

Contributions of the teaching-extension-research indissociability with ECOSOL groups for the training of TEIHS students

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Tatiana Losano de Abreuⁱ

Instituto Federal da Paraíba, Guarabira, PB, Brasil

Wiliane Viriato Rolimⁱⁱ

Instituto Federal de Minas Gerais, Ouro Preto, MG, Brasil

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Abstract

The Federal Institutes of Education, Science and Technology - FIs, offer the so-called Technical Education Integrated to the High School - TEIHS, a broad, comprehensive professional education for citizenship formation (MACHADO, 2008). The construction and organization of this type of education permeates the praxis of the teaching-extension-research tripod, being an extension capable of breaking through the walls of the institution and reaching Solidarity Economy – SE workers, for example. They are productive groups of the popular classes that will find in SE a way of producing based on specific principles. The projects developed with them are also spaces for the construction of knowledge for the students involved. We sought to discuss this experience for their professional formation from the point of view of graduates of TEIHS courses and former participants of an extension group in SE. It is a qualitative research and it was possible to perceive the importance of the effective praxis of the tripod for the professional formation of emancipatory Character.

Keywords: Technical Education Integrated to the High School. Teaching-extension-research tripod. Solidarity Economy. Professional Formation.

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Resumo

Os Institutos Federais (IFs) oferecem o chamado Ensino Técnico Integrado ao Médio – ETIM, como educação profissional ampla, integral, para a formação cidadã (MACHADO, 2008). A construção e organização desta modalidade de ensino perpassa pela práxis do conjunto ensino-extensão-pesquisa, sendo a extensão capaz de romper os muros da instituição e atingir a comunidade, como por exemplo, os trabalhadores da Economia Solidária – ES. Grupos produtivos das classes populares que encontram na ES uma forma de produzir com base em princípios específicos. Os projetos desenvolvidos com eles constituem-se como espaços de construção do saber também para os discentes envolvidos. Buscou-se, a partir do olhar dos egressos dos cursos ETIM e ex participantes de um núcleo de extensão em ES, dialogar sobre essa experiência para a formação profissional deles. Trata-se de uma pesquisa qualitativa e foi possível perceber a importância da efetiva práxis da indissociabilidade entre ensino-pesquisa-extensão para a formação profissional de caráter emancipatório.

Palavras-chave: Ensino técnico integrado ao médio. Indissociabilidade ensino-pesquisa-extensão. Economia Solidária. Formação Profissional.

1 Introduction

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The Federal Network of Professional, Scientific, and Technological Education is immersed in the context of the dispute over an educational project for the working class. Its emergence marks a scenario of the valorization of the instrumental character of education, based on the formation of polyvalent, flexible, creative and participatory workers on the threshold of the interests and logic of capital. This is education for the development of competencies dictated by the world of work - or better saying, employment.

The Federal Institutes (IFs), when offering Professional Technological Education (EFA), suffer influence and pressure from productive sectors and the status quo, which seek a technician, fragmented and superficial education (SOUZA, 2013) to produce and reproduce workers with technical mastery, but "devoid of the ability to build knowledge that enables them to have a broader view of the social, political, economic and cultural reality in which they are inserted" (SILVA, 2016, p. 174). Still, it is possible to understand the importance of offering professional education via public sphere, since the public institutional space is able to provide the realization of collective interests, with a minimum of autonomy and potential to overcome social contradictions (SOUZA, 2013).

Therefore, it is seen the professional education offered by the IFs as a propitious space for the defense and realization of a public, state, democratic and emancipatory education, in the perspective of enabling the conscious and collective mastery of men over their self-construction, in order to become the real protagonists of their destinies (PORTELA, 2014).

Specifically the high school professional education, called Technical Education Integrated to High School - ETIM, has special relevance among the range of education modalities offered by IFs. It is understood that the ETIM is the result of the demands of society itself and carries the possibility of providing a comprehensive education to future workers (MOURA; LIMA FIHO; SILVA, 2015). Thus, there is the commitment to think about education beyond the market demands, moving towards the provision of a broad, comprehensive professional education, in order to provide the student with the development of a reflective and critical view of the world of work, the motivations for the

evolution of technological systems, guided by the essence of capitalist labor relations (MACHADO, 2008), i.e., an education that incorporates, in an inseparable way, science, work, technology and culture, with a look at community problems (MOURA, 2008).

