

THE REFORM OF SECONDARY EDUCATION IN BRAZIL¹

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REFORM OF SECONDARY EDUCATION IN BRAZIL

1. Summary and Conclusions

Brazil's Reform of Intermediate or Secondary Education³ was actually very

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ambitious in both its planning and implementation. It sought inspiration in what was the best and most up-to-date in the experience of different countries at different stages of economic and social development. Most importantly, however, its general theme is fully attuned to the new challenges that the “Knowledge Society” has provided for education systems: creating the conditions for permanent education. On the one hand this requires that, in the context of basic⁴ education, education systems must be able to develop in young people the ability to learn, abandoning for ever ideas based on the transmission of knowledge, and that they must keep their doors open for everyone to be able to continue studying at various levels. On the other hand, in the context of post-secondary teaching, education systems must be diversified and flexible enough to allow people to enter and leave school and the labor market at frequent intervals. These two conditions are clearly present both in the Reform of Secondary Education *per se* and in the Reform of Technical Education that complemented it.⁵

Ambitions for applying the Reform, were controlled by the historical background to Brazilian education. Until the mid-20th century Brazil’s secondary education system was extremely small by any criterion we wish to analyze, serving an extremely small number of young people in the relevant age range. When the Reform was developed, demand for secondary education in Brazil underwent an explosive rate of growth and at the administrative level of the states of the Brazilian Federation, public education systems had to respond to this growth.

Under these circumstances the great challenge came to be, and still is today, the application of the Reform. The process of defining it demanded much work of debate and persuasion and a certain amount of corporate resistance had to be faced. The implementation used a series of instruments, some quite traditional such as teacher training programs, others very innovative such as the development of finance systems associated with implementing the Reform, the creation of an instrument for assessing pupils and the use of communications and distance education, as well as using the new technologies of computing and information.

The process of applying the Reform is far from over. There are too many severe failings in the structure of the physical network of secondary schools for them to be able to cope with the demands implicit in the Reform. Teachers must continue to assimilate the principles of teaching, especially those contained in the new Curricular Parameters for Secondary Education. In addition, there are also many shortfalls to be overcome in relation to the qualification of teachers, particularly in the areas of mathematics and sciences. The financing of secondary education as a whole still needs to be defined in a permanent form. In order to apply the Reform, very large amounts of money were provided in the form of special projects and programs with a limited time span.

It cannot, however, be denied that the application of Secondary Education Reform in Brazil has, up to the present time, achieved a success that is perhaps without equal in the history of education, bearing in mind especially the country’s size and diversity. The

³ The present text refers to secondary education (“Educação Secundária” or “Ensino Médio”) in Brazil. In the Brazilian education structure, the three-year secondary education follows the compulsory eight grades of primary education. In the US system it correspond to the high school level. It is a pre-requisite for entering higher education. For young people who have entered primary education at the appropriate age and completed the eight years without repeating a year, secondary education will last from age 15 to 17. In the present text, “Educação Secundária” or “Ensino Médio” are used interchangeably as synonyms.

⁴ The Brazilian definition of “basic education” is adopted. It comprehend the infant education, eight years of primary education and three years of secondary education

⁵ In fact these characteristics existed in the group of reforms and educational policies that were implemented in Brazil between 1995 and 2002, from early childhood education up to university postgraduate level.

Brazilian secondary education system is without a doubt today bigger, better and more relevant to the lives of the people than it was eight years ago.

2. Secondary Education in Brazil before 1995

Throughout the educational history of most countries, the role the secondary level has played in educational systems has not been clearly defined. Historically, this particular stage of young people's education has been the scene of a struggle between two objectives in opposition to each other: preparation for further studies and preparation for work. To a greater or lesser extent, these two 'functions' of secondary education and the way in which educational systems were responding to the challenge of including them in the options available to young people goes a long way to explaining the educational history of different countries. In many cases the solution was found to be the establishment of two separate systems in which the young person's choice between university or the world of work was made at the age of 15. In a development of this system, some countries created a tertiary level of education exclusively aimed at those leaving vocational secondary education and separate from the rest of the university system.

In spite of not having managed to achieve universal primary education until the final decade of the 20th century, Brazil did not escape this general rule. Secondary education was traditionally considered to be a preparation for higher education and as such reserved for those from the economic, political and social elites. In 1942 the government of President Vargas issued a decree regulating vocational education that viewed it as completely different from secondary education, restricting it almost entirely to those with the lowest income levels in society.

It is interesting, however, that Brazil never completely separated the two systems that would prevent the 'transition' of people between one sector and the other. Thus, if a person had studied at the 'technical' level in secondary school, the doors of the university were still open, subject only to the candidate passing the entrance examination (the 'exame vestibular'). This feature turned the Brazilian secondary education system into a hybrid containing a system preparing people for further study, and a vocational system. The latter was small but made up principally of public technical schools mainly attended by young people from the middle class who were interested in preparing for higher education and not very keen on specifically vocational subjects. In the end, this characteristic removed all trace of their role as schools preparing pupils for the labor market.

In 1971, Law No. 5692 re-organized the education system, setting out the eight compulsory grades of primary education while attempting to turn secondary education into a 'second stage' in which vocational education would be obligatory without sacrificing its quality of being the level of education immediately preceding higher education and a prerequisite for entering it. In this respect the reform failed. Secondary education did not become a vocational system. Many schools were forced to obey the law by creating subjects that supposedly prepared pupils for work; generally they lacked the necessary laboratories, equipment and teachers to be able to offer vocational training. In time the system was gradually modified by interpretations and regulations which, by the 1980s, finally created what were in fact two types of secondary education: one vocational and the other preparatory to further study, both of them being considered equal for the purposes of continuing education.

The growth of enrolments in secondary education, both vocational and preparatory, was very slow until the mid-90s of the 20th century. At the start of the 1950s enrolments

were around 650 thousands pupils in a total population of more than 50 million people. Between 1971 and 1980 enrolments in this sector leapt from a little more than a million pupils to almost three million. This growth, however, slowed down considerably in the following decade, only passing four million at the start of the 1990s. After 1993 a great expansion in the system occurred which passed the mark of eight million pupils in 2000 and 9 million in 2003 as may be seen in Table 1. Between 1993 and 2003 the total enrolment grew by 118%.

There are many reasons for this peculiar development. On the one hand, until the mid-90s there was a lack of demand. This is related to the problems of pupils passing through the primary level. Even in 1994 less than 50% of those entering primary school managed to finish its eight grades. Those who did finish took on average 12 years to do so. In other words, the great majority of young people did not finish primary education or left it at an age when it was impossible to think of continuing their studies at secondary level. On the other hand there was little economic stimulus to go on to secondary education. Until the 1980s the Brazilian economy was extremely closed. Demand for low-level manpower was high and the majority of jobs did not require the completion of secondary education as a pre-condition for employment. This changed radically in the 1990s with the opening up of the Brazilian economy and its entry into the system of global competition. A huge process of technological renovation was introduced into all sectors of the economy, and the secondary school leaving certificate came to be a requirement for employment in the simplest jobs. Given that the growth of employment also decelerated after the start of the 1980s, secondary level qualifications came to be a documentary requirement for any job. In addition to this there is the demographic aspect. The 1990s saw a 'teenage boom' without precedent in Brazilian history which will tend to slow down only after 2005⁶

