claim to assume the educational role in society single-handedly. Moreover, learning involves such a variety of factors that it is impossible to conceive of it within the confines of a single system organized and supervised by a central authority. Education is no longer the exclusive responsibility of national education bodies but also that of other services and institutions, including those active in the development field.

Education and learning are no longer consid-

ered to be synonymous with "schooling", even if many parents continue to equate education with school, obsessed with the diploma which the school is assumed to award as a passport to employment, now becoming increasingly hypothetical. The equation of learning with formal education remains firmly achored in the minds of many parents, buy as they have been forced to acknowledge the failure of the system in which they have placed all their hopes, their dissatisfaction with, and criticism of, existing systems of education have become a rising tide and a subject of major concern.

To begin with, it was the shortcomings and inadequacies of the traditional school system that sparked this growing interest in out-of-school forms of education acting as a supplement to or even substitute for formal schooling. This interest is understandable, given the advantages that non-formal education has to offer for socio-economic and/or socio-cultural development, particularly when faced with the disappointing performance of a school system whose educational component, while ambitious academically, is neither practical nor specific; it has no relevance to the everyday life of pupils, and its costs are high, thereby limiting its expansion. It is these quantitative constraints and qualitative inadequacies of formal education which have meant that solutions have been sought in out-of-school activities (Furter, 1984, p. 5).

Influenced by the notion of lifelong education, the extension of these approaches to education provides frames of reference, enabling long-term decisions to be taken which will diversify the functions, tasks and contributions of education systems, according to the different institutional forms adopted, even though, at national level, this perspective seldom goes beyond the theoretical stage, through lack of appropriate conditions (Furter, 1984, p. 7).

A few definitions: formal, non-formal, informal

In the International Standard Classification of Education, the term "education" itself is defined as "organized and sustained communication designed to bring about learning". This reflects an institutional point of view which is restrictive and excludes anything done on a relatively large scale to broaden access to education. It is a definition which attaches little importance to spontaneous, out-of-school forms of learning. Today, no one disputes the fact that people continue to learn from their experiences and are capable of absorbing and storing knowledge and ideas –often passively– by watching television programmes, visiting museums, observing their parents, peer groups, friends, etc. This type of learning is acquired haphazardly, of course, and thus does not always fall within the realm of the educator, still less the planner. Education is most often thought of as a sequence of learning experiences prepared in advance and presented by qualified staff for the benefit of pupils. By broadening this definition, "education" could come to include anything aimed at bringing about a change in the attitudes and behaviour patterns of individuals, given that in order for this change to come about, they have necessarily acquired new knowledge, skills and abilities. Advocates of this broader definition of the educational process go so far as to argue that spontaneous, non-school learning, in that it is diffuse, comprehensive and rich in creative potential, is as deserving of public funding as is traditional formal education, which has thus far enjoyed a virtual monopoly in this respect.

All learning processes fall necessarily into one or other of the following three categories.

"Random" (or supplementary, incidental, diffuse, spontaneous, informal...) learning which includes non-structured educational activities (Evans, 1981). In "random" learning, education is a process of osmosis between the learner and his environment. It has been established that most of the knowledge and skills an individual accumulates over his or her lifetime are acquired in a non-structured environment through this very type of education. This applies to learning one's language, cultural values, general attitudes and beliefs and the behaviour patterns of a given community, which are transmitted by the

family, the Church, associations, prominent members of society, social communication, the mass media, museums, publishers, games and any other cultural institution. To a large extent, such education is obtained through a combination of observation, imitation and emulation of specific members of society. For example, radio or television broadcasts for the general public may, to some extent, be intended to instruct, but they may or may not find listeners or viewers who are willing or able to learn from the message and put it to use. The same may be said of young people who may watch craftworkers for the express purpose of learning a skill (there is intent on the part of the learner, but not of the teacher). Several aspects of "random" learning should be taken into account in the training of teachers - the use of national languages and/or mother tongues which act as vehicles for this random form of learning as well as models and values which are often different from those inculcated by formal education, the linkage of formal learning with productive or socially useful work, the dovetailing of school activities with learning opportunities and socio-educational and cultural infrastructures already in place in local communities and the channelling of influences exerted by the media, etc.

Non-formal (or out-of-school) education, which encompasses all forms of instruction consciously promoted by the teacher and learner, the "learning situation" being sought by both parties (transmitter and receiver). Coombs and his collaborators proposed a definition for non-formal education which has ben widely accepted: "Any organized educational activity outside the established formal system... that is intended to serve identifiable clienteles and learning objectives" (Coombs *et al.*, 1973). This definition has the advantage of setting out the main characteristics of non-formal education. It consists of activities which are:

- *organized and structured* (otherwise it would be classified as informal);
- designed for an *identifiable target group*;
- organized to achieve a specified set of *learning objectives*;
- *non-institutionalized*, carried out outside the established education system and intended for learners who are not officially enrolled in school (even if in some cases learning takes place in a school setting).

Formal (school) education, which differs from non-formal education in that it is taugh in institutions (schools) by permanently employed teachers within the framework of a fixed curriculum. This type of education is characterized by uniformity and a certain rigidity, with horizontal and vertical structures (age-graded classes and hierarchical cycles) and universally applicable admission criteria. Such education is intended to be universal, sequential, standardized and institutionalized, guaranteeing a certain measure of continuity (at least for those who are not excluded from the system).

The borderline between formal and non-formal is not always clear-cut and there is no real consensus as to the difference between the two subsystems: there are non-formal aspects in formal learning structures such as the use of non-professionals as teachers, distance teaching, the participation of parents or members of the community in the education process or in school administration, the introduction of productive work into school, and so on. Similarly, experiments have been conducted outside schools using different methods and at different speeds from those used in traditional schools but whose objective is to teach the same curricula as that used in the formal sector. This interpenetration, far from being harmful, can be highly beneficial when both sides can "borrow" ideas from the other. In this booklet the terms non-formal education and out-of-school learning are used indiscriminately, with the same meaning, on the understanding that the concept may be equally applied to adults and children and encompasses all possible learning and self-instruction situations, having a more or less structured form and positioned on the fringe or outer edge of the school system (even if such activities are carried out in the school buildings of the formal sector). Nevertheless, whatever terminology is used, the complex relationship between formal and non-

formal education persists and there is still no clear, unequivocal definition of either concept.

Development of the methods and scope of basic education

Non-formal approaches as an alternative system

In many countries, action undertaken in favour of the general provision of primary education, especially through the extension and reinforcement of the formal school system, has failed to produce the expected results. Moreover, the main thrust of such action has frequently centred on the provision of schooling, while retaining conventional approaches in terms of curricula and teaching methods. Furthermore, amongst children within the school system, there are many who drop out at an early stage before acquiring basic reading and writing skills, their guarantee of future employment. This situation has inevitably led to the introduction of non-formal methods, with a view to enlarging, supplementing and sometimes even improving initiatives undertaken within the framework of the formal sector.

In areas where there are no schools, non-formal basic education programmes have done much to remedy the situation. They are intended for children for whom inadequate educational provision has been made and for adults who have had no access to learning. For those who have never attended school, they provide basic learning skills, enabling them to use to greater advantage technical services in the field of agriculture and health while also broadening access to any other sector where such capabilities are considered a prerequisite. They are of particular importance in regions where the economy is still underdeveloped and the competent authorities (public health, water supply, agriculture, stock-breeding, craftsmanship) have as yet been unable to undertake appropriate action, through lack of technical agents and representatives. Non-formal basic education aims to improve living conditions of individuals and speed up the development of people living in the most impoverished regions, especially in rural areas or on the outskirts of large cities, characterized by a generalized and chronic lack of basic needs and limited participation in the life of their society.

There can be no doubt that demands for democratization, equal access to education and chances of succeeding at school require that children everywhere should be guaranteed appropriate, standard, formal education. However, given the conditions of extreme poverty which frequently prevail in developing countries, where communities lack even basic social services, education must undeniably go beyond the level of mere instruction. Non-formal education can do this. Examples of non-formal approaches to basic education encompass a wide range of structures and practices, from major programmes undertaken at national level, with government backing and support, to modest community based projects launched within a neighbourhood, village or community by volunteers or non-governmental organizations.