It has been seen that the development of activities beyond the classroom brings benefits for the education of all involved, especially for students. And, when it comes specifically to professional education, Gasparotto et al. (2018) point out that these activities, called extension, enable the development of a reflective look at the professional context, besides allowing the interaction, intervention, and transformation of the social space, stimulating cognitive, affective, psychomotor, and citizenship aspects. Such experiences, defended here, are related to the practice of inseparability between teaching, extension, and research, one of the pillars of professional education offered by the IFs.

In the Federal Institute of Paraíba, Guarabira campus, there is an example of a nucleus formalized in the Pro-Rectorate of Extension that seeks to put this inseparability into practice. It is the NUCAES (Núcleo Catalisador de Empreendimentos Solidários) that, since 2015, has been developing projects to strengthen the Solidarity Economy - SE in the city of Guarabira-PB and region through the involvement of students of the ETIM courses in accounting, computer science and building and the Solidarity Economy workers of the territory. It is worth mentioning that the SE public is heterogeneous and the demands that provoke the developed projects are diverse, so that working with this public is rich in experiences and challenges.

Given the above, the question is: What is (are) the contribution(s) of the development of NUCAES projects for the professional training of the students involved? It was sought, from the point of view of former participants of NUCAES, to discuss the contributions of the practice of inseparability teaching-extension-research with groups of Solidarity Economy for the professional training of ETIM students.

2 ETIM's emancipatory professional formation and the praxis of teaching-extension-research with Solidarity Economy workers.

The relationship between work and education can be considered an existential factor of the human race. Since it is marked in the history of our evolution the reciprocity

between the activities performed for survival (work), and the consequent effect on values, personality, habits, skills, and competencies of men. Against the backdrop of the dialectical conception between work and education, society formulates pedagogical projects in order to meet the formative demands arising from work. And, when it comes to work performed as employment in the capitalist market, the formative demands are considered to be directed towards greater efficiency in capital accumulation and the strengthening of class society.

The pedagogical projects, being immersed in this society, result from the class dichotomy. Thus, it is possible to observe the implementation, throughout the history of Brazilian education, of antagonistic projects depending on the public to be reached. Caires and Oliveira (2016) observed, in the course of the history of Brazilian professional education, the existence of two differentiated training paths depending on the function to be exercised in the economy: one that will give access to a school directed to the leaders, and another that offers light training and modulated to the interest of the labor market.

The proposal of an integral education project that breaks with the historical conditioning of offering a technical, light and fragmented education to the working class gains strength through the proposal of Professional Technological Education - EFA offered by the Federal Institutes - IFs. The completeness of the desired training is based, here, on its intellectual, cultural, physical and technological aspects (MOURA; LIMA FIHO; SILVA, 2015), of unitary character, from the perspective of intellectual mastery of techniques or, in another way, mastery of the scientific foundations of the different techniques, the polytechnics (SAVIANI, 2003). Thus, it is understood that the utopia of a comprehensive education aimed at the working class has its genesis in EFA, especially in the ETIM offered in these institutions.

The economic conditions of the working class have demanded early insertion in the labor market from young people, and the ETIM is a necessary response given by the public sphere to this reality. Different from offering a purely technical education, it has the potential of overcoming this situation by providing a comprehensive education. According to Frigotto, Ciavatta, and Ramos (2005, p.43):

If professional preparation in secondary school is an imposition of reality, legally admitting this need is an ethical problem. However, if the aim is not only to meet

this need, but to change the conditions in which it exists, it is also an ethical and political obligation to guarantee that secondary education is developed on a unitary basis for all. Therefore, secondary education integrated to technical education, on a unitary basis of general education, is the necessary condition for making the "crossing over" to a new reality.

Thus, we can consider the EFA, and the ETIM, its main modality, as a counter hegemonic instrument that enables students, "even in a reality that is adverse to it, a scientific, technical and political training whose content, method and form express a direction antagonistic to the perspective of one-dimensional subordination to the capitalist social and educational relations" (FRIGOTTO, 2009, p.76).

