KNOWLEDGE SOCIETY AND TECHNICAL PROFESSIONAL EDUCATION IN BRASIL

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ABSTRACT

This article approaches the discussion on education and knowledge focusing on the subject of the often reiterated statement that present societies are "knowledge societies" at the global level. The first part of the text, therefore, discusses this formulation, as well as the concept of "education", and the second part establishes the relationship between both of them, as well as the relationship between "education", school education, in general, and professional education in particular.
KNOWLEDGE SOCIETY – VOCATIONAL TRAINING – EDUCATIONAL POLICIES

THE KNOWLEDGE SOCIETY

The term "knowledge society" is frequently used in texts that are directed at examining and analyzing the changes that have been seen in the field of work, in particular as applied to the industrial sector, because of the adoption of new physical and organizationally-based technologies, especially the former. It is also common to find reference to it in texts from the educational area, bearing in mind the argument that, since current societies are "knowledge societies" it is the responsibility of education generally and school education in particular to consider this characteristic and adapt to the demands that are made of it in this particular sense. But the expression "knowledge society" is not always interpreted in the same way. In fact, given its vague and polysemic character, it takes on various meanings, to suit the convenience of those who happen to be using it.

The polysemic character of the expression probably lies, if not totally, at least largely, in the polysemy of the term 'knowledge' itself, and for this reason it is useful to examine some of the meanings that are formally attributed to it. According to the new Aurélio Dictionary (Ferreira, 1986), the term has at least 13 meanings that vary from those that take it as being a part of social reality (idea, notion, information, news, science, life practice, experience) to those that refer to more or less elaborate cognitive processes, which relate to the subjectivity of the cognoscent subject: "the act of effect of knowing; discernment, criterion; self-awareness; appropriation of the object through thought, however such appropriation is conceived of: as definition, as clear perception, complete apprehension, analysis, etc".

In most literature, the term 'knowledge' tends to be generally related to information and science. Considering, on the one hand, the extensive process of information dissemination and the discourse about the growing ease of access to it due to the development of informatics and, on the other, the pronounced process for valuing/vulgarizing science, whether via the media or because of the speed with which products multiply, the origin of which is attributed to scientific advance, it is no wonder that the belief rapidly spreads that we live in a "knowledge society".

In turn, knowledge is very highly valued in business circles, more so than in previous periods and its role as a production input has become more pronounced. Knowledge production in central countries, both in the area of basic science as well as of applied science, has led to crucial transformations in the industrial field, like the substitution of production based on electro-mechanics for that based on electro-electronics and the development and application of informatics in manufacturing production. Theoretical production and its practical use in the field of administration have revealed themselves to be no less important; they have allowed for a review of previous forms of work organization and management of workers with a view to increasing productivity and control.

Do not wonder, then, at the cult of knowledge (understood as a production input) that is seen in the most advanced and dynamic of business sectors. The value attributed to it tends to be disseminated throughout the whole of society by businessmen themselves, or their spokespeople, and is generally augmented by repeated statements that, because of the predominant role that knowledge has assumed in production, being present as it is in equipment and machinery as well as in the organization of production methods, workers need

to have more advanced formal educational knowledge. This, therefore, closes the identification circle between science and knowledge, which is obviously not inappropriate. What is inappropriate, however, is the way in which, as a result of this process, scientific knowledge is reduced to applied science and/or technology.

In the case of information it is obvious that the development of informatics, and more particularly of equipment like personal computers, pagers, cell phones, CDs and DVDs, as well as the products/processes that make faster, more dynamic and better quality communication feasible, like fiber optics and the digitalization of telephones, have made access to it much faster, much more efficient and, what is more, much wider. Theoretically, there are no access limits and those who possess IT equipment that allows them to navigate the Internet have at their fingertips convenience, savings in time and resources and diversified information of varying levels of complexity. This is what then gives rise to another expression – "the information society" – or, as some would have it be known, the "informatics society", both of which are frequently used as synonyms for "knowledge society"[1]. If, in the case of the identifying knowledge with science there is a possible risk of reductionism, in the case of identifying information with knowledge this risk is much greater, because any piece of information might be said to be knowledge in the most simplistic sense of the word. Do not wonder, therefore, if this is why the concept that several of the societies that are spread across the planet are commonly understood as being "knowledge societies", or in short, and in a globalized, abstract and generic way, as the "knowledge society", has been cheapened.

