

**TEACHERS' CONCEPTIONS OF INTEGRATED EDUCATION IN FEDERAL
INSTITUTES: AN ANALYSIS FROM CONTINUING COLLABORATIVE
TRAINING**

***CONCEPÇÕES DE PROFESSORES SOBRE O ENSINO INTEGRADO NOS
INSTITUTOS FEDERAIS: UMA ANÁLISE A PARTIR DE UMA FORMAÇÃO
CONTINUADA COLABORATIVA***

***CONCEPCIONES DOCENTES DE LA EDUCACIÓN INTEGRADA EN INSTITUTOS
FEDERALES: UN ANÁLISIS DE LA FORMACIÓN COLABORATIVA CONTINUA***

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ABSTRACT: This paper presents the results of a research that sought to analyze the contributions of continuing education to possible changes in teachers' conceptions of Professional and Technological Education (EPT). Within the scope of EPT, the term "integrated training" presents a certain polysemy. Amid this, Integrated Secondary Education (EMI) seeks to overcome the social division of labor. Thus, promoting a professional education that contemplates the principles of integrated training, serving everyone equally, is to understand the teacher's conception of this. In this context, here is a look at the teachers' conceptions before and after experiencing training that had the collaborative focus as a differential for understanding the principles and purposes of EPT. Following a qualitative approach of a descriptive-explanatory and interventionist nature, an extension activity (course) was elaborated, applied, and analyzed, with the semi-structured interview as the main data collection instrument. The subjects are professors in Basic, Technical, and Technological Education (EBTT) teaching careers at the Federal Institute of Mato Grosso do Sul (IFMS). The results point to the initial predominance of a conception focused on the labor market. From the training experience, the understanding became that of an integral human formation, looking at the world of work. In short, it was evidenced that a continuous formation under the collaborative approach that contemplates the previous knowledge, the aspirations, and the reality of the professional performance of the professors offered in their workspace, allows them the construction of new knowledge and a better appropriation of the principles and purposes of the EPT.

KEYWORDS: Teacher training. Professional and Technological Education. Collaboration.

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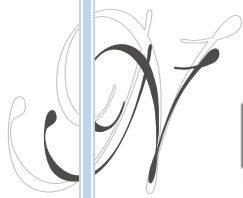


RESUMO: Este artigo traz resultados de uma pesquisa que analisou as contribuições de uma formação continuada para possíveis mudanças de concepções de professores sobre Educação Profissional e Tecnológica (EPT). No âmbito da EPT, o termo “formação integrada” apresenta uma certa polissemia. Em meio a isso, o Ensino Médio Integrado (EMI) busca a superação da divisão social do trabalho. Assim, fomentar uma educação profissional que contemple os princípios da formação integrada, atendendo a todos de maneira igualitária, é entender qual a concepção que o professor tem desta. Neste contexto, traz-se aqui um olhar sobre as concepções dos professores antes e após vivenciarem uma formação que teve no enfoque colaborativo o diferencial para a compreensão dos princípios e finalidades da EPT. Seguindo abordagem qualitativa de natureza descritivo-explicativa e caráter intervencionista, foi elaborada, aplicada e analisada uma atividade de extensão (curso), tendo como principal instrumento de coleta de dados a entrevista semiestruturada. Os sujeitos são docentes da carreira do magistério do Ensino Básico, Técnico e Tecnológico (EBTT) atuantes no Instituto Federal de Mato Grosso do Sul (IFMS). Os resultados apontam a predominância inicial de uma concepção voltada para o mercado de trabalho. A partir da vivência da formação, o entendimento passou a ser o de uma formação humana integral, olhando para o mundo do trabalho. Em suma, evidenciou-se que uma formação continuada sob o enfoque colaborativo, que contemple os conhecimentos prévios, os anseios e a realidade de atuação profissional dos docentes, ofertada no seu próprio espaço de trabalho, lhes possibilita a construção de novos saberes e uma melhor apropriação dos princípios e finalidades da EPT.

PALAVRAS-CHAVE: Formação de Professores. Educação Profissional e Tecnológica. Colaboração.

RESUMEN: Este artículo presenta los resultados de una investigación que buscó analizar las contribuciones de la educación continua para posibles cambios en las concepciones de los profesores sobre la Educación Profesional y Tecnológica (EPT). En el ámbito de la EPT, el término “formación integrada” presenta cierta polissemia. En medio de esto, la Educación Secundaria Integrada (EMI) busca superar la división social del trabajo. Así, promover una formación profesional que contemple los principios de la formación integral, sirviendo a todos por igual, es comprender cuál es la concepción que tiene el docente de ésta. En ese contexto, aquí se hace una mirada a las concepciones de los docentes antes y después de vivir una formación que tuvo el enfoque colaborativo como diferencial para comprender los principios y propósitos de la EPT. Siguiendo un enfoque cualitativo de carácter descriptivo-explicativo e intervencionista, se elaboró, aplicó y analizó una actividad (curso) de extensión, teniendo como principal instrumento de recolección de datos la entrevista semiestruturada. Los sujetos son profesores de la carrera docente de Educación Básica, Técnica y Tecnológica (EBTT) que actúan en el Instituto Federal de Mato Grosso do Sul (IFMS). Los resultados apuntan al predominio inicial de una concepción centrada en el mercado de trabajo. A partir de la experiencia formativa, la comprensión pasó a ser la de una formación humana integral, mirando al mundo del trabajo. En definitiva, se evidenció que una formación continua bajo el enfoque colaborativo, que contempla los conocimientos previos, las aspiraciones y la realidad del desempeño profesional de los docentes, brindada en su propio espacio de trabajo, les permite la construcción de nuevos conocimientos y una mejor apropiación de los principios y propósitos de la EPT.

PALABRAS-CLAVE: Formación de Profesores. Educación Profesional y Tecnológica. Colaboración.



Introduction

The continuing education of teachers is an ever-present need. In the context of Vocational and Technological Education (EFA), in which vocational training should go hand in hand with general education, the reflective practice may foster the basic conditions for teachers of Basic, Technical, and Technological Education (EBTT) - coming from multiple areas of knowledge - can understand the complexity of EFA and Integrated High School Education (EMI), offered by the Federal Network of Professional, Scientific and Technological Education, through the Federal Institutes of Education, Science and Technology (IF) and Federal Centers of Technological Education (CEFET).

The creation of the federal institutes, by Law 11.892, of December 29, 2008 (BRASIL, 2008), promoted a professional education that contemplated the unification of basic training to technical, scientific, cultural, and technological knowledge and to consolidate public, unitary, polytechnic and quality education with a view to training for the world of work and to break with the historical dichotomy of this kind of education, by giving priority to the offer of high school in the form of integrated courses, which made necessary the meaning of professional education in EFA. This re-signification implied the need for a teaching professional who understood and knew how to promote onilateral education, capable of forming autonomous and critical-reflexive citizens.