Non-formal basic education programmes intended for children, adolescents or adults, are mainly targeted at the following categories:

- children who have never attended school;
- children who have dropped out of school early;
- specific groups (nomads, refugees, isolated groups, etc.);
- adults who have had no access to elementary schooling or who have relapsed into illiteracy;
- adults who are already literate or have previously attended school.

These programmes require different types of teachers:

- full-time paid adult education teachers - generally members of a national literacy organization, a department of adult education or community development, working full time at a normal rate of pay;
- officials of government bodies, already in touch with the population: enlisted to participate in the programme as teachers (after appropriate training) as part of their official

duties; enlisted to participate in the programme as teachers (after appropriate training) over and above their official duties, and paid overtime; volunteering in the same way as other citizens and paid the remuneration, if any, given to such volunteers;
- primary-school teachers from the formal education system: whose official duties include part-time adult education; who are paid overtime as teachers of adults (or children not enrolled in a school); volunteering in the same way as other citizens to teach adults, and paid the remuneration given to such volunteers. These teachers from the formal sector may or may not have received specific training in non-formal education methods;
- literate citizens or new literates, who have rarely received appropriate training;
- schoolchildren, students, pensioners or members of the clergy who volunteer their services for a specific programme of fixed duration;
- members of a non-governmental organization giving voluntary service within the framework of their organization;
- members of the armed forces or those called up for special literacy service in place of military service.

All these categories of teachers require initial or in-service training if they are to perform their task efficiently within the framework of a non-formal system. Many countries run short in-service training courses to provide students with minimum skills and/or elementary techniques of transmitting knowledge, but very few offer thorough pre-service training; even fewer provide basic training which is common to a number of these categories.

Co-ordination and linkage of school education and out-of-school learning

Government authorities often know little about non-formal education projects, especially if they are organized by non-governmental organizations or local associations. The latter usually do not welcome government intervention. Since these experiments are little known, they are not recognized; this makes it difficult to plan or co-ordinate them. The authorities are often not keen to do this in any case, as the management of a subsystem of this sort in not subject to the traditional rules and procedures of educational planning and management. Yet at the same time, planning bodies have foremost responsibility for examining the problems of linking formal and non-formal structures. Linkage is no doubt difficult between two subsystems of which one is unified, homogenous, centralized and hierarchical, and the other multi-purpose, diversified, decentralized and self-sufficient.

But co-ordination is necessary, if for no other reason than to avoid overlapping and squandering resources. It can operate through:
- vertical structures, administrative and hierarchical, which provide a beneficial complementarity between the unified action of the State and grass-roots initiatives;
- horizontal structures, local and participatory, which provide coordination between the different participants, particularly between the public and private sectors (mainly associations), and between activities of the national ministry of education or approved services and educational projects conducted by other socio-cultural and socio-economic development agents;
- networks such as resource or back-up centres which are accessible to all participants in educational activities in a given area.

One of the fields where this kind of co-ordination has been most successful concerns the common cores of training for the different categories of agents involved in a formal or non-formal educational process. This trend, which takes into account the development problems specific to a particular cultural and social environment and seeks the participation of a variety of actors in the educational process, is not new. Witness the handbook of suggestions for use by all those, teachers and others, concerned with elementary school (Handbook of suggestions for the consideration of teachers and others concerned with elementary school), published by the Ministry of Education of the United Kingdom and sum-

marized in "Fundamental education, common ground for all peoples" (UNESCO, 1947). At that time it also became clear that these different agents at local and national level were in need of a common core of training. Between 1948 and 1958, programmes of community action and multi-purpose, wide-ranging integrated education were launched, which called for multidisciplinary educational teams with the participation of members of the community, parents and development specialists, alongside teachers. Temporarily halted in 1958, the experiment was taken up again in 1971/1972 at the instigation of the International Commission on the Development of Education, which reintroduced the concept of *basic education*. This concept had the advantage of an approach based on the complementarity of in-school and out-of-school aspects of a fundamental education process seen as a minimum educational requirement to meet the needs of a community, and also serving as a starting-point for lifelong education. The idea was taken up again in the 1980s, on the assumption that it is perhaps possible to identify certain common training components, for different categories of personnel, which correspond to specific professional tasks or qualifications dictated by school educational policy as a whole.

If it is generally acknowledged that the demand for education cannot now be met, because of the limitations and insufficient resources of existing institutional systems, then educational fecilities must be made accessible to as many people as possible. As pointed out in the report "Learning to Be" (p. 183), "Education must cease being confined within the schoolhouse walls. All kinds of existing institution, whether designed for teaching or not... must be used for educational purposes...".

The linkage of educational activities for children and adults provides and effective answer to the economic and socio-cultural needs of individuals while also reinforcing development objectives. The use of premises and equipment of the formal school system for out-of-school activities for adults and youngsters not enrolled in a school, or excluded from primary education, makes the school a community-based learning centre open to both children and adults. This approach is currently applied in a number of countries, albeit in many different forms. Mention should also be made of experiments in which children alternate school activities with out-of-school productive work in local communities, often in conjunction with development programmes.

School buildings and teachers are the two determining factors in the cost of education. Existing school buildings can be used (and made cost-effective) through non-formal educational activities conducted outside normal school opening hours and days. Non-formal education can also be provided in other premises free of charge (for example, mosques, churches, pagodas, warehouses, private homes, etc.). Another factor in the linkage of school and out-of-school activities is the multi-purpose utilization of teachers, with or withouth supplementary remuneration for adult education courses. With this end in view, some countries have incorporated an introduction to adult education into their pre-service teacher-training programmes, with particular importance being paid to the needs of rural populations. This is the case in the primary-teacher training college at Bunumbu in Sierra Leone. In the United Republic of Tanzania, adult education in similarly an integral part of a teacher's duties, and the headmaster is responsible for organizing and running literacy courses. In India, teacher-training institutions prepare their graduates to teach children, adults and unemployed young people.

Direct participation in the educational process by members of the community, either economic agents of production –health officials, agricultural extensionists or other development agents– or master craftsmen and experienced farmers, represents another link in activities between the two subsystems while also serving to open the school to the community.

UNESCO's contributions in this field have been significant, with various studies carried out in the early 1980s, for example in Benin, Togo, Sierra Leone, Mexico, United States and Peru,

as well as the work of teacher organizations such as WCOTP and IFFTU, on "the functions and training of non-teaching personnel contributing to school education"; symposia have also been held on this theme in Africa, Asia, Latin America and Europe. Nevertheless, such experimental projects using the manpower available in the community are few and far between. There are many more non-formal primary-school projects (for example in Asia) which call upon the services of teachers recruited from the local community, often on a voluntary basis.

Linkage can also extend to the joint production of multi-purpose teaching materials for the formal and non-formal sectors, for example when national languages and mother tongues are introduced into both systems: rural newspapers and libraries, reading booklets for post-literacy programmes, the use of documentation from communication agencies and development bodies, the optimal utilization of printing facilities and distribution networks, combined school broadcasts, etc. While the trend is towards the production of materials with a functional content, many countries have no other aids than the existing textbooks available in primary schools.

The changing role and functions of the teacher

Factors contributing to this change

The role of the teacher has evolved due to the social and political changes in each society, which impose new demands on the education system as a whole in terms of both educational aims and objectives, and teaching contents and methodology. They are mainly as follows:

The democratization of education, leading to the rapid growth of education services throughout the world and providing schooling to more heterogeneous groups of pupils than before, from widely varied socio-economic environments. School is therefore no longer elitist or selective. Teachers have had to familiarize themselves with different systems of cultural and social references, so as to identify needs and motivations and to adapt organizational and teaching practices to new learning context and situations. In addition, the extension of basic compulsory schooling in many countries has lengthened the period from four to six years to eight to ten years, frequently incorporating existing primary levels, the first stage of secondary school, and even in some cases pre-school classes. This has led to a review of teacher specialization, since the range of pupils attending school is much wider than before.