In general lines, this is the situation in the current context as far as the relationship between knowledge, science and information is concerned. But this is not a situation about which everyone is in agreement. To discuss the dissenting and consenting opinions it is

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[1] For some authors, like Lima (1998), it is incorrect to use the expression "information society" because this reduces "its meaning merely to the availability and velocity of data transmission, in other words to the formal process" (p. 26). In his opinion, such an expression ignores not just the "content of *communication* that materializes via '*informatization'*, but also (...) the progressive integration – both economic as well as technological – between (...) *telecommunications*, *mass media* and *informatics*", through the digital revolution. For this reason Lima believes that the most suitable expression for characterizing contemporary society is "*a communication society*". It is worth highlighting, on the one hand, the diversity of focuses that seek to establish the relationship between society and 'informatization' (which is not exhausted, as will be subsequently seen, by the expressions herein indicated), but also the tendency to abstract generalization by society, within an homogenizing perspective.

necessary to investigate, initially, the concepts by which the relationships between science and production are established.

The main fundamentals of such relationships are to be found in theses about the "post-industrial society", a concept that originated in the USA in the 1960s. These theses were mainly organized by Bell (1973), but found in Richta (1969) and Touraine (1969) conceits with which they are in tune. In fact other authors, who did not always share the same theoretical orientation, ended up aligning themselves with the proposals of post-industrialism, which helps when it comes to understanding not only the convergence there is between them but above all the nuances that exist. The theses about post-industrial society are centered basically on the tendency to substitute industrial work, governed by manual labor, by automation processes resulting from the advance of physics-based technology and informatics, as previously indicated, both of which appeal to intellectual work.

Because of this, in the 1960s and subsequent decades, discussions about the technical and social consequences of the application of science to production gained weight. Among these discussions are those relating to the erosion of industrial jobs, the valuing of technical and scientific knowledge rather than experience, the changes in the nature of manufacturing work, which is less centered on the handling and control of equipment and more on watching over machine systems, the gradual substitution of operatives by technicians and engineers, etc. One of the most distinctive characteristics arising from post-industrial societies is the progressive and incontrovertible process of deindustrialization, or rather the "*substitution* of production by information, [...] the complex *interpenetration* that exists between industry and services, conception and manufacture, science and experience and, as a consequence, between salaried production workers and salaried conception workers" (Lojkine, 1995, p. 238). In fact, Bell is more emphatic; he believes that the tendency is to move from the production of goods to a service economy.

Malin, referring to the current day, draws attention to another aspect in which science is present as a force in production. This is the progressive substitution of raw materials by synthetic products, which tends to free up capital from any constraints associated with obtaining them, in addition to bringing about a reduction in costs. As the author states, "in this field the question refers to the way of producing and applying 'knowledge', in other words, how to use this knowledge to produce knowledge" (1984, p. 11).

In addition to reinforcing Bell's statement as to the principal nature of the economy of post-industrial societies, this author draws attention to a change "in the nature of occupation [as expressed] in the knowledge society concept". She understands that this is:

> ...updating bureaucracy to technocracy [in which] the central role assumed by theoretical and technical knowledge is explicit, as well as the rise of a *new social class*, that of the 'knowledge workers', that has an elite group of scientists at its heart. (Malin, 1994, p. 11, my italics).

However, because she believes that "knowledge [...] involves a large dose of subjectivity", and that the service category is too generic (1994, p. 12), in order to deal with information she proposes in a precise and measurable way the "pragmatic concept of "information activities", as formulated by Porat (1976). By incorporating the information activities that are present in the three classic sectors of the economy (primary, secondary and tertiary) this concept allows for the constitution of a new one, called the Quaternary, Informative or Information sector, which is compatible with "a society that revolves around an *information economy"*, understood as being a strategic resource (1994, p. 12).

Here we have, however, a formulation that is essentially economic in character, and which it is important to retain for two reasons, at least; in the first place, because it transforms scientific knowledge into measurable information as a result of its theoretical origin and is, therefore, a transparent expression of the understanding of science as a production input and, therefore, like merchandise. In this sense, as Lojkine (1995, p. 240) states, "the work-value of industrial (capitalist) society is substituted, therefore, by the 'knowledge-value' of post-industrial (post-capitalist) society"[2]. It is not surprising, therefore, that post-industrialism theses talk about the substitution of the working class by the "class" of technicians and scientists.