High school is the level of education in which educational dualism reveals with more evidence "the fundamental contradiction between capital and labor, expressed in the false dilemma of its identity: is it intended for propedeutic training or preparation for work?" (FRIGOTTO; CIAVATTA; RAMOS, 2012, p. 31, our translation). The disparity and differentiation of schools for social classes have resulted in the provision of a public education that does not meet the interests of the children and the great mass of workers (DAMASCENA; MOURA, 2018).

Because the goal of EFA is training for the world of work, it is necessary to think of a human world "as the aegis of work as an educational principle" (SAVIANI, 2007, p. 152, our translation) aiming to achieve integrated training. The human formation, in the integrated perspective, it is sought the historical overcoming of the existing duality between the formation of the human being and the access to consumer goods and services, as well as the breaking of the dichotomy between doing and thinking about doing, which permeates the Brazilian school since its early days (MOURA, 2008). The school is now seen as a space that



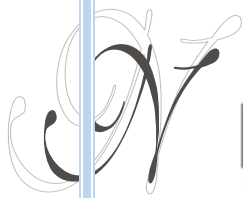
enables human training for adolescents, youth, or adult workers, one that contemplates polytechnic training (FRIGOTTO; CIAVATTA; RAMOS, 2012).

EMI should promote an education that leads workers' children to see themselves as subjects of action (integrally conceiving them) and fosters conditions for their participation in public or private life. This happens when education is oriented to the world of work. Therefore, it is necessary to rescue the integral man through practical actions during the educational processes based on "[...] the worker's living conditions, with their political and cultural ties" (CIAVATTA, 2012, p. 89, our translation).

In the context of Vocational Education, the term "integrated training" presents a certain polysemy. Ciavatta (2012, p. 85, our translation) says that to accomplish this training is "[...] to overcome the human being historically divided by the social division of labor between the action of performing and the action of thinking, directing, or planning", bringing in preparation for work, vocational education, and general education as unique, whether in the educational processes of initial training, teaching, technical, technological or higher education, and the production methods. Thus, the EMI seeks to overcome the social division of labor.

To promote a professional education that contemplates the principles of integrated training, attending to everyone in an equal manner, is to understand the initial conception that the teacher has of this (KUENZER, 2008). Proposing continuing education without discussing the principles that guide EFA, or even without having the teacher as the protagonist of its construction, can only repeat what has been done for years in education in general. Therefore, it is important to understand teachers' initial conceptions about EFA to propose training based on the principles of integrality that effectively promotes changes in conception, in the sense that teachers take the concepts of integrality into their practices.

In this context, this article is part of a professional master's research that aimed to analyze the contributions of continuing education to possible changes in conceptions about EFA in a group of teachers of the Federal Institute of Mato Grosso do Sul (IFMS). The research had a guiding question: How can specifically prepared training to interfere with the teachers' conceptions about Vocational Education? To answer it, it was proposed a continuing collaborative education based on the ideas defended by Fiorentini (2010) regarding the principles of collaboration, by Valente (2005) and Sanavria (2014) regarding cyclical formative action, and the principles pointed out by Fullan and Hargreaves (2000) regarding collectivity and its contributions to professional development.



Based on the assumption that teachers already dominate the specific knowledge of their areas of expertise and seeking to overcome the duality between general education and vocational education, continuing education was brought as a possibility of dialogue between teachers' knowledge and the conceptions that permeate the EFA, such as educational dualism, integrated training, integrated high school, polytechnic education, professional education, technological education, and onilateral education. By adding academic education to work, we propose a contextualized education with a discussion of technology principles through the historical perspective (PACHECO, 2010), based on ethical and aesthetic principles and values, as Freire (2004) warns.

This paper will focus on analyzing the main conceptions identified by the teachers before the proposed formative experience, comparing them with what they began to demonstrate after the process experienced, seeking evidence of a movement towards understanding the guiding principles of EFA and EMI in their educational practices.

Teacher Training and Collaboration

The federal institutes are born in the search for the offer of quality education for the less favored classes and access to higher levels of education, among them the training at the academic and research level. A way to break with the dual school is an education that has as purpose the inseparability between thinking and doing (RAMOS, 2014), establishing that the training is experienced, proposed, and evaluated by teachers, seeking to break with banking education (FREIRE, 2019) and having a research as one of the assumptions of teacher training.

It is known that it is necessary to resume the concepts that support it and analyze what is implicit in each of them so that, then, training is proposed that does not only train the teacher in his work environment - or even see him deprived of his intellectual capacity and strategies - but that understands the school under the humanistic bases and with a view to onilateral training.

Taking the school as a place of work and training, Nóvoa (2009; 2016) says that continuing education must occur there. It does not mean only participation in courses, but mainly a shared reflection in the school space, because it is not done through catalogs of courses or discontinued actions outside the school environment, in the exercise of the profession, with peers, and having the teacher as the subject and author of this. The teacher

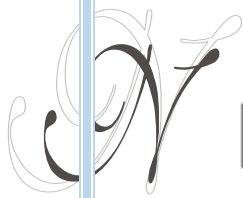


needs to be understood as "[...] someone who knows something and whose function is to transmit this knowledge to others [...]" (TARDIF, 2010, p. 32, our translation). Teaching knowledge is constituted from various sources and knowledge, and "the teacher never stops learning, since teaching is an activity that requires constant evolution and adaptation to new situations" (PACHECO; FLORES, 1999, p. 56, our translation).

In this context, to think about teacher education built on the profession is to break the theory/practice dichotomy through reflection that transforms practice into knowledge from the subjects involved: the teachers. In this sense, the teaching practice integrates several pieces of knowledge established by different relations and is not reduced to the transmission of constituted knowledge and "[...] arising from professional training and disciplinary, curricular, and experiential knowledge" (TARDIF, 2010, p. 36, our translation). Enabling integrated training in a professional development path is the way to articulate the practical and theoretical knowledge necessary for the professionalization of the teacher.

According to Tardif (2010), teaching practice mobilizes various types of knowledge, and professional training knowledge can be classified as *pedagogical knowledge* (which comes from teacher training in training institutions, in which teaching and the teacher are objects of knowledge for the sciences: education and human. These sciences, in addition to producing knowledge, also seek to incorporate such knowledge into teaching practice); *disciplinary knowledge* (which comes from the various fields of knowledge and arises from the social groups that produce knowledge and from cultural tradition. They are presented in the form of disciplines and arise from the social knowledge cutout and; the *curricular knowledge and experiential knowledge* (corresponding to the goals, contents, discourses, and methods through which the school institution categorizes and presents the social knowledge it selects and defines as training models for culture and erudite culture). At the institutional level, the articulation between practice and sciences happens through initial or continuing education. Understanding it is a possibility of contemplating theory in practice.

