

# Chapter 288

## The impacts of the pandemic for the teacher in initial formation: The view of undergraduates

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### **Bruna Vieira Bardt Littke**

Federal Institute of Santa Catarina / Campus São José

E-mail: brunalittke@gmail.com

### **Luciana Gelsleucher Lohn**

Federal Institute of Santa Catarina / Campus São José

E-mail: lohn@ifsc.edu.br

### **Michelle Barcellos**

Social Service of Commerce - SESC / Palhoça Unit

E-mail: dra.qmc.michelle.barcellos@gmail.com

### **ABSTRACT**

With the arrival of the pandemic, sudden changes happened in education, forcing teachers and students to live in a new format of classes. These changes, without much planning, end up generating some effects, expected and not expected. This research aims to demonstrate the transformations that the pandemic has brought to the Degree in Chemistry course of the Federal Institute of Santa Catarina - Câmpus São José (IFSC - SJ), observed by the students. In this way, it aims to be able to observe its positive and negative

points, and results of the transformations that occurred in the first year of the pandemic, the first and second semesters of 2020. In pursuit of this objective, 29 teachers in initial training at the institution were interviewed through questionnaires, where it was possible to perceive that the effects of the pandemic go far beyond the classroom and that they are reflected in the students' learning. It is concluded, after analysis of the data of the research, together with the bibliographic studies, that, even if amid different perspectives, due to the reality of each student, most of the interviewees were partially satisfied with the methodologies used in the period. And despite adverse results, the actions taken in the face of the pandemic have provided knowledge that will serve as the basis for the teacher training of these students. However, even bringing benefits, taking into account the emergency nature, they demand improvements to the environment.

**Keywords:** Emergency Remote Teaching, Teacher Education, Impacts of the Pandemic.

## **1 INTRODUCTION**

The pandemic arrived suddenly and surprised the whole world. Students and teachers had to drastically change their routines to the new scenario that has been presenting itself. Social isolation became an indispensable measure in the quest to control COVID-19 infection and emergency remote learning was then established, requiring the use of digital resources to build learning. But, regardless of the moment of the pandemic in which we are living, Freire (1996, p. 77) already brought and one of his works a definition for what it is to learn. For him, "Learning for us is building, rebuilding, seeing to change, which is not done without openness to risk and the adventure of the spirit." In this way he warns us that we do have to venture to the new, and in this case, what an innovator, isn't it?

Still in this line of thought about how to build learning, Freire (1987) also demonstrates the importance of seeing beyond the classroom, of not staying only there. Today, we are experiencing the

moment in which education was forced to work with different ways of teaching and learning, to provide opportunities for encounter with the subjects of education (teachers and students), to provide access to school knowledge, although in preventive isolation. However, the change from face-to-face to remote mode requires detailed planning, which was not very possible due to the urgency of the situation and the referrals of the IFSC administration and the Campus. And, this sudden change can bring some harm to education, by the simple fact that it was not planned, but it can bring benefits as well.

Thus, Gomes (2020) believes that for teacher training, the decision for emergency remote teaching was not enough for good learning, since the strategies used to maintain teaching during social isolation were not enough to meet all the needs of those involved in the education of the teacher in training Will. In agreement with Gomes (2020), when addressing the limitations of ANPs, Cardoso, Ferreira and Barbosa (2020) point out that the insufficiency of the emergency plan for remote teaching will bring great losses to Basic Education (EB) and, perhaps, put to lose much of the educational evolution achieved in terms of quality, given the limitation of teachers in the face of new methods and technologies. In this sense, it is evident the need for preparation of teachers in the face of the new methodologies used, whether at any stage of teaching.

However, beyond the limitations of teachers, we cannot help but think about the limitations of students. According to Cardoso, Ferreira and Barbosa (2020), it is undeniable that remote teaching during the pandemic brings benefits to students who have access, as it maintains the risk of studies and stimulates the continuity of the learning process, in addition to providing new knowledge and training in the technological area, enabling the use of more tools in the preparation of classes. But still, the aforementioned authors complement their reflection by saying that the problem is that not all students have access to the resources or tools necessary to access online content. Corroborating this, Cunha, Silva, and Silva (2020, p.32) show that:

[...] with social distancing and the predominance of strategies that depend on information and communication technologies, a portion of students face or will face difficulties to access and remain linked to school. One of them relates to internet access. According to data from the survey conducted by CETIC (2019a), in Brazil 29% of households, approximately 19.7 million homes, do not have internet. Of this amount of disconnected, 59% claimed not to hire because they considered this service too expensive, and another 25% because they do not have internet in their locations. It is also noteworthy that 41% of respondents claimed not to have a computer for this and 49% did not know how to use the Internet. Thus, the students included in these statistics are outside the strategy of remote teaching mediated by digital technologies.

This difficulty is reflected in social relationships, in the direct interaction between students and teachers, and in communication during this pandemic period, where it is undermined or even limited. Communication is fundamental for good learning because according to Freire (1996, p. 20 and 21), "There is no intelligibility that is not communication and intercommunication and that does not merge in dialogic." Communication comes from one of the great challenges faced in the pandemic period, being established only through virtual means, making it difficult to exchange more in-depth experiences, conversations and

knowledge. However, it facilitated communication in some aspects, such as enabling the participation of guests in classes and projects, guests who may be from various locations around the world.

In addition to the difficulties mentioned, Gomes (2020) points out that, because we are facing a health crisis, people also tend to have psychological and emotional limitations, which can bring even more obstacles to build good learning. In addition to time to study, undergraduates need concentration and dedication to their studies and it is at this point that personal problems drastically affect the learning of this academic.