The science that tends to be valued as a result of this is not everything that is produced but only that which can be intrumentalized, which leads to the development of financial restrictions (or those of another nature) to scientific production that may assume a different

[2] This association produced by Lojkine between industrial society/capitalism and post-industrial society/post-capitalism does not seem appropriate to me because despite the attacks on the abstract work crisis, the way in which economic production is carried out today is no different from the way it was in the first half of the 20th century; we are simply witnessing another configuration of capitalism.

character. Another aspect to point out in this way of looking at science is 'secondarization', or a lack of attention to its contradictions, as if all science necessarily has a dimension of positivity, thereby ignoring its harmful aspects in terms of social well-being, such as for example, the way it creates unemployment, the establishment of areas of power that are extensive but restricted to small groups, sophistication in the production of arms of mass destruction, etc.

The second reason why attention must be paid to the economic-biased conceits of science and knowledge has to do with the fact that this is not an isolated way of understanding such concepts. On the contrary, as indicated at the beginning of this text, it tends to constitute the usual way in which the business community, as well as the media and even researchers and social scientists, attribute value to scientific knowledge that, from this perspective, begins to constitute an instrument of power and a justification for supporting social policies that may result in exclusion, even though, on a discourse level, they are presented as being inclusive in nature.

There is no doubt that much of what was anticipated by the formulators of the theses of the post-industrial society has been incorporated by the so-called third industrial revolution, whether at the economic level or at other levels. However, according to Lojkine, such theses, when applied to the production field, are characterized by a "technocratic concept of innovation from the top (in which the influence of Taylor and American capitalist organization is dominant), which today tends to be questioned by countless Western economists and managers" (1995, p. 240).

According to this author the criticisms of post-industrialism theses, arising from empirical research, are strictly speaking centered on three aspects[3]: the preeminence of theoretical knowledge over experience knowledge; b. the supremacy of service sector activities over production activities; c. the substitution of the working class by the information worker "class". In the first case Lojkine emphasizes that, unlike the post-industrialist forecasts, what is observed is that "*successful innovation processes suppose relationships of reciprocity between scientific research, development methods, manufacturing and marketing*" (1995, p. 242). With regard to the second and third he points out that there is a strong

[3] The author mentions four aspects but I believe that the third is a spin-off of the second, since both refer to relationships between activities of an industrial and a service nature (cf. Lojkine, 1995, p. 242).

relationship of a complementary nature between growth in the industrial sector and the service sector, as a result of which, and because of what has been pointed out with regard to the close links between production and information, measurements of the volume of employment that compare one sector to the other are false. Finally, with regard to the third aspect, he reports not to have found any evidence of the substitution of the working class by the information worker "class", but, on the contrary, "complex, contradictory processes of approximation, but also differentiation between salaried production workers and salaried service workers [that] raise questions as to the former category split between managers and operatives (...)" (idem, p. 243).

As can be noted, criticisms are fundamentally leveled at one of the principal theses of post-industrialism (the tendency by which the service sector prevails over the production sector in the economy) which was adopted by many analysts - Offe (1989), for example –, when, since the final decades of the 20th century, they have questioned whether work (in fact, abstract work), as a central sociological category, is capable of taking account of the structure, organization and dynamic of contemporary societies.

But, such criticisms do not question (as indeed they could not in view of the evidence available) the transformation of science and technology into economic input in the current configuration of global capitalism, which, as we have seen, constitutes one of the bases on which belief in the "knowledge society" is based, and the spread of the expression, an attribute that, when unduly generalized, homogenizes heterogeneous societies, whether from the economic point of view (even when governed by the capitalist way of production) or from the social and cultural point of view.

The other basis on which the indicated belief is structured has to do with the possibility of access to information. As previously stated, this access became widely available with the progress achieved in the informatics area, as well as through the facility that exists for acquiring equipment capable of processing/spreading information by electronic means. Parallel with this is the repeated generalization of the possibilities of this double access.

According to data supplied by Bessa, Nery and Terci (2003)[4], this generalization is not justified, because information from the UNPD [United Nations Development Program]

[4] According to the authors, such data indicate that "72% of current users [of the Internet] live in OECD countries, have high incomes and account for just 14% of the world's population" (2003, p. 5)

relating to Human Development in 2002, indicates that access to the Internet is a privilege of the richest sectors of the world's population. In this sense, the authors draw attention to the fact that the special spreading of Information and Communication Technologies (*TICs*) "when it does not reinforce them, merely repeats the patterns of social exclusion that are present in societies that have profound distribution differences" (idem, p. 4). The causes of this process, according to the research from the Organization for Economic Cooperation and Development (OECD), which is referred to by the authors, are varied, "ranging from factors relating to telecommunications' infrastructure to access difficulties in geographically isolated locations and reasons of a socio-cultural order" (2003, p. 6).