Teacher training, for Nóvoa (2009), should be given back to them, passing into the *profession*, in the sense of being based on the acquisition of a professional culture with which its spaces should be occupied, not by external experts, but by more experienced teachers and the curriculum designed by them. It should not be designed for them but with them. A way out for teacher education based on EFA principles is to start from the understanding that general education needs to happen while teaching/learning the concepts and practices related to technique and technology. To bring the discussions from the context of performance,



granting the teacher the role of a protagonist by promoting collaborative learning environments and the learning spiral (VALENTE, 2005) is to provide an opportunity for natural conditions to be contemplated in the teaching process and that it happens "[...] in the hurried and complicated worlds of their classrooms [...]" (FULLAN; HARGREAVES, 2000, p. 48, our translation).

Continuing education is defended as the one that takes place in the school space, through joint action and sharing of experiences, in which the school is constituted as a broader place, as the place of production of the profession, the place of teachers, and that the creation of this pedagogical environment is a place of experience of interactions that promote the construction of the teaching profession and learning (NÓVOA, 2009). Being together promotes possibilities of exchanges and experiences that promote knowledge and enables teachers to conduct their training under the assumptions of continuing education.

Gama and Fiorentini (2009) consider collaborative groups to be an opportunity to break with the individualistic culture because this becomes a space in which participants are encouraged to perform and share experiences, and this makes them feel valued because they can expose their ideas, projects, texts and didactic and pedagogical support materials. Inviting teachers to volunteer to be part of continuing education with a collaborative approach is a way to respect the knowledge they bring from their initial training. It is to allow them to dialogue and share successful and unsuccessful experiences in their work environment with their peers.

A point to be highlighted is that there is no hierarchical relationship in collaboration. The constitutive aspects of collaborative work are: "voluntariness, identity and spontaneity, shared leadership or co-responsibility, support, and mutual respect" (FIORENTINI, 2010, p. 51, our translation).

It is necessary to break with the teaching of practice in the sense of instrumentalization. In this sense, to understand integrated education, it is necessary to understand that culture becomes an important part of school education, technology is constituted as an element that allows social construction, allowing the appropriation of knowledge, knowledge and practices and research as social dialogue and work is understood as a characterizing element of human existence.

Research Design and Methodological Path

The research described here was developed in a qualitative approach, according to Alves-Mazzotti (1998), of descriptive-explanatory nature (GIL, 2021) and interventionist character (SANDÍN ESTEBAN, 2010), starting from a question of local interest in the search for understanding the conceptions of teachers who work at IFMS about Vocational and Technological Education. The systematic data collection was based on Alves-Mazzotti (1998), for being preceded by an immersion of the researcher in the studied context.

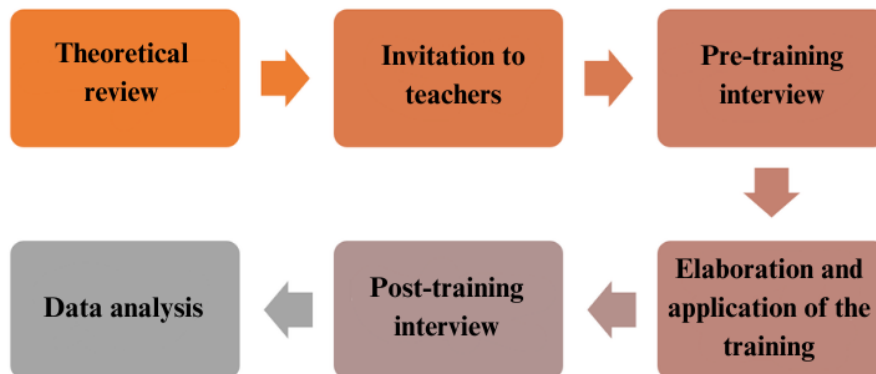
For the results discussed in this article, we have as main indicators: 1) What is teachers' understanding of federal institutes? 2) What is the understanding of teachers about integrated training? 3) For the teachers, what is their vision of the student in the context of Integrated High School? 4) For teachers, what is the role of the teacher in the context of EFA? 5) What is the teachers' understanding of the federal institutes post-training? 6) What is the teachers' understanding of integrated training post-training? 7) For the teachers, what is the student's view in the context of Integrated High School post-training? 8) After experiencing the training for the teachers, what is the teacher's role in the EFA context?

Thus, the data that will be presented and analyzed here are based on the following questions asked to the teachers through semi-structured interviews:

- - What does an integrated education mean to you?
- - In your own words, define Integrated High School?
- - What are the goals of Integrated High School?
- - What is the role of Integrated High School when it comes to a professional training?
- - What are the objectives of a course that claims to provide an integrated formation?
- - In your role as a teacher, what kind of man does Integrated High School aim to form?

Figure 1 illustrates the systematized steps to carry out the research described here.

Figure 1 – Research stages



Source: Prepared by the authors

The educational product elaborated, applied, and analyzed as an extension activity (course) was aimed at the teachers from the Brazilian School of Educational Technology and Technology (EBTT) who worked at IFMS. They were previously invited and spontaneously joined the action. The training was organized in five weekly *online* meetings, with asynchronous activities between meetings.

To be in line with the type of man that the federal institutes propose to train, the menu established for the training process analyzed here had the following points Integrated Training; High School and Integrated High School; Man, Work and World of Work; Educational Duality; Unitary School; Politecnia as a Pedagogical conception; Teacher training and teacher training for Professional and Technological Education; Knowledge and Teacher Identity; Conceptions, assumptions, and practices for the training of teachers who work in Integrated High School.

Collaborative continuing education was the way we found to make it easier for teachers to become the authors of their actions. It sought reflection based on the context of the teacher's performance to promote the understanding of the conceptions that guide EFA and allow the participants to (re)think the necessary knowledge for their practice and construct their teaching identity. Thus, it brought the debate about thinking, planning, executing, evaluating, and rethinking their performance in the act of their pedagogical practice.

The thirteen (13) teachers who participated in the training are the object of this research work or have worked in high school courses at IFMS. For example, in the 2020/02 semester, ten teachers worked in Integrated High Schools and three (3) in Higher Education courses. We did not exclude the latter from the research since the Basic, Technical, and

Technological Education (EBTT) career teacher works vertically and may, each semester, teach classes in different courses and levels. The interviews (pre- and post-training) were conducted with these teachers because it is understood that this category is composed of professionals with different initial training (bachelor, bachelor, and technologist) in different areas of knowledge and professional performance, as well as specific degrees.