In this sense, Libâneo (1994) cites in his work the main task of the teacher, and describes it as ensuring the didactic unity between teaching and learning, and also mentions that the teacher must plan, direct and control the teaching process, encouraging the student to seek his learning. With the ANP's, teachers had to reinvent themselves so that this task could be performed.

But not only did teachers need to review their way of teaching and learning, students also needed to review their way of constructing learning. This way, for Santos et al (2020) the decisions made during the pandemic, in a premature process, will bring several learnings, not only to teachers, but also to students who had to learn to participate more actively in the construction of their learning.

And what can be said, then, of the students in initial teacher training who, in this period, were in Supervised Curricular Internship (ECS), a project of the Institutional Program of Scholarship of Initiation to Teaching (PIBID) and Pedagogical Residency (RP)? That in addition to their way of learning, they had to learn to teach in this complex moment for education. This research is in line with students' reflections on their initial teacher training, given the new methodologies used and the changes resulting from the pandemic. And for this, it is necessary to understand the transformations that occurred in the IFSC-SJ Degree, which is the field of this research, having as a research problem: what were the transformations that occurred in the teaching and learning process in the Chemistry Degree of the IFSC-SJ, observed by students, resulting from the implementation of non-face-to-face activities (ANP1) during the pandemic?

Thus, the objective of this research is to identify, according to the perception of students in initial teacher training, the transformations that occurred in the teaching and learning process in the Degree in Chemistry of the IFSC-SJ, resulting from the implementation of the ANP's due to the pandemic, which includes planning, the form of evaluation, the use of new methodologies and their perception of their training.

It was sought to achieve these objectives through qualitative research, the qual has three distinct stages, namely, the exploratory period, focused investigation, in addition to the final analysis and preparation of the report (ALVES, 1991). From the definition of the research method to be used, a case study was conducted. According to Alves-Mazzotti (2006), the most common case studies are those that focus only on one unit, which can be an individual, a small group, an institution, a program or an event. In this case, it focused on analyzing the impacts of the pandemic on the initial training of teachers at IFSC-SJ from the perspective of undergraduates.

Through this research it will be possible to build a point of view of the scenario of the Degree in Chemistry at IFSC-SJ, according to the perspective of the undergraduates and, based on these data, understand better the effects that all this change, caused by the pandemic, has caused. It is very important to know the impacts that the pandemic has brought to education so that we can measure not only the losses but also the benefits that it has been leaving. With this reflection, it is possible to visualize aspects that can be improved for higher-quality education.

## **2 TEACHING IN A TIME OF PANDEMIC**

### **2.1 THE ARRIVAL OF THE PANDEMIC AND THE NEED FOR CHANGE**

The pandemic has affected the political, social, economic, and educational structure, among other sectors of the country and the world, because of the virus that has spread, the Coronavirus or COVID-19. To contain the contamination, education has undergone a drastic measure, as described in Ordinance No. 343 Gab/MEC, of March 17, 2020, which provides for the replacement of face-to-face classes by classes in digital media,

<sup>1</sup>ANP - ANP is understood as the set of activities carried out with technological mediation or not, to promote the bond with the institution and learning during the period of restrictions for the realization of face-to-face meetings at the IFSC São José campus. (IFSC-ST. JOSEPH, 2020, p. 01)

for as long as the Novel Coronavirus - COVID-19 pandemic situation lasts (BRAZIL, 2020). As a way to comply with the aforementioned Ordinance and maintain social isolation, the ANP emerged in the IFSC, also called remote teaching. Thus, the ANP's began on March 17, 2020, as described in Rector Ordinance No. 1178, of March 16, 2020, which suspended in-person classes on IFSC campuses (IFSC, 2020). In this context, teachers had to go through a lightning replanning and then, students and teachers were faced with a great challenge, which was to face classes in virtual environments, with the help of technological tools and diversified methodologies. It is worth remembering that this practice goes against the practice of ensino EaD2, which had its first actions carried out here in Brazil in the nineteenth century. and, according to Gomes (2020, p.36):

Over the years, the need for adaptation to the detriment of the expansion of the internet was established, and with the emergence of new means of communication, through the Law of Guidelines and Bases of Education (LDB), a law that establishes the principles of education in Brazil, Decree No. 5,622 of December 19, 2005, was established, making Distance Education legitimate.

In this sense, we see that distance education is already structured and prepared for the digital format, which is not the case of ANP's, and this is an emergency measure. Until then, in face-to-face teaching, for a long time, the traditional method of teaching has been used in many schools and colleges. However, Freire shows us, in several of his works, the need for change, regardless of the events we are experiencing today.

It also shows that it is necessary to be prepared to adapt to the changes that may occur and continue in search of the best way to teach and even dare in front of traditional classes.

Freire (1987) in dialogue with Shor, in the work *Medo e Ousadia*, adds:

PAULO. I think that if it were possible for many of the teachers who only work within the school – stuck to the programs, the schedules, the bibliographies, the evaluation sheets – to expose themselves to the greater dynamism, to the greater mobility that is found within the social movements, they could learn about another face of education that is not found in books. There's something very important that people are creating, outside of formal education. For teachers, it would be an experience of opening up new perspectives. However, I respect teachers who prefer to stay in schools; even there, however, one must be critical within the system. (FREIRE, SHOR, 1987, p.30-31).