Table 1

Number of Enrolments and Completions in Normal Secondary Education

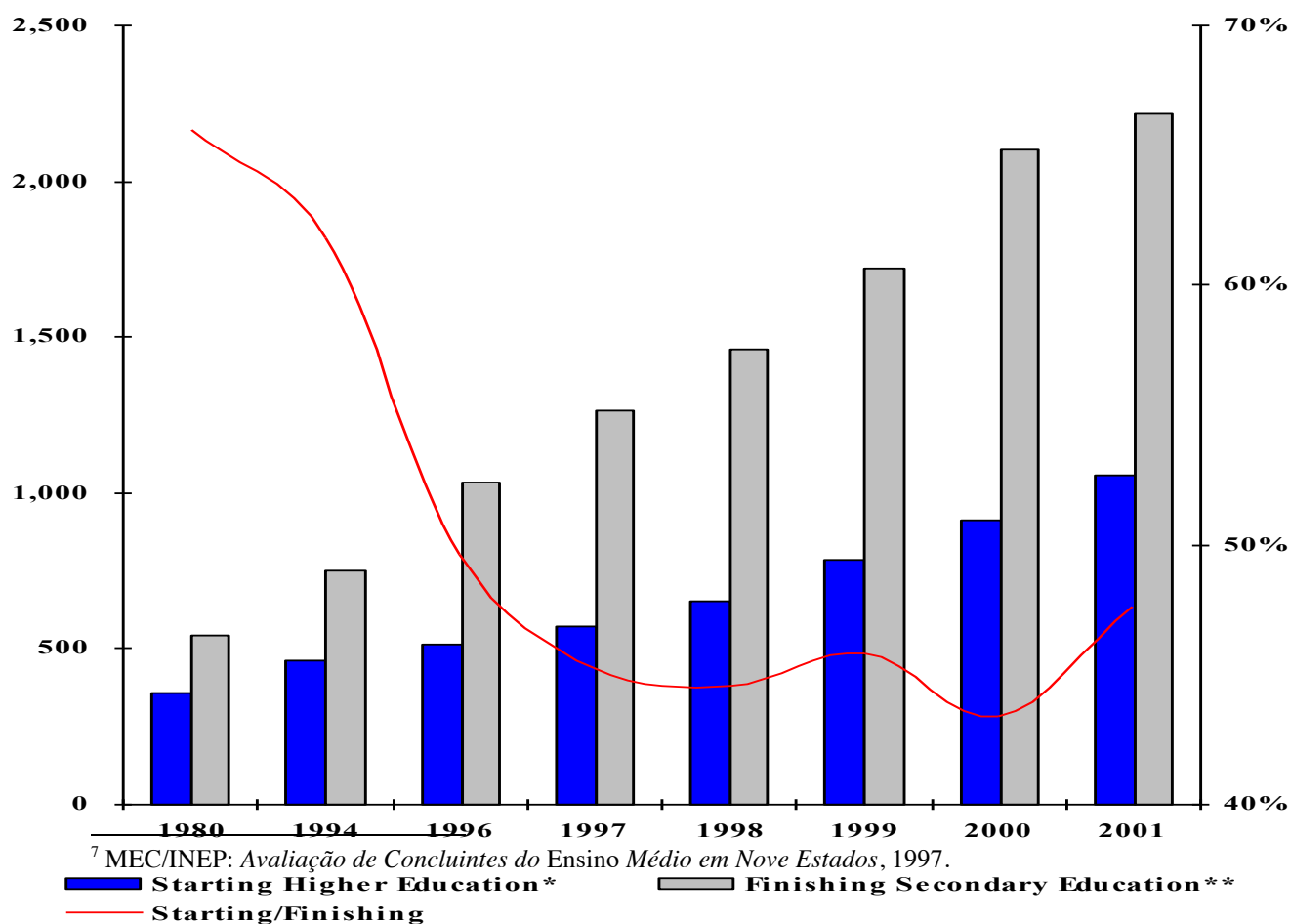
	Enrolment	Completions
1980	2.819	541
1984	2.952	585
1988	3.368	631
1993	4.184	851
1994	4.936	917
1996	5.739	1.164
1997	6.405	1.330
1998	6.968	1.536
1999	7.769	1.787
2000	8.193	1.836
2001	8.398	1.855
2002	8.711	...
2003	9.133	...

Source: MEC/INEP

⁶ In 1990 there were a million more teenagers than in 1980; in 2000, 2.8 million more than in 1990 and in 2005 there will be 500,000 more than in 1995.

These changes are also dramatic in relation to the future of young people who are finishing secondary education. In 1980 the number of those entering higher education was almost 70% of young people who had finished secondary education in the previous year, as can be seen in Graph 1. In 2001 this percentage was less than 50% in spite of the number of places in higher education having increased 248% during this period. This change in the profile of students and in attitudes to secondary education had already been seen since 1997 when INEP (the National Institute for Educational Studies and Research) carried out a study on 430 thousand young people who had completed secondary school in nine Brazilian states. It was found that 53% of them belonged to families with a monthly income of up to R\$720.00, that is, the equivalent of six minimum wages at that time; that 50% were the children of parents who had not finished secondary education and that only 9% of the fathers and 7% of the mothers of these young people had spent longer in school than their children had at that time. What is interesting, however, is that only 43% of these young people declared their intention of taking their studies to a higher level. The rest said they wanted to follow a technical course or go straight to work⁷.

Graph 1
Number of Pupils Completing Secondary Education and those Entering Higher Education during the Year in Relation to those Completing during the Previous Year (thousands)



* Includes regular courses of four years length and short terms of two years.

** Conventional Education and Education of Young People and Adults

Source: Paulo Renato Souza Consultores based on data from MEC/INEP

3. The Management of the Reform of Secondary Education in Brazil

During the electoral campaign of 1984, Brazil generated for the first time an electoral debate on proposals and ideas for the new government. The presidential candidate, Fernando Henrique Cardoso, presented his platform to the country by means of a book entitled *Mãos à Obra, Brasil (Hands to Work, Brazil)*. The chapter on education was one of the most important and it set out clearly: priority was to be given to primary education and the general lines of what the Ministry of Education was subsequently to put into practice during the next eight years. It may be claimed that everything that was set out in the book was implemented, but that not everything that was done in those eight years appeared in that document.

The ideas set out there concerning secondary education were especially concise and all-embracing. Priority was given to the: *“increase in the number of secondary schools in regions of the country where there is a lack of places. Improvement of the quality of teaching (...) and providing chances for vocational education (...). Setting out basic curriculum content and learning systems on a national level that include educational aims that are socially useful for all children (...). Stimulating the definition of complementary curricular items to be adopted by schools, bearing in mind local and regional differences and cultural variety”*.⁸

The topic secondary education became the object of a more systematic attention after the new government took office in 1995. Besides the internal debate in the Ministry, the National Congress was deliberating on a new Law of Guidelines and Foundations of National Education (LDB), which was passed in December, 1996 and established itself as a new institutional landmark for the whole of Brazilian education. Within the National Congress an intense debate was opened and the Ministry of Education clearly played a leadership role in this process, making proposals and initiating many discussions.

Secondary education took up a significant part of these proceedings. In order to discuss specific proposals in relation to this level of education the Ministry, through the Secretariat for Secondary Education and Technology (SEMTEC), led the wide-ranging process of debate at national level. Throughout the whole of the unfolding of this process the Ministry developed and distributed the basic documentation on which discussions were founded.

For this reason the visits Ministry experts paid to various educational systems that stood out by reason of their experience in the secondary area were important, as were the visits to countries which were carrying out at the same time reforms similar to those that Brazil was proposing. As a result of these contacts it was possible to identify three basic groups of ideas of the final stage of secondary education in the world's educational systems:

⁸ Cardoso, Fernando Henrique, *Mãos à Obra, Brasil*, Presidential Election Platform, Brasília, DF, 1994, pp. 119-121

- The first was setting out two paths, one in the direction of carrying on studies and the other in the direction of preparation for work, with no equivalence between them, or with equivalence by means of excessively complicated procedures that made it practically unviable. The clearest examples were Spain, France, Germany and Austria, among others.
- The second group was trying to bring together all these threads by means of offering education that was quite differentiated in itself but with equivalence that allowed the continuance of studies. Among these were the examples of Portugal, Italy, England and some American states.
- The third way, which was at that time being sketched out in various ways, proposed a general, contextualized education that attempted to combine a strongly scientific and technological sector with humanities by means of differing paths that might be pre-defined or not. In addition, they tried to establish the complementary nature of vocational education either in specialized schools or at the workplace. In this group we find the reforms that were being carried out in Israel, Australia and some American states such as Oklahoma.

As the debate was being held in Congress, the Ministry was holding a series of meetings with leading figures in Brazilian states, teachers and experts. The first meeting between the state authorities, the Ministry of Education's specialist team and teachers invited from various Brazilian universities, emphasized the need to work out a proposal which would incorporate the previously mentioned precepts and respect the principle of flexibility that was the basis of the LDB and which all the states in Brazil could put into practice, when allowances were made for regional inequalities.

Starting from this point the Ministry, together with the Council of State Secretaries of Education (CONSED), organized a series of public debates. The first of these was the International Seminar on Policies in Secondary Education held in 1996 in a joint initiative with the São Paulo State Secretariat of Education. The proposal was to study and analyze experiments in secondary education carried out in Europe, the USA and some Latin American countries. The debate that ensued embraced those working in the world of education, secondary school teachers, state secretaries of education, specialist teams from the state secretariats of education, and regional groups of head teachers and specialists from secondary schools.

The working methodology was designed to broaden the debates both on the academic level and within the context of each state, involving teachers and specialists working in secondary education. The debates held in the states were coordinated by teacher representatives, and aimed at facilitating a critical analysis of the material and developing new questions and/or suggestions for improving the documents.

Once this first stage was over the papers were submitted for the perusal of state secretaries of education in CONSED meetings with the aim of gaining new insights from those who would be putting the Reform into practice in their respective states. The debate was broadened by the participation of specialist consultants in various meetings at state level and by the distribution of basic texts concerning the Reform.

Along with the reformulation of the theoretical documents, two meetings were held, in the states of São Paulo and Rio de Janeiro with teachers who were working in the public sector, chosen at random in order to check whether the papers that had been produced would be understood and received. The project was also discussed in public debates such as the one organized by the *Folha de São Paulo* newspaper at the beginning of 1997, in

which teaching unions, the association of university and secondary students, representatives of private schools and other sectors of society took part.

