Resumo: A formação inicial e continuada de professores foi instituída como política educacional com a Lei nº 11.502, de julho de 2007; a criação da Rede Federal de ensino faz parte das ações propostas para a oferta dessa formação. Este artigo tem como objetivo refletir sobre a formação inicial de professores proposta pelo Instituto Federal do Paraná (IFPR). Analisam-se Projetos Pedagógicos de Cursos (PPCs) de Licenciatura em Química e em Física do IFPR, mediante conceitos da Teoria Crítica da Sociedade. Observam-se nesses projetos ambigüedades que perpassam a perspectiva de formação humana no contexto da sociedade industrial desenvolvida, remetendo à compreensão dos limites da formação para a autonomia em um contexto heterônomo.


Resumen: La formación inicial y continua de profesores ha sido instituida como política educacional con la Ley nº 11.502, de julio de 2007; la creación de la Red Federal de enseñanza hace parte de las acciones propuestas para la oferta de esta formación. Este artículo tiene como objetivo reflexionar sobre la formación inicial de profesores propuesta por el Instituto Federal de Paraná (IFPR). Se analizan Proyectos Pedagógicos de Carreras (PPCs) de Profesorado en Química y en Física del IFPR, mediante conceptos de la Teoría Crítica de la Sociedad. Se observan en estos proyectos ambigüedades que traspasan la perspectiva de formación humana en el contexto de la sociedad industrial desarrollada, remetiendo a la comprensión de los límites de la formación para la autonomía en un contexto heterônomo.


ABSTRACT: Initial and continuing teacher training was instituted as an educational policy under Law No. 11,502 of July 2007; The creation of the Federal Education Network is part of the actions proposed for offering this training. This article aims to reflect on the initial teacher education proposed by the Federal Institute of Paraná (IFPR). Pedagogical Projects of Degree Courses (PPCs) in Chemistry and Physics of IFPR are analyzed through concepts of the Critical Theory of Society. These projects present ambiguities that permeate the perspective of human formation in the context of the developed industrial society, referring to the understanding of the limits of training for autonomy in a heteronomous context.


Introduction

With Law 11,502 of July 2007, the Coordination for the Improvement of Higher Education Personnel (Capes, Portuguese initials) became responsible for articulating, formulating and executing policies to meet initial and continuing teacher education for basic and higher education. With regard to the execution and implementation of these policies, the rule is that of the collaboration regime between the federated entities, through the establishment of agreements with higher education institutions and private institutions that work in the area of education. This law was created with the objective of ensuring the quality and expansion of the formation of professionals who, primarily, will work in basic and higher education.

A brief review of the complexity of this theme allows us to point out that this debate is not limited to today. In the 1930s, the Manifesto dos Pioneiros da Educação Nova (New Education Pioneers Manifesto), a document representative of the educational panorama of that context, pointed to the need to establish “unity in teacher training”, as these are the professionals who conduct educational practice in schools.

Without denying its importance, the legal outline is not sufficient to establish a policy that guarantees quality programs to meet the demand for teacher training. The National Education Plan (PNE/2014-2024), through its goal 15 (BRASIL, 2014, p. 78), points out that teacher education is an issue not yet resolved in Brazil, that is, there is still no a state policy set up for that purpose. Among the strategies indicated as a possibility for the solution of this problem, is the implementation of programs that ensure the training of teachers at a higher level.
In this sense, it is observed that from the 1990s onwards, the Brazilian State adhered to the guidelines contained in technical reports formulated by international organizations, which present parameters for the profile of basic education professionals. However, teacher training becomes a control mechanism when it is aligned with governmental interests; by not constituting itself as State Policy, it can be discontinued when it is not suited to the governmental objectives of a period; in general, it expresses strategies to allow capital expansion.

In the context of the need to meet the demand for teacher training, the Ministry of Education (MEC) made possible the creation of the Federal Network of Professional and Technological Education, through the implantation of Federal Institutes (IFs) that develop, for free, one of the stages basic education - propaedeutic high school and technical high school - initial teacher training at higher level and continuing training for teachers. Although the original justification for its creation is based on overcoming merely technical training (BRASIL, 2010), operationally, the Federal Institute is an institution that trains professionals, including teachers for working in basic education, whose profile is linked as required by the developed industrial society, in an advanced stage of technological development.