<sup>2</sup> Distance learning is characterized by having a teaching and learning project that differs from face-to-face learning since it adopts different methodologies and didactics to subsidize the practices mediated on the internet. Thus, it is an organization that has support and pedagogical structures and diversified technologies for both teachers and students, in which they are prepared and environmentalism with the spaces in which they circulate. (PRESTES, VARGAS, BRACHTVOGEL, BOFF, 2020, p.3)

The speech of Freire and Shor (1987) gives us an overview of how teaching has been plastered. The arrival of the pandemic did not question the school system, on the contrary, it found a way to keep the system even in isolation, where the ANP's were created. However, even indirectly, it provided the possibility of a new look, the possibility of testing part of the theory of Freire and Shor (1987), and one of the ways to create a new dynamic, was to explore technological resources.

For Gonçalves and Avelino (2020), the production of knowledge through the use of media and technological resources is necessary. They also point out that the use of these resources has great potential to boost knowledge and provide greater efficiency to pedagogical practices, considering their power of interaction, which contributes to overcoming the challenges faced by education, especially in times of pandemic. The use of technology has brought benefits to this difficult time for education. What you can't forget is that it doesn't solve all the problems brought on by the pandemic.

## 2.2 EMERGENCY REMOTE LEARNING AND ITS EFFECTS

The face-to-face mode ceased to exist temporarily and everything that previously followed a routine, began to take new directions, forcing teachers and students to adapt to this new format of the class, where new resources and methods are helping teaching and learning. However, without proper planning and preparation, it is difficult to organize classes with quality teaching. What material will I be providing to my student, or rather, what quality of material will I be providing to my student? And how will this material get into it? The preparation of the didactic material is something that requires time and skill, things that we end up not having in many cases. This has been driving the organization of various ways of teaching virtual classes, without knowing for sure which of them is the most efficient or most appropriate.

According to Moreira, Santos and Kumanaya (2020), it is important to emphasize that distance learning does not only start from the condition that classes must be planned on a good platform and with

qualified teachers, but that, in addition to these points, it is also necessary to immerse, interest, responsibility and the effort of students in studies, even at a distance, to obtain satisfactory teaching and learning.

With the arrival of the pandemic, many changes had to be made prematurely, with no previous experiences to assist in the choice for decision-making. And what were the expected and unexpected effects of these decisions? Freire (1996) already says that no decision does not follow expected, unexpected or unexpected effects. That's why decision-making is a responsible process.

For Freire (1987), teachers also need to look around the school, look at society and the necessities that it has. And during the pandemic, many teachers were forced to perform some of these actions pointed out by Freire, but without any preparation. Gomes (2020) brings the reflection in his article, that as much as the teaching-learning process has transformed over time, due to a society that consumes information instantly through media and internet, still, it is a fact that we have some limitations. In this way, teachers have been learning, during the pandemic, about the tools available and how to use them.

In his work, Freire (1996) brings the importance of looking around the walls of the school and understanding in what context it is necessary to include his classes. However, he points out that this contextualization alone is not enough. In the first place, the offender must be moved by technical competence and passion for teaching. It is also necessary to add knowledge of concrete reality and technical knowledge in different areas, such as communication and technology. Gomes (2020, p.38) says that:

Many of the reports of teachers in the current situation related to the lack of more and fundamental time to learn how to use the software more robustly; learning has been done jointly with students during the process itself and runs from classes, which facilitates the expenditure of useless time (SIC) due to lack of knowledge and technological management.

In this sense, Cardoso, Ferreira and Barbosa (2020) also reinforce the need for preparation of teachers in the face of the new methodologies used, then say that the suspension of face-to-face school activities reveals the need for the development of digital skills and competencies.

And when we talk about the need to use digital resources, we cannot be restricted to the pandemic period. The learning of chemistry involves the understanding of concepts that are brought in the form of representations, which can be graphs and molecular structure as an example (AMARAL-ROSA; FRAMES; NERY, 2017). The use of these resources in the teaching of chemistry collaborates in the construction of learning, as it facilitates the understanding and recreation, by teachers in initial training, of various concepts studied.

### 2.3 IMPACTS OF THE PANDEMIC

In general, with the implementation of the ANP's, it was expected to maintain social isolation and continue studies safely, that is, remotely. Teachers were forced to adapt to a new teaching format and, in addition to looking at their own needs, in the face of such a worrying period, they also had to look at the

needs of students. Taking into account, for both parties, their personal lives, their physical and mental health problems, their financial problems, access to classes, among other aspects. Without looking at it this way, it becomes impossible to build proper learning. And one wonders, has this sudden change brought satisfactory results? In addition to being innovative, has it proved rewarding? What has student-teacher interaction been like in a time of pandemic? What is the role of the teacher in this scenario? For Freire (1996, p. 20), "the coherent task of the educator who thinks right is, exercising as a human being the irrefutable practice of intelligible, challenging the learner with whom he communicates and to whom he communicates, to produce his understanding of what has been communicated".

And as we've already mentioned, that's been a big challenge in the pandemic landscape we're in, communication. According to Prestes, Vargas, Brachtvogel and Boff (2020), the obstacles and difficulties encountered during the pandemic can be several and, as much as the digital context provides the progress of classes remotely, they do not solidify social interactions, such as affectionate looks, conversations in the speaker and nostalgic hugs.

Still in this sense, Moreira, Santos and Kumanaya (2020) point out in their article that although new technologies are offered by several universities, many students do not give up face-to-face classes for the safety they feel in having their doubts immediately resolved, in addition to the motivational issue that brings responsibility of being routinely in the school space, up to date with their studies and activities.