The active participation of state secretaries of education in this process was extremely important because they are responsible for public secondary schools. Thus there was a guarantee of both a profound knowledge of the previously existing situation and also of the realism and relevance of the proposal being presented. The conclusions of this debate were eventually incorporated into the text of the new Law of Guidelines and Foundations. In the words of Ruy Leite Berger Filho, former Secretary of Secondary Education at the Ministry of Education:

“For the first time, a Brazilian Constitution has considered Secondary Education to be the right of all citizens: the 1988 Federal Constitution established as a principle the ‘progressive universal provision of free secondary education’, in other words: the provision of secondary education should be gradually extended to all those who complete primary education, even if it is not obligatory in order to study at secondary level. Secondary education has now become part of the educational process that the country considers essential for the exercise of citizenship, for access to productive activities and also for pursuing the most elevated and complex levels of education for personal development. In 1996 the Law of Guidelines and Foundations for National Education gave it a new meaning by including it as the final stage of Basic Education, after early childhood and primary education. In fact it reaffirms the constitutional mandate in terms of its basic nature but goes further in its conception and function within the Brazilian education system: it is not just one more level of teaching but a part of basic education. The final part, secondary education, should be provided universally and gradually made obligatory.”⁹

4. The Content of the Reform

4.1 The General Concept of the Reform

The Law of Guidelines and Foundations of National Education established the main direction of the Reform and the principle lines of the new secondary education. Brazil made a clear choice of the third way described above, and sought to harmonize the demands of different areas of society, from the productive sector to the academic community. Brazil’s Reform defines secondary education as having a strong content based on the humanities, science and technology, focused on the personal development of its citizens. It also aims to offer preparation for further study and to define the skills and abilities that have to be achieved at this level of education. Finally, secondary education should open the doors to vocational education by developing the general skills needed in the workplace.

By opting for this pattern, Brazil broke with the model set down in 1971 which, as mentioned above, sought a solution that would conciliate between the aims of preparing young people to go on with their studies, and training for work within a second level of vocational training which was increasingly subordinated to the processes of selection for higher education. An extremely important point in the Reform was precisely the definition of vocational education as being **complementary** to secondary education and no longer as a separate path in teaching.¹⁰

⁹ Berger Filho, Ruy Leite, *A Reforma do Ensino Médio*, unpublished text, Brasília, 2003.

¹⁰ The nature of basic education at secondary level achieved concrete expression when Articles 35 and 36 of the LDB established its aims, set out general guidelines for the organization of its curriculum and defined the profile of the school leaver:

The concept of preparing for work helps to overcome the duality of secondary education: that preparation must be basic, in other words, one that can serve as a basis for the training of everyone and for all types of work. Being basic, its point of reference are the changes in the requirements of the labor market; it is not aimed only at those who are already working or who have recently started to work; nor will it be a preparation for specific types of employment or for performing particular jobs.

Vocational education was the subject of a Presidential Decree passed in 1997. *“The function of vocational education, according to the LDB, is not to take the place of basic education nor to compete with it. The value given to the one does not detract from the importance of the other. Improving the quality of vocational education presupposes a high-quality basic education and is an indispensable condition or success in a world ruled by competition, by technological innovation and by the increasing demands for quality, productivity and knowledge.*

“Federal Decree No. 2,208/97, which controls the LDB, has established a curricular organization for the technical level of vocational education which is independent of, but linked to, secondary education, joining technical training together with a solid basic education and highlighting the need for a clear definition of curricular guidelines, with a view to bringing them into line with the trends in the world of work.”

“Essentially the new legal landmark encouraged the formal separation of technical from secondary education, making it complementary and creating a flexible curricular structure to allow those who had left the system to return to it. On this basis, young people who had obtained secondary school leaving certificates through supplementary courses

Article 35 – Secondary education, the final stage of basic education, shall last for a minimum of three years and have the following aims:

- *the consolidation and strengthening of knowledge acquired during primary education in order to permit the continuance of study;*
- *basic preparation for work and the citizenship on the part of the learner, for the continuance of learning, so that he or she shall be able to adapt flexibly to new working conditions or the improvement of previous ones;*
- *the improvement of the learner as a human being, including training in ethics and the development of intellectual independence and critical thought;*
- *understanding the scientific and technological foundations of productive processes, relating theory to practice in the teaching of each subject.*

Article 36 – The secondary school curriculum shall observe the provisions of Section I of this Chapter and the following guidelines:

emphasis shall be given to technological education, the understanding of the meaning of science, language, literature and the arts; the historical process of changing society and culture; the Portuguese language as an instrument of communication, access to knowledge and the exercise of citizenship; it shall adopt methods of teaching and assessment that stimulate pupils' initiative; a modern foreign language shall be included as a compulsory subject, chosen by the school community, and a second, optional language shall be available within the institution.

First paragraph – The content, methodologies and forms of assessment shall be organized in such a way that at the end of secondary education the learner shall demonstrate:

command of the scientific and technological principles that govern modern production;

knowledge of the contemporary forms of language;

command of that knowledge of philosophy and sociology that is necessary to exercise citizenship.

Second paragraph – Secondary education will serve the general training of the learner by being able to prepare him or her to work in technical employment.

Third paragraph – Secondary school courses will have legal equivalence and will enable learners to continue to study.

Fourth paragraph – Development of general preparation for work and optional vocational training will be able to be carried out in secondary education institutions themselves or in co-operation with specialized vocational education institutions.

could obtain secondary level vocational diplomas in technical schools or in the “S” system institutions¹¹. This, in its turn, achieved a new dimension and a greater degree of connection with the whole of the educational system by being able to give its leavers this certificate, since the pupil had already obtained his or her secondary level diploma either through the conventional school or the supplementary path.”¹²

4.2 Reform of the Curriculum

The Reform of Secondary Education, strictly speaking, was carried out by reforming the curriculum. Based on results of the debate mentioned above, the Ministry consolidated the proposal that had been submitted for study by the National Education Council (CNE). This body arranged new debates with the academic community in two public events organized by the CNE, as well as working meetings with representatives of regulating and executive organs of the educational systems in the states of Brazil, not to mention countless meetings, seminars and debates in which versions of the text under discussion were presented and evaluated. The result was Report (Parecer) No. 15 of 1998, written by Councilor Guiomar Namó de Mello, a specialist in secondary education with immense experience of working in the Brazilian public sector and in international organizations.

“As the final stage of basic education, secondary education should be terminal in nature; as a level of education that should be guaranteed to all citizens in order to consolidate and increase the knowledge acquired in primary education, it should enable pupils to continue their studies, guarantee basic preparation for work and citizenship, provide pupils with those instruments that will enable them to carry on learning all through their lives and improve the learner as a person. In order to achieve its ends it must develop an understanding of the scientific and technological bases of modern processes of production, mastery of languages and the codes of understanding of the society in which pupils live and of the culture to which they have signed up and which they ‘sign’. Thus, secondary education should be the last stage of an education that is general, in tune with modern life and the construction of basic skills that identify the learner as a person who can produce knowledge and participate in the world of work, and in tune also with the development of the individual as an ‘actor in society’ – a citizen.”¹³

The idea behind Brazil’s Secondary Education Reform is a particular one and taken as a whole is quite different from what is happening in other countries in the world. It contains, however, important contributions from the latest reforms in some of these countries that can be identified in various aspects of the Brazilian Reform:

- USA and Australia: the adoption of a single stream with the possibility of wide differences between regions and schools, including the organization of teaching areas and time allocated within the curriculum and even the organization of subjects and teaching loads;
- some experiments in England, Portugal, Scotland and some states of the USA: contextualization of the curriculum and the possibility of organizing the school curriculum with projects, problem-solving and case studies instead of subjects;
- Israel and Holland: a single path with a strong relationship between training in humanities and technology;

¹¹ The “S” system is a network of technical schools sponsored by the entrepreneurial association using compulsory contributions recollected by the government and transferred to them

¹² See: Ministério da Educação, *A Reforma da Educação Profissional*, Série Políticas e Resultados 1995-2002, Brasília, DF, 2002, p. 6 e 7. See also, Conselho Nacional de Educação, *Diretrizes Curriculares Nacionais para a Educação Profissional de Nível Técnico*, Parecer 16/99, Brasília, 1999.

¹³ Berger Filho, Ruy Leite, *op. cit.*

- Spain: open specification of the curriculum with a description of the skills required as a result without any prior definition of compulsory curriculum content.

4.3 Central Points of Secondary Education Curriculum Reform¹⁴

a) General Principles

The aesthetics of sensibility, the policy of equality and the ethics of identity are the basis of the new concept of secondary education. Creativity, the spirit of invention, curiosity about the new and the affective domain need to be incorporated into identities that are able to deal with disquiet, live with the uncertain and the unforeseeable, welcome and live with diversity, value quality, delicacy and subtlety. The bases of an aesthetic of sensibility are cultural pluralism and a concept of quality based on permanent improvement. The policy of equal access to social and cultural benefits, the recognition and exercise of human rights and the duties and rights of citizenship, respect for the common good, interaction and responsibility within public and private environments, should inform all educational policies and curriculum proposals, exercising autonomy all the while. The principles of an ethic of identity that lies behind the whole process of teaching and learning should be recognition, respect and acceptance of the identity of the other, solidarity, responsibility and reciprocity as guiding principles in human activity.

b) Consolidating the Ability to Learn

From the legal point of view secondary education no longer contains two functions that are hard to reconcile: preparation for continuing studies and training for the exercise of a profession. The double nature of the demand will continue to exist because the age at which pupils finish primary education coincides with making life choices that are strongly determined by the family's economic situation and, to a lesser degree, by personal characteristics. Among those who can afford to stay longer in education, this system may involve an educational career that postpones the challenge of material survival until after finishing higher education. Among those who have to struggle for survival at an earlier age it will require entering the labor market soon after finishing compulsory education, during secondary education or immediately after it.

