

## The Agronomists teachers in the context of the teaching practices in at a Federal Institute of Education

Oswaldo Palma Lopes Sobrinho<sup>1\*</sup>, Rosenilde Nogueira Paniago<sup>1</sup> and Alvaro Itauna Schalcher Pereira<sup>2</sup>

<sup>1</sup>Centro de Educação Rosa de Saberes, Instituto Federal de Educação, Ciência e Tecnologia Goiano, Rod. Sul Goiana, Km 01, 75901-970, Rio Verde, Goiás, Brasil.

<sup>2</sup>Instituto Federal de Educação, Ciência e Tecnologia do Maranhão, Codó, Maranhão, Brasil. \*Author for correspondence: engenheirooswaldopalma@gmail.com

**ABSTRACT.** The study aims to investigate the interrelationships between training, knowledge and educational practices developed by teachers trained in the field of Agronomy. The research was carried out in the period 2019-2020 with teachers who teach subjects in Bachelor of Agronomy courses at a Federal Institute of Education (IF). In qualitative research, the autobiographical narrative of four teachers in this area of activity was used as a methodological data collection procedure. The knowledge and teaching practice of the IF Agronomist professor ranges from accounts of life stories and academic training, to the option of entering teaching and, then, the course of his professional career. The narratives show that teachers care about the good quality of the teaching they provide. However, they state that the time allocated to carrying out teaching, research and extension activities combined with the lack of pedagogical training are elements that challenge the materiality of a teaching praxis that takes into account the different forms of student learning. In their reports, teachers recognize the difficulties with regard to pedagogical knowledge and practices, considering that their training is focused on research and not teaching. The results reveal the need for educational institutions to provide pedagogical training courses in order to bring technical area teachers closer to the specificities of knowledge and teaching practices.

**Keywords:** teaching; teaching-learning; agronomist training; technical pedagogy.

### Os professores Agrônomos no contexto das práticas docentes em um Instituto Federal de Educação

**RESUMO.** O estudo visa investigar as inter-relações entre a formação, os saberes e as práticas educativas desenvolvidas pelos professores com formação na área da Agronomia. A pesquisa foi realizada no período de 2019-2020 com professores que ministram disciplinas nos cursos de Bacharelado em Agronomia em um Instituto Federal de Educação (IF). Na pesquisa de natureza qualitativa, utilizou-se, como procedimento metodológico de recolha de dados, a narrativa autobiográfica de quatro professores dessa área de atuação. O saber e o fazer docente do professor Agrônomo do IF compreendem desde relatos de histórias de vida e formação acadêmica, até a opção de adentrar na docência e, em seguida, o decorrer de sua trajetória profissional. As narrativas evidenciam que os professores se preocupam com a boa qualidade do ensino que desenvolvem. Contudo, eles afirmam que o tempo destinado à realização das atividades de ensino, pesquisa e extensão somados à ausência de formação pedagógica são elementos que desafiam a materialidade de uma *práxis* docente que contemple as diversas formas de aprendizagem dos alunos. Nos seus relatos, os professores reconhecem as dificuldades, no que diz respeito aos saberes e fazeres pedagógicos, considerando que a sua formação é voltada para a pesquisa e não para a docência. Os resultados revelam a necessidade de que as instituições de ensino oportunizem cursos de formação pedagógica de modo a aproximar professores, das áreas técnicas, do saber e do fazer docente.

**Palavras-chave:** docência; ensino-aprendizagem; formação do agrônomo; pedagogia tecnicista.

### Profesores Agrónomos en el contexto de las prácticas docentes en un Instituto Federal de Educación

**RESUMEN.** El estudio tiene como objetivo investigar las interrelaciones entre la formación, los conocimientos y las prácticas educativas desarrolladas por docentes formados en el campo de la Agronomía. La investigación se realizó en el período 2019-2020 con docentes que imparten asignaturas en cursos de Licenciatura en Agronomía en un Instituto Federal de Educación (IF). En la investigación cualitativa se utilizó como procedimiento metodológico de recolección de datos la narrativa autobiográfica de cuatro

docentes de esta área de actividad. El conocimiento y práctica docente del profesor Ingeniero Agrónomo del IF abarca desde relatos de historias de vida y formación académica, hasta la opción de ingresar a la docencia y, luego, el rumbo de su carrera profesional. Las narrativas muestran que los docentes se preocupan por la buena calidad de la enseñanza que brindan. Sin embargo, afirman que el tiempo destinado a la realización de actividades de docencia, investigación y extensión, combinado con la falta de formación pedagógica, son elementos que cuestionan la materialidad de una práctica docente que tenga en cuenta las diferentes formas de aprendizaje de los estudiantes. En sus informes, los docentes reconocen las dificultades en cuanto a conocimientos y prácticas pedagógicas, considerando que su formación está enfocada a la investigación y no a la docencia. Los resultados revelan la necesidad de que las instituciones educativas brinden cursos de formación pedagógica con el fin de acercar docentes, áreas técnicas, conocimientos y habilidades docentes.

**Palabras clave:** enseñando; enseñanza-aprendizaje; formación de agrónomos; pedagogía técnica.

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## Introduction<sup>1</sup>

The research in question addresses the knowledge and the educational practices of teachers trained in the field of Agronomy, in the context of Professional and Technological Education at a Federal Institute of Education. We understand that since the teaching practice is an activity of human interaction, it would also imply prior training for such; on the other hand, Pedagogical practice is defined as the teacher's actions in the classroom and reflections over them. In this context, both the knowledge and practices in the teaching-learning process have been objects of study, research and discussion in recent years, due to concerns and/or worries about the different attributions recommended in its educational activities.

Regarding the teaching-learning process in the broad field of Agricultural Sciences, carried out by Agricultural Engineers, we are uncomfortable about the way it has been developed, that in which it has been more oriented towards teaching students how to reproduce the economic model applied in the agricultural field; in this scenario, universities, institutes and colleges, at times, align themselves with training perspectives that are of interest to this model, since these research institutions are reflections of society itself (Silveira Filho, Sales & Haguette, 2011). Thus, these reflections point to the need to work on theoretical-practical elements in the teaching-learning process in a concrete and dynamic way, in which the student would be the center of the educational process, the protagonist of their own learning and the teacher would be the facilitating agent (Freire, 2006b).

However, the professional of Agricultural Engineer follows training taking into account a technical pedagogical approach, in which knowledge is adopted by specialists of the specific field, through a range of disciplines organized and/or reorganized periodically in the curricular matrices (Cavallet, 1999). As a result, educational practices and knowledge exercised on a daily basis in the classroom contribute to the construction of their identity, which can be, sometimes, aligned with the perspective of technical rationality, that which they reproduce, in the classroom, the academic knowledge without mobilizing different didactic strategies that facilitate student learning (Paniago, 2017).