Communication being strictly through technologies and internet, ends up being limited to students who have access to these tools, which is not the reality of all. In addition, this dialogue does not always take place satisfactorily, because the access is sometimes restricted, slow and even with oscillation, hindering this communication, which would be much more fluid in the face-to-face format. Not to mention that this new format of communication can sometimes inhibit some students, those more withdrawn, because it ends up creating prominence to them in case of participation in class or clarification of doubts. This can cause a difficulty in actually getting a dialogue with everyone.

According to Ladies (2020), the continuity of educational activities, using methods similar to distance education contributes positively to the maintenance of educational commitment in the short term. Although, using the same tools already established in EAD, the results are very different due to the differences between empirical experiences and the transmission and absorption of content or even the capacity and difficulty of access.

The difficulty of access is a clear example of the insufficiency of the remote teaching inserted so quickly, where the initial decision was to maintain contact with as many students as possible. It was a choice between doing this or doing nothing and leaving students from all over Brazil without any contact with educational institutions and stopped in their time of formation. And, as a consequence of this decision, it was evident the reality that not all students would be able to follow the classes in this format. Silva (2020) addresses this issue describing it as one of the consequences left by the virus, where, the suffering resulting from the absence of technological structure of teachers and students populated the agenda of families,

referring to those who have the minimum necessary for ANP's to occur, such as a reasonable access to the Internet and tools such as a cell phone, notebook or tablet.

In addition to all the transformations in the school environment, we cannot forget the transformations that society as a whole has been facing. Situations such as people losing their jobs, others getting sick, and students who now must care for their siblings, the increase in cases of infected people and social isolation. All these are examples of situations that cause great impact on people, and that may have changed the reality of part of the teachers and students in initial teacher training. In agreement with the above, Gomes (2020, p. 38) also points out that:

It is important to mention that it is not only about whether or not to have technological devices or know how to handle them, but also that, because we are facing a biological disaster, people tend to have limitations not only of a physical nature, but also of a psychological, emotional nature.

In this sense, it is important that not only the physical aspects are taken into account when we talk about teaching and learning. Because, during the pandemic period, many students are facing problems that have caused great emotional impact, which can be reflected in the performance of the disciplines and consequently in the learning of this individual.

## 2.4 INITIAL TEACHER TRAINING IN TIME OF PANDEMIC

Everything happened in a very intense way, very rapid changes, totally escaping from the conventional and the culture of the school of our time, requiring an accelerated adaptation of both teachers and students. However, even with the changes, the roles remain the same, bringing the need for trials and adaptations. In this sense, Santos et al. (2020, p. 88) state that:

The paths and possibilities, invented during the pandemic in a process of trial, error and success, will bring countless learnings, not only to the teachers who needed to reinvent the way they taught but also to the students who had to learn to actively participate in the construction of their learning.

The arrival of the pandemic forced temporary changes in education, but through it, much learning was provided. According to Freire (1996), the student experience is fundamental to the teaching practice that this student will have in the future or that he is having now, simultaneously with that one. And that, in most cases, it is by critically living the freedom of the student that he prepares to assume the role of teacher. For this, the student, today, who dreams of teaching tomorrow, must be based on the experiences that have been giving you with your teachers. He also points out that we are part of what we experience, that is, if I have a quality training today, I will reflect this formation in my act of teaching tomorrow. He adds:

My role as a teacher, when teaching the story or b, is not only to strive to, with maximum clarity, describe the substantivity of the content so that the student fixes it. My fundamental role, in speaking clearly about the object, is to incite the student so that he, with the materials he offers, produces the understanding of the object instead of receiving it, in full, from me. He needs to appropriate the intelligence of the content so that the true relationship of communication between me, as a teacher, and him, as a student, is established. (FREIRE, 1996, p. 60 and 61).



This interaction between the student and the teacher is fundamental for teaching-learning and, according to Moreira, Santos and Kumanaya (2020), for many teachers and professionals in the area of education, this interaction becomes essential to better enjoy the learning process because, through this contact it is possible to identify the difficulties that students may present during the development of the class, being able to make them adaptable to the need found.

All this experience is reflected in higher education, where initial teacher training takes place in practice, through various activities, among them, the ECS, as pointed out by Gonçalves and Avelino (2020, p. 47 and 48):

It is important to emphasize that the supervised internship is part of the curricular fulfillment of the courses for teachers, it is a basic requirement for obtaining the degree of licentiate, provided for in the Law of Guidelines and Bases of National Education - Law 9394/96, in the Opinion of the CNE / CP No. 009, of May 8, 2001, and in Resolution CNE / CP No. 01, of February 18, 2002, being carried out throughout the training course and experienced with sufficient time to address the most diverse professional experiences, including the social and intellectual involvement of the subjects.

The ECS, according to Gonçalves and Avelino (2020, p. 41), "allows the future teacher to reflect on his performance in the work environment, by relating theory and practice, so important in the quality of teaching". And, it also highlights that this proximity of the *estagiário* with the future work environment refers to an incalculable pedagogical gain, in addition to the fact that the trainee's learning is reinforced day after day, when attending the school environment, either for observations or for class regencies in EB.

