

THE IMPORTANCE OF SOCIAL STUDIES OF SCIENCE AND TECHNOLOGY IN THE TRAINING OF PROEJA TEACHERS

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Abstract

The initial and continuing training of teachers for the education of young and adult workers is a central theme of public policy. What are the skills necessary for professional teaching practice in a world of constantly changing science and technology? This work presents initially the description of the integrated professional education in high school, a policy introduced in 2006 by the Brazilian Education Ministry in order to encourage the return of young and adult people who have not finished this level of education at the expected age. Emphasizing the political and pedagogical challenges for the construction of this state policy, we have reviewed some aspects of its principles and policies, particularly emphasizing how the proposal of the integration presents itself in the ruling documents of the Education Ministry (MEC) which establish the “Programme of Integration of the Basic Education with the Professional Education in the Young and Adult Modality” (PROEJA). This program proposes the technical training of young workers and adults based on the integration of work, science, technology, humanism and general culture, understanding that the world of labor and everyday life of people these dimensions are inseparable. By understanding that this option considers the curriculum focus of the Social Studies of Science and Technology (SSTS), this paper analyses the importance of design in the formation of SSTS to PROEJA teachers. Through using methodological procedure document analysis - taking as a theoretical basis contributions of authors in the field of SSTS to the demystification of science and technology – the study design verified the presence of SSTS and its importance in guiding documents of the concepts and training of PROEJA teachers of this programme.

Introduction

The National Programme for Integration of Vocational Education with Basic Education in Young and Adult Education – PROEJA (Brasil, 2009) is a program of the Federal Government, promoted by the Ministry of Education, under the coordination of Vocational and Technological Education Secretariat – Setec/MEC, which proposes the integration of professional education with basic education in Young and Adult Education (EJA). It is intended to increase basic schooling by providing initial training and continuous/elementary (PROEJA- FIC) Professional and Technological Education integrated with the Indigenous Elementary Educations (Indigenous PROEJA) and Technical Vocational Education at Mid-level /Secondary

Schooling for young and adult workers who, for various reasons, had their schooling trajectory interrupted or discontinued.

The PROEJA, in its Basic Document proposes technical vocational training of young and adult workers, based on work, science, technical, technology, humanism and general culture, integration, which are considered to be major curricular articulators. The curricular option integrates professional technical education with general education, and provides the opportunity to contribute to enriching scientific, cultural, political and vocational learners understanding that they are considered to be intertwined and inseparable dimensions in the working world and in people's daily lives.

In the design of public policy it is assumed that there is a gap in the training of teachers to work with integrated professional and technical education, especially in respect of young and adult workers. This requires, therefore, the specific training for teaching staff in Secondary Education and Young and Adult Education (EJA), because this initial training has not been included in the undergraduate courses of teachers.

There are still very few Pedagogy degree courses that include a specific course that addresses the EJA among their required courses. Also, a vast majority of teachers who work in professional education received no pedagogic training during their undergraduate studies (bachelors, engineers, architects, etc.) or other form of initial pedagogical training. In this case, very often, their initial training as regards teaching takes place through special training programmes, sharing work and training, through simple and flexible processes.

The official recognition of the need to give special postgraduate training to teachers is presented in the PROEJA Basic Document (Brasil, 2009) as one of the conditions for the implementation of this public policy. The Professional and Technological Education Secretariat of the Ministry of education (Setec/MEC), as national Manager of the PROEJA, is responsible for creating special programmes for the training of trainers, teachers and managers through the provision of Specialization programmes in PROEJA.

The training of teachers and managers for PROEJA was outlined in the document, "Training professionals in public education to act in mid-level technical vocational education integrated into secondary schooling in young and adult education (EJA) General Proposals for Project Preparation of Pedagogical Specialization course "(Brasil, 2006,). This document contains the guidelines for the structuring the Specialization course in Mid-level Technical Vocational Education Integrated into Secondary Schooling in Young and Adult Education and is therefore an official proposal of the Setec/MEC, and funded by it, for the training of teachers and managers of PROEJA.