The institutionalization of the Federal Institute of Paraná (IFPR) and its formative dilemma

The Federal Institute of Paraná (IFPR) is a federal public educational institution linked to the Ministry of Education (MEC) through the Secretariat of Professional and Technological Education (Setec, Portuguese initials) (IFPR-REITORIA, 2018). It was created on December 29, 2008, through Law No. 11,892, which established - from the Technical School of the Federal University of Paraná (ET-UFPR) - the Federal Network for Professional and Technological Education and the current 38 institutes federal, with the legal imputation to offer basic and professional education, as well as higher education.

If it is possible to read in the institutionalization of the FIs a integral formative project (BRASIL, 2007), with incentives for human emancipation and autonomy, a critical reflection on education is necessary. According to Adorno (2006, p. 143),

> Education would be impotent and ideological if it ignored the objective of adaptation and did not prepare men to orient themselves in the world. However, it would be equally questionable if it stayed in this, producing
nothing but well-adjusted people, as a result of which the existing situation imposes itself precisely at its worst.5

In this regard, both education that is limited to intellectual training, and education that seeks inclusion through the training of technical skills for immediate action in the world of work, end up educating people who are only well adjusted to reality without interpreting it. Critically forming to act productively in society is a necessary integration; the need to historically safeguard the possibility of orienting oneself in life (ADORNO, 2008) cannot be disregarded, however if the subject does not develop awareness of the pressure that society exerts on him, it will be difficult for him to think about the possibility of a democratic society, oriented by and for freedom. To think of a formation for emancipation is to think of it with the political, social and economic conditions that historically involve individuals. This is a reflexive analysis that is attributed to the FIs, in order to highlight their real formative purpose (CIAVATTA, 2012).

In these terms, the criticism regarding teacher formation, specifically about the intended training and the training carried out at IFPR, cannot deviate from the proposal to overcome the human condition that, politically, socially and economically, is reified (COHN, 1986; WIGGERSHAUS, 2006).

When investigating the institutional context of the FIs, it is clear that the forwarding of the educational process highlights works as a reference in the educational process, being one of the means of human guidance in the world (BRASIL, 2010; 2007). However, work must be understood in its link with the social reality of prevalence in capital. When addressing the conception of capitalist work, Marcuse (1973, p. 45, authors' highlights) qualifies it as a process of professional slavery. For him,

The machine affirms its greatest domination by reducing the 'professional autonomy' of the worker, integrating him with other professions that suffer and direct the technical group, in what becomes, itself, a system of tools and mechanical relations, thus going more beyond the individual work process. In fact, the previous 'professional' autonomy of the worker was, rather, his professional slavery. But this specific mode of slavery was, at the same time, the front of his specific, professional power of denial - the power to stop a process that threatened him with annihilation as a human being. Now the worker is losing the professional autonomy that makes him a member of a

5 A educação seria impotente e ideológica se ignorasse o objetivo da adaptação e não preparasse os homens para se orientarem no mundo. Porém ela seria igualmente questionável se ficasse nisto, produzindo nada além de well adjusted people, pessoas bem ajustadas, em consequência do que a situação existente se impõe precisamente no que tem de pior.

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class distinguished from other occupational groups for personifying the refutation of the established society.6

The challenge of critical thinking in scientific production is evident in a society whose formative criticism is not consolidated as a cultural value. In a culture in which scientific knowledge serves to exercise and maintain power (MARCUSE, 2009), the possibility of the critical element is a factor of resistance due to the opportunity for reflection. In this respect, opening up to self-reflective criticism is part of cultural formation.

As the creation of FIs occurred in a country classified by the international economic powers as a developing country, that is, as one that has not yet reached its intellectual-formative and economic-financial autonomy - criterion by which the identity and potential of a people are evaluated intentionally and internationally - to think of IFPR's institutionality is to think of it within a political economy that establishes the rules of the current system. Thus, the institution is accepted by the system, but is pressured not to break with the economic order that legitimizes it, by using the official discourse assumed in an innovative guise.