Work and citizenship are seen as the main contexts in which the ability to carry on learning should be applied so that the learner may be able to adapt to changing conditions in society, specifically in the world of work. In this sense the LDB is clear: instead of setting down specific subjects or content, general abilities are emphasized, among them a capacity for intellectual autonomy and critical thought. In other words, it calls for the creation of an autonomous identity.

In this interpretation the basic training to be sought in secondary education comes to be achieved more by constructing skills, abilities and behavior than by the amount of information. Learning to learn and think, to relate knowledge to facts gleaned from daily life, giving meaning to what has been learned and capturing the meaning of the world, making the link between theory and practice, finding a foundation for criticism, arguing from a basis of facts, and dealing with the feelings that learning arouses.

c) Interdisciplinarity and Contextualization

¹⁴ See: Conselho Nacional de Educação, *Diretrizes Curriculares Nacionais para o Ensino Médio*, Parecer 15/98, Brasília, DF, 1998.

Interdisciplinarity should go beyond the mere juxtaposition of subjects and at the same time should not allow them to become diluted into generalities. Indeed, it will be mainly in providing the chance to relate disciplines in activities or study projects, research and action, that interdisciplinarity will be able to become a pedagogic practice capable of achieving the aims of secondary education.

The contextualized treatment of knowledge is the resource that the school possesses in order to draw the pupil away from being a passive spectator. If it is properly designed it enables teaching content, by means of the pedagogic process, to bring about significant learning processes that mobilize pupils and establish a two-way relationship between them and the topic being studied. Contextualizing educational content does not entail freeing it from the abstract level of the teaching process in order to imprison it in the spontaneous and mundane.

The recommended contextualization as an organizing principle in the curriculum, was aimed to facilitate the application of school experience to an understanding of personal experience on more systematic and abstract levels and to use personal experience to facilitate the process of assimilating the abstract knowledge the school works with. This means that the bridge between theory and practice should be a two-way one. In both directions the schools are dealing with basic cognitive skills: abstract reasoning and the ability to understand new situations, which is the basis of problem-solving.

d) A Partly National, Partly Differentiated Basis

The Law of Guidelines and Foundations had already laid down that primary and secondary school curricula should have a national basis and be complemented in each school and education system by a differentiated component determined by the characteristics of regional and local societies, by culture, economic factors and the clientele. The Council Report established that a minimum of 75% of the secondary school timetable should be dedicated to the common national basis, with 25% left to be defined by the education authorities or, in the last instance, by the schools themselves.

e) Preparation for Work

The LDB assumes that there is a difference between “general preparation for work” and “vocational training”. As a matter of principle, the law does not separate general training for work from the learner’s general education, and this applies both to the “common national basis” and the “differentiated component” of the curriculum. This general preparation for work therefore, embraces the general content and skills needed to enter the world of work and those that are relevant or indispensable for entering a course of vocational training and practicing a technical career. In the first case, content would include general notions concerning the role and value of work, the end-products of work and conditions of production, among others.

These courses of study may be used in order to obtain vocational qualifications in complementary courses developed concurrently with or subsequent to secondary education. Thus, secondary education subjects that are *vocational in character* may constitute up to a maximum of 25% of the vocational qualification curriculum. This limit applies to subjects in basic or general education which, at the same time, are fundamental to vocational training and for this reason may be included in specific courses aimed at gaining particular qualifications.

f) Curriculum Structure

Following the Resolution that establishes the guidelines for the new secondary education, the common national basis for the proposed curriculum should be organized in three areas of knowledge. The first is that of Languages, Codes and their Technologies; the second is that of Natural Sciences, Mathematics and their Technologies; the third, Human Sciences and their Technologies. Each of these areas of knowledge should lead the pupil to a certain type of skill.

When studying Languages, Codes and their Technologies the pupil should be able to understand and use symbolic systems in the different languages, encounter different opinions and points of view, and analyze and interpret texts. This area includes different forms of expression, first among them is the Portuguese language. Foreign languages are also included – at least one is compulsory – the arts, physical activities, computing and another language of choice, whether it is visual, auditory or of any other kind.

The area of Natural Sciences and Mathematics includes knowledge related to Physics, Chemistry, Biology and Mathematics. These are not subjects labeled with these names, but skills related to gathering knowledge from those areas of knowledge. In this way the pupil should be led to understand sciences as human constructs, understand the relationship between the development of natural sciences and technological development and associate the different technologies to problems with a view to solving the latter.

In the area of Human Sciences, emphasis is placed on skills related to knowledge of society and culture, history, geography, sociology, psychology, philosophy and anthropology. In this area the pupil should understand society, its development and changes, as well as individually absorbing knowledge concerning the individual, society, the economy and social and cultural practices.

5. Resistance to the Reform

The Reform of the Secondary Education Curriculum in itself did not meet strong resistance to its implementation. The way in which the Reform was defined and its approval both in the National Congress and in the National Education Council involved, as we have seen, wide participation on the part of those involved, from state secretaries of education to the unions, as well as teachers, academics and specialists in the area.

Resistance to the Reform centered particularly on the aspect of separating vocational education from secondary. In the federal vocational schools the reaction was at first very negative, one of the reasons being that the principals of those schools felt that they had not been sufficiently consulted. The Reform was seen as being a separation of theory from practice, of the applied from the conceptual. Isolating the technical aspect could lead to a diminution of its pedagogical content by depriving those who will use their hands of the ability to use their heads. This resistance actually concealed the fear of technical schools teachers who taught subjects preparatory to further study, that the Reform would eliminate their role.

The Ministry's reply was to allow the federal technical schools to maintain two parallel courses of study: normal secondary education and technical education. Thus the argument against the Reform was weakened. The proposal to separate the two courses provided two alternatives. Either the technical curriculum ran alongside the last year of secondary education or it came after graduation from secondary school. If it was concurrent it would involve merely re-arranging of the two curricula whose content remains

closely related to what it was, simply changing the administrative requirements of what came to be seen as two enrolments and two diplomas running in parallel. If the vocational course came after the secondary, this would happen when pupils had already received all their academic training at secondary level within the number of teaching hours laid down by law. In addition, the Reform went on to open up the possibility of obtaining a technical diploma for young people in all secondary schools, and not only for those lucky enough to have had the chance to pass the highly competitive entrance examinations to the very small number of technical schools that existed in Brazil up until that time.

Last, but not least, the Reform opened the doors to vocational qualification in technical subjects to the huge contingent of young people and adults who had obtained their secondary school diploma by means of supplementary courses and examinations aimed specifically at this clientele. The expansion of adult education in Brazil in recent years has taken on gigantic proportions, as will be seen in Table 2. This enormous contingent of people looking for more education has specific aspirations towards progress in society and in work and the reform of vocational education was precisely an attempt to satisfy these wishes by means of secondary level technical courses high-level technologists.

Table 2

**Number of Enrolments and Completions in Adult Education at Secondary Level
(thousands)**

	Enrolments	Completions
1996	340	102
1997	391	132
1998	517	183
1999	657	314
2000	873	381
2001	987	365
2002	874	...
2003	1.098	...

Source: MEC/INEP

6. Implementation of the Reform

The implementation of the Reform was carried out by means of a series of instruments, some quite traditional such as teacher training programs, others more innovative such as the development of finance systems associated with implementing the Reform, the creation of an instrument for assessing pupils and the use of communications and distance education, as well as using the new technologies of computing and information.

6.1 The Financing of Secondary Education and the Reform

The Brazilian Constitution states that 25% of all income of the states and municipalities must be spent on education. Responsibility for primary education is also divided between these two levels of government, with early childhood education being the

responsibility of the municipalities and secondary education administered by the states, with responsibility for primary education being shared between these two elements of the Brazilian Federation. The 1966 Constitutional Reform (Amendment No. 13) made a significant advance in defining the responsibilities of each of these two levels of government in relation to primary education, giving it 15% of revenue and establishing the distribution of these funds according to the number of pupils in the respective education systems. Thus the Fund for Primary Education Development and for Enhancing the Value of the Teaching Profession (FUNDEF) was created. The Amendment also helped indirectly to improve the distribution of public funding for early childhood education since the Law of Guidelines and Foundations of National Education restricted the remaining 10% of money in the municipalities, exclusively for the use of this level of teaching, which gave it a significantly larger share of the resources available.