The document referred to, presents the specialization course guidelines and establishes five curricular areas, with a listing of basic content to be developed in the training of these teachers and managers to work in PROEJA. Each curricular area envisages enabling discussion on science, technology, nature,

culture and work, thereby creating a synthesis which promotes closer links between these areas of knowledge and which effectively empower the teacher to achieve the integration of work, science, technical, technology, general culture and humanism in his/her teaching practice of the classes of PROEJA.

In this text we want to bring in the design of Social Studies of Science and Technology (SSTS), because we believe that this option of curricular organization takes this approach into account, and reflect on its importance in the training of teachers of PROEJA. This understanding will help the teacher in reflecting and understanding the inseparability of the dimensions of the curricular areas proposed in the milestones of this programme.

The present study adopts as primary sources, the two documents of Setec/MEC referred to above. It subjects them to the methodological procedure of documentary analysis – based on the theoretical reference works of authors and the products from the field of SSTS (or CTS, abbreviation in Portuguese language version) that contributed to demystifying science and technology – in order to verify the presence of the mentioned design in these documents and the degree of importance that was assigned to it.

What Are Social Studies of Science and Technology?

Bazzo, Lisingen, and Pereira (2003) define SSTS studies as an academic field of work whose objects of study are the social aspects of science and technology. The field emerged in early 1970, with the aim of understanding the social dimension of science and technology, its background as well as its social and environmental consequences. SSTS seeks to characterise the factors responsible for scientific change and attempts to understand science and technology as a social product/process, in which elements such as values, beliefs, culture, political and personal interests and/or economic pressures are decisive factors in the consolidation of scientific ideas and in the genesis of artefacts. From this perspective, it is understood that the scientific and technical decisions are never neutral, because the technology is also the realization of interests and values, and therefore the products of social relationships. In this sense,

It is important to understand the social aspects of the phenomenon of science and technology, both with regard to their social conditions as regards to their social and environmental consequences. The general approach is interdisciplinary covering social science disciplines and academic research in the humanities such as philosophy and history of science and technology, sociology of scientific knowledge, the theory of education and economics of technological change. (Bazzo, Lisingen, & Pereira, 2000, p. 4)

The understanding of science and technology stemming from SSTS studies questions the deterministic character, neutrality and advantage of technology for contemporary society, evidencing that negative social impacts also occur in its development. Technological determinism conceives technological changes as being responsible for impacting on society from the outside to the inside (Mackenzie & Wajcman, 1996). This way of conceiving technological

changes leads to a passive social attitude in their presence and an attitude of adaptation to changes rather than engaging in promoting change. It is a trend that leads to diminishing all progress that humanity has achieved to date regarding the latest technologies, understanding technological change as autonomous and the great inventions as belonging to the geniuses, as if in any actual fact any invention would be possible only with the intervention of a person.

In presenting some current trends in technology studies, Feenberg (1995) highlights some aspect. Among them is that technology is not neutral. Its uneven distribution contributes to social injustice because technological development occurs predominantly in the direction of the interests of the ruling class, but in some instances public participation in the design of systems and devices has made a difference in this area. He considers these three aspects: non-neutrality, (un) equal distribution and public participation, as the foundation for the construction of a democratic theory of technology, with a view to understanding that this involves several partnerships in the design process.

In the late 1980s and early 1990s various interpretations arose in the USA regarding SSTS that have led many experts to an understanding that science can be conceived as dependent on causal factors determined socially, built with resources existing in nature, and that new technologies demanded a greater control and evaluation with a view to the scale and social implications of their impacts. What was sought was greater understanding and a more comprehensive social context of science and technology, indicating that there were negative implications associated it and not only benefits. Workers saw and denounced social impacts arising from the implementation of new technologies in the form of automation in the execution and control of work processes and their consequences to stability in jobs.

The development, production and control of science have been dictated by pragmatic mechanisms, primarily linked to the logic of production and capital appreciation. Gorz (1979) said that science is bourgeois, owned by a minority, because it was developed by the ruling class to sustain it and to reproduce it, strengthening members' dominance in such a way that science and technology have brought benefits and negative impacts, as well as reflect values and visions only of those who have decision-making power. For him, the class character of modern science is working for capitalism in order to sustain the social division of labour. Therefore, the criterion of what is and what is not scientific is not the context of knowledge. It is not considered science if it is not embedded in the capitalist way of production, i.e., only content that is geared towards the need for reproducing and accumulation of capital is considered to be scientific.