As for working in other areas, two (2) teachers responded that they had not worked, being them: a graduate and a bachelor. They came directly from the initial training and *lato sensu* specialization courses for teaching in the EFA of IFMS. The other eleven teachers have worked in the career they were trained for and other activities related to the second sector. Two of them mentioned having worked as teachers in their area of education, but for private institutions and outside the context of formal education.

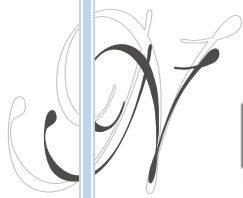
The data collected were analyzed from the proposal of content analysis proposed by Bardin (2021) because this way, the researcher can analyze the speeches through a set of methodological tools, quite diverse and constantly improving (FRANCO, 2005).

Results

Understanding that continuing education with a collaborative approach allows teachers to understand the concepts that underpin Vocational and Technological Education, this training process is taken here to analyze whether there were changes in the initial conceptions of teachers who work at IFMS. Here we will present the analyses obtained through the interviews conducted before and after the training, as well as the systematic observation made during the application of the educational product. First, the teachers' conceptions before continuing education will be highlighted, and then the conceptions after the training will be analyzed, highlighting possible changes.

The pre-training conceptions

When asked what integrated training would be, most teachers had doubts when defining the term. One of them said that, until that moment, he did not know it. Another referred to integrated training as a synonym for the project. Nóvoa (2016) recommends the project as an element of interdisciplinary work in modern education but states that integral education is greater than applying a didactic strategy. Three (3) teachers showed the



understanding that only the junction of subjects does not enable integration and that a comprehensive education presupposes looking at the human being in its entirety as an integral subject that has values, ethics, knowledge, culture, memory, identity, imagination, and the school has to account for all these dimensions (NÓVOA, 2016).

[...]Yes, this training is not simply to tell the student how to perform technical training, no. Instead, it is a training that integrates, in fact, the various dimensions: the dimension of the general training of high school; the **dimension of science; the size of work training** [...] (TEACHER S, our emphasis).

According to Pacheco (2010), training in Federal Institutes should be permeated by knowledge, contextualized from values and principles that strengthen human action to search for more dignified life paths.

When asked about the objectives of a course that aims to provide an integrated education, the answers presented showed three categories, as follows *Labor Market Vision* (5 responses), *Intermediate Vision between the Labor Market and the World of Work* (5 responses), and *Vision for the World of Work* (3 responses). Each teacher noted at least two goals. First, most of the answers leaning towards preparation for the job market showed signs of a dual formation, in the more propedeutic aspect and for the technical formation, and, in some cases, even the dichotomous sense between doing and thinking was presented (RAMOS, 2008). Let's look at teacher X's speech as evidence of such a finding:

The objectives are that the technical course part aims to prepare the individual for the labor market without necessarily a higher level, while the objectives of the high school part prepare this student, also in parallel, for entry into a higher level course. (TEACHER X).

The category established as *Vision for the World of Work* contemplates the assumptions of integrated education, and here we bring the report of Teacher V to explain such conception better:

To give meaning to what the student seeks to **apprehend** and to **apprehend**. Not only to learn but to apprehend, to consolidate that knowledge within oneself. [...] And he should work on this issue of integration. So again, I return to the **student's autonomy and maturity**. (TEACHER V, emphasis added).

By bringing the apprehend, Professor V makes it possible to resume Freire (2004, p. 72) when he announces that "our ability to *learn*, from which flows the ability to teach, suggests or, more than that, implies our ability to apprehend the substantivity of the object learned" and that the ability to learn should be to interfere and transform reality, thus breaking with the training of the learner.

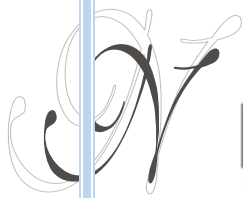
When asked for a definition of what Integrated High School would be, it was observed that a significant part of the teachers resumed the answers they had previously given to the question referring to integrated education, taking them as synonyms. When they tried to define IMS, most understood it as *basic education plus technical education*, as if it were a combination of two types of education. Chart 01 shows each identified category's characterization and the number of classified answers.

Chart 1 – Categories represent the conceptions of Integrated High School.

Category	Quantity	Description
Basic Training plus Technical Training	07	High School education parallel to the technical course, in a broader course. Contemplates traditional and technical subjects based on specific objectives. Challenging because the student leaves with basic education and professional training.
Basic Training plus Technical Training together with a Social Training	02	Aims to enter the job market. It brings to the classes ideas and practices in the job market, including social formation.
High School that Explores Multiple Skills	01	From the joint work between High School and the development of technical and socioemotional competencies and skills linked to the so-called regular high school subjects.
Teaching Methodology	01	The student takes both the regular and technical high school subjects, with an extra component. These subjects are not treated isolated, allowing students to access knowledge and follow their desired careers.
EMI Training in Integrated Design	02	It aims at the EMI based on integrating the various sciences of the formal (cultured) and non-formal contents. It is concerned with general education, integrated with the dimension of work, science, and technology, with an attentive look at the subjects' experiences, thinking in all areas, and all their dimensions.

Source: Prepared by the authors

The five categories identified allow us to resume the ideas of Frigotto, Ciavatta, and Ramos (2012) when they argue that the search for the integral formation of the human being



can occur through the integration of general formation with technical formation. Integrated High School cannot be summarized by the junction of the two buildings, in a summation sense, as the categories *Basic Training plus Technical Training and Basic Training plus Technical Training along with Social Training present*, but should be conceived by their unity, through an integrated curriculum and the struggle to overcome the contradictions in its implementation, as they can be overcome if there are public policies that propose a unitary school.

Breaking with the formation based on productive demands is a first step towards achieving an integrated high school. Overcoming the organization of knowledge in a disciplinary way would be another. Thus, Professor X's speech denotes the integration of the disciplines with a view to application in the student's life:

Integrated high school education is the integration of knowledge from various sciences. Formal and non-formal content, content that we call cultured. Contents that are not restricted to a discipline have to be integrated to be applied in our lives (TEACHER X).

Beyond curriculum integration aimed at application in our lives, it is necessary to look at other aspects. Some of them are brought by Teacher S, who, in her answer, presented general education, the dimension of work, science, and technology. It is known that these concepts, along with culture, are part of the structuring axis of an integrated curriculum aimed at integral human formation, as advocated by Moura (2008).

Integrated high school is to worry about this general education when we think of high school, integrated with the dimension of work, science, and technology, which is to bring this look of really giving these skills, of providing these experiences and experiences so that the individual, the subject, our subject, has a comprehensive education. Thinking in all areas and the dimensions he integrated into his daily life. That's it for me (TEACHER S).