Evidently, the Agronomist professor has an important role in agricultural education, making it essential to seek subsidies that provide students with teaching that allows for a more accurate learning and holistic training, that includes scientific knowledge on the area, procedural and attitudinal knowledge, which requires planning with clear intentions and pedagogical training.

Regardless of the field of activity, pedagogical training is essential, so that teachers mobilize a teaching knowledge that contemplates the diversity of the student learning process. In this account, Tardif (2013), when problematizing the nature of teaching work and contexts, proposes the classification of knowledge into: disciplinary, curricular knowledge; professional training knowledge (including that of Educational Sciences and Pedagogy); curricular and experiential knowledge. Tardif (2013, p. 36) states that: "Teaching knowledge can be defined as a plural knowledge, formed by the amalgam, some way coherent, of knowledge originated from professional training and disciplinary, curricular Professional and Technological Education and experiential knowledge".

Furthermore, in times of change, Day (2001) reports the need for institutions to offer opportunities and for teachers to commit to their professional development, since it, at times, takes place in the midst of

<sup>1</sup> This scientific study was submitted to the Research Ethics Committee and approved through opinion no. 3,956,526.

tensions, in addition to depending on political factors, school contexts and also their personal and professional life stories. Paniago (2016) reinforces this idea, defending that the professional development of teachers is influenced by different factors, such as personal and professional experience, family experience, reflection and investigation practices, training processes and sociocultural, economic, political and environmental aspects, among others.

Following this, Paniago (2017) considers that a class is not characterized as a 'cake recipe' or by improvisation, there is a need for school planning, which guarantees the observation of some aspects relating to the didactic components of teaching work, that is, in the elements of the teaching-learning process, such as the physical conditions of the institution, available resources, teaching level, didactic-pedagogical strategies focused in innovation, student expectations, socioeconomic, cultural, environmental conditions, in short, the objective and subjective conditions that occur in the process.

The lack of pedagogical training for Agronomist teachers has weakened the teaching-learning process, raising the questions that led this research: What knowledge and practices are woven into the daily practice of Agronomist teachers? What challenges do they face in their praxis<sup>2</sup>? Training is an element that greatly influences the teaching knowledge and professional development of teachers and/or opinion makers.

Therefore, Agronomist teachers start teaching without having specific training and/or even a pedagogical training course, which qualifies them for teaching. Based on this assumption, they have technical training in their area of knowledge, but not for teaching and, thus, for all areas of knowledge, it is important to have a set of educational knowledge and practices, as assumed by Tardif (2013) and Freire (2006b). In this sense, this study aims to investigate the interrelationships between training, knowledge and educational practices developed by teachers trained in the field of Agronomy.

## Methodology

This research, submitted to the Ethics Council of Research and approved through opinion no. 3,956,526, is part of the works of the Educational research group, being carried out in the context of the Postgraduate course in Teacher Formation and Educational Practices at a Federal Institute of Education (IF) created by Law No. 11,892 (2008), as a result of the rearrangement and of the expansion of the Federal Network of Professional and Technological Education, started in April 2005 together with the other Federal Institutes of Education, Science and Technology. The (IF), the locus of the research, is located in the Southwest region of the State of Goiás in an area of 221 hectares, which houses the administrative headquarters, facilities and professional training spaces. The choice of this institution is justified due to the fact that, since its foundation, the large area of Agricultural Sciences has been the central focus and, today, it offers courses at Technical, Higher and Postgraduate levels (Specialization, Masters, Doctorate and Post-Doctorate).

With a qualitative nature, in the research trajectory, we used the autobiographical narrative as a methodological procedure for data collection. Qualitative research is characterized by the requirement that the world must be examined taking into consideration that nothing is trivial, that is, everything has potential in the construction of a clue, providing the establishment of an understanding of the object of study (Bogdan & Biklen, 1994). On the other hand, narratives are common, with greater frequency in the broad area of Human Sciences and allow the memory of the past, including biographies, life trajectories, autobiographies, oral reports, personal narratives, narrative interviews, singular events, ethnobiographies, memorials, ethnographies and popular memories (Galvão, 2005), predicting that the narrative researcher observes life stories and, more frequently, stores actions and doings, events and everything that constitutes narrative expressions (Clandinin & Connelly, 2011).

Paniago (2016) reports that, through narrative interviews, remembrance, experiences and the lived past can be seen, through a reorganization of memories into spaces, historical occasions and everyday actions of the interviewees narrating more significant aspects. In a conversational or prose tone in everyday life, the narrative interview indicates paths and trajectories of the family and experiences at school, ensuring the learning of aspects of personal life, training and its marks on the teaching profession (Souza & Oliveira, 2013).

Narratives were collected from four selected teachers, based on the following criteria: 1) being a teacher with a degree in Agronomy; 2) be in active recurring practice in the Bachelor's degree in Agronomy, from 2019

<sup>2</sup> We perceive the term "praxis" from the perspective of Freire (2006b), in which transformation is fundamental in the process, as well as in Pimenta (2006), who based on Marx, elucidates that "[...] praxis is an attitude (theoretical practical) human transformation of nature and society. It is not enough to know and interpret the world (theoretical), it is necessary to transform it (praxis)".

to 2020; 3) agreeing to participate in the research. The teachers were named fictitiously as Smith, Jansen, Peterson and Newton, maintaining confidentiality and not revealing their identity. We seek to tabulate, organize and analyze the data based on the different phases of content analysis: 1) pre-analysis; 2) the exploration of the material and the processing of data; 3) inference and interpretation (Bardin, 2019).

### Some theoretical contributions on the topic

The introduction of reflective practices, didactic-pedagogical strategies and research into teacher training has been the subject of discussions in the specific literature, so that teachers can mobilize the knowledge necessary for their teaching performance and praxis (Paniago, 2017). With this, the transformations that have occurred over the last 25 years permeates or have permeated the paradigm of challenging the professional autonomy of teachers, in addition to carrying out a survey on the meaning of being a professional under increasing public scrutiny and including imminently personal learning without guidance, from experience and informal to formal professional development opportunities experienced in the school environment (Day, 2001).

Alarcão and Roldão (2010), Flores (2014), Tardif (2013), Freire (2006b) and Paniago (2017) point out that it is necessary for teachers to think and reflect on their practices and didactic-pedagogical strategies in the teaching-learning process, since pedagogical training courses must provide opportunities that enhance the development of knowledge necessary for educational praxis. However, for teachers who did not have this training during their academic and professional life, as is the case of Agricultural Engineers, it is important that initial and continuing training courses are offered to help them with the challenges that teaching entails.

Freire (2006a, 2006b), in his various works, invites us to reflect on themes linked to education, teaching-learning and teaching knowledge. In particular, we draw on Freire (2006b), who elucidates the knowledge essential to the teaching practice of educators, from a critical and progressive perspective; according to him, there is no teaching without learning, because “[...] the two explain each other and their subjects, despite the differences that connote them, are not reduced to the condition of each other's objects. Those who teach learn by teaching and those who learn teach by learning [...]” (Freire, 2006b, p. 23).