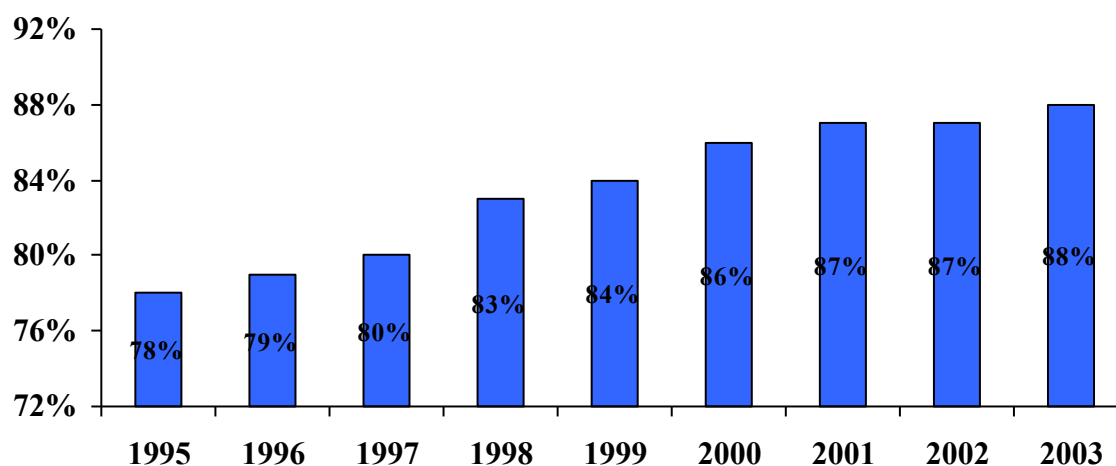
The financing of secondary education remains nevertheless in need of a permanent mechanism to ensure that it receives sufficient resources to attend to requirements with a high quality of service. At state level the remaining 10% of educational funding is not dedicated solely to secondary education and in many cases has to be shared with the high costs of higher education. In accordance with the Constitution and the Law, Federal Government's contribution to financing basic education is concentrated mainly on primary education and to a lesser extent on early childhood education, so that the secondary level receives only a part of what is left over from educational resources belonging to the states. Meanwhile, many states operate extensive higher education systems that compete with the secondary level for a share of this section of funding. This is an even greater problem for the relatively less developed states which are seeing the highest rates of expansion in secondary school enrolments. In spite of these problems, it was actually the public sector, through the states, that satisfied the huge demand for secondary education, as can be seen in Graph 2, which shows the increasing participation of the public sector in the overall provision of secondary education.

The Reform of Secondary Education provided an excellent opportunity for the Federal Government to take on the task of channeling resources to this level of education in a manner that was quite directed and focused on two basic aims: helping the states to implement the Reform and favoring the poorest states. Three instruments were used, two of them with international help from the International Development Bank – BID.

The general aspect of the Reform, that is, the separation of secondary from vocational education and the expansion of technical education, was the subject of a project approved and financed by BID: the Vocational Expansion Training Program (PROEP), involving a total of US\$500 million. The program was aimed at modernizing and expanding the system by means of transferring resources to schools in the federal and state areas and initiated the creation of a new area: community schools. Transfer of the Program's resources is conditional on following the principles of the Reform in facilitating the adaptation of existing schools, but the greater part of the investment has been aimed at expanding the system within the new pattern.

The implementation of the Reform of Secondary Education in Brazil forms part of a wide program of investments also financed by the BID with the same amount of money as before, aimed at improving the expansion of educational provision in order to ensure the quality of teaching to the growing numbers of young people who are looking for secondary schooling. The aim of the program, called the "Young School Project" is to create a school specifically for young people and adults, separate from schools for younger children and properly equipped to take into account the needs of young people as learners.

Graph 2
Public Sector Share of Secondary Education (by number of enrolments)



Source: Basic data from MEC/INEP

The project is based on two sub-programs: a national sub-program to be executed by the Ministry of Education and the sub-program of the Constituents of the Federation, to be executed by each of the 27 states which conform to certain pre-conditions, that is, the adoption of a plan for reconstruction and rationalization in their school networks, actions for controlling the rate of flow through primary schools, the institution of a specific management organ for secondary education within each secretariat of education and the availability of financing the state's own contribution to complement central funding. Resources for the states are transferred on a non-return basis leaving the Government with the onus of external funding. The national sub-program is divided into four large components: policy-making, execution of policies, monitoring and evaluation, and social communication. Putting it into practice will allow actions of a universal nature aimed at making up for inequalities between the various states to be put into practice, since some states will face greater obstacles in carrying out the Reform and in setting up an investment project by reason of their financial difficulties.

The third initiative taken between 2000 and 2002 took the form of a voluntary transfer of resources from central government to the 14 states with the lowest rates of human development in the country. In three years, a billion *reais* were transferred, the equivalent of more than US\$500 million, distributed among the states in proportion to net transfers to their municipalities to be spent on primary education according to the terms of Constitutional Amendment No. 13. These resources have to be applied exclusively to projects for expanding and improving the quality of secondary teaching in accordance with the guidelines of the Reform and could be used as a counter part funds by the states for projects supported by the Young School Project financed by BID.

6.2 Evaluation as an Instrument in the Application of the Reform

The National Secondary Education Test (ENEM) was created in 1998 and is

directly related to the changes proposed for reforming secondary education.¹⁵ Its aim is not to identify weaknesses but to stimulate the development of citizens who are can think for themselves and act dynamically to solve the problems of modern life. In this sense the ENEM is a powerful instrument for change and is helping states to implement reform of the secondary school curriculum. The ENEM is a form of evaluation that focuses on the skills and abilities that it is hoped the pupil will display at the end of basic schooling. The ENEM is interdisciplinary and endeavors to evaluate the overall performance of all those who take it, indicating pointers for continuing studies, for individual improvement or even for entry into the labor market.

The test consists of an essay on a current topic and objective questions that assess the skills and abilities pupils have developed in school – that is, their ability to reason and solve problems instead of memorizing the content of each subject area.¹⁶ By emphasizing the development of competences and skills that permit the young person to establish relationships and turn information into knowledge, the ENEM shows schools that they have a new function: going beyond the traditional concept of being simply transmitters of information in favor of becoming social institutions that shape abilities and cognitive structures. In this new function the pupil must no longer be a passive spectator. With the teacher's help he or she must manipulate information, contextualize it and interact with it in a critical and independent way.

This new type of school demands more from those working in it. It is a great challenge for teachers and head teachers, who have to change the concepts on which they base their day-to-day activities. This is the greatest pedagogical effect of the ENEM: by assessing pupils in this way it is showing the whole of society what should be taught. It is a specific instrument that allows the teacher to see what to do in order to work with interdisciplinarity and Contextualization, the twin pillars on which the Secondary Education Reform is based. In addition, the ENEM is being gradually adopted as a complement or an alternative to university entrance examinations. About 300 higher education institutions are currently using ENEM results in their selection procedures.

Included also in the ENEM is a wide-ranging socio-economic questionnaire that provides information on the family situations, school career, working life, habits, beliefs and expectations of those taking the test. This information gives a better idea of the profile of those completing secondary education, helping to develop and improve Brazil's

¹⁵ In Brazil there are basically two national assessment systems for secondary education: the National System for Evaluation of Basic Education (SAEB) and the National Secondary Education Test (ENEM). The SAEB, carried out every two years: 1995, 1997, 1999 and 2001, is a large-scale, sample-based assessment that assesses the performance of pupils from 4th to 8th grades in primary school and the 3rd grade of secondary school (11th grade). The results provide an overall view of the quality of basic education in Brazil and can be separated according to state and administrative authority (municipal, state, federal or private). In addition, the SAEB allows the main factors associated with school performance to be identified by means of questionnaires given to pupils, teachers and head teachers.

¹⁶ The ENEM's Framework of Competences is the basis on which the learner is assessed in the test. It assumes that the content of different areas of knowledge in the curriculum proposals of Brazilian schools is the result of collaboration, is complementary and integrated. Five competences have been defined as being fundamental for every citizen and summarize the skills that guide the construction of the test: (1) mastering the standard pattern of the Portuguese language and making use of the languages of mathematics, the arts and science; (2) constructing and applying concepts from the various areas of knowledge to an understanding of natural phenomena, historical and geographical processes, technological production and artistic expression; (3) selecting, organising, relating and interpreting data and information represented in different ways in order to make decisions and meet different problem situations; (4) relating information represented in different ways, and knowledge available in specific situations, in order to construct consistent arguments; (5) using knowledge developed in school formulate proposals for common action in society, respecting human values and socio-cultural differences.

educational policies. As well as this, it permits a permanent and up-dated survey of the opinions and complaints of young Brazilians, a fundamental basis for an educational project that hopes to achieve higher levels of citizenship and a virtuous circle in the work of schools and teachers with their pupils.

Participation in the ENEM is voluntary. Equally, use of the results in higher education selection process is not compulsory. Each institution is left to decide how to use the ENEM results. Given its voluntary nature, the ENEM has been extremely well accepted in Brazil. The first application of the test took place in 1998. In that year 125,000 pupils took it. Since then the numbers of ENEM candidates has grown greatly. In 2001 the Ministry of Education decreed that enrolment should be free for needy pupils and for all those completing their education in public secondary schools, a decision that benefited 82% of those taking part. This was the final step that was needed to encourage large-scale voluntary participation in the test. After 2002 the numbers of candidates passed 1.3 million, about two thirds of those estimated to be completing secondary education in that year.

Table 3**The Development of the National Secondary Education Test – ENEM
(by thousands of pupils)**

	Nº of IES using ENEM ⁽¹⁾	Nº of municipalities hosting the examinations	Nº of pupils enrolled taking the examination
1998	1	184	115.6
1999	93	162	316.0
2000	199	187	352.5
2001	296	277	1,200.9
2002	338	600	1,327.6
2003	----	600	1,318.1
Accumulated Total of Participants			4,630.6

SOURCE: MEC/INEP/DACC.

NOTES: (1) IES = Instituições de Ensino Superior - Higher Education Institutions that are already using the results of the examination as criteria for selection for undergraduate courses.