The knowledge explosion, with an escalating body of applied knowledge –particularly scientific and technological– its periodical obsolescence, and the emergence of new fields of knowledge (environment, population studies, drug abuse, prevention, etc.). This entails the updating of school curricula, with emphasis on developing the desire to learn and the ability to acquire new knowledge on one's own. Learning to learn becomes at least as important as what is learned. This perspective of life long education provides the most appropriate framework for the incorporation, within the structure of school systems, of forms of both school and out-of-school learning. This approach will radically change the very principles on which curricula are based and will emphasize more individually adapted teaching methods and techniques, more time allotted to team work and a change in teacher/pupil relationships. In this pupil-oriented approach, stress is laid on the acquisition of the means whereby the individual can constitute his own body of knowledge, rather than through the unilateral, passive transmission of pre-established facts.

The development of modern information dissemination techniques –by the press, radio and above all television– which tend to affect the teacher/pupil relationship. The teacher is faced with youngsters who are better informed, more critical and less conservative in outlook, hence more open but more demanding. He is therefore no longer the only purveyor of knowledge, which is now acquired from many different sources, forming what is known as "out-of-school activi-

ties".[1] School is clearly no longer the only place where children are educated, even if the family increasingly unloads it responsibilities on to the school as it scope develops. Although not explicit, these external educational pressures exerted by "out-of-school activities" are the vehicle for highly significant cultural models of which the school must take account. Consequently, teacher training must take into consideration the fact that school is no longer the temple of all learning and the only source of knowledge. School must be opened to out-of-school activities, conceived as complementary educational activities, with due account of structures, curricula and methods. This approach is widely acknowledged, but difficulties arise in practice, due mainly to:

- the standardizing function and unifying nature of a school system "divided between this task of equalization which society assigns it and the trend towards developing personal aptitudes" (Moeckli, 1980), as well as the importance attached to a system of assessment and diplomas awarded in recognition of measurable abilities, excluding non-quantifiable and subjective components, especially personal, creative capabilities;
- the reluctance on the part of the teaching profession to welcome external influences, particularly if they involve the participation of non-teachers in the educational process;
- the over-centralization of curricula development which takes no account of the diversity of cultural environments.

The introduction of "non-school" activities in teacher-training programmes promotes teaching methods which develop a sense of individual and group initiative and foster the creative expression of each pupil's cultural identity. Everyday life is thus brought into school, an approach which requires the teacher to be much more of a group leader and organizer of learning than the transmitter of knowledge.

Implications for training policies and curricula

Policies for change

National teacher-training policies, an integral part of any overall educational strategy, must provide more than a simple answer to the question of supply and demand. They should offer a range of options for defining objectives, organizing training systems, and for the recruitment and educational levels of future teachers, etc. But, most importantly, it is in terms of curriculum content that the roles of future teachers must be determined. Their training must be redirected to prepare them to be educators who are equally capable of participating in different out-of-school and school-based activities and of working alongside personnel from other sectors who contribute to the overall educational process; it must also promote the opening of school to the community.

It must prepare teachers for these tasks theoretically and in practice, with emphasis on a type of training geared to change, which will give them the skills to adapt to continuing social changes. This is no easy undertaking, since the role of the teacher is changing more quickly than the content of planned curricula. Unfortunately, it has to be admitted that few teacher-training systems are able to respond to the new needs of recruitment or the teaching methods applied in such institutions. Few offer courses of study in keeping with the professional profile required if teachers are to be instrumental in bringing about change.

The integration of initial and in-service training

While it is true that in the long term improved initial training will lead to improved standards of teaching, in the short term this can only be

1 By "out-of-school activities" is meant educational pressures to which the child is subjected: non-formalized pressures which are not necessarily directed at him and of which he is not always aware, any more than his parents and educators are - such as the social environment, the press, television, the religious environment, the urban environment, play, and so on (Moeckli, 1980).

achieved by means of further training for in-service teachers. Even so, such training would have to be viewed as the extension of initial training and not as an isolated, one-off operation. Some countries do admittedly recognize the need for teacher-training programmes comprising and initial stage and a complementary (in-service) stage, regarded as of equal importance. However, there are few examples where, theorizing apart, initial and ongoing training are part of an integrated system. This approach, while widely accepted, is far from being generally applied, even when initial and in-service training are the responsibility of the same authority.

In-service training is in most cases considered as a separate branch, quite distinct from the training acquired in initial teacher-training colleges. Integration may well be more likely if in-service training is entrusted to initial training establishments, thereby transforming them into multifunctional institutions. In any case, integration is a prerequisite for any effective linkage between school and out-of-school education, the incorporation of out-of-school activities into teacher education and the application of non-formal teaching methods in primary education.

The importance of identifying training needs in advance

The conventional approach, based on quantitative projections of numbers of pupils of school age and pupil/teacher ratios, as a means of estimating the number of teachers necessary for a given system or a specific time-frame, takes no account of qualitative needs and demands whose identification is necessarily linked with an overall diagnosis of the educational subsystems, formal and non-formal. To do so would require access to an overall view of the illiteracy rate of the target population, children and adults, and the predictable evolution of this rate for all age-groups rather than consulting separate statistics concerning school enrolment and literacy training.

This overall picture of existing and potential "learners" is the only valid approach to the formulation of alternative strategies for the provision of basic education and the identification of the training needs of educational personnel concerned with teaching young people and adults, in the perspective of a more thorough integration of formal and non-formal education at the level of elementary learning. It should be noted that at the stage of diagnosis –which precedes the identification of training needs– the main problem is the availability of the necessary data on non-formal activities and their distinguishing features. Hence the need for a decentralized approach, involving the close co-operation of all participants and actors in the educational process, either individually (potential beneficiaries as promoters of educational action, parents, policy-makers and administrative officials, technicians, etc.) or collectively (local authorities, trade union and professional associations, non-governmental organizations, co-operative groups, cultural associations, etc.).

It is also important to define the procedures for joint planning and participation. The number and professional profile of personnel of different categories and the objectives and curricula of the pre-service and in-service training to be given them can be determined only on the basis of educational policy goals; the educational needs and demands of the target populations as a whole (age-groups of both sexes) who have to receive an elementary education whose objectives and curricula must themselves be defined in the context of studies to be carried out at several levels of the society in question, and with the participation of the groups and individuals concerned..." (Pauvert, 1986, p. 126).

The continuing problem remains how, in the context of a given country, to identify the different target populations to be reached through a diversified but consistent course of action, comprising specific objectives, processes, structures, programmes and activities to be formulated on the basis of identified needs (Pauvert). From the outset, identification raises difficulties as regards levels of research, especially since studies in this field are usually theoretical, and consist of taxonomic hypotheses and investigations. This is a field for operational research.

Towards new roles for teachers

In the preparation of teachers for the new role they will play in a co-ordinated system of formal and non-formal education, it is important to remember that success in the field of school and adult education is largely dependent on the ability of the educator to establish a good relationship with his pupils, in the same way as a doctor with his patients. It is this pupil-oriented approach which must dictate the professional profile of teachers. This means that their main function –the transmission of organized knowledge– becomes relatively less important, as also their traditional authority over pupils (to the great regret of some nostalgic old-timers).

Moreover, emphasis in placed on both collaboration with parents, members of the community and non-professional teaching personnel, and co-operation among teachers themselves. Priority is given to the organization of the learning process and to group leadership (both school and adult class-groups). With these ends in view, it is vital to develop the teacher's personality so that he accepts and seeks change, learns to learn by himself, and is constantly concerned to further his own studies. This also means that traditional procedures for the selection of trainee teachers should be reviewed, and that their recruitment should take account of potential aptitudes which help to develop initiative and creativity, as well as interpersonal skills. The definition of a pre-training profile is as important as its post-training equivalent.

The demands and constraints of enlarging the teacher's functions

The teaching of children and adults: the need for multi-purpose teachers

The special features of adult education

Adult education activities are frequently hampered by the fact that teachers and group leaders often lack the necessary capabilities and/or skills required for the teaching of adults. Recognition of the aspirations and attitudes peculiar to a given group of adults in a learning situation, an awareness of the attention to be paid to their previous experience, and the adaptation of curricula to different socio-vocational practices and socio-cultural environments, all form part of a specifically adult-oriented teaching approach. Adult education should be perceived as more than merely a second chance of schooling, centred on the same objectives, curricula and teaching methods as those applied in primary education, especially if the learning acquired is to lead to changes in individual behaviour patterns and contribute to community development.