The forces outside the institution that are proposing to form critically aim to make it inefficient; on the other hand, internal forces predominantly seek educational criticism that calls into question the real formative conditions prevailing in the system in which historically a formative institution is inserted. Thinking and acting to effect possible changes requires the agents linked to the institution to have critical and self-reflective attitudes about what prevents the subjects from realizing, within and from themselves, the humanity to which each one is potentially connected; it also requires the conquest of a formation that can exert resistance to the society of power, instead of having as a goal to offer conditions for inclusion through equality of power.

The resistance is in the conception, in the direction and in the practice of the educational process that bases the critical rationality beyond the instrumental and positive rationality based on the pragmatic scientific principle. The critical potential presented by the IFs and the IFPR - by opening up to the formation of a rationality and a citizen experience that understand the human and work through the alienated condition in which they find themselves - can have an

6 A máquina afirma sua maior dominação ao reduzir a ‘autonomia profissional’ do trabalhador integrando-o com outras profissões que sofrem e dirigem o conjunto técnico, no quanto se torna, ela própria, um sistema de ferramentas e relações mecânicas, indo, assim, mais além do processo de trabalho individual. Na verdade, a autonomia ‘profissional’, anterior do trabalhador era, antes, sua escravidão profissional. Mas esse modo específico de escravidão era, ao mesmo tempo, a frente de seu poder especifico, profissional de negação – o poder de parar um processo que o ameaçava de aniquilamento como ser humano. Agora o trabalhador está perdendo a autonomia profissional que o faz membro de uma classe destacada de outros grupos ocupacionais por personificar a refutação da sociedade estabelecida.
effect in establishing a formative horizon and a perspective of society different from the imperative. To form scientifically and critically is to present what deforms; it is to understand the mechanisms used by society to keep subjects under the threat of not being included, as well as the possibility of overcoming this form of existence. The formation whose project of human life is different from those presented in the history of Brazilian education means an educational perspective beyond the educational models internationally thought. In this sense, the analysis of teacher education in Brazil and, especially in IFPR, requires a critical reading that is not guided by the disqualification of the value of teacher education, but for the contradictory argument about reality.

Having made such considerations, the next topic discusses the teacher training proposed by IFPR, through the critical analysis of pedagogical projects for undergraduate courses (PPCs) in Chemistry and Physics at IFPR, highlighting in these projects, ambiguities that permeate the proposals teacher formation in the context of developed industrial society. Critical reflection may be the possibility of thinking about forming for autonomy, without meaning forming for the perpetuation of heteronomy.

Pedagogical Projects for Undergraduate Courses as an expression of a proposal for teacher formation at the Federal Institute of Paraná

As already mentioned in this text, in the PPCs of undergraduate courses in Chemistry and Physics at IFPR (BIDO, 2018, p. 159-260) we seek to analyze the teacher training proposed by IFPR. This requires an understanding of at least three aspects of teacher education, namely: the didactic-pedagogical relationship; the dichotomy between content and form; rupture and permanence in the concept of formation.

For the analysis, six PPCs under development were gathered, two of them in Chemistry and four in Physics. The cut takes into account one of the reasons that underlie the FIs: to attend the areas that have the greatest demand for teachers in public schools.

Reflection on the fundamentals and purposes that guide social dynamics, beyond their mere description, is essential when it comes to reaching the relationship between society and its institutions that, despite being innovative, often hide their reactionary character, since they seek to positivity the reality, instead of showing the need to overcome it aiming at an organization in which everyone can live with dignity, according to historical conditions and not those of power.
As evidence of formative ideas that permeate the PPCs, five notions of formation are emphasized in its documentary structure: a) formation as “competences to teach” and to “propose innovative teaching methods”; b) formation as "awareness of the social function of the teacher" to "integrate their students in contemporary society"; c) training as a “researcher”; d) formation that “includes both theoretical, scientific and technological training, as well as critical humanistic and pedagogical formation”; e) formation as the development of “skills and abilities necessary for the future teacher”, stimulated through “learning from the perspective of the interface and transversality” between “different fields of knowledge and the technologies corresponding to them”, with the purpose “to formation of universal citizenship and professional training”.