For Rays (2003), the conception of integral human formation needs to be in line with the inseparability between teaching, research, and extension. We can understand teaching as intentional learning actions for the construction of knowledge, research as an act of creating new knowledge, and extension represents not only the sharing/exchange of knowledge, but the rediscovery and reconstruction of it as a result of interaction with other agents. Thus, "since, by researching, I feed teaching and extension; by teaching, I can stimulate research and extension; and by practicing extension I can instrumentalize the pertinence of teaching and the relevance and direction of research" (LORENZET; ANDREOLLA, 2020, p. 12).

These are three elements of education that, viewed and practiced separately, constitute a fragmented education, but, as inseparable, they make it possible to break with the paradigm of separation between theory and practice, science and common sense, bringing closer the "man who thinks" of the "man who performs", promoting a break in the dual conception, historical, linked to the working class education (RAMOS, 2016).

Regarding the constitution of Higher Education Institutions and, specifically, the Federal Institutes, there is the inseparability of teaching, extension and research as a premise for professional, scientific and technological education, which is also an institutional commitment (PACHECO, 2016). Far from trying to create a rank of importance among the three components of the triad, the extension is understood as a mobilizing link, articulator and promoter of inseparability, since it represents the educational, political,

social, cultural, scientific and technological process that enables the dialogic and transforming interaction of society (FORPROEXT, 2015).

It is worth remembering here that the path towards integral professional education goes through a critical approach to reality. The contribution of the practice of extension, through the involvement in projects that, inseparable from research and teaching, are focused on community problems, enabling an effective break of the walls of formal education and approach of students of the demystified reality. For Santos (2010) the extension has the primary contribution of providing the development of civic and ethical awareness as a practice and exercise. Gasparotto et al. (2018) argue that extension projects provide subsidies so that the professional is not restricted only to technical aspects, but develops a reflective look. In their words:

Professional education allied with experience in extension projects provides cognitive, affective, psychomotor, and citizenship stimuli. These competencies allow, among other aspects, a greater understanding of ethical issues and professional challenges when dealing with society (GASPAROTTO *et al.*, 2018, p. 03).

In this way, the development of extension projects can be considered the springboard for a critical view of the world and the promotion of citizenship, especially if the projects are aimed at marginalized groups that put into practice counter-hegemonic principles, as is the case of Solidarity Economy (SE) workers. This public is extremely heterogeneous. They are productive groups that, linked to some economic sector, organize themselves in the search for the group's subsistence. The organization of production and of the decision-making instances are based on cooperation, self-management, and collective ownership of the means of production, aspects that represent a break of paradigms in relation to the productive model in force.

The Solidary Economic Enterprises (SEEs) are, therefore, groups that carry in their origin marginalization and are in the process of building SE as an effective way of life. In practice, there are several challenges that permeate the SE, from operational difficulties, related to the management of the enterprise, to even basic education, since many of them do not have literacy, and even ideological, since they are daily fighting individualistic and

disintegrating behaviors that have historically been stimulated. According to Singer (2005), it is necessary to re-educate those who were formed in capitalism, to internalize the principles of solidarity, collectivity, and self-management.

The eyes of the researchers of the NUCAES (Núcleo Catalisador de Empreendimentos Solidários), an extension center linked to the Instituto Federal da Paraíba (IFPB), Guarabira campus, have turned to these groups since its inception in 2015. Throughout its history, it has developed about 20 (twenty) projects that seek to contribute to the strengthening of the ES in the region and with the training of those involved in the perspective of citizen training.

The projects promoted by NUCAES corroborate the proposal to offer the praxis of extension as a formative process of the professional trained in EFA.

3 Methodology

This study has an exploratory and descriptive character. Its exploratory nature is given by the proposal to explore the relationship between the practice of the tripod teaching-extension-research and professional training of graduates of ETIM. It is also descriptive because the facts were observed, analyzed and interpreted (ANDRADE, 2010). As a technical procedure, a field research was conducted to obtain information directly with those involved (PRODANOV; FREITAS, 2013).

Regarding the problem approach, this research is characterized as predominantly qualitative, for enabling the survey of opinions, beliefs and meanings in the words of the research participants (VIEIRA, 2008). For the effectuation of the qualitative research, discourse analysis was employed, following the French line. In general, discourse analysis is the analysis practice that considers that the subject's discourse is not transparent, but an effect of history (GUIMARÃES, 2015). Regarding the French line of interpretation, it is characterized by articulating the logistical aspect with the social and the historical (PÊCHEUX, 2002).