When asked about the objectives of the EMI, the teachers pointed to categories that reflect their understanding of the concept of the EMI. To *provide technical and basic training for the labor market*, five teachers mentioned the need to work between disciplines to make the contents of the basic area apply to the technical training disciplines. Teacher S demonstrated the understanding that the objectives of the EMI were to contribute to the *Integral Formation of the human being*, as can be seen in the following excerpt:



The objectives are: to contribute to the integral Formation of the human being, to look at the various aspects, the multiple dimensions, the various social spheres, and to think of a proposal for education that is whole, let's say so. Comprehensive in the sense of bringing science and technology, integrating life, the project we live, and bringing the goals and the longings that this student has. For me, it is in this sense (TEACHER S).

Frigotto, Ciavatta, and Ramos (2012) confirm such understanding and assert that it is through this understanding that one can transcend this proposal of Comprehensive High School, understood from the concept of polytechnics, and, one day, achieve onilateral education.

In understanding the conceptions and goals brought by the interviewed teachers, they were asked about what was the role of Integrated High School when talking about professional education. And among the multiple statements, the categories are: *Prepare for the Labor Market and Be a basis for Technical Training*, each with three (3) answers; *Develop Skills*, with two (2) answers; *Complement the areas*, with one (1) answer; *Form the Professional Beyond the Technical and Form for life understanding its various aspects*, bringing two (2) answers each.

It is observed that the issue of technical education permeates a significant part of the answers as synonymous with professional training. However, there was a movement in search of understanding the meaning of such concepts brought by teaching in the EBTT career or even by contact with other teachers, which was affirmed by teachers when they said that they perceived that the federal institutes brought a differentiated teaching proposal. For example, teachers who had already worked in Professional Education in other institutions verbalized that it was necessary to learn how to integrate because, in the past, it was not necessary.

Looking at the type of person that the EMI aims to form, based on the teacher's performance, six (6) interviewees talked about the *Citizen*, one (1) about forming the *Student with a Differentiated Vision*, another of better people, one (1) *Who has professionalism*; one (1) *Entrepreneurial Student*; one (1) of the *Entrepreneurial Student*; two (2) brought up the issue of formation in a broader sense, one (1) talking about the *Man Who Holds Values* and the other of forming the *Man As a Social Being*. Chart 02 organizes a synthesis of the elements that characterize the identified categories.

Chart 2 – Categories about the type of Man EMI aims to form

Category	Description
Cidadão	He is a complete citizen that, as he is taking the high school course, is preparing for his profession with moral and ethical values, self-knowledge, self-control, respect, and discipline. Who seeks the best interaction with people and collaboration with everyone to become a better person with the capacity to make decisions.
Student with a differentiated vision	A formation in which the students' knowledge is not reduced to technical learning but to citizenship conditions that lead them to know the cultural, human, and social aspects. Through the experience of the integration between basic and technical subjects, they learn a profession, understand the world through it, and reflect on it.
Professionalism	People who know how to be ethical get respect in what they do and have professionalism.
Enterprising Student	One that demonstrates what they have learned and, based on the content, the interaction, the explanations, and the examples given by the teacher, can learn the minimum to have a profession, or a job, demonstrating what they have learned by undertaking or getting a job. When entering the job market, they know how to solve problems. In addition, they are someone who can help other people as well.
A Man with Values	The integral man, in the broadest sense, with ethical values learned from the relationship and from observing the teacher's behavior. He should be invited to do it together. They should understand that they are part of a social group, have responsibilities within this group, and need to contribute so that it can improve and become more and more integral. The teacher should have values, understand that we depend on each other, and establish healthier relationships.
Man as a Social Being	A man is a social being who carries his cultural preserves. As a subject, he also has the power to act in the sense of understanding his culture while understanding himself as someone who can transform the environment in which he lives and be transformed by it. He understands that transformation is not only about adapting to the environment but also about meaning.

Source: Prepared by the authors

When it comes to the type of man, observing the students' conception, the subjects one hopes to form, how they are seen, and what type of education is offered to them is pertinent. If, in the act of formation, they are understood from their multiple dimensions, it is necessary to promote the break with the market vision that transforms them into a labor force to be trained and whose only skill to be offered is manual labor. This is especially true regarding the young people for whom the EMI is intended, whose break with this historical segregation is due to them.

The last two categories are separated by the specificities they presented, but if joined together, they result in the precepts that foster the integral man. In the search for the man that the EMI proposes to form, Freire (2004) elucidates that it is necessary to conceive him as an active subject, capable of being a protagonist, respecting his dignity, his identity in the process, and his autonomy.

In summary, it was evident that, before experiencing the continuing education proposed and applied by the research described here, most teachers had a vision of Integrated High School that was still based on the understanding of technical education. In all their speeches, they sought to understand the IMS proposed by the federal institutes. Thus, it is affirmed that some aspects need to be understood. As teachers, they glimpsed that, by working in this teaching modality, they had a social function to fulfill and needed to break with the disciplinary training.

Post-training conceptions

The questions in the pre-training interview were redone after the training process had taken place, and, to have a better understanding of what the training had contributed to the learning of what EMI is, two questions were included at the end: How should WorkWork be understood as a category to foster integrated training? What are the structuring axes that lead to integral human formation?

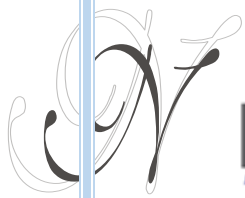
Searching again for the meaning of the concept of integrated training, from the training, there was the overcoming of the category *Joining disciplines* by most of the teachers, as well as the understanding of two formations. Professor R, who still fits in this category, brought the word *integrate* instead of *join* and complemented it by proposing a dialogue between the areas. An excerpt from his speech allows us to highlight this analysis.

Integrated training is when we integrate the applied contents **when teachers from different areas jointly prepare classes.**
(TEACHER R, our emphasis).

Regarding the *Ideal Integrated* category, here is an excerpt from Teacher Z's speech to deepen this understanding

Before, if I had integrated two subjects, I would have already been running or doing an integrated technical course. [...] I could see an integral formation with the course, even as a man. This question - this preparation for the world of WorkWork - has been hitting me, you know? It is 'hammering' me every day. [...]! You have this formation involving WorkWork, science, and culture [...] (FEMALE TEACHER Z).

Teacher Z, after her Training, demonstrates that for a course to be integrated, it is necessary to go beyond this methodological aspect. Instead, it needs to bring the Training directed to the world of work and the dimensions of work, science, and culture. Here, the



technology dimension is included, as Moura (2012) advocates, when he says there must be an appropriation of knowledge and discussions about society to achieve a humanizing and more general education.