While this critique of Gorz (1979) is partially true, its extremely negative aspect could lead to immediacy or contempt (by workers or those who are faced with the capital) in relation to scientific and technological knowledge. However, for a full understanding of the modern production processes, it is essential to fully grasp of the scientific and technological knowledge

embedded in them as the basis for the autonomy of the subject. In this sense, scientific and technological knowledge is understood as being social production and no longer fetish and becomes strategic to the workers.

But it is important to consider that for a democratic society it is important that the expertise of the scientists and the production of science and of scientific and technological knowledge must be shared with all other workers, bringing overall progress to their communities.

Any progress in knowledge, technology and power that produces a permanent divorce between specialists and non-experts should be regarded as bad. Knowledge, like everything else, only has value if it can be shared. (Gorz, 1979, p. 119)

Gorz (1979) who is one step from blaming science offers the possibility for criticism. However, it is insufficient, because the pessimism towards such demonization of science always involves the risk of ignoring the class society, ignoring class struggle. The dominant class to hold the ideas also makes a social division of knowledge and it takes ownership to enlarge its reproductive process.

On the other hand, the folk knowledge accumulated is not systematized in the form of educational content. It does not enter the school, as the professions stemming this knowledge also have little value on the labour market, so that only recognizes as scientific knowledge and abilities that are transmitted by formal education and certified by an official institution. Education ultimately contributes to the reproduction of such selection so that capitalism has a deepened division between theory and practice, intellectual and manual labour. It has created an unprecedented abyss between the professional competence acquired formally and popular culture, between scientists and people, becoming a cultural barrier and social class.

From the decade of 1980, SSTS became characterized as an interdisciplinary studies field in the academic area, aiming at interdisciplinary planning also in different instances, for understanding both the benefits as the effects, nor so beneficial, accelerating technological development in individual and collective life of the people. Since its emergence, the SSTS studies and programs developed in three directions come from: in search (socially contextualised the scientific activity view); public policies (social regulation of science and technology with democratic mechanisms in policy decisions); and education (with the emergence of SSTS programmes in secondary education and university).

On the other hand, the degrees with SSTS programmes sought to meet the demand for new methodological forwards in education in university education, so that this conception of science, technique and technology curriculum has been reflected in the organization of vocational and technical education. One of the goals sought with the SSTS studies is to bridge the "growing chasm in elimination of mentalities among the humanist culture and scientific-technological culture that both fracture our society" (Bazzo et al., 2000, p. 5).

People have become used to associating the advancement of techniques and technology to changes in life forms, predominately still feeling the power of technology as a transformative agent in society. All the more reason to expand the understanding of logic and existence of techniques, i.e., understand that "a set of techniques appear in a given time, remain as hegemonic during a certain period, constituting the material basis of the life of society, until another technical system take place" (Santos, 2008, p. 140) and as Vieira Pinto (2005, p. 234), noted, "the whole time had techniques that could have".

Accordingly, it takes special relevance to understanding of policy implications of scientific knowledge, technology and technological artefacts. In this sense, to Winner (1999),

Many important inventions and technical systems in our daily lives involve the possibility of ordering human activity in different ways. Consciously or not, deliberately or inadvertently, societies choose structures for technologies that will influence how people work, how they communicate, how they travel, how they consume over a lifetime. In the processes by which decisions are made on these structures, people end up distributed in different layers of power and at different levels of knowledge. (p. 8)

According to Vieira Pinto (2005), "Our age is witnessing an extraordinary proliferation of technology, possession of almost all aspects of human existence" (p. 234). But, doing a dialectical analysis reveals the contradiction present in this movement of development of technologies:

On the one hand, the huge current development results from the accumulation of historical knowledge and social practice, that side the situation that characterizes our age is no different from previous ones, in which the same phenomenon has always occurred. On the other hand, shows the same exuberance unprecedented and delay need be, to the extent that as the technology of the present announces and determines the future technology, which will then be truly "explosive" for those to be present. What appears under the figure of the "explosion" today contains within itself the very negation. (Vieira Pinto, 2005, p. 234)

A teaching that considers this movement technique and technology in focus, SSTs may be favoured by the change of position "through which the teaching of science and technology is no longer focused on distant content and fragmented scientific knowledge-based neutral and autonomous, and supposedly becomes focused on situations experienced by learners in their day-to-day existential contexts" (Linsingen, 2007, p.13). Thus, it would be paying attention to the social circumstances of development, employment and use of technologies, the characteristics of technical objects and the meaning of such features, as well as social and economic forces that determine its use.