Having diagnosed the five conceptions of formation, it is emphasized that they are fully in tune with the official educational situation and, as such, becoming the regulator of formative action for rational functionality and instrumentality. In focus is the pedagogy of learning to learn (DELORS, 1998, p. 92) and skills (BANCO MUNDIAL, 2011, p. 7), which reinforces the formative flexibility (DELORS, 1998, p. 144) specific to the context of industrial society whose production processes, time and space have also become more flexible in the face of scientific and technological development, which, strictly speaking, is accompanied by human regression.

It is emphasized that the formative conditions outlined in the five notions of formation reinforce operational knowledge more than in-depth knowledge, denouncing the encouragement of functional and instrumental rationality. On the other hand, when addressing the meaning of “the formation of universal citizenship”, it approaches the concept of education assumed by Edgar Morin (2003), limiting the notion of education as cultural formation and directing knowledge to the performance of man in daily life, preparing him as a specific professional, as well as the proposal assumed by the Unesco Report (DELORS, 1998, p. 96).

Cultural education, which understands man as an integral being, is being replaced by education for specific productions and knowledge. The more one specializes, the more the comprehension of the totality is sacrificed, since the specialization is that demanded by the regulatory logic of pseudo-formation. It is observed that teacher training, assumed as “skills to teach” and to “propose innovative teaching methods” (IFPR / IVAIPORÃ, 2015, p. 11) reinforces the form, and the content is put for this purpose.

When treating formation as “awareness of the social function of the teacher” to “integrate their students in contemporary society” (IFPR / PARANAGUÃ, 2013, p. 4), critical analysis is placed for understanding the distinction between in-depth analysis and the principle
of socio-productive adjustment. This data is decisive, since the self-reflection turns to the formative awareness of the human resignification or to its social reification.

Teacher formation, understood as a researcher - even if the argument reinforces the sense of continuous research as a means of “contributing to your area of teaching by sharing your classroom experiences in the form of scientific publication” (IFPR / TELÊMACO BORBA, 2016, p. 11) -, also expresses the sense of professional productivity linked to the goals proposed by scientific indicators. The importance of research is not denied, nor does it disqualify it; the question is its purpose, since the contemporary sense of science places it as a regulator of hegemonic society.

When facing formation as that which “contemplates both theoretical, scientific and technological training, as well as critical humanistic and pedagogical formation”, an expanded formation possibility is enunciated. However, the formative conception directs its perspective towards “human and social improvement” (IFPR/FOZ DO IGUAÇU, 2013, p. 13). Formation aimed at “human and social improvement” outlines the functional principle of the adaptability of the teaching professional to the environment and their work as a means of responding to socio-cultural challenges.

Assuming formation as the development of “skills and abilities necessary for the future teacher”, stimulated through “learning from the perspective of the interface and transversality” between “different fields of knowledge and the technologies corresponding to them”, with the purpose “to forming universal citizenship and professional training” (IFPR/JACAREZINHO, 2014, p. 8), the official argument of the Curriculum Guidelines for the Training of Basic Education Teachers is strengthened. Without harming the legal basis, forming is aimed at regulating social dynamics devoid of dialectical criticism to socio-political factors that converge to maintain the status quo, even taking into account the guidelines of international organizations.

Taking the five notions of formation that are evident in the PPCs, from the perspective of critical reflection, it is possible to diagnose the pedagogical conception that contemplates the formative directions. This is in accordance with the formative ideology that supports national and international guidelines on education, strengthening the pseudo-culture. Even though there are innovative linguistic and terminological connotations in the text that define the educational proposal, they do not account for a substantial change in the formative perspective.

Within the scope of IFPR, these conceptions are guided by the institutional purposes of 'promoting the integration and verticalization of basic education to professional education and higher education, optimizing physical infrastructure, staffing and management resources” and...
“offering education professional and technological, in all its levels and modalities, training and qualifying citizens with a view to professional performance in the various sectors of the economy, with an emphasis on local, regional and national socioeconomic development” (IFPR/REITORIA, 2017).

The undergraduate courses under analysis do not contradict the legal and institutional guidelines, observing from the regulatory guidelines of education by the State and the offering autarchy. On the other hand, they become devoid of criticism as formative self-reflection, when they are placed only as formal means for overcoming social demands.