Particular attention must be paid to the sociological, psychological and cultural backgrounds of students, to the exchange of experience and information, and to a dialogue. An adult has his own extensive capital of impressions, thoughts, opinions and experiences, of both a positive and a negative kind. This is the raw material on which to base any educational experience to which external inputs are added. The role of the educator is basically to help the learner to become aware of the different facets of his personality and to give shape to his experience of life. This is the only way of preventing adult education from becoming a one-way process and of ensuring that it is based on a form of exchange, even if those involved may not necessarily be on a footing of equality. Adult education must be grounded on the principle of mutual respect, a concept which should be applied to all forms of education, including that at school. We must steer clear of what P. Freire has called the "banking concept" of education in which (to continue with the banking analogy) students receive "funds" deposited by the teachers. "In the banking concept of education, knowledge is a gift bestowed by those who consider themselves knowledgeable upon those they consider to know nothing" (Freire, 1977).

What kind of teachers are required for out-of-school education?

For adult education and even non-formal children's education, there are two main options for

the recruitment of teachers; either to use professional teachers, usually in-service primary teachers, or to recruit specialized instructors who have been given a specific training in this field. It is clear that without previous training, neither can a primary teacher teach adults efficiently nor can an adult education teacher instruct children (as can happen in the case of non-formal programmes intended for children outside the school system). The approach adopted in adult education is radically different from that aplied to children. The use of primary teachers raises problems not only in terms of skills and technical knowledge specific to particular fields but also, and most importantly, as regards the overhaul of traditional teaching practices. Similarly, without prior training in communication skills, the specialist (agricultural extensionist or consultant, health official, social worker, etc.) or local group leader (community development promoter, volunteers from local associations or nongovernmental organizations, members of the community, etc.) are bound to experience difficulties in the process of learning and the transmission of knowledge, specially in the teaching of essential learning tools –reading, writing and arithmetic– where, whatever approach is adopted, basic teaching principles must be observed.

Because of the socio-vocational diversity of the different groups of adults in adult education programmes, the curricula on offer must be correspondingly varied, taking account of students' earlier experience, with the purpose of filling in the gaps in their knowledge, in relation to the goals and objectives of the programme in question. The aim is to identify the problems pose by what will be expected of them in a teaching situation, as a basis on which to develop complementary training which will focus on the difference between what they need to know and what they know already. Another crucial factor in this respect is the nature of the relationship established between teacher and learners, founded on mutual trust, creating an environment conducive to learning. There is therefore little doubt that the best educator is one who is familiar with the socio-cultural background of his students and is very mucho part of it, in his trained role as group leader. During his training, he must participate actively in his own further education, rejecting the notion of being merely the passive beneficiary of the courses he attends.

Training primary teachers for out-of-school activities

Teachers from the formal sector undoubtedly constitute the bulk of adult educators. Some of them (a minority) work full time, others part time. They are less represented in other forms of adult education such as community development, agricultural extension or health programmes, population education programmes and the environment... The main motivation for teachers to undertake adult education is still the bonuses they receive as a result. They are mainly involved in what is known as the "in-school education" of adults, specially literacy and post-literacy training. They are sometimes blamed for the "formal" component of such programmes, for which they are seldom properly trained. Hence the need to redirect their training towards a more multifunctional role, enabling them to act as "multi-purpose" out-of-school educators.

Multi purpose teachers? Under what conditions?

Given the current levels of development in Third World countries, there is no alternative but to have recourse to "traditional" teachers, without whose participation non-formal education would be virtually impossible through lack of human and financial resources. The tasks involved in non-formal activities mean a heavier work-load for the village schoolteacher who, particularly in rural areas, is expected to assist other public and private bodies in conducting censuses, surveys, etc. In fact, in such areas, he is practically the only person capable of fulfilling these tasks, which he frequently undertakes free of charge.

The problem then is to ensure effective participation by teachers in non-formal educational activities, given their professional obligations

and family commitments. It is now generally agreed that teachers must be released, at least partially, from their duties within the formal system to enable them to perform these additional tasks, striking a fair balance between their in-school and out-of-school activities.

The changing role of teachers and the extension of their functions and tasks require that their timetable be reviewed. There is a conflict between all they are expected to do and the time at their disposal to carry out these new tasks, especially if they must also keep up with the growing tide of new developments and upgrade their professional qualifications.

Any examination of the role of teachers must also take into account their working conditions, particularly since the teaching profession offers more limited opportunities of promotion than other comparable professions in other sectors of the economy. Furthemore, the neccesary resources should be made available to teachers to enable them to solve their professional problems and find ways of continuing their further training.

Teachers - a new profile

While the role of the teacher in formal education is to create educational situations and learning conditions in keeping with existing curricula, in the non-formal sector, his task will be to focus on actual experience, analysing it with his pupils and incorporating it into his teaching material, which will lead to the acquisition of new knowledge (the starting-point and basis for these analysis being, for example, the description of a particular situation experienced by one of the students, a radio broadcast or a group discussion of a common problem, etc.). As already noted, the training of teachers for the twofold role of primary-school teacher and group leader for adult learners is far from being a reality in the majority of Third World countries, despite limited experimental projects conducted in some of them. Yet such training is essential, and must start with primary teachers, for few countries have at present the human and financial resources to employ two teachers, a primary-school teacher and a non-formal educator, in every village.

Since there are few teachers trained in out-of-school education and national budgets do not allow for the establishment of a new body of educators alongside that of traditional teachers, training must be provided for in-service teachers and student teachers working within the formal system, either in pre-service training institutions, through practical in-service training courses or even at universities. To this end, therefore, the curricula and methods in use in training institutions must be reviewed so that they can better prepare teachers for this twofold role. Is this where the solution really lies? One cannot help but wonder at the reasons for the difficulties encountered in putting this formula into practice. A possible solution is recommended in the draft of UNESCO's 1973-1978 Medium-Term Plan, providing for "multipurpose institutions... to train both teachers and administrators, people who will be working within the educational system and people who will be devoting themselves to the various aspects of out-of-school education". This institutional innovation is also referred to by Porter[2] in his description of "the scope for institutions particularly interested in interprofessional training of teachers, social and community workers, health officers and trade unionists to work together".

The training of both future and in-service teachers must focus mainly on:

- an introduction to the methodology used in the social sciences and the practical analysis of social contexts and environments, specially techniques of conducting socio-educational surveys, monographs, etc.;
- the theory and practice of community development:
- communication skills and techniques of group leadership (children and adults);

[2] James Porter, "The Changing role of the teacher", Paris, UNESCO/Geneva, IBE, 1978.

- techniques and methods of active education for children and adults in learning situations;
- techniques of self-instruction and the production of teaching cards;
- techniques of group dynamics (theory and practice);
- the methodology of teaching reading, writing and arithmetic and the specific learning techniques required by children and adults;
- the interdisciplinary use of new educational contents;
- an introduction to psychology, adult education and the psychology of learning;
- the basic principles of curriculum planning (depending on the objective in view and the intermediate stages required to reach them);
- the conduct of cultural activities in school and the community;
- techniques of evaluation and self-evaluation.

The principles listed above are intended as general guidelines only and should be adapted to each individual situation and the characteristics of the learner group (children or adults). They call for more diversified and flexible teaching methods, give precedence to acquiring methods and techniques rather than factual information, encourage a regular alternation of theoretical and practical activities, and focus on developing pupils' creative abilities and sense of initiative, with priority given to ways of thinking rather than learning by role.

The emphasis of this approach to training teachers in formal and non-formal education means new responsibilities for the teachers concerned. It also involves determining the skills and knowledge to be acquired for the accomplishment of these new tasks. It likewise indicates the kind of rapport and relationship which should exist between the teacher/educator and his pupils (children or adults), parents and other members of the community, and procedures for co-operating with other local agents, group leaders and any other "participants" in the overall educational process. The following profile (provisional and not necessarily complete) emerges:

At the level of teaching capabilities

- the ability to transmit one's knowledge effectively and to evaluate its assimilation by one's pupils;
- knowing and understanding all the complex facets of the learner's personality, child or adult (notions of individual psychology, cognitive and affective development);
- a knowledge of the factors involved in the learning process, understanding and memory;
- a knowledge of active teaching techniques and how to apply them (a) in a class of children, and (b) with adult learners;
- the ability to prepare and develop study plans and learning experiences for a specific group of learners;
- using all the methods available to make coursework accessible to the learner, in particular "mobilization" techniques to ensure the pupil's participation, and to catch and hold his attention; and the ability to find the most motivating solutions and situations;
- the ability to organize both individual learning and group work;
- an understanding of how to conduct a multidisciplinary approach, and experience of multidisciplinary work.