It is also taken Professor O to analyze the concept referring to the intention of integrated Training. He says

I, after the course, presuppose a formation that integrates all aspects of the mental or spiritual life of the human being in a single education that does not differentiate those who only work from those who only think (TEACHER O).

In this statement, it is possible to gauge the understanding of one of the purposes of integrated Training, which is to contemplate the dimensions of man, break with the educational duality that is historically set for PE since its inception and that is based on the search for meeting the desires of the labor market (FRIGOTTO; CIAVATTA; RAMOS, 2012).

Once it is understood that the Training - to a greater or lesser extent - has changed the teachers' conceptions about the concept of Integrated Training, especially because they began to understand it beyond the integrated high school, we now start to know the objectives they have set for a course that claims to provide integrated Training. For example, we can see that among the thirteen (13) teachers, only one (1) brought up Training for the labor market, and in general, there was a movement towards describing the objectives as if they were for integrated high school education. Only in two (2) answers did this equivalence exist in the *Labor Market Vision* category.

Teacher Z's answer (brought here because her speech represents part of the other answers) also proposes integration for graduation. Her speech fits into the category of *Vision for the World of Work*, as can be seen:

Look, but I have reflected so much! Because honestly, I had no notion that we prepared this student for the world of work. It seems repetitive, but, unfortunately, we, who are inside an institution, the Federal Institute, my colleagues don't know, and it is a Brazilian reality. We don't know what the objective is, we don't know about integrated education. Everyone had to go through a training program. And it is not because I went through yours that I know everything. [...]. Today I see the importance of bringing, for example, I saw the e-mail about pink October, bring this information because it also prepares this student as a man with this vision. (TEACHER Z).

Teacher Z begins her speech by bringing up the issue of reflection. In this sense, we agree with Pimenta (1999) on the understanding that, in constructing the identity of the (relatively) autonomous teacher, such reflections must be made so that his work is critical-reflective. Next, it touches on the point that motivated the proposition of the educational product of this research: the recognition that, even in an institution based on integrated training, this understanding is not always extended to all teachers.

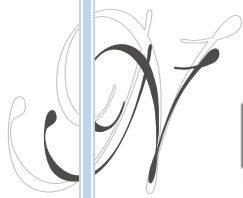
Understanding the formative journey as a moment of personal growth, we look at Professor T (*Intermediate Vision between the Labor Market and the World of Work*) and Professor N (*Vision for the World of Work*) who, together, bring up the issue of integration between the technical part and the common part and point out two precepts of an integrated journey:

This formative path should really stress the integration between the **technical part and the standard part** so that we put **into practice** the objectives already mentioned in the **integrated formation**. (TEACHER T, our emphasis).

It is the **broader formation** of this student. [Broad training in this sense: you train a qualified workforce, but you are also training that student with the subjects from high school that were already integrated into that curriculum of his course, you are also enabling him to enter the higher education level. He will **not stay only on the issue of qualified labor**. (TEACHER N, our emphasis).

When understanding the technical part and the common part as elements of a single training, it is possible to trace a training path that breaks with the dual school (PACHECO, 2015) and, therefore, an opportunity to overcome the juxtaposition of formations commonly understood as synonymous with integrated training. Here, it is possible to state that there was a significant movement of understanding because what was previously focused on the junction of disciplines and the synonym of objectives for integrated high school is now understood, by most, as a concept that transcends the teaching modality: professional education.

Regarding the question that sought to know the teachers' definition of Integrated High School, it is noteworthy that the seven (7) teachers who, before continuing education, fit into the *Basic Training plus Technical Training* category no longer understand the EMI as parallel training or as *High School that explores several skills*. Regarding *EMI Training in the Integrated Conception*, we have Teacher P, who states:



Integrated High School is more than integrating high school and vocational training. It descends directly from Gramsci's ideas about an integral education. An education that unites science, culture, technology, and the world of work. This logic is essential to the Federal Institutes; it is part of our formation. A formation that wants to form the student in all these aspects. Professional education is essential, but it has a significant advantage when done with all the issues in mind. Regarding scientific training, technical training, training for the world of work, training for culture, and the humanities in general. And this more humanistic formation, but holistic, that tends to work on the spiritual life as a whole, seems to be more positive (TEACHER P).

Professor P brought the foundations that enabled the Federal Network and the Federal Institutes to be constituted (PACHECO, 2015) by citing Gramsci and presented the structuring axis for an integrated curriculum - work, science, culture, and technology - according to Moura (2012), confirming the need for federal institutes to bring it into their training.

Regarding the teachers' understanding of the EMI's objectives, the categories *Provide Technical Training And Basic Training for the Labor Market*, *Provide Two pieces of training, and Develop Skills* were overcome. However, two (2) new categories have emerged: *Fostering a Broader Vocational Training and Rethinking Vocational Education from an Integrated Curriculum*. From the category *Encouraging a Broader Professional Education*, we have an excerpt from Professor V's speech:

[...]. To make learning more meaningful so that the student can perceive how all that knowledge that the school is providing for him (how all that) can be worked on and how all that can be, can serve as raw material, as a tool, with a set of tools (as I said before) for him to transform his reality and the reality in which he lives [...]. (TEACHER V).

It is noted here that the teacher understood that learning should break with the transmission of knowledge (FREIRE, 2004) and that the reality of the student needs to be considered. Because of this, it is necessary that the EMI also brings, among its objectives, a sociopolitical vision, especially when addressing the contents (CIAVATTA; RAMOS, 2011).

As for the role of EMI in vocational training, a new one is added to the categories identified in the analysis of the pre-training questions: *To Train, Professionals Preparing them for Higher Education*. From the general analyses, it is observed that, after continuing education, only one teacher still brought up the issue of training for the labor market.

It is known that it is necessary to break with the common sense about high school integrated with vocational education being designed to respond to the wishes of society,



business people, and the government (hegemonic thinking) and to meet the needs of students and the market, a view propagated in the phase of full employment and the national-developmental project and brought by the studies of Ciavatta and Ramos (2011). Therefore, it is necessary to instigate training focused on the world of work for a society under construction, and "this society under construction requires a school linked to the world of work in a radically democratic and social justice perspective" (PACHECO, 2015 p. 8, our translation).

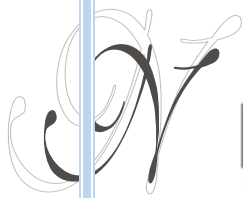
In the category *To Form Professional Preparing Them for the Higher Level* it is highlighted that this refers to the issue of experiences with the world of work, as brought by Professor T:

Integrated High School helps in the formation of professionals because the student who leaves Integrated High School already has some **experience in the world of work**. He already leaves with some initial skills that he needs to enter the profession of his choice, not necessarily limited to the course he took. (TEACHER T).