6.3 The Use of Communication in the Implementation of the Reform

An important element in the whole process of defining and implementing the Reform of Secondary Education was the involvement of the media. Interviews in newspapers, on radio and television, permanent information about meetings, debates and negotiations, participation of Ministry experts and authorities in seminars and events, including those organized by the major press organizations and the unions, took place constantly from 1995 to 1997, contributing to the initial construction of secondary education reform.

In the following years, official campaigns were launched by means of television, radio and the press as part of a strategy of publicizing the ideas central to the Reform. The first of these coincided with the launch and distribution to all teachers of the National Curriculum Parameters for Secondary Education. Two working areas were defined: the first was aimed at society as a whole, the second at those in schools, especially teachers, but also pupils. A new brand was created to symbolize the post-Reform school – the “Escola Jovem” (“Young School”). The aim was to increase the impact of the idea of a new view of secondary education and prepare for a cultural change in school and in the public imagination. It was also necessary to point out that this was not a school where the children of the elite were preparing for entry to university, but that the school was an important instrument for the life of the citizen, and to this end the slogan “education now is for the rest of your life” was created.¹⁷

¹⁷ Three television films and two radio ‘spots’, were produced with the aim of explaining proposals to the public. Using the language of young people, the films used three characters representing clearly school-based ideas: Enzyme, Oxygen and Percentage, which entered people’s lives sharply linking school content to life. The same was done on the radio, using other ideas in musical form whose rhythms clearly identified with young people from different social classes. While the campaign was being broadcast there was an increase in

For those in schools, as the Curriculum Parameters were arriving there, the Ministry took over part of the program “A Jump into the Future” that was aimed at teachers. It is produced by “TV Escola” (“School TV”)¹⁸ and broadcast by it and also by TVE (TV Educativa – Educational TV) a public channel, and re-broadcast for several months at different times by all television channels. A series of a week of daily broadcasts initiated the inclusion of the topic of secondary education in this program .

At the same time, TV Escola created a slot for secondary education at a particular time. As well a support program for teachers on the subject of curriculum reform, a series of 20 programs about all aspects of the Reform was produced. In 2001, with the reform process already quite advanced, a second series of activities in the area of communication was launched focusing on head teachers, teachers and pupils. A ‘marketing’ initiative was used in programs with the highest audiences among young people and the public at large, whose theme was the participation of everyone in building a new type of school. The presenters, each in their own language, stated that Federal and state governments were investing in schools but that if teachers, pupils and their families did not involve themselves in school life, change would not come about. At the same time, printed materials were sent to heads and teachers in schools, along with a wall newspaper for pupils. At the same time, support programs for teachers and school managers continued to be developed on TV Escola.

“The great difficulty for social communication is finding the proper language. Translating educational policies and concepts into the language of publicity and the press is not easy either for advertising agents and journalists, nor for educators. In addition, newspapers do not have the same agenda as those who formulate policies and educational concepts. Time scales are not the same, either. Themes such as assessment and its results, curriculum changes, the time and strategies for implementing policies and their results, in education, are not really understood by those who are not ‘on the inside’. It is the same with those working in advertising. Convincing people of the need for behavioral changes in different sectors of the public is by no means the same as selling soap powder or even creating an image for a politician.”¹⁹

Communication was also widely used in implementing the ENEM, which forms an important component in the Reform of Secondary Education. From its conception until its first general results, it was widely publicized and debated in various areas of Brazilian society, involving state secretariats of education, public and private higher education institutions and organizations representing industry. The tests, the basic documents and the pedagogic reports were always published on the Internet. The publicity strategy used radio, television and mass-circulation magazines. In addition, several gatherings specialist meetings were held all over the country to discuss the model for the test and its underlying pedagogic concepts. The Ministry of Education held periodic press conferences to present the test results to the media.

Special attention was given to secondary schools, which received an “ENEM kit” containing posters, magazines and explanatory booklets. The aim of this kit was not only

the participation of senior Ministry staff on radio and television programmes and in the press, talking specifically about the subject of the Reform.

¹⁸ TV Escola is a satellite television system created in 1996 to carry programmes aimed at public sector school teachers. More than 70,000 public schools all over Brazil have access to the system, which was originally intended for primary school teachers.

¹⁹Berger Filho, Ruy Leite, *O uso da mídia e das tecnologias da comunicação e da informação na implementação da reforma do Ensino Médio*, unpublished text. Brasília, 2002

to stimulate schools to encourage their pupils to enroll for the test but mainly to provide teachers and head teachers with information about the test and the reform of secondary education.

6.4 Teacher Training

Success in building a new secondary education that would meet the needs of teenagers and young adults depended without a doubt on the provision of varied and innovative opportunities for further training for those working in education. This requirement, however, was not new. Traditionally investment in this area had centered mainly on holding training sessions in which the teachers had contact with educational theories, new teaching methods and up-dated information about their subjects. It was believed that change and innovation in teaching practices could come about simply by taking teachers to hear about these changes.

Educational reform in Brazil required a search for new in-service training strategies that were more in line with the principles and bases of the Reform itself. This meant the adoption on the part of the organizations responsible for managing educational systems, of a wider set of strategies and actions, gathered under the guidelines of a real policy of professional development on the part of teachers, managers and others working in education. The intention of this policy is to guarantee to these individuals a broad range of resources and strategies for their training and the widening of their professional and cultural life experience.

This policy was based on two principles of Brazilian education that were clearly set out in the LDB: the principles of autonomy and independence. The success of the whole process of improving education is based on building and affirming teachers' professional identities, contained within a specific awareness of what it means to be an educator in our society. For this reason it is important that these professional people should have a profound knowledge of the law, the norms and political and ethical principles that have a bearing upon their activities.

It is not only events such as conferences and lectures that give teachers an acquaintance with the principles that should rule their work in school. It is more important that they have practical experience of the application of these principles, that they should be given the time needed for those principles to come to maturity and that they should be asked to observe, investigate, analyze and evaluate their own practices in order to choose the best options, taking into account pupils' learning. The training of the teacher is more effective when it is based in the reality the teachers meet every day in the schools where they work.

These were the precepts on which the Ministry of Education used as a basis for the production of a set of materials and the co-ordination of support activities for teachers in all Brazil's secondary schools. These activities and materials were aimed at meeting the specific needs of the different stages of implementing change in schools:

- General diffusion of principles, concepts and policies;
- Initial application of principles and concepts;
- Continued training in curriculum development;
- Training for specific requirements;
- Cultural awareness.

From the start, the discussions, reflections and decisions regarding Brazil's new

secondary education were open to the participation of interested parties. For this purpose, various events were held, with participants either present or linked at a distance, that provided for schools informative materials on the topic. Meetings with specialist teams from the Ministry of Education, national, regional and state-level seminars, videos, teleconferences and television programs broadcast by TV Escola (“Salto para o Futuro” and “Ensino Legal”) [“Jump into the Future” and “Cool School”] formed part of a broad pattern of such events.

Among all these activities what stands out is the bi-monthly distribution of the *Boletim do Ensino Médio* (Secondary Education Bulletin), with texts to study and the sharing of school experiences, and the production and broadcasting of television programs. By means of various partnerships the Ministry of Education produced approximately 100 hours of video aimed at spreading the news about the new secondary education, in an attempt to reach the specialist teams in the state secretariats of education, heads and teachers in at secondary level and even parents and children. All this material constitutes a useful tool for activities of raising awareness, mobilization and study on the part of the various agents involved in implementing the Reform.

Once the initial stage of raising awareness, mobilization and general publicity of the Reform had been achieved, it was necessary to carry on developing more systematic work. Three major activities were carried out in this new stage:

- Distribution of copies of the National Curriculum Parameters for Secondary Education to all secretariats of education and secondary schools;
- Provision of a 40-hour classroom-based course on curriculum development, for seven specialists in each of the secretariats of education;
- Provision of a 40-hour classroom-based course for the training of multipliers for the application of Parameters in Action – Secondary Education, in the areas of languages, codes and their technologies and human sciences and their technologies.

Another important strategy encouraged by the Ministry was the construction of school support networks, which had a decisive impact on the self-esteem and the value felt by those working in school, as well as contributing to the development of their feelings of solidarity. The Ministry organized meetings where innovative and successful experiments were presented, with the aim of encouraging secretariats of education to set up these networks. The main aim of the support networks was to create the conditions in which professionals could give each other mutual help by their exchanging experiences in implementing the National Curriculum Guidelines for Secondary Education. This network of help and exchanging experience was intended to overcome the challenges presented by the new idea of the secondary curriculum, whose implementation is not easy but necessary.

The development of these activities to spread the news of the Reform, initial application and continued training, revealed specific needs arising from failings that the resources used in these strategies had not been able to overcome. In these cases, the Ministry went on to offer courses and workshops, either classroom-based or at a distance, to up-date teachers in the content of the subjects they taught, both in methodology, teaching resources and content. These demands were met according to requests passed on by the school head to the relevant secretariat of education.

Table 4 shows that in three years more than 40 thousand secondary teachers took part in activities related to implementing the Reform.