SSTS: TECHNIQUE AND TECHNOLOGY INTO THE CURRICULUM OF PROEJA

The introduction off the Basic Document of PROEJA (Brasil, 2009) refers to the need for this program consolidation with a view to its perpetuity as public policy of integration of professional education with basic education in the EJA. The assumption is to assume the condition of education that provides access to knowledge humanizing value and scientific and technological knowledge for the world of labour “not only of modern technologies, but of all the historical construction that men and women performed, from simple and coming inserted into / from the local to the most complex, expressed by the revolution of science and technology” (Brasil, 2009, p. 13) and to review the concept of work and development.

Later, the Basic Document, to bring data that puts our capitalist society as inserted in global market logic, stresses the need to pursue the construction of a new society:

In which technology is subjected to an ethical rationality instead of being the exclusive service of the market and the strengthening of economic indicators. In this society, the collective production of knowledge should be geared towards finding solutions to the problems of individuals and disadvantaged communities with a view to building a socially just society. (Brasil, 2009, p. 24)

To foster an ethical rationality of technology around pointing to the present situation, the basic document makes a correct criticism, but almost subliminal "instrumental rationality" (Weber, 1996) that guides the production of science and technology. However, this critique is somewhat emptied by not explaining the criticism of the "instrumental rationality." Seated in the structure of class society, we don't realize the obstacles and limits on ethics to the construction of an "ethical rationality," keeping the current social structure.

On the other hand, the Basic Document, when referring to the intersection between education and work required in the knowledge-based organization, presents us with the understanding that this intersection if we understand the multiple dimensions of the qualification, “is never just "professional" (technical dimension), but always "social" (socio-occupational dimension), emphasizing that in these two dimensions would be focused on qualifying for the "unattended and solidarity in the world integration of labour” (Brasil, 2009, p. 46). Once again the Basic Document uses dubious expressions. Socio-occupational dimensions - what is that? The Basic Document couldn't be more affirmative and bringing together the technical dimension with the human dimension arising from the conception of labor as an educational principle?

It is clear that this understanding was brought from the National Qualification Programme 2003-2007, as the document itself, and therefore what comes right after affirms the need in the course for "the promotion of educational and political activity based on innovative methodologies within an emancipating

thinking and inclusion labor as an educational principle” (Brasil, 2009, p. 47). Once again, implying that the leave labor as an educational principle must be a principle embedded in the promotion of innovative methodologies and activities within an emancipating thinking, not to say the limits.

On the other hand, it affirms "the right to work as an essential value of citizenship" then spells out "qualifying as a social inclusion policy and an indispensable support of sustainable development” (BRASIL, 2009, p. 47). To be an educational principle, the work has to counteract the way in alienating and alienated that takes as merchandise. Is contradictory to take the job as an educational principle of policy, for which the qualification is "indispensable support to sustainable development” (p. 47).

For the labour insertion in the world of labour, at the current stage of social, economic and technological development, it is necessary that every employee has a professional technical and technological training that integrates the curriculum proposed four axes of PROEJA. This includes necessary knowledge both in complex work processes and simple work, e.g., allow the worker to know the process in its entirety, knowing the principles governing the operation of a production process, "if he mastered the science a machine incorporates established another type of relationship, which allows you to direct the work, and not be directed by him" (Kuenzer, 1985, p. 193).