To collect the research data, a self-made form (GoogleForm) was applied, consisting of 21 questions that addressed the following themes: general data of the

participant; professional experience; experiences from the development of projects in the NUCAES (Núcleo Catalisador de Empreendimentos Solidários), linked to the IFPB - Guarabira Campus. The research participants were students who had graduated from ETIM courses offered by the above mentioned campuses (computer science, construction and accounting) and who participated in at least one research/extension project offered by NUCAES. Through the access to the projects developed by NUCAES available in the Unified System of Public Administration - SUAP, a total of 15 possible participants were found for this research. All were contacted and, from this total, 7 answered the form, being 01 former student of the ETIM in computer science, 02 former students of the ETIM of buildings, and 04 former students of the ETIM of accounting. All were aware of the research objective, the anonymity of the answers and authorized the use of information for academic publications.

4 Results and Discussion

In this research, we sought to obtain specific data such as the characteristics of the participants (age, gender, course, period of work) and other YES or NO questions. But, mainly, we based ourselves on self-written answer questions based on experience reports, positions, and justifications. Thus, it was possible to associate certain characteristics of the participants with certain positions, or even with the clarity of ideas and depth in the presentations. The participants who are older, more advanced in their studies (some are already studying for a master's degree) or have more professional experience, and those who have participated in NUCAES for a longer period of time, developed more extensive texts and went more in-depth in their reports and justifications than the students who were younger and participated less. No differentiations could be found when considering gender and course. Both of them, as well as students from the three ETIM courses (Computer Science, Accounting and Building Construction), had performances (in relation to the answers) that do not allow differentiations by gender and course.

Regarding the projects in which each one participated, the differences were remarkable. Students who have been in extension projects for longer and who participated

in a greater number and variety of projects report a more diverse range of skills developed. Students who participated only in specific projects (as in the case of Papo Reto) developed skills specific to that project and had these skills well marked (attentive listening, keen eye for the problems of others). Beyond these clippings by characteristics of the participants, it was possible to verify data regarding the entire universe of interviewees.

9 Considering the reports about knowledge and skills acquired from the participation in NUCAES, specifically in extension, but also in research, the data referring to communication skills were the most cited: dealing with people, public speaking, interpersonal relationships, understanding the other, respect for differences and for each other's time were skills that most respondents cited. Still in the field of communication and expression, academic writing was mentioned a lot: learning how to write scientific articles, how to do fiches and summaries, how to elaborate projects and present papers in congresses.

Secondly, teamwork was what our graduates learned the most. Cited by almost all participants, terms such as proactivity, leadership, cooperation, and unity came up again and again. The production of events was mentioned by all the participants of Integrasol (an event held annually by our nucleus and involving all its members) and by those who helped in the organization of the Solidarity Economy fairs. It was interesting to verify how the knowledge of Solidarity Economy itself was punctuated: the interviewees showed that in the school curriculum, in the contents of the subjects, they would never have learned what Solidarity Economy is. Only the extensionist practice allowed them to have knowledge of such magnitude, capable of changing their world view and of leading them to perceive and apprehend a social reality that they would never have access to.

Regarding the Solidarity Economy values they practice in their professional and student life after IFPB, autonomy (ability to participate in collective decision making), solidarity (meaning shared responsibility), and the notion of collective were the most cited. Equality, participation, unity, and empathy were also highly mentioned, as well as care for the environment and respect for diversity. All of them affirmed having critical thinking, trying to see beyond appearances, to know the several angles of the issue, to deepen their knowledge about the facts, and to have their own position. As for political engagement,

only one participant answered that he was not politically engaged. The others justified their engagement by bringing up political awareness and awareness of the employer/employee relationship, agendas of collective interest, public policies, and more specific causes such as the LGBTQIAP+ cause.

5 Considerations

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Our research sought to verify how participation in extension and research work carried out by the Solidarity Enterprise Catalyst Center of the Guarabira Campus of the Federal Institute of Paraíba caused changes in the professional lives of those egresses - students who have graduated and left the institution - who were part of its staff. We start from the premise that the pedagogical practice based on the inseparability between teaching, research and extension has more fruitful yields in the formation of high school courses integrated to technical education. This means that students who participate in extension and research activities are more likely to learn better, develop critical thinking skills, and become more participative and aware citizens.