Of special interest to the discussion on this theme within the Brazilian context, because it refers to a region that, from various aspects, is developed, is the survey carried out by the State Data Analysis System Foundation (*Seade*), relative to Living Conditions in 1998, which took as its reference point the São Paulo Metropolitan Region. The survey incorporated information about the number of fixed-line telephones, cell phones and computers existing in households which, according to the authors, "allowed them to outline a picture of the accessibility conditions of individuals to the basic technology that provides access to digital networks" (idem, p. 6). The results indicated that "for every 1000 families with income in excess of 20 minimum salaries there were almost 1000 computers (an average of one per household), while for those with income up to 2 minimum salaries the density was 160 terminals for each group of 1000 families" (2003, p.6). According to the same survey, among students 7 years old and over who study in regular schools in the region surveyed, almost "24% [...] had PCs in their residences", but the distribution varied a lot depending on whether they were students from the public school system (11%) or the private school system (62%). Data like these led Bessa and Tápia to state:

> ...that the link between income concentration and the level of education, on the one hand, and access to computers, on the other, raises obstacles of a structural nature that might themselves reinforce the already existing levels of exclusion that are far from being solved by traditional policies. (2003, p. 88)

This discrepancy is not simply due to the indolence of peripheral countries or the lack of interest of the poorer sectors in advancing in the field of informatics. It ***is*** due, however, not only to the contradictions that exist in the capitalist production system, which simultaneously generates enormous riches and dire poverty, which in itself represents limitations of access to

information and knowledge, but also to the political mechanisms, by which richer sectors and countries establish intellectual property rules that limit access to information and scientific knowledge of a strategic character.

The social, economic and political configurations of this nature have led researchers to formulate the concept that, in parallel with economic forces, the production, use and spread of information has currently accentuated the process of social inequality; in fact, it has accentuated its use as an instrument of power, which is nothing new. To discuss unequal access to scientific knowledge Tilly (2006), without discarding the generation of value arising from industrial production, initially highlights that this generation is being displaced to four new focuses, namely: a) financial capital; b) information; c) the means for storing and transmitting capital, information and technical and scientific knowledge, and d) technical and scientific knowledge itself.

Although the assumption (the mentioned displacement) is questionable, because, along the same lines as that of post-industrialism, it suggests doing away with work-value which, in our opinion, is the basis of the capital accumulation process, the power that the above focuses have for creating social inequality and/or aggravating already existing inequality is undeniable. One of the forms of expression of this is the fact, pointed out by the author, that such focuses are "under the control of networks that, when compared to the world population, are very small". In his understanding,

> During the second half of the last century, the differences linked to financial capital, to information, to means of communication and to technical-scientific knowledge increasingly participated in producing inequality, especially at the international level. In this century, these resources will become even more important as the basis of categorical inequality[5], both locally and internationally. The force that the current combination of financial capital and technical-scientific knowledge has for producing inequality, between those who control this combination and those who do not, is unheard of (Tilly, 2006, p.56)

[5] To understand the concept of "*categorical inequality*" it is necessary first to resort to the notion of frontier, used by the author in a dichotomous way: frontiers define identities that separate those who have rights (relative to something), on the one hand, from those who do not have them, on the other. According to the author "categorical inequality" "refers to those forms of unequal benefit in which entire groups of people, on both sides of the frontier, receive unequal treatment" (2006)

This situation leads peripheral countries to the condition of mere consumers and adapters of scientific and technological knowledge, as well as of equipment produced in central countries, although this does not mean that there are no local efforts to overcome such a situation. The picture presented indicates that, unlike the discourse about the knowledge society, which leads us to suppose the generalized existence of political, social and economic conditions that are favorable to the production and consumption of knowledge and information, what we see is the production of reserves of these goods, and these reserves constitute not only one more aspect in the maintenance of the hegemony of powerful social sectors, but represent a crucial and central aspect of this process. As Rouanet states (apud Motta, 2006)

> [...] a real knowledge society would be that in which knowledge, considered in its broadest sense, covering not only the technical and scientific disciplines, but also philosophy and the humanities, is the main determinant of social organization and in which all social strata in all countries in the world have symmetrical chances, guaranteed by democratic processes, on a national as well as global scale, of participating in the generation, processing, transmission and appropriation of knowledge and the information necessary for this knowledge (Rouanet, 2002, p. 14-15).