## 2.5 ERVISIONADO SUP INTERNSHIP AND EXTENSION PROJECTS

It is consecrated in the literature of the area, the importance of this stage of the course for the formation of the future teacher (PIMENTA, LIMA, 2006; PEPPER, ANASTASIOU, 2008; BRAZIL, 2015; GONCALVES, AVELINO, 2020). Well, it is not enough just to know the content of chemistry, it is also necessary to know how to build this knowledge together with the student. It is necessary to know my student, the environment in which he lives and seek more and more, to bring the best way to teach. "The exercise of any profession is *practic*, in the sense that it is about learning to do something or action. The profession of the teacher is also *practical*" (PIMENTA, LIMA, 2006, p. 07). And, the ECS is the fundamental moment for this practice, where students enter the classroom to become teachers. According to the Internship Regulations:

The Supervised Curricular Internship, mandatory for Undergraduate Courses, aims to provide the improvement of the pedagogical practice and learning of the undergraduate, and should be built, experienced, reflected and evaluated by curricula, programs and school calendars (formal or non-formal educational spaces), to constitute itself as a instrument of integration, immersion in educational practice, technical-cultural, philosophical, scientific, political, aesthetic and human relationship improvement (IFSC-SÃO JOSÉ, 2019, p. 01 and 02).

Aware of the importance of this movement, the ECS, in the Degree in Chemistry of the IFSC-SJ, follows a sequence of four stages, starting in the sixth phase of the course and ending in the ninth phase. In the first stage of the internship is where the student will make three or more observations in the classroom, in different environments (formal and non-formal). In the second stage, the student begins the observation of eight chemistry classes, in the high school class of the school chosen to carry out the internship. Based on the observations, the student will prepare the didactic material to be used in the following semester. In the third stage of the ECS, this is where the moment of intervention finally happens, with monitoring by the supervising teacher and the guiding teachers. And finally, in the fourth etal., the final report of all the experience gained in all stages is prepared (IFSC-SÃO JOSÉ, 2019).

In the year 2020, and during the first semester, 2020.1, in which the ECS II was held, the implementation of the ANP's took place, resulting in the first stage of remote observation of the IFSC-SJ. As a consequence, in the second half of the year, 2020.2, the first stage of intervention in digital format took place. In the impossibility of teaching the classes in the school initially chosen, the ECS III was taught in the Campus itself, IFSC-SJ, where the classes were prepared for a class of Integral Technical High School, remotely. This was innovative, both in the format and in the field of internship, as it was the first time that an internship of the degree course was taught at IFSC-SJ and in a non-face-to-face way. In addition, the classes were not prepared with the elaboration of an Ecoformador Creative Project, a format indicated, preferably, in the Pedagogical Project of the Course (PPC) of the degree (IFSC-SÃO JOSÉ, 2014). This occurred because the arrival of the pandemic took everyone by surprise, and preparing the classes for the IFSC-SJ Integrated Technical High School, which demands content for high school and technical education, coupled with a Creative Ecoformador Project, in a short time, would be something unfeasible for the moment. This has become a preponderant factor for this decision-making.

Like teachers, students also needed to learn how to teach their classes in the virtual format. To this end, the classes for the intervention of Stage III were prepared in the format of ANP's and the trainees participated in a training, the Educational Marathon. This was composed of three lives, which addressed topics such as online teaching posture, methodologies and digital tools, as well as a mentorship with several mentors, being external teachers, from other IFSC campuses and from the campus itself. After this preparation, the students had to elaborate a class to be taught in the form of live, that is, to give a live class. Thus, even without the Ecoformador Creative Project, the classes followed a specific, creative and different format from the usual, that is, virtually, with the help of methodologies and technological and digital devices.

Seeking to enhance teacher education, IFSC-SJ has some federal programs to extend teacher training such as PIBID and PR. The PIBID is an action of the Ministry of Education (MEC) that aims to provide students in the early stages of the undergraduate course, a practical approach to the daily life of public schools in EB (BRASIL, 2010). PR is one of the actions that aims to improve practical training in the final stages of the undergraduate course, and promotes the immersion of the undergraduate student in the EB

school (BRASIL, 2020). With the arrival of the pandemic, these projects did not stop, but were molded to the virtual environment.

## 2.6 UNDERGRADUATES' PERCEPTION OF EDUCATION IN TIMES OF PANDEMIC

Amid so many transformations in the field of education and the personal lives of students, it was necessary to understand how teachers in initial training have seen this scenario and how they have felt their teacher training. And, Moreira, Santos and Kumanaya (2020) bring in their research some important perceptions of students, where they highlighted as the main positive factor, about ANP's, the fact that classes are recorded, which enables the review of the subject, which for students who have difficulty, provides an opportunity to study the content again, as many times as necessary.

And, as the main negative factor, the aforementioned authors highlight the excessive demand for work established by teachers. Still, according to Moreira, Santos and Kamanaya (2020), for some remote learning provides the student with a greater opportunity for development, autonomy, comfort, flexibility and time saving. However, for others, these aspects can be detrimental to the student who has difficulty in administering them. The authors concluded their research by mentioning satisfactory results in the ANP's. Even due to the troubled situation and methods and tools used by higher education universities as a palliative to the face-to-face format, the remote learning system exceeded expectations and fulfilled its purpose. However, the need for future improvement is evident.

## 2.7 METHODOLOGICAL PROCEDURES

The methodological process of this research is qualitative, and according to Lüdke and André (1986) it is characterized by giving more emphasis to the process than to the product, having the natural environment as a space for data collection, considering the different points of view of the research subjects, being predominantly descriptive. This is because the context of the research considers the transformations in initial teacher education as a complex object of study with many variables. For Minayo (1994, p. 21-22), "the qualitative approach deepens in the world of the meanings of human actions and relations, a side not perceptible and not graspable in equations, means and statistics".

According to Alves (1991), this methodology has three different stages, the first phase being exploratory. According to her:

The main objective of the exploratory phase is to provide, through the immersion of the researcher in the context, a general and non-biased view of the problem considered, and to contribute to the focus of the questions and the identification of informants and other sources of data. (ALVES, 1991, p. 58).