For Freire (2006b), teaching requires methodical rigor, and it is essential that teachers stimulate the student's critical capacity and curiosity. The author also warns about the need teachers have to research, because teaching requires research and there is no teaching without research or vice versa. Indeed, Freire (2006b) highlights the need and importance of continuous search, problematization, observation and intervention on the part of teachers, as a way of stimulating these attitudes in students and improving their teaching practice.

Tardif (2013), in turn, when defending the importance of teachers developing disciplinary knowledge from different areas, curricular (composed of objectives, content, methods, among others) and experiential or practical knowledge, warns for the need of teachers being supported to develop this knowledge. In this sense, we agree with the author when he says that some knowledge “[...] arises from experience and is validated by it. They are incorporated into the individual and collective experience in the form of habitus and skills, of knowing-how and knowing-being” (Tardif, 2013, p. 39), however, continuous training is fundamental for a perennial relationship between theory-practice, so that teachers can problematize, reflect on their praxis and (re)signify it.

In this line of thought, Candau (1999) reports that the teacher will never be completely 'ready', as his preparation, teaching learning and professional development are built on a daily basis, in theoretical and practical mediation. Its constant updating will be done through daily reflection on the data collected from its practice in the light of theoretical knowledge. From then on, the fields of knowledge in which they serve as basic subsidies should not be removed and isolated from their object of action, which is education and the differing teaching-learning processes, but rather will be ways of seeing and understanding holistically its object of action.

It is fundamental that the teacher, whether he has a degree in Agronomy or any other field of knowledge, adopts pedagogical skills that enable the mobilization, in the classroom, of various strategies and teaching resources necessary for his class, seeking to meet the diversity of student learning. In such a way that he is careful to establish which are essential and should be explored by everyone and which can be made available as a complement for those students who aspire and are able to go further. This is considered an opportunity for everyone to advance. These questions corroborate Freire (2006b), when he states that teachers memorize their content, rejecting education as a general theory of knowledge with reflections over the agreement of thought between subject and object.

Evidently, there are several elements that influence the learning of students and the functions that a teacher performs. However, special focus will be placed on the classroom and its different participants. Based on this

assumption, the class does not only start in the classroom, but at the moment it is being planned and/or prepared. The action of planning is essential for a lesson to be beneficial. It needs to be well organized and well-founded, it is also necessary to ask some questions, such as: Who am I preparing class for and under what conditions? What will be my goals? What would be the most appropriate methodological procedure? What resources will be available to students? What dynamics can be used to make my class more attractive? Among the contents to be covered, which are essential? Paniago (2017) reinforces this thought by conceptualizing planning as a continuous and dynamic action of analyzing the conditions of all possibilities and weaknesses in a given situation, and then making decisions on what is the best path to take.

A teacher from any area of knowledge, concerned with the construction of knowledge and problematization of hypotheses must always rethink his pedagogical practices, as being a good teacher goes beyond the school walls; he researches, innovates, transforms and creates conditions for students to become increasingly interested and pursue science, contributing to the teaching-learning process. Therefore, the application of innovative methods in teaching is important, as it will develop in students a critical and reflective capacity, with regard to the contents they assimilate.

Paniago (2017) raises a concern that the teacher should not shy away, that is, remain absent in silence, and should not forget their role as a teacher/educator, education, the ideological forces that condition and oppress them. This thought is reinforced by Moretti-Pires (2012), when he says that education solidifies itself in the transformation of being and, at the same time that it intervenes in reality, it is transformed by it. Therefore, it is an action that demands the participation of teachers and students and can be justified, through their interaction, through which the new is constructed generating an adaptive dynamic that is generated based on what is significant for the student. Freire (2006b) also warns that educational practice is not neutral but, rather, political; a fact that requires teachers to take a critical and political stance towards their educational practice, the institution and other stakeholders that influence the educational system.

### **Teacher's narratives about their knowledge and teaching practice**

Based on the proposed questions and objectives, we sought to organize the results of the narratives into the following categories, some related to the objectives and others emerging in the voices of the participating teachers: i) training and beginning of the teaching career; ii) knowledge, practices and challenges in the practice of Agronomist teachers.

#### **i) Training and beginning of the teaching career**

Initially, we sought to listen and give voice to teachers, leaving them free to tell their life stories, taking into account the oral narratives of these teachers and/or tellers of their own history, their subjectivities and memories. At this point, some questions were raised, such as academic training, motivation for teaching and life history and why be a teacher?

The Prof. Smith has a background in Agronomy with a Master's degree in Seed Science and Technology, a PhD in Phytotechnics (Plant Production) and a Post-Doctorate in Agricultural Sciences. The desire to start teaching began when he was studying for a PhD, however, he made clear the frustrations and challenges he had to face, as, despite having scientific knowledge, training and experience with research in the broad area of Agricultural Sciences, he was unable to obtain approval in public examinations when arriving at the didactic test; this can be justified due to the lack of pedagogical training courses.

In the first attempts at public exams, I failed the didactic aspect. My first job was as a researcher. From then on, the objective to become a teacher took a dignified turn in my life because I ended up exempting myself from the public exams and went on to study Post-Doctorate at a Federal Institute, where I had my first classroom training on teaching practices in my Post-Graduation and that gave me some ability to manage classes a little better (Prof. Smith, 2020).

After struggles and setbacks of much preparation and dedication to teaching, the teacher was approved in a public exam at a Federal Institute, which provided the opportunity for his first experiences in the classroom in the Bachelor of Science in Agronomy and Technician in Agricultural courses. His perception regarding the lack of pedagogical training led him to study Specialization in Pedagogical Training in Professional, Scientific and Technological Education and he still shows complete indignation towards his colleagues in Agronomy, for devaluing pedagogical perspectives, including great characters in educational history, such as Paulo Freire.

Prof. Smith's narrative agrees with what Silva (2017) and Paniago (2021) point out about the non-requirement of pedagogical training for Professional and Technological Education teachers, in which the

profile of teachers is marked by the diversity of training. “This profile is also made up of a large number of non-graduates who have academic and professional training developed with no connection to teaching” (Silva, 2017, p. 112). Paniago (2021, p. 200), in turn, asserts that:

To join the Federal Institutes, teachers are not always required to have academic training linked to teaching; therefore, teachers join without knowledge of the specifics of teaching. Thus, although many have vast knowledge and research in specific areas, they do not have teaching experience and teacher training and even so, they are accepted to work in high school to postgraduate studies, including graduations.