The logical conclusion that can be drawn from what has so far been said about the "knowledge society" is that this notion performs a role that has more of an ideological character than one of a scientific characterization of contemporary societies, in benefit of the mentioned hegemony. From the point of view of those who question this hegemony, this implies the strengthening of counter-hegemonic activities, among which those that refer to the education of social subjects can be legitimately included.

EDUCATION/FORMATION

According to the dictionary, education refers generically to "the act, effect or way of constituting (something); creation, construction, constitution". From this perspective the definition suggests an intentional action or actions, in the sense of giving form to something or someone. Although this inference is not wrong we must consider that, in the case of the education (formation) of human beings, this comes not only from the intentionality of the person who is prepared to produce it but also from unplanned circumstances, or those not unleashed directly for this purpose, as is suggested by a second accepted meaning of the term

education/formation: “The way in which a person is brought up, everything that molds the character, the personality”. The formation (education) of a person, therefore, results largely from socialization processes that occur through their lifetime.

From a more accurate perspective the second meaning may be seen as a broader aspect of the process for the ontological constitution of the social subject, whose origins and development, from the Luckasian viewpoint, refer back to work, by means of which man constitutes himself as a generic being in the process of submitting nature to his designs, with a view to reproduction. Without the intention of going into this in any great depth, which is not appropriate at this point, since the objective here is not to discuss this theoretical construction, we would merely point out that, with a view to his own reproduction and the reproduction of society as a whole, the social being under construction, in both his genesis and also subsequently, imposes ends on himself, the consequence (objective) of which implies the construction of alternatives arising form the need to get to know elements of objective reality (initially, predominantly material, but subsequently, also social). Objectives, therefore, are the expression of the subjectivities of individual and collective social subjects, arising from what they appropriate from the world in which they live, and taking the shape of the social practices by which men produce and reproduce their private lives, as well as their lives in society. This is the way in which instruments, knowledge, objects, customs, rules of sociability and finally culture are constructed. When an individual is born, he does this in the context of a particular predetermined historical formation, which deliberately and directly (by means of the actions of parents or social groups), or not, and indirectly (through social intercourse) opens up to him, or closes off, depending on the circumstances, opportunities to be ‘formed’, in accordance with the characteristics, impositions and possibilities offered by this particular context.

When students reach school they have already suffered from a process of primary socialization, as Bourdieu guarantees, which although it is conducted mainly by the family in an intentional way, is not restricted to this, even when it has to do to the family’s way of life. Evidently, this process varies by reason of the economic class of the different families, which allow some children, even before they reach school, to have access to cultural wealth, forms of action, skills, etc. which allows them to move with greater ease within the school environment, while this is denied to others. Also according to Bourdieu, the secondary socialization that develops in social institutions, especially in schools, has a very much more

formalized intentionality character, but it too is not immune to that general education/formation process that continues to be exercised by diffuse socialization and that, in various ways, touches on the more structured processes of formal education, even if those who think about it and put it into practice do not realize it.

SCHOOL EDUCATION AND THE "KNOWLEDGE SOCIETY"

For purposes of this work, it is interesting to focus on school education and a peculiarity of it, vocational training, as well as the education that is given by it, or can be given, bearing in mind the previous discussion about the knowledge society. In this sense we start with the heavily documented substantiation that the emphasis placed on technical-scientific knowledge and on informatics by various central countries, as well as by those that are more or less directly under its influence, has a repercussion in some way on the school education they offer. This repercussion may affect different aspects of school life, such as for example, curricular organization, teaching methods, teaching materials, assessment processes, the use of time and space, the formation of teachers and their teaching practice.

In the case of Brazil, starting in the 1990s, and more specifically with the government of Fernando Henrique Cardoso, based on documents from multilateral agencies, read in accordance with national interests, it has been possible to see that education policies have become more oriented towards the valuing of technical-scientific and information knowledge. The document *Educación y conocimiento: eje de la transformación productica com equidad*, [Education and knowledge: the axis of equitable production transformation] produced by the Economic Commission for Latin America and by the Regional Education Office for Latin America and the Caribbean – *Cepal/Orealc*, Unesco, in particular, has had a marked influence in this process. The document explicitly defends a concept of education that is entirely in tune with the above indicated orientation.