And, according to the aforementioned author, after the exploratory phase, then comes the focused investigation. At this stage, systematic data collection begins, which may or may not resort to the use of auxiliary instruments, such as questions, interview scripts and observation forms, for example. And finally,

there is the third stage, which corresponds to the analysis of the results obtained during the research and preparation of the report.

Qualitative research typically generates a huge volume of data that needs to be organized and understood. This is done through a continuous process in which it seeks to identify dimensions, categories, trends, patterns, relationships, unveiling it and the meaning. This is a complex, non-linear process that implies a work of reduction, organization and interpretation of the data, and that begins already in the exploratory phase, accompanying the whole investigation in an interactive relationship with the empirical data: as the data are collected, the researcher will try to identify themes and relationships, constructing interpretations and generating new questions and/or perfecting previous ones, which, in turn, leads him to seek new data, supplementary or more specific, that test his interpretations, in a process of "fine tuning" that goes until the final analysis. (ALVES, 1991, p. 60).

From the qualitative method, the case study is instituted, which, according to Alvez-Mazzotti (2006), establishes an investigation of a specific unit, located in its context, selected according to predetermined parameters. The aforementioned author (2006, p. 650) complements by saying that "the criteria for identification and selection of the case, however, as well as the forms of generalization proposed, vary according to the paradigmatic link of the researcher, which is of his free choice and must be respected."

### **3 METHODOLOGY**

The study developed here analyzes the impacts on the initial training of chemistry teachers, at IFSC-SJ, under the view of undergraduate students. Spanning two semesters (2020.1 and 2020.2), the first year of the COVID-19 pandemic.

This study seeks to identify and describe how students have perceived their participation in the construction of their learning through the new methodologies and teaching tools used in ANP's, in the perspective that the student is co-responsible for their learning process. And yet, the study is interested in understanding how these changes contributed to their initial formation.

Considering that the study reflects on the impacts caused by the sudden changes in the educational routine due to the pandemic, we sought to dialogue with the undergraduate students who were studying the degree at that time. To achieve these objectives, it is understood that the study with a qualitative, exploratory and descriptive approach, such as a case study, would be more appropriate. In this sense, Alves-Mazzotti (2006, p. 643) points out that "questions or themes about complex, situated and problematic relationships" are the main characteristics of a case study, in addition to "questions about how and why they refer to complex relationships, over which the researcher has little control". Given these characteristics, it is understood that they can be thought of for qualitative research in general, including for this research, in particular, which is defined as a case study.

For data collection, seeking a better understanding of the reality of undergraduate students in initial teacher training, a questionnaire was applied through the Google Forms platform, which was carried out in two stages, identified in Stages 01 and 02, as shown in Chart 01:

Table 01: Questions used for data collection.

Stage	Questions
Stage 01	<p>* In what year did you enter the Degree in Chemistry at IFSC-SJ? * What is your current phase in the course?</p> <p>* What motivated you to choose the Degree in Chemistry?</p> <p>* What is your dedication to the course?</p> <p>* Did you have to lock up any disciplines or phases of the course due to the pandemic? * Did you fail any course subjects due to the pandemic?</p> <p>* What pedagogical disciplines have you taken or are you taking so far? * Have you been participating in classes during the 2020.1 and 2020.2 semesters?</p> <p>* Did you have difficulties during classes in ANP format? If so, what were they? * What kind of student do you consider yourself?</p> <p>* Which of the following characteristics do you consider to possess today?</p>
Stage 02	<p>* How did you perceive your classes until the start of the pandemic?</p> <p>* How was the organization of classes before the pandemic and the new ANP format, concerning the methods and tools used?</p> <p>* How did the organization take place, regarding the methods and tools used in the classes after the implementation of the ANP format?</p> <p>* How has the pandemic affected your participation in the course of classes? * How did you perceive the evaluation process in times of pandemic, both with the proposed activities and in the observation of the construction of learning? * How was the student-teacher interaction in your perception during the pandemic? * In general and with the teaching of chemistry, how have your teachers been shown during the pandemic?</p> <p>* What benefits did you find with the implementation of ANP's?</p> <p>* How satisfied are you with the methods and platforms used during the pandemic?</p> <p>* To what extent have non-face-to-face activities and the use of technologies helped in your training as a future teacher?</p> <p>* Do you feel that your learning is doing enough for your teacher training? * In Step 01 of this research you mentioned related difficulties in the figure below. How were these difficulties handled?</p> <p>* Regarding the question asked in Stage 01 of this research, regarding failure in one or more disciplines due to the arrival of the pandemic. What are the possible reasons for this disapproval(s)?</p> <p>* Leave your suggestions for the best use of classes and diminution of the negative impacts in times of pandemic?</p>
<p>* Questions with option for multiple answers.</p>	

Source: Autoras, 2022.

The first questionnaire, Step 01, has eleven questions, which aims to identify the characteristics of the students, to direct the questions of Stage 02. The second questionnaire, Step 02, contains fourteen questions that seek to recognize, in fact, the problematization of this research.

Based on the view of the interviewees and, from this case study, it was possible to provide an initial view of the impacts that the pandemic has brought to the initial teacher training at IFSC-SJ, whose results are exposed in this research. 16th

## **4 RESULTS AND DISCUSSION**

### **4.1 CHARACTERIZATION OF THE RESEARCH OBJECT**

With the arrival of the pandemic and social isolation established, many institutions stopped their activities so that teachers could prepare pedagogically for the start of emergency remote learning. However, at IFSC-SJ, this pause in activities did not happen. The teachers continued with classes without initial meetings or pedagogical organization.