At the level of general capabilities and aptitudes

- the ability to undertake self-directed instruction and pursue further studies;
- a knowledge of development problems, especially at local level, as well as the major issues facing the present-day world (basic economics, environment, population trends, the impacts on development exerted by individuals and groups...);
- being motivated, interested and commited, and respected by one's pupils (children or adults);
- a good relationship with individuals and groups;
- the ability to communicate in the language spoken by the learner and to give clear and simple explanations;
- the ability to apply scientific methods to a given situation.

At the level of organizing the learning process

- the ability to organize the utilization of the time, space and resources needed for the learning process;
- the ability to analyse a real situation in concrete terms, determine its key components, identify inherent problems and obstructions and propose solutions appropriate to the environment and the characteristics of the learners;
- the ability to understand and evaluate local socio-cultural data, to conduct surveys and analyse the findings;
- the ability to turn to advantage and utilize the previously acquired knowledge and skills of participants in a given educational context;
- the ability to analyse the needs of a particular environment, for example to understand expressed needs and recognize those which are not expressed;
- aptitude for teamwork (with fellow teachers, other specialists or group leaders) and ability to organize it in the light of the target group concerned (children, young people, adults);
- the ability to prepare and develop teaching aids for learning situations;
- the ability to develop and apply the necessary tools for evaluation and self-evaluation;
- the ability to research and apply the documentary information and data required for course preparation.

If pre-service training colleges and in-service training centres are to train teachers successfully to organize group activities (in school classes or with adults), emphasis must be laid on:

a) *Group leadership techniques*, which have the twofold purpose of involving student teachers and in-service teachers alike in the process of their own training, while also bringing them into contact with a teaching relationship pattern they will experience in the future. Group leadership links individual and group work, and represents a form of instruction in which adults and children can express themselves, communicate and participate freely. It implies an openness to the views of others, mutual respect and a willingness to accept exchange and the confrontation of ideas and points of view. It is only effective however if applied as part of a *specific project* carried out in accordance with an *organized procedure.*

b) *Alternation* between theory and practice. This consists the constant interplay between actual experience and its applied implications (recorded observations, problem-solving, potential theoretical input and formulation of solutions), leading to further practical inputs, followed by continuing theoretical reflection. Alternation may occur frequently (every lesson, for example) or on a wider time-scale (establishing a balance between practical work and theoretical learning).

c) *Self-instruction*, conceived as both an end and a means. As an end, it reflects the concern to open up initial training to the subsequent cultural and professional education of practising teachers. Its aim is the acquisition of attitudes and aptitudes favouring intellectual autonomy, namely an awareness of one's needs and the organization of working methods geared to meeting them. As a means, it provides training in working on one's own and devising one's own individual training. It entails practice in analysing one's needs, programming one's work, and the researching and use of information. This approach is well adapted to methods of alternation (see (b) above) and is further validated by the approach based on productive work (see (d) below).

d) *Productive work.* Here student teachers develop products on services, for example, teaching or self-teaching aids (educational materials, observation grids, evaluation test, surveys, monographs, teaching sequences, etc.). To have any real educational value, these products, even if still of an experimental nature, must be designed for actual use. Such activities –similar to those developed at workshop seminars– are the natural counterpart of "academic" exercises devised for *ad hoc* practical work, whose purpose is to help assimilate knowledge and skills and to inform teachers as to the effectiveness of their transmission.

Alternation: complementary training situations

Situation 1 (at school)	Pupils and teachers concentrating on theoretical work.	There is a danger that the relationship with the real world will be reduced to illustrations chosen because of their suitability. Applications of theory risk being artificial or misguided.	Teachers remain "monodisciplinary" (the teacher focuses on the content of his own subject).
Situation 2 (at school)	Practical workers participate with the teachers in training the pupils.	This is the first form of confrontation (possibly contradictory) between the logic of production and the logic of transmission. Illustrations turn into real situations. But because the practical workers "come to the school" there is a danger that they will also become caught in the trap of the logic of the educational process.	The "monodisciplinary" tendency continues. However, the practical workers bring very different approaches to the various problems.
Situation 3 (on the job)	Teachers participate with practical workers in following activities of pupils at the various places of work.	This is the second form of confrontation. The "case" is left aside and the real situation is examined. But there is a danger that the teachers will have some difficulty in fitting into this situation unless they have experience as practical workers.	The "multidisciplinary" tendency develops. A practical problem which arises in its natural setting may involve a number of disciplines without any link between them.
Situation 4 (on the job)	Pupils and practical workers concentrate on productive efficiency.	There is a danger that the relationship to theoretical learning will be reduced to poorly structured instruction provided on a casual basis. The pupils may be so overawed by the practical workers' competence that they will not ask them questions.	There is a danger that the "multidisciplinary" tendency will result in intellectual "indiscipline". The aim of this play on words is to call attention to the indiscriminate circulation of knowledge through productive activity, without any concern for intellectual training. In other words, the multidisciplinary approach breaks down and becomes "indiscipline".

Source: Schwartz. B. "Problems and prospects of alternation" in "Learning and Working" Paris, UNESCO, 1979, p. 113.

Common cores of training for formal and non-formal education

In the context of co-ordinating primary education with the literacy training of young people and adults, and with a view to relatively greater integration of formal and non-formal education with productive social and cultural activities, it is necessary to avoid a dispersal of efforts and to optimize the use of all the human resources available and involved in the educational process: or at the very least, steps should be taken to ensure greater co-operation between the various specialists and actors working in the field of education for development. Also, if these specialists and actors are to speak the same language, they must be given the necessary training to enable them to help to adopt educational innovations which concern them all, in multidisciplinary fields such as population education, the environment, communication, international understanding and the linkage between productive work and education (Pauvert, 1985).

This kind of common training would encourage the desire for joint participation in the development of multidisciplinary teams, at all levels of society. It is a natural consequence of the overall concept of education (formal and non-formal), linked to the role of education in an integrated approach to development. It is possible to define the minimum common skills required by all personnel involved in formal and non-formal education activities, which in turn are components of multidisciplinary activities all converging towards the same objective, in the context of development.

The introduction of common cores of training inevitably highlights the need for consistency and harmonization of the types of training given or to be given to teaching personnel with different functions. The need for greater integration of the types of training to be given to the various actors and agents engaged in formal and non-formal education is nothing new, but it must be recognized that this principle is not widely applied in practice, despite the many studies carried out in this field and the efforts made to identify training components common to different categories of personnel (Pauvert, 1983). As a result of two consultations and three workshops, and approach to the establishment of common cores was first studied at the theoretical level, and subsequently examined in the light of a complex general situation (the Sahel). It was later applied experimentally in practice.

Conclusions and prospects

It is generally acknowledged that teacher-training strategies must be based on an overall view, which provides the only solution to meeting new needs in this field; also that it is neither efficient nor cost-effective to address the different aspects of such training in an uncoordinated and compartmentalized way. It is also recognized that teachers must be trained to be educators/group leaders, capable of teaching children as well as adults, both in school and out of school; and that their pre-service education is not an end in itself, and cannot be considered separately from the training of their supervisors and educators.

There can be no doubt as to the relevance of such principles. They have been the subject of many recommendations by regional conferences of Ministers of Education and of Ministers responsible for Economic Planning in Member States, as well as at various sessions of UNESCO's General Conference, the International Conference on Education and, most recently, the World Conference on Education for All (Jomtien, Thailand, March 1990). Ways of implementing these principles have been discussed in detail at numerous regional, subregional and national seminars or workshops, and have been the subject of many studies and research projects in support of which UNESCO's contribution has been invaluable, especially in developing contries, through its operational action and regular programme.