Prof. Jansen has a Bachelor's degree in Agricultural Sciences, a Master's degree and a Doctorate in Agronomy. He has worked as a teacher since 1993, having passed the 2nd public exam of the federal education network at a Federal Institute, at the time designated as the Federal Agrotechnical School. According to the respective teacher, at that time, those who did not have a degree entered teaching in Agrotechnical schools. Today, Federal Institutes should attend pedagogical training, since their initial training did not offer pedagogical subjects that would qualify them for teaching. Currently, there is this requirement, however, according to Paniago (2021) there is no effective policy that provides opportunities for Professional and Technological Education teachers, pedagogical training and, also, the Federal Institutes that provide opportunities, as the case of the Federal Institute, locus of this research, do not count with the support of the vast majority of teachers, because, as explained by Prof. Smith, many colleagues do not consider pedagogical training important.

Prof. Peterson has a degree in Agronomy, a Master's degree in Development and Environment and a PhD in Phytotechnics. After graduating, he served as a Municipal Servant and Secretary of Agriculture for a municipality in the interior of Paraná. The one year long search to work independently created frustration, but also the opportunity that was the completion of a pedagogical training course in 1996. In 1997, he joined the Federal Agrotechnical School, of the current Federal Institute, locus of research as a full-time employee.

My background is Agricultural Engineering, although I don't see myself as an Engineer, but faced with so much ingenuity that we encounter on the path of life, sometimes we are led to seek or resort to this technical, technological juggling act of making people and processes come to fruition, but, despite everything, I still interpret that the great construction of teaching the pedagogical practice is to improve the way people face life and their duty, that is, face life and its obligations, needs and above of all his insertion in the social context, of which he is inevitably a part of (Prof. Peterson, 2020).

Prof. Newton has a degree in Agronomy and a Master's degree in Phytotechnics (Plant Production), a PhD in Agronomy (Entomology) and a Post-Doctorate in Ecotoxicology. In addition to his studies, he completed a Sandwich Doctorate at the Kansas State University Agricultural Research Center in the United States and is still in the process of completing his Specialization in Pedagogical Training in Professional Education. His first teaching experience took place in 2018, working as a substitute teacher and, in 2019, he became a permanent member of the teaching staff at the Federal Institute, the locus of the research. He also reported that the choice for the Agronomy course was due to the city where he and his parents lived, as, at the time, agriculture was the main economic activity in the region and there were job opportunities, due to the agricultural market. During his academic life, between one class and another, the experience as a monitor in Entomology for a period of 3 years and the coexistence with his Masters and Doctorate colleagues awakened his passion for teaching. From then on, the teacher enjoyed it and felt safe and happy when participating in activities, demonstrating his desire to pursue a teaching career.

In general, the narratives of Agronomist teachers indicate how their life history and social context influenced their choice of teaching, as pointed out by Sarmiento (2009) and Goodson (2013), when elucidating the importance of listening to teachers through their life stories, and this allows us to understand the complexity of the plots between times and spaces that involve their training and teaching action.

Regarding institutional support for pedagogical training, Prof. Smith narrates that, over time, institutions have invested more in activities related to research, bringing benefits and the verticalization of teaching. However, teaching has been seen as something secondary, diminishing the essence of the teacher in relation to human development. For him, “[...] generally, professional colleagues do not know how to answer what this training would be and perhaps with our research methods and activities we also encourage the creation of skills and capabilities, taking into account the technical, humanistic dimension and of the being itself.”

The teacher has to adapt the training strategies according to the student's Being and profile, because this sensitivity, this look, and what we lack is to stimulate work, we have to do a very strong job of sensitizing the teacher to start reflecting more, and that it is generally a seed that takes time to germinate. It is something that the institution will have to intentionally plant with a program to value the teacher's pedagogical awakening in order to combat the very technical bias (Prof. Smith, 2020).

Prof. Smith recognizes that initiatives, although timid, are taking place at the institution, as he had the opportunity to take a Specialization course in Pedagogical Training for Professional and Technological Education, a fact that contributed to looking at the students in a different way and seeking new alternatives and didactic-pedagogical situations for mobilization in your classroom. When analyzing Prof Smith's narrative, we go back to Freire (2006b), elucidating that teaching is a profession of human interaction and that teaching is a human specificity, which requires professional competence, commitment, knowing how to listen, knowing how to dialogue. Those are, therefore, fundamental attitudes to teaching practice.

Prof. Jansen reports the need for continued training, as it is a viable alternative for improving the quality of the teaching-learning process, as meetings that last just a single day, a morning or two mornings would only be a stimulus, highlighting the importance of transversal themes in which each teacher brings their personal experience while the students also would, bringing collective growth and involvement without obligation.

There must be a continuous training center throughout the year in different areas of the pedagogical team. But with the entire team and narrating the experiences, it builds through adjustments, of course there must be encouragement from the management, from the pedagogical side, as the teacher has a classroom, extension and research projects, internship guidance among other activities. There are many activities, but this has to be a part of it, the classroom has to be a priority, investments have to be the best because we are in an educational institution and there must also be priority in the pedagogical training of professionals (Jansen, 2020).

In the understanding of Prof. Newton, the Agricultural Engineer is not instructed to be a teacher, that is, there is no pedagogical training that directs him on how to behave in a classroom, prepare a test, teach classes, among other teaching activities. In fact, Prof. Newton's narrative is important, because as Freire (2006b) warns, the teaching activity is complex and involves a profound process of humanization, which implies continuous qualification, as "[...] no one starts to be an educator on a certain Tuesday at four o'clock in the afternoon. No one is born an educator or marked to be an educator. We become educators, in practice and in reflection on practice" (Freire, 1991, p. 58). Therefore, teaching, like other professions, also requires human training and practical activity. Or is it possible for a person to perform surgery without having the training to do so?

Prof. Newton continues by stating that the Agronomist professor is a professional trained to become a researcher. In this sense, he also emphasizes the need for Postgraduate courses at the Master's and Doctorate levels, in addition to disciplines aimed at teaching, since teaching internships are very few, as, in most cases, the postgraduate is responsible for a subject and the teacher does not even have the training on teaching how to do it. He also denounces that, when they start teaching, they only have an idea of what it means to be a teacher, but "we don't have any training on how to take a class, prepare a test or anything like that." Like the other teachers, Prof. Newton demonstrates the importance of pedagogical training courses or even subjects in Postgraduate courses, since these professionals with training in Agronomy begin to teach without any pedagogical training (Prof. Newton, 2020).

Pimenta and Anastasiou (2010) contribute to this analysis, by elucidating that many of the teachers who enter teaching in higher education bring with them a lot of knowledge about research in their specific areas, however, they do not have pedagogical training nor do they have any idea of what is to be a teacher, which is why continued training is essential. In turn, Silveira Filho, Sales & Haguette (2011) highlight the lack of teaching training for Agricultural Engineers, as they are instructed to be researchers and not teachers. He also considers the wear and tear and dissatisfaction caused by the identity crisis that the profession of Agricultural Engineer is going through, reflecting on the teachers themselves, who feel discouraged and without perspective in relation to the profession.

Indeed, training for teaching is fundamental for any level of education and field of knowledge. In this case, for teachers who have a degree in a specific area, postgraduate internships and continuing education can be an alternative to alleviate these gaps. In this subject, Pimenta and Lima (2017) contribute by defending the importance of the internship for teaching and for the construction of teaching identity.