Without denying the formative value of undergraduate courses and without disqualifying the projects in question, analyzing the formative basis, in approximation with the sense of Adorno’s cultural formation, we can observe the continuous reinforcement of cultural pseudo-formation, at the same time as the institution convinces that it critically fulfills its formative role, by emphasizing the development of skills.

The use of the term competence cannot be analyzed in itself without being understood in its semantics. It is a fact that the word competence is surrounded by a series of pedagogical concepts that say more about formative operationalization than its original (etymological) conception. From the Latin competentĭa, its meaning refers to the proportionality and symmetry of human actions and, as a psychological fact, says about what the individual is in the action/relationship, as an activity perceived by the collective. As a term, the word competence served as a reference to support pedagogical perspectives (RAMOS, 2002) and build formative scenarios. Thus, this word expresses a formative concept in PPCs, when endorsing the educational purpose.

It is observed in the analyzed PPCs that the writing of the intended objectives exposes the vision about the educational process and the performance of the Chemistry and Physics teachers in real contexts. This element becomes noticeable, when the objectives are noted for students to acquire “an understanding of the world around them, both natural and technological” (IFPR/IVAIPORÃ, 2014, p. 17); so that they can develop “awareness of the social function of the teacher” (IFPR/PARANAGUÃ, 2013, p. 4); so that they acquire “a comprehensive scientific and human formation, necessary for acting in the various aspects of contemporary scientific education” (IFPR/TELÊMACO BORBA, 2016, p. 13).

Concerning the objectives of these PPCs, with regard to didactic-pedagogical training, the understanding of the technological world implies a criticism about technology as a tool of the productive system. However, the analysis of the contradictions of the technology itself is not explicit in the PPCs.
In the objectives of the Physics Course in Foz do Iguaçu, for example, there is a formative potential for criticism, when it expresses that the course is “an educational environment for the formation of educators with critical capacity for the changes in Brazilian society and the different forms of participation, aimed at building a more just society” (IFPR/FOZ DO IGUAÇU, 2013, p. 17). This objective points to a certain purposeful effort of the course in articulating teacher training and social action. However, his stance in affirming the sense of “training physical educators, capable of making integrated use of the competences and skills involved in research and teaching in various educational activities” corroborates his connection with national and international regulatory scopes, based on guidelines and official guidelines for pseudo-formative guidance.

At Jacarezinho’s PPC of Chemistry, a certain self-reflective potential manifest itself in its objective. The document makes clear the purpose of “training educators aware of their role in the formation of citizens from an educational, scientific, environmental and social perspective” and that of “generating, through practical activities and curricular internships experienced in different educational spaces, the integration of specific knowledge with teaching, research and extension activities” (IFPR/JACAREZINHO, 2014, p. 12). The objective is thus exposed to dialogue with the graduate profile; however, it remains firm in the formative culture by proposing “competences and skills so that the graduate has a broad, diversified and solid education, in basic knowledge of specific areas of Natural Sciences and Chemistry” (IFPR/JACAREZINHO, 2014, p. 12).

The indissociability between teaching, research and extension is also defended, as an articulated action, through the following argument:

> The strategies proposed for the articulation of this tripod - teaching, research and extension - will be based on curricular flexibility that enables the development of entrepreneurial and innovative attitudes and actions, focusing on the learning experiences for training and insertion in the world of work. (IFPR/JACAREZINHO, 2014, p. 21, authors' highlights).

The analysis notes that the central scope of the program in this formative dimension is focused on two actions: “curriculum flexibility” and “development of entrepreneurial and innovative attitudes and actions”. Both are seen as means for the promotion of “learning for training and insertion in the world of work”. It is evident that the perspective of functional

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7 As estratégias propostas para a articulação desse tripé – ensino, pesquisa e extensão – se dará pela flexibilidade curricular que possibilita o desenvolvimento de atitudes e ações empreendedoras e inovadoras, tendo como foco as vivências da aprendizagem para a capacitação e para a inserção no mundo do trabalho (IFPR/JACAREZINHO, 2014, p. 21, grifo nosso).
training is not extrapolated. The inseparability between teaching, research and extension has its critical potential and its transforming formation minimized in the argumentative construction. The premises that justify inseparability are based on pedagogical and didactic actions that do not contradict contemporary formative dynamics, nor do they stand as resistance to hegemonic ideology.