We must now recognize that the necessary complementarity between pre-service and in-service training, the problem-based approach,

the need to provide common training for the different agents of the educational process, the operational value of integrated training for different categories of personnel and the notion of multidisciplinary teams are no longer innovations. Why then do training policies find it so difficult to take them into account? Why are efforts to put words into action so tentative? Why is there such a discrepancy between the recommendations made and the actual situation found in training institutions? The fact is that, verbal formulations and statements of intent aside, the answer no longer lies in the choice of a particular policy but in the "political will" to act, in the decision to advance from the stage of policy-making to that of implementing strategies.

During the last few decades these approaches and their underlying methodological theories have been repeatedly put to the test in concrete situations. The activities introduced, considered innovative at the time by many Member States, have apparently not had the desired effect on training systems, or on the functioning of training institutions, and still less on everyday practice by teachers. The obvious conclusions have rarely been drawn, even when the outcome has been positive, and very few people have taken the step of applying to a whole country –or region– the findings of experimental or pilot projects conducted on a geographically limited scale. One may well wonder, therefore, if it is desirable or realistic to envisage other procedures in this field, as long as the results of such efforts by both Member States and UNESCO have not been fully exploited.

From the problems and questions examined in this booklet, two different avenues of approach may be identified which are suitable for due consideration at international and national levels, and even in institutional terms:

Firstly, there is no doubt that a thorough and objective evaluation of what has been done over the last 20 years of international and regional cooperation is necessary so as to analyse in the field the kind of obstacles and constraints encountered, in each specific situation, in implementing these principles. The findings could then be made available to future national or regional conferences on the problems involved in, and realistic strategies for the training of agents called on to participate in basic, formal and non-formal education.

The second approach concerns the inadequacies still to be observed in the circulation of information and documentation, whether between UNESCO and Member States or among Member States themselves. This is the conclusion of the study on experiments and innovations in the pre-service and in-service training of primary teachers between 1960 and 1985, which also states that visits to documentation centres in establishments set up in the 1960s with UNESCO's backing reveal for example that methodological tools produced by training workshops or seminars are either not available or not utilized. The implementation and widespread application of guidelines recommended at international level seem to encounter numerous obstacles. These difficulties are often the result of the inadequate dissemination of texts and methods used successfully in the limited context of pilot projects in isolated institutions and one-off seminars. This lack of continuity in the circulation of information is apparently often one of the causes contributing to the inadequate generalization of innovations. Serious thinking is therefore necessary on ways of promoting and encouraging exchanges of information between Member States, training institutions, teaching establishments and research centres. Practical measures should be defined to permit the effective implementation of recommendations relating to the dissemination of relevant information and documentation, adopted by international conferences and regional meetings organized by UNESCO.

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SEVENTH REGIONAL CONFERENCE OF MINISTERS OF EDUCATION

UNESCO started the preparatory work of the Seventh Regional Conference of Ministers of Education of Member States in Latin America and the Caribbean (MINEDLAC VII). We feel convinced that the co-operation of our Member States and the concemed institutions will allow us, as for the past, to achieve successfully the identification of those strategies facilitating the attainment of the objectives of the Major Project in the Field of Education in Latin America and the Caribbean (PROMEDLAC VI).

At the generous invitation of the government of Jamaica, the Meeting will be held in Kingston, in early May 1996. Interpretation from/into English will be ensured at the Meeting.

The list of invitations is underway. In conformity with UNESCO's rules in force, the Ministers of Education of Latin America and the Caribbean is due to be despatched by December 1995, upon the subsequent adoption by the General Conference at its twenty-eighth session of a resolution authorizing the convening of MINEDLAC VII and PROMEDLAC VI.

PROMEDLAC VI will be held immediately before MINEDLAC VII in order to prepare contributions to it. The two conferences will thus constitute a single, continuous event which will last five working days.

UNESCO considers also the participation of U.N. specialized Agencies, Inter-Regional, Intergovernmental, Non-Governmental Organizations, Foundations, Institutions, and UNESCO Member States other than those of LAC linked to the themes of the Meeting whose contribution is recognized in the Latin-America and the Caribbean.

The organizational arrangements are also under consideration. The best and most productive fashion seems to be Planaries, Working Groups and Round-Tables.

As for the Agenda, quality and relevance of education will be discussed. Additionally, and as suggested by the LAC Representatives to UNESCO in Paris, topics dealing with secondary and higher education in line with the needs/challenges of development in the Region will be also considered.

The Govemment of Jamaica and the UNESCO Office in Kingston set up a local Steering Committee in charge of making the appropriate logistic arrangements for the Meeting.

UNESCO, upon the subsequent adoption by the General Conference at its twenty-eighth session of a resolution authorizing the convening of MINEDLAC VII (kindly refer to document "Draft Programme and Budget for 1996-1997, [28 C/5] para 01122), has also continued implementing the preparatory arrangements. The document on Invitations to be approved by the Executive Board at its 147th. session is now completed. Following the rules of procedure, the General Conference will decide in due course on the invitees, i.e. Member States of the Region, Associate Members and Territories; U.N. Agencies; other UNESCO Member States; Intergovernmental and Non-Governmental Organizations; Institutions and Foundations co-operating in Latin America and The Caribbean.

By mid-September 1995, one reconnaissance mission will travel to Kingston to discuss with the national authorities on the place and eventual dates of the Meeting as well as the diplomatic agreements needed. The Jamaica Government Conference Centre, located in down-town, might be retained as the seat of the Meeting. As for the dates, the Meeting might be organized from 13 to 17 or 20 to 25 May 1996.

At the OREALC's invitation, ECLAC expressed interest in writing a document on demands for economic and sustainable development in Latin America and The Caribbean.

OPEN AND DISTANCE LEARNING

Division of Higher Education UNESCO*

Open and distance learning is today one of the most rapidly growing fields of education and training in the world. The potential impact of open and distance learning on all education delivery systems, from primary to tertiary level, has been greatly accentuated through new developments in information and communication technologies, which increasingly free the learners from the constraints of time and space. The objective of this paper is to review open and distance learning in the context of its challenges and potentials, examine its main concepts and components, outline current global and regional trends, identify strategies as well as problem areas, and suggest modalities for international cooperation and UNESCO's role therein.

It follows from the nature of open and distance learning, which basically is a method available to all, that this policy paper is addressed to a wide range of individuals, associations, institutions; NGOs, governmental decision-makers and intergovernmental organizations including UNESCO, as the specialized United Nations Agency with a mandate to provide education for all. If the paper can enrich discussions on open and distance learning, serve as policy guidance for those interested in its potentials, and inspire national, regional and international cooperation, it has served its purpose.

Challenges and potentials

During the last two decades the world has seen a considerable growth in education and training. But the world still suffers from intolerable inequalities both at the international level and within nations. Many countries are struggling with limited access to education and training for children and young people, and at the same time have to address basic needs of the older generation. Low quality and insufficient relevance is a concern in many countries. At the root of most of these problems is the problem of financing an adequate provision of education and training. Some of the trends affecting education and training in most countries are: structural reforms in education and society; diversification of the resource base, privatisation, etc.; the fast development of information and communication technologies; the move towards a more knowledge-intensive economy; increasing integration and interdependence of world economy.

The potential of open and distance learning in relation to some of the problems of education and training in the world today should be considered from different perspectives.

For the student/learner it means liberation from the constraints of time and place, leading to the benefits of increased access and flexibility, as well as the combination of work and education. It may also mean enrichment and higher quality, and a more learner-centred approach with the possibility of new ways of interaction.

For employers it offers high quality and often

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cost-effective professional development and learning in the workplace. It allows upgrading of skills, increased productivity and development of a new learning culture. In addition, it means sharing of costs of training time and increased portability of training.

For governments the main reasons for introducing open and distance learning are its potential of increasing the capacity of education and training systems, reaching target groups with limited access to conventional education and training, supporting and enhancing the quality and relevance of existing educational structures, achieving more cost effective education and training, and promoting innovation and opportunities of lifelong learning.