It is clear that research participants recognize the importance of pedagogical training for teaching in Professional and Technological Education, a fact that is problematized by different theorists who deal with it,

such as Silva (2017), Zamberlan (2017) and Paniago (2021). Paniago (2017, 2021) points out essential elements and knowledge for teaching knowledge and practice, regardless of the teachers' area of activity.

## ii) Knowledge, actions and challenges in the praxis of Agronomist teachers

The praxis<sup>3</sup> and challenges regarding teaching methods are increasingly based on the needs and realities that students experience. Indeed, it is important that the teacher's actions are based on didactic-pedagogical strategies and teaching resources that facilitate teaching, considering the different ways in which students learn. Therefore, it is a challenging task for the teacher to know how to deal with students in the classroom, maintain good coexistence in the school environment, concentrate on subjects and assimilate content. Consequently, it is important that the teacher seeks appropriate subsidies and/or instruments to draw the students' attention, awakening their desire to learn and continue learning.

Paniago (2017) emphasizes some pedagogical concerns about the didactic components that are used in the school space, such as: in what context am I working? Who is my student and what are their weaknesses and possibilities in learning? Why this specific content or am I just fulfilling the curricular requirements? What content should I work on and how important is it for the student's education? How does my student learn and how can I transform the knowledge so that it becomes more understandable? and how to evaluate? Didactic strategies include: dialogued expository class, portfolio, conceptual map, exercise resolution, discussion and debate, seminar, symposium, lecture, simulation, forum, case study and teaching with research.

In the narratives about the knowledge, actions and challenges faced in the daily classroom, the interviewees express elements that are in line with what Pimenta and Anastasiou (2010) and Paniago (2017) defend, regarding knowledge about content, pedagogy content, about the students and their context. Furthermore, the importance of the relationship between the tripod of teaching, research and extension is highlighted. Therefore, we will organize this category into the following subcategories: the teaching knowledge of Agronomist teachers; the mobilization of the research, teaching and extension tripod in the praxis of Agronomist teachers and the challenges of the praxis of Agronomist teachers.

### About the teaching knowledge of Agronomist teachers

Concerning knowledge about content and content pedagogy, Prof. Jansen talks about the need for knowledge and understanding about a certain subject and/or theoretical content, which will be covered in the classroom, as one cannot talk about what one does not know. However, this alone is not enough for the teacher to be considered a good mediator of knowledge, because, according to him, it is important to know the students' reality.

The teacher has to have his theoretical content, what he will teach. But is it only the content that qualifies you to go to a classroom? In addition to the content, the teacher must have a notion of didactics to transmit knowledge. The student who studies technical and higher education at night is completely different from those who study, for example, civil engineering, agronomy, which is a comprehensive education. Those who study at night usually work all day and have a family, so their realities are different, the content is the same, but the way in which you work must be different (Prof. Jansen, 2020).

It is evident, for Prof. Jansen, the need for teachers, in addition to mastering the content, also to have the pedagogy of the content, which, for Paniago (2017), based on Tardif (2013) and Shulman (1987), refers to the paths, the form, the method, in short, the didactic-pedagogical strategies that teachers mobilize to facilitate student learning. With Paniago (2017), we understand that didactic-pedagogical strategies refer to the set of actions of the teacher and student seeking to achieve the purposes of the teaching-learning process. In turn, Anastasiou and Alves (2004) recommend that the teacher should be a strategist, justifying the adoption of the term strategy, in the sense of analyzing, choosing, organizing and proposing the best instruments for students to appropriate knowledge.

Prof. Newton mentions that the teaching process is to enable students to produce and construct their own knowledge. Therefore, teacher training must go beyond the academic knowledge acquired through training at universities, institutes and/or colleges.

The teacher plays an important role, as he is the one who clarifies the actions in the classroom and significantly interferes with the construction and/or elaboration of students' knowledge. In this way, the good use of a teaching

<sup>3</sup>For Paniago (2016), in praxis, reflection is essential to think in the light of theory so that the teacher problematizes, analyzes and, through interventions in their practice, seeks alternatives that aim to improve the teaching-learning process.



methodology will assist in this construction carried out by students and, consequently, there will be prosperous when well guided by the Agronomy teacher (Prof. Newton, 2020).

Still Prof. Newton says that he feels fulfilled in the teaching profession, that is, he does what he likes, keeps students well informed and, finally, he is receptive and open to dialogue. It also points out how important it is to talk to students about various subjects, such as: training and internship advice, the world of work, whether to do a master's degree or not, among other questions and this has been positive, as there are teachers who do not open up to students.

I receive both positive and negative feedback. Sometimes, the student sends an email and says that the class taught is something they are actually seeing in practice and is interesting. In fact, this semestre, I received seven students who are listening to the course, students who have already taken the course with other teachers, but who asked to listen to me (Prof. Newton, 2020).

Regarding knowledge about students, Prof. Peterson brings with him the concern about social injustices that establish differences and inequalities between students, showing that, behind a number, a line on the roll call, through a registration code, there is a biography. For him, to be a teacher, one must be aware that each student has their own pace and way of learning, that is, their particularities and their growth and/or development have a direct connection with the environment that surrounds them and cultural relationship and, mainly, familiar coexistence.

Each student brings very different knowledge, and it is up to us to be mediators of scientific and technological knowledge [...] and our challenge is not to be frustrated in the face of some inevitable situations in which all those students you help to train do not come to fruition with their dreams of being in the military, working, building a life with what you helped form (Prof. Peterson, 2020).

Prof. Peterson points out that educating is touching, not with your hands, but sharpening the feelings and touching the innermost parts of each student, exposing the need to encourage them to discover their values and perceive them as characters in the history of the process that is being built. As can be seen, Prof. Peterson defends a perspective that comes close to what Freire (2006b) proposes, by stating the importance of valuing students' knowledge, the importance of dialogue, affection, and a problematizing and liberating education, which advances from banking education that in which students are mere listeners, receivers of information, disconnected from their sociocultural, economic, historical, environmental and economic context for a human and integral formation.

Prof. Peterson continues by elucidating that if educational institutions are satisfied with offering reagents, laboratories, benches and other things, they will be helping to build a citizen who can produce some reactions, interpret certain situations, but, if they do not have the human training to guide them about of the causes and effects of that process, model or experiment, there may be some shallow meaning to the story, as suddenly this student completes the task, but does not develop the ability to perceive things and especially perceive himself as part of the teaching-learning process.

With this, some questions are taken into consideration such as: who is this experiment serving? Who can it serve? Who can provide it? i.e. who am I working for? This makes us think that there are research scientists who do not take these questions into account and who sometimes are not even aware of the reasoning behind the project's financing (Prof. Peterson, 2020).