This means that the worker needs broad knowledge, in a vision of wholeness, but always realizing that the technique, although contributes to the understanding of the dynamics of society, of time and space, by itself does not explain anything. Santos (2008) leads us to understand that the space is formed of technical objects that are affected by work:

Time, space and the world are historical realities, which must be mutually convertible, if our concern is epistemological totalizing. At any time, the starting point is the human society in the process, i.e., performing. This achievement takes on a material basis: the space and its use, time and its use, as well as materiality and its various forms, actions and their [...] The techniques are dated and include time, qualitatively and quantitatively. The techniques are a measure of time: the time of the direct process of work, time of movement, the time of the territorial division of labor and time cooperation. (Santos, 2008, p. 54)

Bazzo et al. (2003) understand that initially a SSTS education aiming to literacy in science and technology to the entire population is needed so that educating to develop critical attitudes takes place. They emphasise the importance of stimulating the vocation among young people by the studies of science and technology, developing a critical judgment and a deep reflective analysis of their interference in society, an educational environment that promotes the development and consolidation of democratic practices and attitudes on issues of social importance relating to technological innovation and environment.

Freire (2000), summons always to not to abandon the dream and utopia "as the dream of autonomy of be, which implies the assumption of its social responsibility and politics, the dream of constant reinvention of the world, the dream of liberation" and not to let the technique to occupy the entirety of human acts. He considers this to be "so urgent and necessary to correct understanding of technology, that refusal to understand it as diabolical work threatening always humans or that outlines how to constantly service of his welfare" (Freire, 2000, p. 101). He claimed,

A critical understanding of technology, which the education they need to be infused, and which sees it as an intervention increasingly sophisticated in the world necessarily be subjected to political and ethical scrutiny. The larger has been the importance of technology today is much more affirms the need for strict surveillance on her ethics: "An ethic of service to people, of their ontological vocation, that of being more, rather than a narrow and bad ethics, such as profit, the market" (Freire, 2000, p. 101).

According to Freire, especially with relation to scientific-technical training for young people and adults, as well as to general education, we cannot waive the exercise of thinking critically,

De pensar o conhecimento enquanto se conhece, de pensar o quê das coisas, o para quê, o como, o em favor de quê, de quem, o contra quê, o contra quem são exigências fundamentais de uma educação democrática à altura dos desafios do nosso tempo. (Freire, 2000, p. 102)

Techniques are part of the cultural contribution of young people and adults with low educational attainment, especially those techniques that Santos (2008, p. 181) classifies as "techniques to be." According to him, the techniques of being "are a product of history, and, in a second moment, they are producing of history." In this sense, even when you cannot abandon and replace those techniques and technologies so to do, the way of being which make up the imaginary already constitutes the way people are in a certain community. This recognition has special importance in the Indigenous PROEJA (Brasil, 2007), curriculum and teaching practices as a result need to consider the millenarian knowledge, traditions and customs of indigenous communities. This curricular integration planned for PROEJA should enable students to perceive and be themselves, while constantly becoming. They should be able to pursue education while also thinking subjectively in other instances who participates and transitions in their lives, thus giving direction to one's life, not being an object, or a passive consumer of material and spiritual goods whose needs are not always real, but created by the cultural industry (Adorno, 2002).

By providing integration between work, science, nature, technique, technology, humanism and general culture in an organization, the curriculum, in addition to the elevation of PROEJA basic schooling with professionalization, is intended to contribute also in building democratic

values that should support the development of technology. Thus, according to Feenberg (1995),

A good society should increase the personal freedom of its members while enabling them to participate effectively in a growing number of public activities. At a higher level, public life involves choices about what it means to be human. Today these choices are increasingly mediated by technical decisions. What human beings are and what they will be decided on the configuration of our tools as much as the actions of statesmen and political movements. The design of technology is therefore an ontological decision fraught with political consequences. The exclusion of a large majority stake in this decision is profoundly undemocratic (Feenberg, 1995, p. 137).

Feenberg emphasizes that "no progress can happen in a society that sacrifices millions of individuals by production and deprives its members in all aspects of social life, pleasure, education of medical care urban planning" (1995, p.136).