When we talk about the world of work, we refer here to training that understands the human being as the subject of his history and capable, by being in a context, of changing himself and his locality. Thus, according to Moura (2014), training - in the context of neoliberal hegemony - needs to go beyond the limits imposed by the capitalist company and provide conditions for students to obtain autonomy and emancipation and for student performance to be in the perspective of social transformation aimed at supporting the needs and interests of the working classes while promoting access to knowledge that is at the basis of contemporary production processes.

When asked what their understanding was regarding the human form that the EMI should prioritize, faculty members issued a diversity of answers that complemented each other, and there was no re-presentation of the answers for the categories *Citizen, Student with a Differentiated Vision, The categories Critical Student* - referring to a subject (concerned about the situation in which he lives) who is inserted in an economic context, but who have cognitive skills to criticize the system and through reflection can even propose changes, especially from the moment he has experience with the world of work fostered in the EMI - and None, when Professor R brought that the goal is integrated teaching.

We now highlight Teacher Z's speech regarding *Man as a Social Being* among the other answers.



In my understanding? Can you prioritize? There is no way to prioritize, you have to work on everything! You have to work on this moral, social, and cultural issue, and when I say culture, it seems superfluous, but it is not. It is working with values, norms, ethics, morals, and organizing something, whether aesthetic or not. And, of course, it involves science and works as well. So we must try to work with the most diverse [dimensions]. (TEACHER Z).

It is possible to observe that the teacher, in the first moment, questions whether there is a way to prioritize one type of man and presents elements that constitute integral human formation in the course of her reasoning. For example, in the new category of *Critical Student*, Professor N positions herself.

It [EMI] must prioritize the formation of a critical student. He is inserted in a certain economic system, but he will have the cognitive ability to criticize it. [...] that they don't just accept what is happening. That they can reflect on or they can suggest some change. Restless people, in this sense, of not accept everything happening without reflecting [...] (TEACHER N).

The critical and reflective subject is a condition for change to happen. Freire (2004; 2019) says that not education changes the world but people. So, to be able to subvert the exploitation of man, the one that despises his social action and takes him as a tool, it is necessary to look at the educational contexts that are being proposed and, in the specific case of EFA, at the given conditions and the utopia in changing them.

Seeking to understand which ways allow to foster this change, one of the conditions posed by Frigotto, Ciavatta, and Ramos (2012), Ciavatta and Ramos (2011), Ramos (2014), Moura (2008), and Pacheco (2015) is to look at the category of work from its historical and ontological sense. In this question, the answers brought the possibility of understanding that, despite work being a specific concept, in EFA, an analysis beyond that posed by the labor market is assumed. It advocates the understanding that, in the production of knowledge, work is historical and ontological mediation and "[...] that men and women are social-historical beings who act in the concrete world to satisfy their subjective and social needs and, in this action, produce knowledge" (RAMOS, 2014, p. 86, our translation).

When asked how work should be understood as a category to promote integrated education, the teachers' responses identified the categories systematized in Table 3.

Quadro 3 – Categorias sobre o trabalho na perspectiva da formação integrada

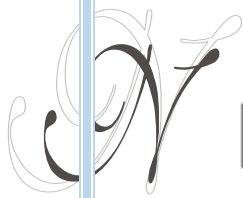
Category	Quant.	Description
As Utopia	01	Ideally: this refers to the training that the teacher should have. In practice: starting from the understanding that, many times, students base their professional choices on the monetary results they will get, selling their labor force, without identifying or finding themselves in it.
As Gifts	01	Starting from the understanding that people are born with some gifts and, throughout life, will develop them. The educator: they need to unite and debate more among teachers from different areas to reach a consensus.
As a Condition for the World of Work	01	Work is an essential element and a condition to reach the World of Work.
As a possibility for Citizen Education	02	Fostering in students a better understanding of work from their perception as citizens.
As an Element to Foster Integrated Formation	04	I understand that work is not only what I do as a profession, promoting the teaching of the contents and instigating students to be creative and give back to society what they have learned.
As Part of Life	04	Work should be seen beyond the labor market, breaking with the common sense understanding that it is the sale of one's productive force.

Source: Prepared by the authors

Thinking about what would be the category work, it is noteworthy that this was discussed in the *online* meetings from the point of view that, in EFA, work needs to be understood and conceived as an educational principle, i.e., it is part of the apprehension of reality by the human being and the process of human formation, so it needs to be discussed in its ontological and historical senses (RAMOS, 2014). It was possible to see in the categories some concerns brought up in the *online* meetings.

The discussion about overcoming the training for the labor market permeates the debates regarding the dichotomy between the foundations of integral human training and the practices that have been happening inside the federal institutes and that these coexist with the lack of understanding of the principles that underpin the specific activity (MOURA, 2008). Ramos (2014) presents a challenge for teachers who work in federal institutes to ensure the offer of Integrated High Schools and warns that it is necessary to address it to ensure the education of the children of the working classes in Brazil under the polytechnic conception.

By being categorized *as Gifts*, we have here a vision known to educators, which permeates the social imaginary and, by some discourses, places the teaching work as a gift. However, this view reinforces the common sense that it is enough to have it for the exercise of the teaching profession when it is known, and Pimenta (1999) certifies that such activity



requires the understanding of the knowledge of teaching: experience, knowledge, pedagogical knowledge, and reflection.

In the category *As a possibility of Citizen education*, an excerpt from Teacher S.'s speech stands out:

The work I see that it gives conditions (when we think, thus, of work as the principle of formation and thinking of it in the real world of work) so that we manage to form a conscious citizen about how it works and what is the structure of the world of work and he has conditions to make conscious choices (within this world of work). Professional education, education, and integrated high school dialogues a lot with this issue of turning to the world of work, making students aware of the whole structure, and making their choices consciously (TEACHER S).

When bringing the formation of the "conscious citizen," Teacher S refers to the ideas of Ciavatta (2012, p. 85, our translation) when she states that "as human formation, what is sought is to guarantee the adolescent, youth, and working adult the right to complete training to read the world and to act as a citizen belonging to a country, integrated with dignity into its political society.

As a condition for the World of Work, Professor X presents work as essential when explaining his understanding:

[...] work is an essential thing. We all have to have a job, so we must understand that [...] if you have an education, it's better for you to enter and fit into this world of work. This integrated training helps the student prepare himself and, within what the Institute works on, which is agricultural training, technical training in computer science [represents] what is growing a lot in our country. Agriculture and cattle raising are growing every day. So forming a computer technician is a necessary career, and we find it everywhere. And [understanding] the world of work is necessary and fits perfectly with what the Institute is offering to society.