On another occasion I drew attention to this fact as follows:

> The objectives [of the policy] were explicitly set out in the formula *authentic competitiveness and modern citizenship*, the first term being understood as the "construction and perfecting [of the] skills of [a nation, as well as] ...an effective integration and social cohesion that allows it to take advantage of these skills, as a function of successful international insertion, its final goal [being] ... to promote higher living standards for its citizens" (Cepal/Orealc, 1992, p. 128) and the second as , "to deepen democracy, social cohesion, equity, participation" (idem, p. 17). To the first term, within the educational

> environment one can legitimately associate the preparation of human resources (on a general and also specifically professional level) as being one of the facets of the central idea in Cepal's text (1992, p. 15) as well as that which states that "incorporating and deliberately spreading technical progress constitutes the pivotal point of the transformation of production and making it compatible with political democratization and a growing social equity" (idem). Based on the assimilation of elements of technical progress, this would supposedly contribute to increasing the productivity of workers who are already involved in the PEA, or that might become involved with it. (Ferretti, 2003, p. 43)

Brazilian education reforms, in their turn, when expressed in the form of curricular guidance, tend to include an acceptance of knowledge that has proved to be absent from the discussion that has so far been held, in other words, that which refers to the cognitive processes of preparation and reflection that relate to the subjectivity of the cognoscent subject, a situation in which knowledge is interpreted as a new preparation, based on already existing information and knowledge that are appropriated by the subject. One might say, therefore, that Brazilian reform proposals work with the two accepted definitions of knowledge, which were identified at the beginning of this work, and in this sense they might represent an advance in relation to the discussion that only contemplates the acceptance of knowledge as information.

However, if we look more closely at curricular orientation (especially that directed at high school and technical teaching) as far as the appropriation of existing information and knowledge is concerned, with a view to going into it in more depth and creating new constructions, we can see that the focus adopted aims less at reflection and more at mobilization of the former, by means of cognitive processes that constitute the desirable competences needed for the education of workers who are capable of adequately performing their professional activities in companies that are structured in accordance with a post-industrialism focus. This is, however, one educational perspective which, on the one hand, confers information and knowledge with an instrumental character and, on the other, tends to focus predominantly on the technical dimension of historically produced knowledge, being included, in the considerations of Rouanet, in his criticism of the knowledge society. This is, therefore, coherent with the dominant hegemonic perspective that gave rise to it.

As a result, one has to question if the educational proposal, as expressed in educational reform, responds to the demands that oriented its preparation. Results obtained in national exams (a creation of the reform itself to measure and monitor the results of implementation)

by students who are studying at the elementary education level in the Brazilian public school system, and widely publicized in the media, indicate that, with honorable exceptions, Brazilian education is not even meeting the restricted and interested demands of the very social sectors that created the reform. In other words, it is not managing to even ensure that students develop the desired competences and/or appropriately absorb the technical-scientific knowledge of an instrumental nature that is considered desirable by the production sector.

This was evident in recent research into technical teaching at the high school level. The investigation, the central objective of which was to check how a school unit appropriated the reform relative to this modality of professional education and implemented it (Silva Jr., Ferretti, 2006), was carried out in a public technical school, located in a city in up-state São Paulo, which dates back to the 1920s. Because it has belonged to the public education system since the beginning of the 1980s the school is, as a result, normally guided by what the system indicates and determines. However, the research was based on the assumption that, despite this, there would be a certain amount of leeway for its tradition, background and culture to appear during the reform implementation process.

In view of the restructuring of technical education system, the schools have undergone two recent moments of change. The first, which occurred even before Decree 2208/97 was published, was analyzed by Oliveira (1998). The second, on which this research concentrated, was set in motion centrally by the system's Technical Coordination Office in 2000 and had as its point of reference the documents guiding the reform. The aforementioned coordination office mounted a supervision, training and assessment scheme, which allowed it to directly interfere in the implementation of the reform, which faced various obstacles, so much so that five years after starting it the teachers in the school that was investigated found themselves in serious difficulties when it came to putting into practice the competence-based teaching model. Although the school also had a high school area, which was also researched, the study centered more on the technical teaching.

In a fairly summarized form we now present some of the more central aspects that weighed heavily in the investigation process, such as the knowledge of teachers about the reform-guidance documents, the extent to which they were prepared for working in accordance with what was prescribed by the education system and, consequently, the difficulties encountered in doing so and finally the relationship they established between the reform and the quality of teaching that the school has been offering.