Table 4

Numbers of Teachers Participating in Activities Linked to the Implementation of the Reform of Secondary Education (1999/2001)

	1999	2000	2001	TOTAL
Courses, Events	443	1,079	2,761	4,283
TV School, classroom activities	657	816	1,558	3,031
TV School, distance education	4,500	9,141	20,000	33,641
TOTAL	5,600	11,036	24,319	40,955

6.5 New Technologies in Secondary Education

The National Information Technology Program in Education (PROINFO), created in 1997, was developed by the Secretariat for Distance Education in partnership with the state governments and some municipalities. It sought to bring telematics into public education as a means of enriching the teaching/learning process. This involved having teachers trained to work with computer resources, knowing the educational principles underlying the various uses of the computer, recognizing the affective, social and cognitive factors implicit in learning processes and identifying the learner's level of development in order to making a suitable contribution to the learning process.

In spite of their not being limited to secondary education, participating schools in general were primary and secondary schools and teachers and pupils at this level were the main beneficiaries. While respecting the autonomy of the systems and the diversity of Brazil, PROINFO's guidelines were laid down as a result of a process of negotiation between the Ministry of Education, the National Council of State Secretaries of Education (CONSED) and the State Commissions on Information Technology in Education, made up of representatives of state and municipal areas of education, the universities and the school community – parents, teachers coordinators and head teachers.

To ensure the decentralization of the operation a support structure for the PROINFO network was set up, based on three elements:

1. The Center for Experimentation in Education Technology (CETE), this important element in the strategy for consolidating PROINFO was planned to support the process of incorporating educational technology into schools and to be a center for spreading discussion by means of a network, about experiences and knowledge concerning new technologies that are applicable to education. Located in the Ministry of Education in Brasília, CETE is also a point of contact between Brazil and international initiatives linked to educational technology and distance education.
2. Educational Technology Nuclei (NTE). An Educational Technology Nucleus is a decentralized PROINFO structure specializing in: (a) ongoing training for teachers and support technicians; (b) pedagogic and technical support for schools, including raising awareness of technological issues, support for the development of projects using telematics for teaching purposes and support for teachers and technicians; (c) monitoring, evaluation and research. The process of training professionals is a continuous process within the NTEs. By 2002, in all the states of Brazil, 261 nuclei had been set up, as can be seen in Table 5.
3. E-PROINFO, a virtual learning environment developed by PROINFO to be used in

distance training activities for managers, multiplier teachers, school teachers, support technicians, pupil-technicians and employees of secretariats of education.

Selection of schools participating in PROINFO was not random. The Program's national guidelines stated that computers and their respective peripherals would only be given out to schools that presented a project for the educational application of telematics that was approved by the respective state commissions and that also had teachers willing to be trained to implement the project, as well as having a suitable and safe environment in which to install the equipment. Almost 5,000 schools were admitted to the Program and more than 53,000 computers installed. State and municipal systems were responsible for selecting and buying educational software and also for Internet connections. As these schools were usually the larger ones in their respective areas, we may assume that about seven million primary and secondary pupils were studying in them.

Table 5
Aggregated Numbers for PROINFO, by Region

Regions	Municipalities	Schools	NTEs	Computers	Training of Human Resources (HR)				
					Multiplier Teachers	Managers	Teachers	Technicians	Total HR
Mid-west	160	311	27	4,625	140		4,724	48	4,912
Northeast	416	1,019	81	15,327	600		16,311	122	17,033
North	95	306	24	4,580	167	332	5,657	84	6,240
Southeast	707	1,927	87	16,654	332		77,723	614	78,669
South	371	841	39	10,037	236	109	6,069	14	6,428
Brazil (course completed)	1,749	4,404	258	50,838	1,475	441	110,484	882	113,282
Brazil (course to be completed by December, 2002)	30	200	3	2,780	640	3,500		6,905	11,045
Brazil (totals)	1,779	4,604	261	53,618	2,115	3,941	110,484	7,787	124,327

¹ Data from September, 2002

The Ministry considered the training personnel to be the main pre-requisite for success. Those involved in the scheme – all volunteers – were trained at two levels: multiplier teachers and school teachers. A multiplier teacher was chosen from among public school teachers with university degrees and received training on postgraduate courses (part-time specialization courses) run by public or private Brazilian universities chosen by reason of their high quality in the area of using technology in education. Almost 125,000 people, including teachers and technicians, were involved in the staff training program .

The school teachers were nominated by their head teachers in accordance with the rules laid down in the state projects for the selection and training of educators. Those responsible for in-service teacher training were the multipliers. The principle that was adopted, therefore, was that of teachers training teachers.

7. The Main Results of Applying the Reform

7.1 The Expansion of the System

The result of implementing the Reform of Secondary Education in Brazil between 1995 and 2002 that had the greatest social impact was without doubt the huge expansion of the system, which has already been referred to. The state systems were able to respond to a demand that expanded at a tremendous rate during this period. More importantly, growth in matriculations was greatest in the states with the lowest development indices and where secondary education coverage was least. The measures that were adopted in the area of secondary educational finance mentioned above, definitely help to explain this development.

Table 6**Number of Establishments Offering Secondary Education**

Brazil and Regions	1995	2000	% growth
Brazil	15,357	19,456	27
North	875	1,309	50
Northeast	3,606	4,816	34
Southeast	7,054	8,565	21
South	2,454	3,080	26
Mid-West	1,368	1,686	23

Source: INEP

To a large extent this expansion did not occur by expanding the network of secondary schools itself, but by using primary schools at night. This conclusion is suggested by the data in Table 6, where we can see that in only five years more than 4,000 schools came to offer secondary education, with the highest growth in the North and Northeast regions, the poorest in the country. It could hardly be otherwise, given the short space of time in which this expansion happened. Some states, meanwhile, began during this period to re-organize their school systems by separating schools teaching 1st to 4th grades of primary school and joining 5th to 8th-grade schools onto secondary establishments. This measure helped to reduce the problems caused by having two levels of teaching in the same physical environment. There is no doubt, however, that this is a feature that should be corrected in the longer term of implementing the Reform. Brazilian secondary education has today a clear identity that needs an appropriate physical environment for it to be fully manifested.

7.2 A New Model of Vocational Education

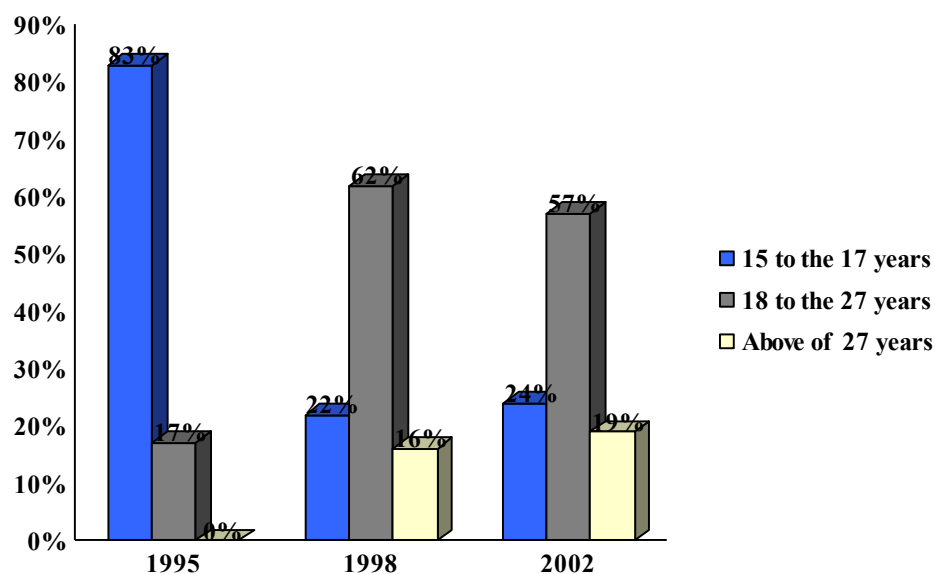
The implementation of the overall Reform of Secondary Education in Brazil, including the reform of vocational education, has brought about a profound change in the profile and nature of technical schools. It is clear that they no longer simply prepare pupils for higher education. The majority of their pupils are not now middle class youngsters who have chosen this alternative. The pupil profile has quickly changed to a profile in which the majority is composed of older pupils from lower income groups, many of them already working.

The schools have been rapidly adapting to these changes by trying to offer more relevant and up-to-date courses as a result of the demand from the labor markets in the regions where they operate. These observations are based on the observations of the majority of technical school heads, although it is not possible at the moment to provide quantitative information in this area. In the mean time we should take note of the comments of the head of the Paula Souza Center, the second largest network of public technical schools in Brazil, in this regard:

“As a result of the reform of Vocational Education a significant change in the profile of pupils has started to take place, especially with regard to the age range and family income levels. Among those entering Vocational Education in the Paula Souza Center since 1998, the majority are over 18 years of age (76%) with a family income of a maximum of five minimum wages (57%). Comparison of these data with those of previous

years, when the curriculum of vocational courses was supplementary to that of the former Second Stage, shows a change in the nature of provision for older students with lower family incomes – in other words: the Paula Souza Center now mainly serves the section of the population that most needs vocational education – adults and lower-income workers.”²⁰
See Graph 3

Graph 3
Paula Souza Technical School Center, São Paulo State
Change in socio-economic profile of candidates in Vocational Education



²⁰ See: Centro Paula Souza, *O Ensino Técnico em São Paulo, aspectos qualitativos e quantitativos*, unpublished text, São Paulo, 2003

7.3 Qualification of Teachers and Conditions of Secondary Schools

It would be natural to expect that such a rapid expansion in a short space of time might have caused great disorganization in the system and that standards might have suffered adversely: that conditions in schools might have become worse and that the huge increase in demand for teachers might have brought about the recruitment of less qualified staff.