Concepts and components

While distance education designates various forms of mediated teaching and learning, characterized by the dispersion in time and/or space of learners and their teachers for the whole or parts of the study programme, open learning indicates a certain philosophy, underlining open entry and access to learning opportunities.

Although there are no direct conceptual links between them, the two concepts are often used to describe similar types of educational provision, sharing a common inspiration of access to learning and flexibility of learning arrangements.

Under the label of open and distance learning this paper will addresses the whole range of related forms of teaching and learning, within both formal and non-formal education and training. Distance education and conventional education are labels covering a wide range of variations and methods. Very often methods from both forms are also combined. This means that although there may be a clear distinction in theory, the distinction between distance education and conventional education in practice is far from clear. Therefore, it is not very useful to look at distance education in isolation from other forms.

Distance learning systems always have several components, and it is important to be aware of components such as: mission, programmes and curricula, teaching/learning strategies and techniques, learning materials and resources, communication, interaction, support delivered locally, delivery system, students and tutors, staff and other experts, management and administration, housing and equipment, and evaluation.

Open and distance learning, like any other mode or approach, is not a panacea. There are both success stories and failures, and many open and distance learning systems are struggling with a range of problems and barriers to effective and successful implementation. Some of the more common obstacles and problems are: inadequate technological infrastructure, planning and programme deficiencies, lack of human capacity and expertise, inadequate economic resources; lack of recognition of educational equivalence, and neglect of learning conditions and cultural aspects.

Sometimes open and distance learning is used for school-age children and youth who are unable to attend ordinary schools, or to support teaching in schools, both at primary and secondary level. However, most school equivalent courses and programmes are targeted towards the adult population. In developing countries, distance education for school equivalency is perhaps the only realistic way of expanding educational opportunities to the adult population. In the developed countries there is still a need for this type of programmes for those who missed out of the conventional system. Tertiary level open and distance learning systems are also providing educational opportunities that are equivalent to conventional university and college education.

Both private and public providers have made important contributions to the development of industry and trade. There are many examples of programmes for vocational and professional education. In addition to business studies and technician training one may mention agricultural training and training for public administration and health services as important sectors. Teacher training is a particularly important area.

This includes both initial training for formal qualifications, in-service supplementary training for formal up-grading, and continuing in-service training in particular subjects and topics. Many examples, particularly from developing countries, show that teacher training at a distance may reach large groups of teachers and may have profound impact on the development of national education systems.

Non-formal education and community development are other sectors where open and distance learning is used. It is often reported that education programmes at a distance reach substantial numbers of women, also in societies where women lack equal opportunities of participation in conventional forms of education and training. Open and distance learning lends itself also to the teaching of many of the complex issues of the modern world, in which input from a variety of disciplines is necessary. There is also a wide range of projects involving thousands of school children and youth in cross-cultural electronic communication. Some of these are very good examples of how to promote international understanding across ethnic and cultural borders.

Open and distance learning has the potential of generating new patterns of teaching and learning. Linked as it is with developments in information and communication technologies, it also is connected with the development of new learning needs and new patterns of information access and application. Open and distance learning therefore may lead to innovation in mainstream education, and may even have effects beyond the realm of education itself.

Present trends in open and distance learning

The confidence is growing that open and distance learning will be an important element of future education and training systems, and may offer some responses to the world's educational challenges. In spite of this, financial constraints and cutbacks are common also in this field. Market mechanisms and customer orientation are highly relevant and may lead to rethinking of organizational and structural aspects. Open and distance learning is approaching a state of acceptance within mainstream education and training that will in the future make it part of the repertoire of most educational institutions. The technological development allows for new patterns of access and delivery in education, often linked to new types of demands and new approaches to learning. One of the trends is the emergence of new forms of distance learning based on more interactive telecommunication technologies, with implications of pedagogical, economic and organizational nature. There is a significant trend towards internationalization. There is still limitation of access for a range of reasons, but the "global classroom" has already been demonstrated in quite a number of projects.

The regional overview shows great differences between all regions of the world, although there are also a number of similarities between some of them. Open and distance learning has existed for about one hundred years in the more developed regions and for about one generation in the developing regions.

In the developing world, open and distance learning suffers from many of the same constraints and problems as education in general. In addition, lack of infrastructure and professional competence in open and distance learning are important barriers. Nevertheless, these forms of education delivery have come to stay in the Third World, and many countries are looking at open and distance learning as a major means of expanding education and training and increase the quality of education. Some countries have established major institutions –open schools and open universities– which seem to become corner stones in their educational systems.

In the developed countries present trends in the field are linked both to structural problems of education in modern society, and to the technological development. The needs of extending learning opportunities over the whole life span and the changing demands concerning knowledge and skills represent a challenge which is not easily met by conventional structures and

institutions of education and training. New information and communication technologies seem to have great potential impact on education. Both existing open and distance learning institutions and conventional institutions are eager to develop effective models of application of new technologies and at the same time meet the needs of learners, and do so with variable success. However, also more traditional models survive, and the field shows great variety as regards both technologies and organization.

Strategic issues and problems

The inclusion of national policies for open and distance learning in policy documents on education and training is a prerequisite for effective national planning and utilization of open and distance learning methods. Statements in national policies should address fundamental questions concerning purpose, target groups, resources and infrastructures, relation to the conventional system, measures for implementation, coordination, funding, quality assessment and recognition. All stakeholders should be included in consultations, and planning should as far as possible be intersectoral. The question of scale has to be addressed, and private sector involvement needs attention.

A successful national launch of open and distance learning requires visible and strong leadership and high level government backing. Careful planning, including forward planning after the launch, is essential. To help ensure effective implementation, evaluation procedures need to be built in at the planning stage. Planners should also take into account the training needs of staff newly involved in open and distance learning. New institutions need substantial funding to cover start up. A cost effective operation is one that makes good use of resource –it is not necessarily low cost. A distance teaching institution needs to have sufficient resource to be able to react fast to meet new demands. There needs to be a planned, continuing interface between all the national stakeholders in open and distance learning, in order to secure coordination. In many countries, international and regional bodies may have a role supporting and guiding developments at national level.

One of the major contributions of open and distance learning in developing countries is within teacher training. It has also contributed towards the improvement and expansion of basic schooling for youth and adults. In many developing countries open and distance learning is a very important means of providing higher education. Its role in non-formal education is also well known. It is playing an important role in qualifying and upgrading key personnel. Institutions of open and distance learning often serve as resource centres for community based learning, and provide an infrastructure for production and distribution of learning materials.

There are, however, some common stumbling-blocks for the effective implementation of open and distance learning in developing countries. The lack of funding ad problems of sustained support are perhaps the most important ones, having detrimental effects on quality and achievements. Another common problem is lack of human resources with sufficient competence and motivation. The third major problem is technological infrastructure, which prevents the effective use of appropriate technologies. Finally, the lack of strategic planning and coordination may reduce the level of achievement and cost effectiveness. Important strategies for future development should include harmonization of goals, policy clarification and coordination at the national level, as well as regional coordination and collaboration. Capacity building is also important, including increased professionalism in planning and management of open and distance learning systems. Other aspects are networking between national stakeholders, better integration between the education and training systems and the productive sector, ad the progressive autonomy and capacity of continuing operation after donations have been exhausted.

New opportunities

Technology is in itself a driving force, which

should be used for the benefit of education. The technologies used are not an end in themselves. They are used to extend the opportunities of learning to new groups, to make learning more efficient and flexible, and to enrich the learning processes. There is a variety of technologies available at different levels of sophistication which may fit quite well to most kinds of requirements. The potential of advanced technologies is linked to the capacity of storing, retrieving, manipulating and distributing large amounts of information, and of speeding up and facilitating communication. All this is achieved in an increasingly integrated way and at decreasing costs. The challenge will be to utilize this potential according to clear educational and instructional strategies, and to integrate the cultural and conceptual developments caused by the new technologies.

Most of the successes of electronic information technologies so far have been in specialized or higher education. One of the major weaknesses has been in facilitating basic education. The developing countries have benefited the least from the potential of educational technology. Interactivity is a key element of most of the new services foreseen. They are particularly adapted to education and to the communication need of dispersed users, but on the other hand need reliable networks. For electronic information technologies to be successfully employed in education on a wide scale, major changes will have to be introduced into education systems. New technologies in education imply new relationships between learners and the available information as the learners acquire knowledge and build knowledge structures. The education sector should probably organize itself as a major technology customer and partner in service development, although not necessarily as producer of learning materials. The integration of open and distance learning systems with traditional educational structures may become part of the strategy in this context. For this to be achieved, the roles of different key actors should be considered and redistributed.