Teacher access to the reform documents, especially those that imply a relatively solid knowledge of its objectives and fundamentals, as well as to the proposals for the corresponding curricular structure, was limited or non-existent. The information disclosed was operational. It was transmitted either by "facilitator teachers" (usually the course coordinators) or by internal documents issued by the Technical Coordination Office. Because of this it was seen that the majority of those interviewed (including coordinators) had an almost common sense view of the reform and its political and ideological meaning.

The "skills training" offered was seen by the teachers as sporadic and contributing little to their facing up to the teaching challenges imposed by the reform. Furthermore, they considered that the "facilitator teacher" formula for their "skills training" was precarious, either because the latter himself/herself faced difficulties when it came to understanding the demands that were being made of him/her by the teaching plan, or because the objective conditions for meeting up with colleagues in order to discuss the guidance were adverse. This situation, which is common in schools, was aggravated by the fact that various teachers, coming from other professional areas, worked in private companies, as frequently happens in many technical schools. Because "they were occasionally teachers", an expression that was repeated countless times, it was usual for them to experience difficulties relating to the schools demands and to the educational jargon despite several of them having done Scheme I courses, the purpose of which was precisely to introduce them to this field.

The teachers encountered problems when it came to working in accordance with the system's proposal, which prioritizes the development of competences. The first one has to do with the domain of the notion, whether because of the polysemy of the term, or the insistence of the education system on a theoretical understanding of it, or understanding the differences and associations with the concept of skill. The second problem, resulting from the first, was expressed in the almost always frustrated attempt to use the notion pedagogically. Aware of this difficulty and also because it was believed that teachers would more easily assimilate this transposition by means, other than discussion and debate, the technical coordination office of the schools produced a working plan form to be completed by teachers for each lesson or set of lessons of a given teaching unit, in accordance with the nomenclature linked to competence-based "education". This gave rise to various consequences: an enormous amount of time used filling in the forms, ill-feeling and opposition from the teachers and finally, dissimulation, given that the teachers started to fill in the plans in accordance with the

recommendations, but developed the lessons in accordance with technical teaching traditions – an emphasis on the expository development of the lessons and on the forms of assessment they had used over time, etc. – albeit "adorned" by use of the Internet, information technology, visits, collective sessions for presenting work and other similar procedures.

The relationship between the reform of technical teaching and the quality of education offered by the school was generally looked at by the teachers from the point of view of the effects the latter had on the duration of the courses. According to these teachers, one of the harmful effects of the reform was the reduction in the duration of courses from six to three months, causing a diluting of the teaching offered and, as a consequence, a weakening of the education of the students, bearing in mind economic sector demands. This assessment had already been detected by Oliveira (1998), since the central element of the initial stage in the change consisted in splitting the course into modules and reducing it, a situation that still persists, even today. This evaluation derives from the fact that teachers consider that the reduction in time prevents them from developing the whole of the content of their disciplines or obliges them to do it hastily. They are all aware about labour consequences of this reduction.

In short, what has occurred in general, but not in an homogenous way, is a process of distancing of the educational proposals contained in official documents, but not because of any critical-ideological refusal of the political and educational content in them. My understanding of the situation is that this distancing occurred first because of the difficulties encountered by the teachers in understanding the proposal and making it the objective of their teaching practices; secondly, because of the privilege conferred by a long historical process of cultural construction on technical teaching, its objectives and relationships with the sectors for which the students ought to be being prepared. What is curious is that, without having a clear idea of this, the teachers tended to come into line, at least in their intentions, with one of the aspects favored by the reform in another diapason. This aspect has to do with the close relationship between technical progress, qualification of the work and qualification of the worker. In other words, they tended to come into line with the substantialist concept of professional qualification, as much as did the reform documents, but in different registers.

However, even if it were to be successful, the professional education policy directed at vocational training at the high school level is far from producing a full school education, if by this is understood more than just the simple, albeit sophisticated preparation of workers

capable of optimizing the performance of the so-called intellectual functions of flexibilized companies, whether because this is not its intention, or because, as was seen earlier, even in this matter the private appropriation of technical and scientific knowledge, strategic information, financial resources and the means to produce them form part of the "rules of the game".