The EJA modality of basic education was integrated teaching systems from LDBN 9394/96. This elevation view of schooling with completion of elementary and middle school in the EJA came from 1997. It took another ten years before the professional education geared to the adult worker could not be supplied in fragmentary form in businesses and by social movements in alternative spaces. With the adult worker spent PROEJA have the right to have the elevation of his basic schooling with professionalization in perspective of human emancipation in the classroom of educational institutions, although not yet universalised. But the claim is the organic insertion of integrated vocational education mode EJA in public education systems with a view to transforming public policy programmes.

THE IMPORTANCE OF FOCUS IN SSTs TO TRAINING PROEJA TEACHERS

We believe that all forms of educational expansion should come accompanied by a teacher training policy. In the case of the extension of PROEJA professional education to the EJA mode in high school level, the need of such training was given in its design and implemented in the form of specialization courses and in training courses. However, this technical training may not be only towards the field of didactical and methodological tools to develop a technical perfection. There is need to have the field of theoretical knowledge historically produced to be worked on so as not to make conceptual misconceptions.

Furthermore, we believe that it is essential to act so that the PROEJA professor recognizes the plurality of cultural identities of learners, valuing them, and assuming attitudes such as dialogue, respect, and balance. Other essentials are knowing the social and labour context of educating, considering the life experience and his/her knowledge built from these experiences, be committed to the students learning and favouring human emancipation - the

emancipation of the "not-knowing," of ignorance, which generates fear, insecurity in workers and inferiority.

The PROEJA recognizes the gap in teacher training and perceives the need for initial training that integrates the technical-professional training in general education, since it is this an EJA integration and a proposition of recent education public policy in Brazil, demanding, therefore specific training to school teachers and EJA. This emphasizes be "crucial that precede deployment of this policy a solid continuous training of teachers, as these also subject of young and adult education, in the process of learning for life" (Brasil, 2009, p. 35).

Accordingly, the document *Training*, which indicates guidelines for the training of teachers and managers to act in PROEJA, establishes five curricular areas with a listing of basic content to be developed in the training of teachers. Curriculum on each axis, is intended to enable discussion among science, technology, nature, culture and work, building up a synthesis that promotes closer links between these knowledge areas, and that effectively empowers the teacher to make the integration of work, science, technical, technology, general culture and humanism in his teaching practice next to classes of PROEJA. This curricular organization considers the focus SSTS.

The focus on curricular organization of courses for SSTS technicians and professionals demands teachers understand another conceptualization and design of science and technology. Lima Filho & Queluz (2005) design science and technology as referential related to historical and philosophical and ideological. They present the term technology as a multifaceted concept, with a multitude of positions resulting from different social subjects and different emphases in spatial, temporal dimensions, materials, and symbolic and cognitive categories. Based on a critical analysis, they have two opposing conceptually technology concepts: the relational matrix, which includes technology as construction, implementation and ownership practices, knowledge and know-how; and the instrumental array comprising technology as technique, as the practical application of science.

Lima Filho & Queluz (2005) understand that scientific and technological development is the process of continuous production and ownership of knowledge, knowledge and practices for social becoming mankind's history and plays a central role in sociability, i.e., the production of reality and imaginary/symbolic. They contend that in the contemporary world science and technology are more than material forces of production as they are present in all fields of activity and size of productive life, intertwined and inseparable from daily practices in their various fields, times and places, assuming full socio-cultural dimension and a centrality in the production of sociability. Furthermore, they designate science, technology and work as interdependent dimensions of social relations. Finally, they conclude that a technological model is matched to a form of society organisation.

With respect to PROEJA, it is necessary to bring the focus of teachers so that they can make the SSTS division of curricular axes in their teaching practices.

This will enable the demystifying of science, technique and technology, still understood by much of society from a deterministic linear design, and neutral. “Os currículos contemplam com muita ineficácia a relação entre ciência, tecnologia e sociedade; os professores são presos estritamente à sua formação viciada em ensinar somente aquilo que lhes repassaram e da forma como lhes repassaram” (Bazzo et al., 2000, p. 8). This has contributed to get people associating the advancement of technology with changes in life forms, predominately still feeling the power of technology as a transformative agent in society.