Fortunately, this did not happen. With regard to the qualification levels of teachers, Table 7 shows that while there was a 34% growth in the number of active teachers in secondary education between 1995 and 2001, their levels of qualification improved appreciably during that period. The proportion of teachers with degrees went from 82% to 89% and those with specialized university-level teacher training certificates increased from 74% to 77%.

Table 7

Proportion of Teaching Posts in Secondary Education by Level of Qualification

Level of Qualification <u>Structure of Qualification</u>	1995	2001
Secondary without Magistério*	11%	6%
Magistério	6%	5%
Higher	82%	89%
Without Magistério and without Licenciatura**	5%	5%
With Magistério and without Licenciatura	3%	6%
With Licenciatura	74%	77%
Total Teachers (thousands)	333,6	448,6

Source: MEC/INEP

* The *Magistério* is a teaching certificate obtained at secondary school

** The *Licenciatura* is a teaching certificate obtained at university

The quality of teaching greatly depends on the existence of proper school infrastructure. Pupils must have suitable buildings and spaces that are equipped for teaching, be they classrooms or sports areas. The question of physical installations is always a problem that can never be entirely solved, since bringing in new pupils requires the expansion of infrastructure, while quality depends on the permanent maintenance of school buildings, building new classrooms and necessary improvements to the day-to-day lives of pupils and teachers.

An analysis of Table 8 shows that in spite of the enormous expansion in enrolments that led to an increase of the number of schools by 27% as shown in table 6, general conditions in schools in secondary education have not deteriorated significantly. In some areas there has been a slight reduction in the proportion of schools having certain facilities, but in others, such as computer laboratories, for example, the situation has improved significantly.²¹ In short, studying the information contained in this table shows the same

²¹ In the state of São Paulo, 70% of pupils from 5th to 8th grades and 83% of pupils in secondary school have this equipment available in school. In the Southeast region, 67% of secondary pupils have access to the

phenomenon that has already been mentioned: the physical structure of secondary schools has very marked gaps, especially when we take into account the aims of the planned curriculum reform.

Table 8
Percentages of Secondary Schools According to Physical Installations

Physical Installations in Schools	Years	Overall Total	Public Sector
Library	1999	82.3%	78.0%
	2002	81.4%	76.4%
Computer Laboratory	1999	45.7%	32.5%
	2002	53.3%	42.8%
Science Laboratory	1999	46.5%	39.2%
	2002	44.7%	35.6%
Sports Area	1999	71.7%	70.6%
	2002	74.3%	71.8%
TV/Video Room	1999	55.4%	51.8%
	2002	56.2%	50.5%
TV/Video/Satellite dish	1999	16.0%	17.7%
	2002	14.0%	14.6%
Microcomputers	1999	75.1%	67.2%
	2002	85.3%	80.5%
Access to the Internet	1999	22.1%	9.0%
	2002	50.4%	38.1%
Water	1999	99.8%	99.8%
	2002	99.9%	99.9%
Electricity	1999	100.0%	99.9%
	2002	100.0%	100.0%
Connected to Sewage System	1999	99.7%	99.6%
	2002	99.7%	99.6%
Bathrooms	1999	97.7%	97.4%
	2002	97.2%	96.7%

Source: MEC/INEP

7.4 Improved Pupil Performance

Between 1995 and 2000 rates of repetition and non-attendance at school were markedly reduced, as may be seen in Table 9. As a result, the growth in the number of pupils completing school was much greater than the total number of pupils enrolled. In fact, between 1994 and 2001, the number of pupils in secondary education grew by more than 70% and in the same period the number of those completing school doubled. The improved flow through the school system also brought a better distribution in the age of pupils according to their grades, which benefited behavior in class. This may be seen in the

Internet. The Northeast region, for its part, is at the initial stage of inclusion in the digital era - 18% of pupils from 5th to 8th grades and 38% of secondary pupils have equipment for information technology in school, with 24% of secondary pupils having access to the Internet (data from the School Census).

rates of distortion of age in relation to the expected grades in the progress through school. The percentage of pupils enrolled at the expected age for their grade has been increasing and this has had a marked effect on performance in school.

TABLE 9

**PERCENTAGE OF PUPILS ENROLLED AT AGE
EQUIVALENT TO THEIR GRADE
BRAZIL – 1995-2001**

YEARS	10 years – 4th grade Primary Ed.	14 years – 8th grade Primary Ed.	17 years – 3rd grade Secondary Ed.
1995	44.7	39.7	42.9
1997	49.0	43.6	44.3
1999	53.8	47.0	45.9
2001	57.5	51.8	46.9

Source: MEC/INEP.

Note : Estimated Data for 1995 and 1997.

Obviously, while they are passing from one year to another, it is necessary to know if the pupils are really learning more. There are specific tests for this purpose (SAEB, mentioned earlier) and Brazil has been applying them systematically every two years since 1995. The results show that there are factors positively and negatively associated with pupil performance. Thus, with regard to the characteristics of the school, pupil performance is positively associated with the level of teacher qualification, with school organization, with class size, with the practice of reading and with parents working with teachers, among other factors. With regard to pupil characteristics, performance is negatively associated with age-to-grade distortion and repetition, and positively with level of family income and parental schooling.

For these reasons there is a general trend towards a fall in the average level of pupil performance in educational systems that are going through an increased growth in rates of inclusion of pupils in school, due to the personal characteristics of the incoming pupils. Many of them, when they start school, find themselves older than the age that is normal for the grade they are in, which worsens the age-to-grade distortion in the system. Equally, this recruitment into school happens among social groups with lower incomes and lower parental schooling levels. Thus, because of these two factors, during periods of increased growth in including new sectors of the population into school, it is to be expected that there will be a noticeable drop in pupils performance indicators over the whole network of school systems.

It is necessary to remember that secondary school enrolments have more than doubled in the last ten years. The young people who are entering secondary education are definitely coming from medium-to-low-income families, sectors of the population that are for the first time gaining access to this level of education. These young people are spending longer in school than their parents. A study carried out among 430,000 secondary school leavers in November, 1977²² showed that 77% of pupils had been at school longer than their parents.

²² MEC/INEP: *Avaliação de Concluintes do Ensino Médio em Nove Estados*, 1997.

In these circumstances we can expect a marked drop in the average performance of pupils, both in primary and secondary education. When we analyze the data of the SAEB tests we find that in the 1999 assessment, results had suffered the influence of the process of inclusion which had brought in large numbers of pupils in 1997 and 1998, and at a slower rate in subsequent years. Even so, on a national level, the overall averages showed that in the 3rd grade of secondary school, the average scores in mathematics of every year had been maintained within the same average interval of variation. (Table 10). In Portuguese language, meanwhile, there is a clear drop in the results. The overall averages include various factors such as age-to-grade distortion, family income level and level of schooling of parents, which cause the decline in results that has been found.

These variations may be considered to be slight compared to the size and speed of the process of including new groups of the population into secondary education. This claim becomes more obvious when we observe the performance of more homogenous groups of pupils. When the SAEB results are separated by region and age they show stability in pupils' proficiency levels in Portuguese and mathematics in 1999 and 2001 when the average intervals stay within similar bands. If we take the performance of pupils who are in their correct grade, the results are better.²³

These results suggest that Brazilian schools are improving noticeably, to the point where they are making practical compensation for the factors associated with parental schooling and age-to-grade distortion. School-linked factors – which are relevant to pupil performance – such as the qualifications and training of teachers, the quality of teaching materials, working conditions in schools, classroom reading, parental participation in school, and other similar factors, have been working to make up for the effects of the increased inclusion of pupils from families with low schooling levels. This is an extremely important point and one that demonstrates the first objectively measured results of the policies for improving quality that were adopted throughout the last eight years in Brazil. The data show also that average pupil performance indices should begin to improve appreciably while the process of making access to education universal comes to fruition in the near future.

Table 10

**Performance of Pupils in the SAEB Examination
Average Variation Intervals
Brazil – 1995 a 2001**

MATHEMATICS				
3 rd Grade Secondary Ed.				
	1995	1997	1999	2001
Upper Limit	288	296	284	280
Average	282	289	280	277
Lower Limit	276	282	277	274
PORTUGUESE LANGUAGE				
3 rd Grade Secondary Ed.				

²³ See: *No caminho da Melhoria da Qualidade na Educação*, Série Políticas e Resultados, Brasília, DF, 2002.

	1995	1997	1999	2001
Upper Limit	294	289	270	265
Average	290	284	267	262
Lower Limit	286	279	263	259

Source: INEP/ SAEB

OBS: Average Variation Interval according to the Bonfenoni Method.

Performance Level in the SAEB:

MATHEMATICS

3rd Grade Secondary: 200 – 275 – 350

PORTUGUESE LANGUAGE

3rd Grade Secondary: 200 – 250 – 300