In the same direction, Prof. Smith elucidates the importance of recognizing the human perspective of education,

Being a teacher is a matter of life conception [...] you have to be a teacher all the time, I am a human being before being a teacher, but I am always a teacher through my example, this is my teaching vision, a vision that I formed and I believe in it even though not everyone sees it the same way. The poverty of teaching sometimes comes from the teacher's poverty of knowledge and pedagogical skills, not necessarily technical knowledge, but other knowledge and its human dimension (Prof. Smith, 2020).

Still on the importance of the emotional relationship and interaction with students, Prof. Jansen points out that it is essential to interact with students. He always seeks to interact and communicate between students whether in the technical courses and modality of the National Program for the Integration of Professional Education with Basic Education, in the Youth and Adult Modality (PROEJA), in Undergraduate or Postgraduate courses.

We therefore infer that professors Smith and Peterson question their role as teachers and problematize the need for them to know students and their different ways of learning, as highlighted by Freire (2006b) and Day (2001). For Freire (2006b), as teaching is a human specificity, knowing how to dialogue, knowing how to listen, knowing how to be affective are fundamental attitudes to teachers' praxis.

In this way, learning cannot be something automatic and devoid of meaning and affective, in the individual's life. Above of all, individual aspects of the human dimension must be considered, such as the learner's emotional and social aspects.

### **The mobilization of the research, teaching and extension tripod in the practice of Agronomy teachers**

When talking about their activities, the interviewed teachers indicate the importance of the tripod of research, teaching and extension going together, as, when integrated, they provide significant changes in the teaching-learning processes.

Prof. Smith mentions that he has already carried out activities involving research, teaching and extension. He started with management projects and extension experience working in Technical Education, Undergraduate and Postgraduate courses. For him, it is possible to work on this tripod in an integrated way, as long as the classroom is an environment to be explored and the student as my teaching resource combined with the research experience, which is developed at the educational institution. Thereby, once the teacher is able to bring this knowledge to the school space, using the content and having this skill, it is possible to understand how to combine it in an organized and integrated way.

In his narrative, Prof. Smith also reports that he used extension practice in the classroom in technical courses, proposing to students a search close to their reality, bringing the technical characterization of what was worked on in the discipline. Another point mentioned was the interdisciplinarity<sup>4</sup> between the area of grain storage and seed technology, as even without having the subject of seeds in the technical course, it was possible for students to develop new abilities and some of them even entered the job market. Ao falarem sobre os fazeres, os professores entrevistados indicam a importância de que o tripé pesquisa, ensino e extensão caminhem juntos, pois, quando integrados, proporcionam mudanças significativas nos processos de ensino-aprendizagem.

You see, a small change in the practical class during the course affected the students' ability, vision and interest, which often leads them to enter the job market. Furthermore, the sensitivity and openness of view that I achieved are related to the pedagogical training (Prof. Smith, 2020).

Beyond that, we infer that his narrative reveals his concern with establishing a relationship between the theoretical and practical knowledge of the student's life, through teaching and extension projects encouraging them to solve practical problems under the light of the knowledge studied. Day (2001) makes important contributions, exposing that the teacher, when carrying out research, is fundamentally a reflective teacher, and Paniago (2016) who believes in the capacity of teacher training to bring to light reflections, analyzes and intervenes in their educational practices and build the systematized knowledge. Freire (2006b, p. 29) contributes by pointing out that:

Teaching requires research. There is no teaching without research and research without teaching. These actions are found in each other's bodies. As I teach, I continue searching, re-searching. I teach because I seek, because I inquired, because I inquire and inquire. I research to find out what I don't know yet and communicate or announce the news [...].

Prof. Smith also emphasizes the need for teaching management to place greater value on class councils, in order to encourage the development of the teacher's attitude, not as a mere operator, but as a mediator, an interlocutor with the course's teaching team; also point out the need to know about the dimensions of the curriculum, what are the communication centers between teachers to have a pedagogical chat and "where" is the pedagogical coffee to exchange ideas with a colleague from another area?

If the teacher is going to do an extension project, he must not lose this point of view, because extension is nothing more than always being in connection with society and nature. It's as if it were a productive bias of yourself as a teacher, the type of activity that you will be able to carry out and that is sometimes limited by institution issues and ends up not being able to do extension work or not being able to do research because your area is not in that environment of the institution, so you have to look at these endogenous differences (Prof. Smith, 2020).

<sup>4</sup> Paniago (2016) makes clear that it is through interdisciplinarity that we complement the different dimensions of knowledge, highlighting the great challenge that is the dialogue between different areas. It also accounts that the lack of interdisciplinary work reveals a delay in these discussions, since we know the need for educational practices not only embodied in interdisciplinarity, but in transdisciplinarity.

Prof. Jansen talks about the great difficulty of aligning the research, teaching and extension tripod and this has to come from the encouragement of the educational institution, as it is a new culture and the generation of new habits requires learning. When developing a project that the student participates in during the semester, the educational institution must be involved, as there are costs and also complete planning. It is necessary to involve colleagues from other areas, such as, in horticulture, we have entomology, which is the specialty of biology that studies insects and with the help of the professional and the entire pedagogical team integrated there is greater planning, engagement, execution and it is still possible to observe what can be improved.

All of this has to happen in practice with the student experiencing it, as he can observe several factors such as the producer's entire reality when he is in the field and not just what is placed on the projector or slideshows. It is necessary to sit down and discuss with the teachers and the institution as a whole why we have some students with different realities, in the technical course, the majority are subsequently who already have children, work and have great life experiences and we, as teachers, and institution have to discuss these topics, as sometimes they will have difficulty with calculations and other basic things, but this training is relevant (Prof. Jansen, 2020).

Prof. Peterson explains that the greatest extension is developed through the relationship with the student himself, when he is launched to establish contact with a broader reality, results and situations are presented to him that, through his perspective, is able to assimilate concepts, definitions, principles and conclusions that enable a confrontation between what is presented and observed in life, in the daily economic and social life of organizations or in small production units, companies, farms, in other words, the extension is inseparable from teaching.

Due to the pandemic caused by the new coronavirus (SARS-CoV-2), the extension rolled back not only internships, but also technical visits, which were teaching mobilities that strengthened concepts and foundations that nature itself, in fact, reveals to us. Prof. Peterson also cites, as an example, that, until then, it was believed that the virus survived very little or almost nothing without the presence of a host that offered it a ribonucleic acid so that it could replicate, and the pandemic reality has shown this to be untrue in relation to this. Therefore it is up to science to review concepts, produce more research, generate innovation regarding methods and searches so that new conclusions can be reached that call pre-existing ones into question.

The need to research in life is inevitable, we all do research, the trials and errors, although not complying with scientific rigor, are carried out every day and with a different reality, a social group and a climatic situation, an adverse situation of that happened yesterday, last week and last year. So if you try the same thing, unfortunately despite the scientific method, you may not achieve the same result because conditions change accordingly (Prof. Peterson, 2020).