It is argued that work has always been important since man reached the present time, and it is understood, in this research, that man's existence is characterized by profession and, therefore, according to Moura (2014), teacher training has to forward to the formation of ethical-political subjects who have the condition for the material production of life and scientific competence, which makes it necessary that the EBTT teacher understands the relations of production and social relations from a critical socio-historical perspective, and that their attitude turns to the formation of emancipated citizens and is ethically and politically committed to the interests of the working classes and to questioning the capitalist system of production itself.



Closing the post-training interview, the question was asked about the structuring axis leading to integral human formation. It was brought to propitiate a last dialogue with the teachers and was used to experience the *reflection-in-action* (PIMENTA, 1999) because, in the observations and reading of the activities carried out for the teachers, it is understood that they knew that the axes existed, but, in some moments, they were in doubt about what they were and questioned the researchers about how to guide their work to reach the integral human formation.

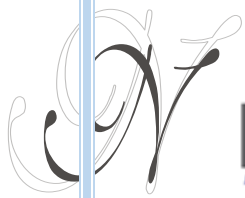
In this context, it is registered that, in some moments, the teachers used the word axes defining each of them, according to Ramos (2008) and, in another, the term *structuring axis*, in the conceptual sense placed by Moura (2014). The five (5) faculty members in the *I Have Doubts at the Moment* category spoke of their doubts about the question or not remembering, specifically, the names of the axes. They requested that they be reminded. However, the previous answers had their names: work, science, culture, technology, or even the concept. Except for one Teacher in the *Structuring Axis* category, the teachers said they understood the importance of the question and, at the end of the interview, said the dialog was important.

In summary, the continuing education experience significantly changed the teachers' understanding of integrated and integrated high school education. Initially, these concepts were synonyms and, for the most part, referred to the junction of subjects. In the questions referring to Integrated Education, the labor market-oriented understanding was changed, except for one teacher, to a broader vision of technical education. The word *integration* replaced the joining of disciplines, and the objectives aimed at the labor market became an intermediate vision between the labor market and the world of work, and the vision of training for the world of work doubled in terms of the subjects that indicated it.

The questions about Integrated High Schools underwent significant approximations in the movement toward integrated training. Regarding the concept, there was a substitution of categories, and the appropriation of values became closer to training for the world of work and social factors included in this path.

The goals stipulated for the EMI turned towards a more social look and an approach to integral human formation. In this context, the understanding of the teacher as a transmitter of knowledge was overcome, and meaningful learning appeared in the speeches. In addition, the curriculum also became a concern.

The role of the EMI presented a significant mutation in the teachers' understanding, as it broke with the knowledge of two educations and approached a training that gives



alternatives and choices to the young people who are part of it. The overcoming of vocational training as synonymous with education for learning techniques had the highest number of representatives, followed by training aimed at understanding the various aspects of human life, in a vision of training for the world of work.

The type of man desired has moved away from the individual who meets the demands of the market, from the demands of an economy based on an excluding and exploitative society, to the understanding of work as historical and ontological and the subject as one who has values and is inserted in a social context. The understanding of the student as a critical subject was presented in a new category.

Regarding the work as a category, the interpretations were diverse, from utopia and gifts (represented by two teachers) to those that converge to what is expected from an EFA based on integral formation, i.e., the understanding that the man is constituted while working.

Finally, as for the structuring axis that leads to the integral human formation, they were presented in the previous answers. However, the doubts were more significant among the teachers than the assertive answers. The complexity of answering such a question is understandable since the integrated curriculum is still challenging for teachers in the BSTST teaching category. However, it originated from the analysis of the questions answered in the training process, and, as our work proposal was based on the *learning spiral*, this question could not be missing. Thus, the last question discussed the importance of knowing that science, work, culture, and technology are the structuring axis of an integrated curriculum that aims at integral human formation, a possible path.

Final considerations

By envisioning a continuing education as described and analyzed here, we sought an approach to the EMI proposed by the Federal Network, more specifically the federal institutes, which required a look at the context of teaching and the purpose attributed to education. In addition, the surveys allowed us to confirm the absence of a discussion about EFA in the initial training of the participating teachers.

Initially, the teachers understood integrated training as synonymous with EMI and an opportunity to obtain two degrees simultaneously. However, the analysis presented here shows that participation in dialogical training allowed this understanding to be overcome. Moreover, what was seen as an opportunity for professionalization for technical mastery in an



area came to be understood as a formative process in which the participant has, at the same time, knowledge of the world related to a profession and that general and professional education should happen with common objectives.

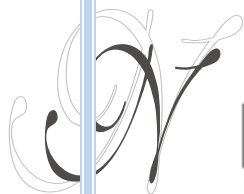
The vision of the student subject has become, besides mastering the specific techniques of this craft, has the conditions to think about this profession and its impact both in his professional and personal life, as well as in the community in which he lives and in the interventions that his choices, experiences, and practices can cause. And the curricula as an opportunity to connect general and professional education. The questions about integrating converged to understanding the local reality and the need for dialog among teachers.

Reflecting on one's practice and taking teaching practice as a condition for understanding man in its various dimensions - as a promoter and social subject - converged to continuous training that sought the conditions for accomplishing the objectives proposed by EMI. The different understandings of Professional and Technological Education, most of them initially focused on the labor market, were overcome, and the world of work became part of the teacher's repertoire.

From the understanding of the path that should be followed today, there is a possible way for the teacher to understand the specificities of the educational modality in which they work. However, this is not how most of them do it, but rather continuous training with a collaborative focus. Therefore, it is necessary to rethink the role of teachers in their training so that they recognize themselves as subjects of change for and in the situation in which they practice their profession. For this reason, we sought this methodology, in which the participant is also a constituent subject of the formative process.

It is argued that the training differential is not in the didactic-methodological novelties that it brings, but it starts by understanding what training means. If taken as the presentation of a particular subject, content, or methodological novelty, this training is understood as something ready and finished. However, if it is considered a process in which man is constituted, it becomes conceived as a moment of reflection in and on the action. The research results made it possible to show that the teachers had other specializations besides their initial training but did not prepare them to understand the teaching and learning process in the complex reality in which they work.

In short, it was confirmed that continuing education under a collaborative approach, which values teachers' previous knowledge and allows them to bring their experiences, concerns, and expectations to the training moment, is the one that allows the construction of



new knowledge by teachers by allowing them to look at their performance, contrasting their didactic and pedagogical choices with those of their colleagues and with the theories that underlie EFA.

In this article, we tried to highlight the changes in the teachers' conceptions of Vocational and Technological Education and Integrated High School, but we also tried to highlight that such a transformation process is not immediate and requires a motivational context for it to occur. Thus, continuing education is essential.

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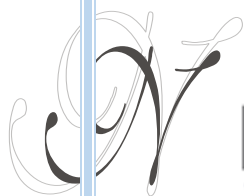
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