In the analysis of the PPCs of undergraduate courses in Physics and Chemistry at IFPR, it appears that the argumentative objectivity in the construction of course projects, by some campuses, does not stand out as a differentiated formation from the one that is officially implemented. A possible project for a differentiated formation in relation to the other undergraduate degrees in execution could consist of explicit reflections and already based on the documentary construction, which presents itself as a regulator of the didactic-pedagogical and the philosophical-cultural action that confronts the reality given. Such a posture would expand the conception of fundamentals and educational purposes in view of the historical-social construction distinct from the current logic. It implies that it is not the creation of an institution that, in itself, guarantees a formative condition differentiated from the socially standardized and the economically stimulated.

From the perspective of the Critical Theory of Society, an educational process is consolidated as cultural formation by the self-criticism of reality and by the disclosure of the means and instruments that remove from the human (in formation) the possibility of overcoming the expropriated identity of itself. This stance is timid in the analyzed PPCs. Not differing from the condition assumed as an official framework for undergraduate degrees, the formative meaning outlined in the PPCs places a limitation on IFPR: that of legitimizing training for the workforce, appropriate to meet the wishes of national and international organizations. Its main historical challenge is to escape a formation for equals, that is, formation for non-change; a formation that includes, but already excludes, the citizen from being more than a commodity in the productive process; of an educational process that adapts the human to the skills and competences listed as references for reflecting and for didactic-pedagogical practice. In the teachers' formative process, even if there is intentionality in the IFPR of a formation for autonomy, the traces of an educational process involved by pseudo-formation have been impregnated, by the absence of self-reflexive criticism.

The task of cultural formation, articulated with specific and didactic-pedagogical training, is to promote human development, because without it, social growth or even its conceptual change will not occur. Overcoming compliance, emphasizing the importance of 'non-identical' as a premise of autonomy and emancipation, becomes IFPR's primary task for a
rational formation beyond the affirmative culture, reproducing the forces of the system based on domination and control.

Final considerations

The reflections presented in this text refer to a set of elements that lead to the perception that, in Brazil, the institutionalized policy by the State to meet the demand for teacher formation is developed through training that, superficial, lends itself to profound consolidation of values that act as mechanisms of repression and submission, that is, that are opposed to democracy. Therefore, it is up to the critical reflection to reinterpret the formation and point it towards the sense of autonomy in opposition to the current social system and the ideology that underlies it.

This reflection can also be understood in the process in which the official pseudo-formation is constituted. The formative proposal that comprises the social structure of the capitalist system (ADORNO, 1986) is identified by Horkheimer and Adorno (1985, p. 20) as an education for conformist identity or the equivalent.

Since bourgeois society is dominated by the equivalent, it makes the heterogeneous compatible, reducing it to abstract quantities. Conformity here is the acceptance of the production set that forms the cultural goods constituted by the cultural industry (ADORNO, 2009) and of a formative process that does not contradict it, but feeds it unconditionally for the realization of the reifying project, therefore the formation that, in a way, reiterates what should be fought: heteronomy.

It is a matter of scientific knowledge and practice that make the objective contents of cultural production object, attributing them the character of utility, of positive, of merchandise. The acceptance or refutation of these cultural goods is linked to the perspective of their consumption value: that (objectified thought and action) that has more cultural/commercial value or causes greater interest in personal satisfaction and receives greater emphasis on educational formation proposals in all levels and spheres, including in initial and continuing teacher training courses.

Identification or conformity/equivalence are categories inherent to the process that strengthens and disseminates pseudo-culture through institutional education. It becomes, therefore, a totalizing or universal culture (HORKHEIMER; ADORNO, 1985, p. 19), whose individual is an element of its maintenance. Thus, it is observed that the project for the training
of teachers carried out by institutions that make up the Federal Network of Professional and Technological Education, configured in pedagogical actions through the PPCs, presents traces of an educational process aligned with the interests of capital, although not stop presenting loopholes for resistance.

As in any educational instance, the awareness of the formation process itself and its relationship with the values that underpin society and at the same time come from it is not little in the face of the instrumentalization of reason - an obstacle to thinking about freedom and autonomy.

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