Prof. Newton reports that his training at research-oriented universities enabled him to do the extension, taking students to the field, providing the opportunity to experience what was covered and/or discussed in the school environment. In terms of extension and as coordinator of AgroDNA, which is a Junior Agricultural Consulting Company, projects are developed in the entomology laboratory, such as the world of insects – educating to preserve which is financed by a multinational and aims to bring knowledge to schools, mainly public ones, to understand the importance of insects and their relationships in the world. In teaching, the teacher participates in field disciplines, not only in entomology, but also in those involving soybean, corn and bean crops. In addition, he acts as coordinator of scientific initiation and vice-coordinator of the Bachelor's degree in Agronomy.

There is a good relationship between teacher and student. I try to show, in my point of view, what would be a good class, a good slide, in my view, especially the students who work with me, I try to place them on this tripod which is research, teaching and extension. Those who are at work are not directly with me, but are in the classroom and I try to take part in extension and also research (Prof. Newton, 2020).

In the scope of research and in the broad area of Agricultural Sciences, he guides students in postgraduate and scientific initiation courses, working in the laboratory and also has the support and participation of master's students in their practical classes, helping them in the preparation of materials, preparation of classes, slides and simulation on insecticide application. In general, even in the midst of challenges, the teachers interviewed signal concern about mobilizing the tripod of research, teaching and extension in their teaching practice.

### About the challenges of the praxis of Agronomist teachers

With account to the challenges of the practice of Agricultural teachers, in addition to the lack of pedagogical training, as already announced, the teachers accentuated the time to organize themselves in the verticalized teaching process of the Federal Institutes as challenges. Prof. Smith alludes to the lack of time to prepare his own teaching material, in order to contextualize the content, insert the student into the environment and modify his life through education, not replicating the encyclopedia and statements, as knowledge is under permanent construction in yourself and in the student.

What we lack is time for all the facets in which the teacher works. Generally, we don't have time to prepare a booklet and sometimes we get stuck getting to class anyway, improvising and this gets in the way of the teacher. For example, I would like to make my own booklet, but this requires tremendous research and time too, if you are very busy with your activities (Prof. Smith, 2020).

So, the teacher warns, in his narrative, that time is an aspect that challenges the process of preparing a booklet and/or teaching material, as well as participating in theoretical and methodological training, given all the facets that the teacher faces. As a result, classes are sometimes improvised, without adequate planning that takes into account the diversity of student learning. Added to this is the fact that some are responsible for subjects that are not their domain, reflecting negatively on the teaching-learning process.

Prof. Jansen also explains about the challenges that education has been facing in times of pandemic, which is adapting to the new teaching model, emphasizing the replacement of face-to-face teaching with the implementation of remote teaching mediated by Digital Information and Communication Technologies (DICT), including technological devices, such as: computers, notebooks, tablets, smartphones with internet access, as well as tools used by resource bias, such as applications, social networks, learning platforms and the emergence of social distancing due to the need to avoid contagion by the new coronavirus.

With the emergence of DICT, teachers had to adapt and make use of the Moodle platform, distributing activities, classes, tests and assignments to students, and this ends up looking like the content is being taught to the teacher himself. Besides, many students still do not have access to the internet. The respective teacher makes it clear that this new teaching model is a point that still needs discussion, taking into account some questions, such as: in what way and how to improve learning in the pandemic context? How to prepare the teacher to improve his class? and how to prepare the student?

Naturally, the teacher exposes representative concerns of many teachers from different networks in times of pandemic, since the lack of preparation for the use of technologies was revealed, signaling that teachers in both the basic and higher education networks need pedagogical training, one that includes the use of digital tools. Alarcão (2011) advocates that media and technologies have overwhelming power with multifaceted influence, requiring teachers to understand and develop new training skills. At the end of the century, Freire (2006b) already covered a reflection relevant to the current scenario of Brazilian education, which involved teaching knowledge and practice, aiming to develop new teaching skills in the format of non-face-to-face classes. In this context, the use of DICT, as both a didactic and methodological proposal available to teachers, has contributed to the teaching-learning process. After all, for Freire (2006b), teaching requires critical reflection on practice “[...] It is by critically thinking about today's or yesterday's practice that one can improve their next practice” (Ibid., p. 39), thus, teachers who have the habit of constantly reflecting and (re)signifying their teaching practice certainly faced the adversities caused by the COVID-19 pandemic more easily.

Prof. Jansen resorts to the importance of training to improve the quality of teaching and, consequently, the success of teaching, as qualifying the professional from a technical and pedagogical point of view must go hand in hand with working conditions, which would be well-equipped classrooms. To this end, pedagogical training assists in any teaching method or modality, whether face-to-face or distance learning.

Equipping the classroom with teaching resources, such as the construction of teaching material, is essential. It is also important to qualify professionals, teachers, the pedagogical team, to prepare the classroom environments so that you are truly able to carry out teaching practices, as every teacher wants to give a good class, that student wants to learn, however, sometimes the teacher is not prepared to transfer knowledge or does not have the patience to teach students with greater difficulties, such as those who have a disability, as they need more attention and resources. So it's challenging, education is never monotonous, sometimes I arrive with 4 or 6 classes with the same content, but the classes are different in terms of student participation and level of difficulties and class duration and this is completely natural (Jansen, 2020).

Prof. Jansen also points out the need of pedagogical training for teachers to work deal with students with special needs and it is believed that the haven't had that, and educational institutions are poorly prepared. He also considers the need to adapt in relation to the adoption of digital technologies, due to the pandemic caused by the new coronavirus, as teaching classes with cameras turned off and without physical and visual contact with students is a different way from what we are used to. The issue of accommodation was another point addressed by Prof. Jansen, as great care must be taken when preparing teaching support material, as, over the years, it may become obsolete.

I see a lot of this constant didactic training to use new technologies, as many of my colleagues can no longer stand using data shows, which is a great tool for some time, but if the entire class is just using this pedagogical instrument, it won't work. We always have to have new didactic-pedagogical strategies, listen to the class more and in this part of the pedagogical training I feel that we need to improve (Prof. Jansen, 2020).

Prof. Peterson also addresses that the pandemic caused by the new coronavirus has worsened the current situation we are experiencing, as DICT has been used for years, which, now more than ever, have become indispensable and he does not feel prepared. He also reports that the available resources are insufficient, in the sense that communication is not simply supported by speaking and listening, in modern means of video conferencing or video classes, as it is impossible to 'touch people', it is not just about touching through a screen, it's to establish or imply the meaning, through emotions and this is not shared by videos.

Away from people, anyone can hide behind a video or themselves, but in the room or conversation circles one can develop much more appropriately and this concerns those who are aware and have an understanding of what they are talking about and who they are talking to. The receiver, from whoever be the interlocutor, is able to appropriate, because he is not simply appropriating words, but using a set of meanings that are being exchanged, making it so that the teacher leaves richer and the student more invigorated, that is, they leave greater than when they entered in the process. Now, I think these audiovisual methods that use DICT are tremendously poor due to the lack of contradiction and exchanges in the process (Prof. Peterson, 2020).