The IFSC-SF is located at Rua José Lino Kretzer, 608, in the Praia Comprida neighborhood, in the municipality of São José, Santa Catarina and currently offers the higher courses of Degree in Chemistry and Bachelor in Telecommunications Engineering, as well as other courses such as: Integrated Technician with the courses of Refrigeration and Air Conditioning and Telecommunications; Professional Qualification with the courses of English A1, English for Teachers of English, Basic Spanish, Configuration of Linux Computer Networks, MATLAB and Installer of Refrigeration and Home Air Conditioning; EJA Professional Education with the Computer Operator course; and Specialization with the course Environmental Education with Emphasis on Teacher Education.

### **4.2 DATA ANALYSIS: THE VIEW OF TEACHERS IN INITIAL TRAINING**

In the first stage of the research we obtained 29 answers, which corresponds to approximately 27% of the students enrolled in the course in the semester of 2020.1. Among the students interviewed, 39.3% joined the course in 2017, in other words, three years before the pandemic, allowing a comparison of teaching at IFSC-SJ in its original format and with remote teaching.

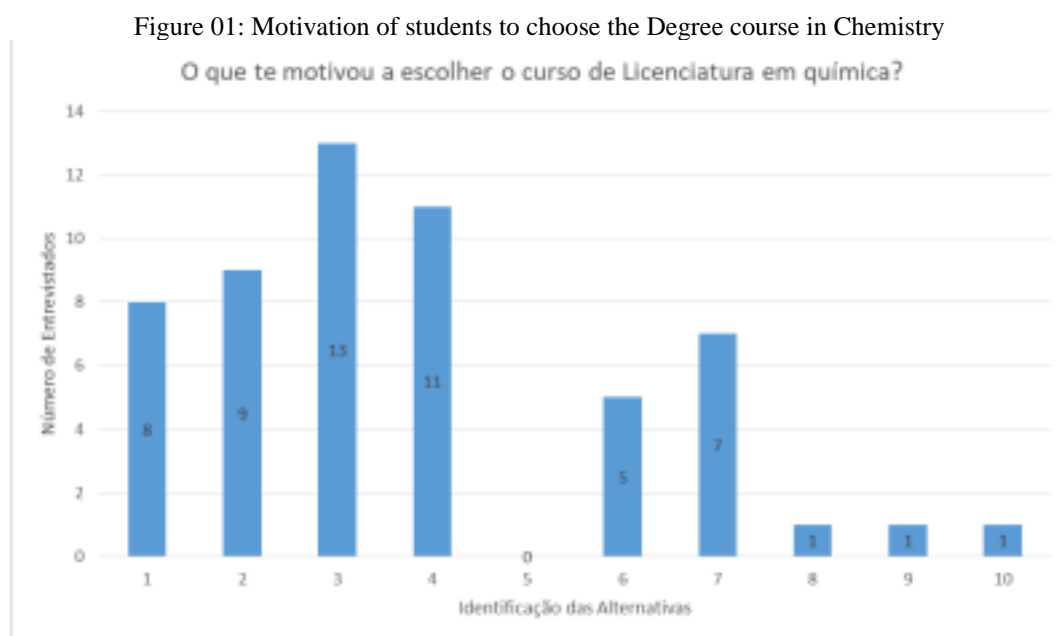
Regarding the phase of the course, we obtained varied answers, which is because some of the students failed or did not take some subjects, taking courses from other phases to which they should be at the moment. In this case, our question could have been clearer, such as: During the pandemic and teaching through ANP's you took courses of what phases?

In response to the motivation of the students to attend a Degree in Chemistry, it was possible to realize that several reasons led them to this choice. How the question was elaborated for multiple answers, according to Chart 01, described in methodology of this research, values were generated that exceed 100%. However, it is possible to perceive which reasons were more present in the answers of the interviewees, where 42.9% said they chose the degree in chemistry because chemistry draws their attention, 39.3% of the interviewees were motivated by teachers of chemistry that they had during their schooling processes and that served as models to be followed, 32.1% said it was because they identified with the exact ones, 28.6% reported it was because they had a desire to teach. Still about motivation, 25% revealed that what motivated

them was only the opportunity to enter a higher education course and 17.9% said that they want to work with chemistry, but do not want to teach. Another 10.8% responded differently, with 3.4% for each of the ones mentioned below:

"I love mathematics, I wanted to go to college and when I finally passed with enough grade in Sisu to be able to the graduation, my score only gave me two choices if I were to come here to the South (Physics or Fashion), at IFSC there Araranguá, then I made transfer to the campus of SJ because here it is bigger, it doesn't give me the impression of a country town (I spent a lot of time living in one and was tired of it)." (Academic 17) "Pedagogical complementation." (Academic 07) "Working in chemistry, as well as teaching." (Academic 20)

You can better visualize this data through Figure 01.



Caption:

- 1 - I have always had the desire to teach
- 2 - I identify a lot with the exact ones
- 3 - Chemistry catches my attention
- 4 - I had chemistry teachers who inspired me
- 5 - I have chemistry teachers in the family
- 6 - Work with chemistry, but not teach
- 7 - Only opportunity to enter a higher education course
- 8, 9 and 10 - Octros (as described above).

Source: Autoras, 2022.

To better understand under what conditions the students took the course, they were asked about the time they dedicated to it. Of the interviewees, 64.3% worked and studied, taking only a few courses. In contrast, 17.9% worked and studied all disciplines and only 10.3% only studied.