There is no single and simple answer to the question about institutional models and structures for open and distance learning in the future. Without doubt, open and distance learning will be adapted and integrated by "conventional" institutions, probably at all levels and in all sectors. On the other hand, there will certainly also be room for other types of institutions, both public and private. New markets and new technologies will impose changes in these institutions as well, and new types of institutions and services will be established. There will also be a continuous need for dedicated open and distance learning institutions (open universities, open schools, etc.) with a capacity for serving very large target groups. Existing institutions will need to develop new types of partnerships and alliances in order to meet the needs of society in more effective ways than most of them do today. The wealth of experience and competence in existing open and distance learning institutions must be capitalized in new alliances and structures. This is a challenge not only to institutional leadership, but also to political awareness, policy development and political leadership.

It is often assumed that open and distance learning is cheaper than other forms of education and training. As a general statement this is far too simple. Usually, the cost structure in open and distance learning is quite different from cost structures in conventional types of education. Clearly, when capital investments substitute high recurrent costs, as is often the case in this field, there is an important factor in the economy of scale. It has been demonstrated in a number of cases that large distance learning programmes may produce graduates at considerably lower costs than conventional institutions. This depends, however, on a number of important factors. While conventional education and training show great variation in costs according to subject area and type of programme, open and distance learning also varies very much according to use of learning materials, other media and technologies, and types and organization of student support services. It is also necessary to consider the rate of completion of studies.

Most cost studies compare the costs of single mode distance learning systems with that of conventional systems, while cost studies of open and distance learning used by conventional or dual mode institutions are scarce. The use of advanced technologies for small target groups makes the provision expensive. Most cost studies are also simple cost efficiency studies which don't take into account broader qualitative and social aspects and perspectives. One such aspect is that open and distance learning systems often are targeted towards other groups, without easy access to conventional institutions. There are other benefits that are not easily quantified and calculated. Opportunity costs and productivity effects of upgrading the workforce through in-service training should also be taken into account.

In most cases funding of open and distance learning institutions is different from that of conventional institutions, and there are many arguments in favour of this. On the other hand, if open and distance learning is to be used increasingly by conventional institutions, funding for programmes of this type needs some harmonization with funding mechanisms for conventional programmes. It is quite usual to assume that students in open and distance learning, who are often working adults, should pay a higher proportion of the costs than conventional students do. However, this assumption should be modified according to missions, target groups and other local circumstances. The balance of funding from government, employers and individual students should be carefully considered, being aware that underfunding may easily have negative qualitative and social effects. As open and distance learning becomes a regular feature in the education system, care should be taken to remedy any unjustified economic discrimination between groups of students.

UNESCO and international cooperation

UNESCO's interest in open and distance learning is a logical consequence of its long-time commitment to the provision of education for all. The Organization has since its foundation shown keen interest in various forms of non formal and adult education; and the use of distance education was given early support. Thereafter, the importance of distance education has dramatically accentuated as a result of rapid population growth and development trends, which called for more effective systems of educational delivery. Parallelly, however, new chances to cope with the situation became available through an unforeseen development of information and communication technologies. Learning was freed from the constraints of time and place: it was potentially open to all.

The new situation was reflected in UNESCO's policies and programmes, and various sessions of the General Conference as well as other conferences stressed the importance of open and distance education. This has also been stressed by the World Conference on Education for All (Jomtien, 1990), by the Regional Seminar on Distance Education in Africa (Arusha, 1990), and by the International Commission on Education for the Twenty-First Century convened by UNESCO to reflect on the future of education. Similarly, the summit meeting of Nine High Population Countries (New Delhi, 1993) came out with a clear mandate to explore the possibilities of distance education in the participating countries. Open and distance learning is also an important component of UNESCO's "Learning without Frontiers" programme proposed by the Ad hoc Forum of Reflection convened by the Executive Board (1993).

In the promotion of open and distance learning, UNESCO assumes an internationally central position. Facing the educational challenges of the 21st century, UNESCO will continue to strengthen its contribution to the development of open and distance learning. This it will accomplish through the functions of advocacy, clearinghouse, capacity-building and cooperation.

The advocacy function consists of generating public interest in the use of innovative open and distance learning methods; sensitizing national policy and decision-makers to the potentials of

these methods to meet the educational needs; facilitating the collaboration of international, regional and subregional networks in the field and enhancing their partnership with information, communication, industrial and other related sectors. The clearing-house function assigns UNESCO an important "observatory" role in promoting international cooperation for monitoring and inventorying present and future open and distance education activities; collecting, processing and disseminating relevant information and experience to Member States and other partners concerned, and strengthening the cooperation with existing information centres and specialized agencies, and assisting governments to establish relevant data bases in this field.

The capacity-building function refers to the Organization's efforts of assisting its Member States in developing their open and distance learning systems through a wide range of activities, such as establishing policies and priorities; setting up delivery systems, institutes and programmes; improving management, administration and student support systems; promoting material and course production; intensifying the training of personnel; extending the use of information and communication technologies. The above activities will be pursued by conducting surveys, feasibility studies, and pilot projects; launching UNITWIN/UNESCO chairs and other schemes of joint action; providing training, consultancies, fellowships, advisory services and other forms of assistance; and mobilizing internal and external resources to support capacity-building activities.

Cooperation in the above field is pursued with an increasing number of intergovernmental, governmental and non-governmental organizations, bi-lateral aid agencies, associations and institutes of open and distance learning. Among intergovernmental agencies, one may mention other UN agencies and the Commonwealth of Learning. Close cooperation is also pursued with the World Bank, regional development banks, OECD, the Commission of the European Union, The South East Asian Ministers of Education Organization, the Organization of American States and others.

Among non-governmental organizations, a central position is taken by the International Council for Distance Education (ICDE) which has developed to UNESCO's main partner in open and distance learning. ICDE, which has acquired Category A status with UNESCO, participates in many ways in the implementation of the Organization's programme. ICDE's Standing Conference of Presidents of Member Institutions (ICDE/SCOP), and International Multi-Channel Action Group for Education (IMAGE); have further widened its scope of activities. In addition, UNESCO cooperates with many other international, regional and sub-regional associations and a large number of distance education institutes of the world.

LETTER FOR TOLERANCE AND NON-DISCRIMINATION

We live in a world where each individual constitutes a universe. Because we are all equal in terms of dignity and rights, we acknowledge the fact that human beings express themselves in manifold ways. The various ethnic, religious, social, and national differences, as well as those stemming from ways of thinking, age and gender, combine with the peculiarities inherent to each person to make up the individual and collective entities that we are: unique, original and –given our human nature– free.

We realize that survival, reproduction, love and progress will be fully attained only in an atmosphere of brotherly harmony. However, the interpersonal relations emerging from this coexistence seem not to reflect the attributes of freedom and equality that are an essential part of us. Our political, economic, social and cultural endeavors have built into their systems severe discriminations which poverty, exclusion, prejudice and violence replicate through our institutions and life-styles. Discrimination, is arbitrarily denying to some the opportunities that are meant for everybody. Keeping a few or many in ignorance with respect to their rights as citizens amounts to intolerance. Tolerance is an unconditional exercise of freedom, and non-discrimination means taking a critical stance before unequal rights in the human community.

We citizens endorsing this Letter call for denouncing the culture of intolerance and aggression; defending the dignity of each individual and the sovereignty of an autonomous conscience; accepting differences as a condition of living, and diversity as a quality of existence; expanding spaces for tolerance in the various social spheres; and, eradicating every lingering form of discrimination that still afflicts the country.

FIRST CITIZEN'S FORUM FOR TOLERANCE AND NON-DISCRIMINATION

Text appeared in a poster elaborated during the First Citizen's Forum for Tolerance and Non-Discrimination, sponsored by UNESCO, Ideas and Novib, held in Santiago, Chile, March 29 to 31.

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