The White Book of the Ministry of Science and Technology (Brasil, 2002), by affirming that investing in science and technology means entering Brazil's sovereignty on the international stage, confirms the recognition of the importance of extending and improving the schooling and professional qualification of the population with foundations of scientific knowledge. The availability of scientific and technological knowledge to everyone, thinking about its genesis, development and innovation are also considered as essential in improving the quality of life of the general population. In this sense,

The extension of benefits to society as a whole, the scientific and technological knowledge depends on the culture, the quality of education in ST & I and its universalization. The concept of citizenship in the twenty-first century is also about the ability of the common man have an understanding of their implications on the daily life of dizzying technological progress in the course. [...] The perception often mistaken in Brazil that the scientific and technological issues of interest only to the inner circle prevents the Science, Technology and Innovation will play a full role in the development of the country and raising the quality of life population. (Brasil, 2002, p. 68)

Bazzo et al. (2003) note that for this to have meaning in basic education, initial training is required in SSTS teachers on the adoption of new ways to organize content in the curriculum, as well as the adoption of methodological renovated and restructured paths. But, the use of the SSTS focus in high school cannot be reduced to only the organisational change and curricular content, but methodological routing should enable the teacher to promote a creative and critical attitude, rather than conceiving of teaching as a process of transmitting information by means of "tricks" and memorization (Pinheiro, Silveira & Bazzo, 2007, p. 81).

To this, techno-science knowledge itself needs to be conceptually transformed and its didactic preparation needs to incorporate the social and cultural conceptions of the nature of science and technology. It is necessary also to consider the treatment of interdisciplinary pedagogical affairs (scientific, technological, social and environmental) and the thematic crosscutting treatment on the disciplinary approach of SSTS-techniques, considering their social and technical relations (Lisingen, 2007, p. 10).

In addition, Bazzo et al. (2000, p. 7) consider that "it would be logical that science, technology and its implications at the current affairs were in everyday society of teachers and technical professionals that make up the functional framework of institutions that work on a daily basis," becoming this practice, the search field. They emphasise the importance of stimulating the vocation among young people by the studies of science and technology, developing a critical judgment and a deep reflective analysis of their interference in society, an educational environment which promotes the development and consolidation of democratic practices and attitudes on issues of social importance relating to technological innovation and environmental.

Final Considerations

In Brazil the demand for EJA elementary school of the first segment (the first four series) can be considered residual in some municipalities, but the demand for EJA in second segment of elementary school and vocational technical high school is still and quite expressive.

The PROEJA is seeking to rise to the challenge of meeting the demand by EJA professional technical high school nationally. However, there are many limitations to the implementation of public policy such as PROEJA. One of those limitations is the initial and continuous training of teachers despite the efforts of Setec/MEC to proffer specialization courses for teachers and managers in PROEJA in various regions.

In addition to the factors set out at the beginning of this text, which affect the training of teachers to the EJA and vocational education, PROEJA stumbles upon several other factors that hamper the adequate training for this specific form of supply of elevation of basic schooling with professional education to the working class. Among these factors we can point to the gap that exists between the offer of specialization courses and demand for training from educational networks.

Although there is an understanding that all curricular disciplines contribute to the civic training, and are also required to sustain the struggle for a more just and egalitarian society, and that the design of the SSTS studies, with another epistemological stance of knowledge of science, technique and technology, can bring a significant contribution to the training of workers with a view to human emancipation, there are limits. One of them is the absence of initial training policies for faculty, including those with a view to SSTS PROEJA, since the specialization courses are formally regarded as PROEJA continued training, although in practice have to cover the gap of missing initial training. Such a situation is quite complex to be addressed in a specialization course, with the obvious risks of making poor teacher training. Even with the focus on SSTS in proposals for the structuring of pedagogical projects specialization courses of PROEJA. This approach is taken as continuing training time, time as initial training, highlighting once again the fragility of individual policies and the absence of permanent policies for teacher training and professional education to the EJA technique medium level in Brazil.

One possibility of hitting the step of training would be to consider the training needs that teachers manifest themselves. This would involve recovering from Freire (2005) the dialogicity and lovingness, and through research hearing the teachers about the type of training that surpasses, in part, the gap that they are experiencing in their training on the challenges of PROEJA. Moreover, listening to them about what the most appropriate methodology to be used at times when they are recognizing themselves as subjects of learning.

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