According to the National Education Plan, "Extension is an academic practice that aims to link the HEI, in its teaching and research activities, to the demands of society. The federal law 11.892/2008 that created the Federal Network of Technical and Technological Education states that "Among the purposes of the IFs is the development of extension programs that promote the emancipation of the citizen in the perspective of local and regional development." The analysis of the data collected through the application of the questionnaires made it possible to ratify our hypothesis that the pedagogical practice involving teaching, research, and extension will necessarily come to realize the purpose of the PNE as well as the purposes of the IFs as deliberated in its creation law. In the case of NUCAES, when participating in an extension project, the student participates in meetings, both for planning and evaluation of the project, as well as formative meetings about the concepts and theories that underlie it. Every project, when finished, needs to generate a scientific article that will be published and presented in seminars and congresses. To produce a scientific article, it is necessary to conduct theoretical research to support the

discussions raised in the text to be produced and published. The learning acquired through the research, fishing and summarizing of texts, data survey in the field, observation of extension actions, production of texts, digested in rounds of conversation, meetings, debates, presentations, and exams in seminars and congresses, is much more vigorous than that transmitted in the classroom.

The contact with social reality in the communities, in the field, in associations, cooperatives, and enterprises allows an unprecedented experience in the life of the student, leading him to get to know facets of the society in which he lives and that, however, are not accessible to him due to the various factors of invisibility that the veils of culture and differences hide. These experiences enable the development of reasoning, perceptions, and understandings that the school walls keep from those who do not go through them.

Communication is the big star of this process. Participating in meetings, in conversations with the most diverse social groups. Talking to people in a state of social vulnerability as well as to the city authorities, proposing solutions to social, political, and economic issues that involve citizens in such different situations, develops communicative and relational competencies required by the multiple and changing world we live in. Speaking in public, talking to different audiences and in different and adverse situations, contacting different people, getting to know different social spaces, from museums, universities, to nooks and crannies on the outskirts of the cities and the surroundings of life in the countryside promotes a wealth of experiences that the classroom would only allow through the screen or the imagination.

The notion of collective is another pearl that extension work, in the terms of NUCAES, necessarily develops. As the fundamental principle of Solidarity Economy is self-management, that is, decision making in which everyone involved has the right to voice and vote, our practice is based on this principle. Students are led to participate in a horizontal hierarchy, in a regime of co-responsibility, and to have a pro-active role in actions, decisions, and reflections. Thus, individualism gives way to the exercise of the collective that, through practice, is internalized, promoting the awareness of the cooperative and solidary subject.

The answers to the questionnaires brought elements that made it possible to verify these situations reported above in the narratives of our graduates. An education policy that enables the integrating practice between teaching, research, and extension and, more than that, that promotes a formation for this practice is necessary if we want to form conscious and critical citizens, capable of a liberating performance both in the world of work and in all aspects of social life.

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ⁱ **Tatiana Losano de Abreu**, ORCID: <https://orcid.org/0000-0002-4865-1801>

IFPB – Diretoria de Extensão - NUCAES

Graduação e Mestrado em Economia (UFPB) e Educação Profissional (ProfEPT – IFPB), doutoranda pelo Programa de Pós-graduação em Educação Profissional (PPGEP – IFRN). Professora no Instituto Federal da Paraíba – IFPB/campus Guarabira, integra a coordenação do NUCAES.

Contribuição de autoria: Conceituação, Escrita – primeira redação, Metodologia e Revisão.

Lattes: <http://lattes.cnpq.br/6317612517673555>

E-mail: tatiana.abreu@ifpb.edu.br

ⁱⁱ **Wiliane Viriato Rolim**, <https://orcid.org/0000-0002-3918-8851>

IFMG – INCUTES/IFPB – NUCAES

Graduação em Filosofia (UFMG); Graduação em Letras (UFMG); Mestrado e Doutorado em Estudos Linguísticos (UFMG). Pós doutorado em Estudos da Linguagem (CEFETMG) Professora do Instituto Federal de Minas Gerais (IFMG) integrante do NUCAES, do Narra-se e do NAD.

Contribuição de autoria: Análise formal, Curadoria dos dados, Escrita e Revisão

Lattes: <http://lattes.cnpq.br/7175521155588905>

E-mail: wiliane.rolim@ifmg.edu.br

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