The attempt to reverse this situation by the formulation of policies, via Decree 5154/2004, was not welcomed in several of the educational institutions that are responsible for the technical formation of young people, and neither did it receive due support from *MEC* [Ministry of Education] itself. This shows that questioning and possibly breaking the "rules of the game" depend on actions that go beyond the realm of schools and education and are firmly lodged in the field of political, economic and social dispute, and therefore in the field of hegemonic dispute, from which education should not distance itself. On the contrary, from this perspective it is the responsibility of education and the school to produce complete (omnilateral) education of social subjects, which does not imply denying them a formation/education as professionals. To do so education will, necessarily, have to assume the perspective of "not immediately interested", understanding education as a process directed at constituting not only technicians, but of politicians, as proposed by Gramsci (1979). This will imply a struggle on the part of the educational sector for prioritization and, therefore, access not only to scientific knowledge, seen as fundamentals of professional practice, but to all that knowledge which constitutes the historically constructed heritage in the various fields.

BIBLIOGRAPHIC REFERENCES

BELL, D. *O Advento da sociedade pós-industrial*. [The advent of the post-industrial society], São Paulo: Cultrix, 1973.

BESSA, W. C.; NERY, M. B.; TERCI, D. C. Sociedade do conhecimento. [*Knowledge Society*] *São Paulo em Perspectiva,* v. 17, n. 3/4, p. 3-16, jul./dez. 2003.

BESSA, W. C.; TÁPIA, J. R. B. Exclusão digital e cidades mundiais: a experiência de São Paulo. [*Digital exclusion and world cities: the experience of São Paulo*] In: SILVEIRA, S. A.; CASSINO, J. (Orgs.) *Software livre e inclusão digital*. [Free software and digital inclusion] São Paulo: Conrad Editora do Brasil, 2003. p. 77-100.

FERREIRA, A. B. de H. *Novo dicionário Aurélio da língua portuguesa*. [New Aurélio Dictionary of the Portuguese language] Rio de Janeiro: Nova Fronteira, 1986.

FERRETTI, C. J. A Reforma do ensino médio: uma crítica em três níveis. [*The reform of high school education: a criticism on three levels*] *Linguagens, Educação e Sociedade*, n. 9, p. 41-49, jan./dez. 2003.

GRAMSCI, A. *Os Intelectuais e a organização da cultura*. [Intellectuals and the organization of culture] 3. ed. Rio de Janeiro: Civilização Brasileira, 1979.

HOUAISS, A. *Dicionário Houaiss da língua portuguesa*. [The Houaiss Dictionary of the Portuguese language] Rio de Janeiro: Objetiva, 2001.

LIMA, V. A. Sociedade da informação, comunicações e democracia. [*The information society, communication and democracy*] *São Paulo em Perspectiva*, v.12, n. 4, p. 26-29, out./dez. 1998.

LOJKINE, J. *A Revolução informacional*. [The information revolution] São Paulo: Cortez, 1995.

MALIN, A. B. Economia e política da informação: novas visões da história. [*Economics and information policy: new views of history*] *São Paulo em Perspectiva*, v. 8, n. 4, p. 9-18, out./dez. 1994.

MOTTA, V. C. Politizando a "knowledge society" sob a ótica do pensamento de Gramsci. [*Politicizing the knowledge society from the point of view of the thinking of Gramsci*] *Boletim Técnico do SENAC*, v. 32, n.1, p. 19-29, jan./abr. 2006.

OFFE, C. Trabalho e sociedade: problemas estruturais e perspectivas para o futuro da sociedade do trabalho. Rio de Janeiro [*Work and society: structural problems and perspectives for the future of the working society*]: Tempo Brasileiro, 1989.

OLIVEIRA, M. R. N. S. *A Prática pedagógica no ensino tecnológico*: o discurso de sujeitos da escola, [Pedagogic practice in technological teaching: the discourse of school subjects] 1998. mimeo

RICHTA, R. *La Civilisation au carrefour*. [Civilization at the crossroads] Paris: Anthropos, 1969.

SILVA JR., J. R.; FERRETTI, C. J. *Competências e prática social*: o trabalho como organizador e estruturador das reformas educacionais brasileiras no ensino médio e na educação profissional de nível técnico e sua concretização nas instituições escolares nos primeiros anos do século XXI: relatório de pesquisa, 2006. [*Competences and social practice: work as the organizer and former of structures of Brazilian educational reforms in high school teaching and professional education at the technical level and its concretization in school institutions in the first years of the 21st century: research report, 2006*] mimeo

TILLY, C. O Acesso desigual ao conhecimento científico. [*Unequal access to scientific knowledge*] *Tempo Social*, v.18, n.2, p. 47-63, 2006.

TOURAINE, A. *La Société postindustrielle*. [Post-industrial society] Paris: Denoël, 1969.

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