Another point would be respect for the shy, humbler, more modest students, trying to encourage them to participate more in the processes. Inevitably, we discover students who bring with them some dramas that end up reflecting on the way they participate in the mechanisms of exchange and dialogue processes. On the other hand, most of the time, we talk a lot and listen a little, and that is the original sin of teaching, this thing of getting lost and trying to simply occupy time and space is something that we recognize as a negative point.

Prof. Newton talks about the importance that teachers have in student learning and, especially, now in this pandemic, which has made the issue of student training flawed. Due to the current scenario we are facing, the teacher mentions that, in his classes, he tries to teach little content, as his concern that it is what students are able to absorb from the topics. He also considers that he has already had experience with subjects that have a lot of accumulated content and this forced him to study only for the test without worrying too much about absorption. Therefore, many times, you have a subject with little content, but you can take advantage of that particular subject and make a connection.

I am very concerned about the issue of structure in the content I am teaching, so it is important for the student to have an idea of all the content they will have access to, including readings, slides, and the construction of the lesson in the classroom. If the student does not understand the path they are going to take, which is the subject, they will probably not be able to absorb this content. It is much better to have little content that is understandable than too much content and the student leaves without learning and contextualizing it. I often say that we in the area of Agronomy are like a general practitioner, as we need to know everything and correlate it with related disciplines and related areas (Prof. Newton, 2020).

He also reports that diction has been another problem faced, as students sometimes have difficulty understanding what is said in the classroom, mainly because the classes are large, made up of 60 students. Furthermore, we are not prepared to do our job as a teacher, as our training is entirely focused on research.

In general, the narratives of Agronomist teachers indicate that they are looking for different strategies and teaching resources to mobilize in their teaching practice, however, the lack of pedagogical training is a limiting element for this process. In this way, it is possible to affirm the importance and need for pedagogical training for teachers who work in Professional and Technological Education, confirming what Zamberlan (2017), Silva (2017) and Paniago (2021) have already pointed out.

## Final considerations

By carrying out the research, which had as an objective to investigate the interrelationships between training, knowledge and educational practices developed by Agronomist teachers, we realized that they face challenges in their praxis, with regard to knowledge and pedagogical practices, as their training is focused on research and not teaching. The narratives symbolize that teachers care about developing better quality teaching-learning. However, they also recognize that the lack of pedagogical training is an element that challenges them in this process. They find it easy to mobilize technical knowledge and develop research in their respective areas of knowledge, but not for teaching at the different levels of education offered by the institution.

Still according to the teachers' narratives, we noticed that one of the essential elements for educational praxis, which is planning, was not mentioned and this would be a support used to assist in the execution of their class. Although this element was not mentioned, we believe that teachers do justice to this in the preparation of their classes, highlighting the use of the teaching, research and extension tripod aligned with the theoretical context of professional practice. With Freire (2006a), we found that the teachers interviewed realize how valuable it is to create possibilities for the student to produce and be active in the learning process. Ultimately, they believe in it and seek new alternatives for their teaching practice.

Indeed, there are several changes that we are currently facing, caused by the advancement of science and technology, including pandemics, such as the one caused by the new coronavirus, which affect teaching-learning processes at different levels and force teachers to reinvent and mobilize different methods, strategies in the classroom, which implies participating in continuous processes of continuing education. Thus, our role as teachers and researchers is to investigate, verify, intervene and point out directions, and it is essential to believe in the possibility of change, as Freire (2006a, 2006b) said.

The research results reveal the need for educational institutions in which Agronomy teachers are assigned to provide pedagogical training courses in order to qualify them for teaching. Teaching in the Agronomy course cannot be trivialized and considered as a simplistic action, and it is essential to recognize that this profession is complex and requires diverse knowledge from teachers, ranging from content on the different ways in which students learn, different teaching methods, including digital tools, among others.

Finally, we recognize the gaps in this scientific study, as it is not possible for researchers to identify the different actors that influence the object under study. However, we emphasize that we seek to prioritize the process by giving teachers a voice. The narratives value the way participants think and experience their praxis in order to deduce which actions can be implemented to alleviate the challenges faced. Therefore, we end this research with some questions: how can the Federal Institute implement continuing education processes, in order to meet the training needs for teachers' teaching? It is important to highlight that the IF already offer a Specialization course in Pedagogical Training. Nevertheless, that offer still does not include teachers in their totality.

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#### INFORMATION ABOUT THE AUTHORS

**Oswaldo Palma Lopes Sobrinho:** PhD student and Master in Agricultural Sciences - Agronomy and Specialist in Teacher Training and Educational Practices at Federal Institute Goiano - Rio Verde Campus. Specialist in Sanitation and Environmental Health from the Federal University of Goiás and Agricultural Engineer from the Federal Institute of Maranhão.

ORCID: <http://orcid.org/0000-0002-4632-695X>

E-mail: [engenheiroswaldopalma@gmail.com](mailto:engenheiroswaldopalma@gmail.com)

**Rosenilde Nogueira Paniago:** Post-Doctorate in Education Sciences from the University of Minho. Specialist in Mathematics Teaching Methodology and Academic Advisor Training. Degree in Pedagogy, Law and Mathematics. Teacher at Federal Institute Goiano – Rio Verde Campus. Experienced in the area of Education and Teacher Training, mainly in the following topics: teacher training, professional development, identity, knowledge and educational practices.

ORCID: <http://orcid.org/0000-0003-1178-8166>

E-mail: [rosenilde.paniago@ifgoiano.edu.br](mailto:rosenilde.paniago@ifgoiano.edu.br)

**Alvaro Itauna Schalcher Pereira:** PhD in Food Engineering and Science from State University Paulista Júlio de Mesquita Filho. MBA in Science, Technology and Innovation Teaching Management from Faculty Integrada Metropolitana de Campinas. Master in Chemistry, Specialist in IT in Education and Graduated in Full Degree in Chemistry all from the Federal University of Maranhão and Teacher at the Federal Institute of Maranhão.

ORCID: <http://orcid.org/0000-0001-5415-9701>

E-mail: [alvaro.pereira@ifma.edu.br](mailto:alvaro.pereira@ifma.edu.br)

**Note:**

Oswaldo Palma Lopes Sobrinho: General project, data gathering, conduction and execution of the research, analysis, tabulation, interpretation and writing of the text. Effectively participated in all stages of construction and execution of the article. Rosenilde Nogueira Paniago: General planning, research monitoring, assistance and guidance in analysis, interpretation and revisions in the scientific writing of the text. Effectively participated in all stages of construction and execution of the article. Alvaro Itauna Schalcher Pereira: Monitoring research, assistance and guidance in analysis, interpretation and revisions in the scientific writing of the text. Without further ado, we certify the veracity of the information.