When asked about the need to lock some discipline, 53.6% of respondents said it was not necessary. However, when asked if they failed one or more disciplines due to the impacts of the pandemic, 50% of respondents answered in the affirmative. The high rate of failures, according to the interviewees, maybe a reflection of the high rate of the first questioning reported in this paragraph, where, perhaps, it was necessary to have locked some discipline. However, the moment of the pandemic and the difficulties that

it could bring in this context were not taken into account. Thinking like this, we address this subject again in Stage 02 of the research, to know the possible reasons for these failures to happen.

As already discussed in this article, schools have suffered great impact with the pandemic, going through many adaptations, which directly influences the participation of students and even school dropout. Amid so many changes, there are also difficulties of adaptation. According to the interviewees, the greatest difficulty found in the ANP's was concentration and learning, accounting for 75% of the answers, while 3.6% said they had not encountered difficulties. Regarding the participation of respondents in the course during the semesters 2020.1 and 2020.2, 78.6% participated in the two semesters integrally, while 21.4% participated partially, that is, in only one of the semesters or isolated disciplines. In the search to solve these difficulties, a large group of students talked to the teachers and obtained greater flexibility in the submission of their tasks. It is worth mentioning that there was no reference to the lack of access to ANP's due to connection and equipment problems, since this was a problem that was presented throughout the country, considering all phases of education, according to the literature analyzed.

It is important to highlight that IFSC-SJ teachers had to rebuild their classes in a summarized way, because they only have one hour for synchronous classes, according to a document issued by the Campus (IFSC-SÃO JOSÉ, 2020). The class format changed from face-to-face to ANP, according to Kraviski (2020, sp.):

So that education in the country did not stop, Non-Face-to-Face Teaching was a necessary, momentary and emergency adaptation, in which teachers, from their homes, are replanning and reinventing teaching to maintain the progress of the school year. The classes and activities, which were previously held in person, are now sent through virtual environments and digital media, which are the communication and information technologies already used in distance learning.

We can not fail to take into account that the students also had to adapt, because the contents that were previously worked in three hours of class, now have been worked in only one. This made the student have to reinvent his way of studying, having to challenge himself, that is, having to study alone to deepen in the contents worked. In this sense, Cardoso, Ferreira and Barbosa (2020, p. 42) say that:

Distance education is characterized by the support of tutors in a timeless way and the workload is distributed in different media resources, which does not happen with the remote classes made available in this period of social isolation. This fact is justifiable, considering that there were no strategies for the current reality, nor administrative, technological and pedagogical preparation.

Given this new format, in the second stage of this research, we sought to understand more deeply how was the experience of students during the semesters 2020.1 and 2020.2. The same 29 interviewees in Stage 01 of this research also answered Stage 02.

Before the pandemic hit, approximately 55 percent of students surveyed viewed their classes in a very traditional way. This teaching method is also pointed out when the interviewees are questioned about the methods and tools used in the classes before the ANP's format, where 96.6% of the interviewees



described the tests as the main method of evaluation, and the questionnaire was structured so that they could point out more than one method. In addition to the tests, 86.2% of them reviewed, which the teachers used as teaching methodology the delivery of texts for reading. This same index was reported for three other methodologies, namely, list of exercises, use of chalk and chalk and debates in the room. Still 82.8%,disare to have had visualization of videos or slideshows in class, 65.5% group work, 37.9% indication of videos, websites or articles, 31% use of applications or platforms and 3.4% development of extracurricular tasks, tours and developmentof academic works. Through these answers it was possible to perceive that, in general, the classes took place, mainly, in the traditional format, as mentioned by Araújo (2007, p. 33):

The conventional curriculum is based on the transmission of knowledge and separates the concrete problems from their social context. It is based on the conception of learning as a process of accumulation of information. That is, it is based on the idea that learning means memorizing information or mechanically performing procedures. In its organization, it uses deadlines and periods established stereotypically, employing the system of disciplines.

With the implementation of ANP's, the format of classes then variedu in synchronous or asynchronous classes, where 96.6% of respondents (28 students) said they had synchronous classes, while 82.8% (24 students) said they had asynchronous classes. This demonstrates that, even with high rates for both formats, synchrotum classes were the most adopted model during the ANP's, although interspersed with asynchronous moments. Regarding the teaching methodology used in these classes, 93.1% said they had received a list of exercises and indication of texts for reading, another 82.8% said they had online tests with time limit for completion and indication of videos. Still about the methods used with the arrival of the pandemic, 75.9% started to use applications or platforms, 72.4% indicated websites or articles for reading, 69% said they had group work and 3.4% described in "other options" that had video lessons recorded. In Figure 02 we can better visualize these data.

Figure 02: Methods and tools used in ANP's.



Caption:

- 1 - Synchronous or real-time class
- 2 - Asynchronous class or recorded video lesson
- 3 - Online exams with time limit for completion
- 4 - Indication of videos
- 5 - Sending texts for reading
- 6 - List of exercises
- 7 - Group work
- 8 - Indication of websites or articles for reading
- 9 - Use of applications/platforms
- 10 - Other: recorded video lessons

Source: Autoras, 2022.

From Figure 02, we elaborate Chart 02, which presents a comparison of some methods used by teachers. We noticed that teaching methods vary little when compared to the period before the pandemic, except for cases in which the context actsl forced the alteration of teaching and learning methods. This brings important reflections, because the class format has changed drastically.

Table 02: Comparison of methods used before and during ANP's.

Methods	Before the ANP's	During the ANP's
List of exercises	86,2%	93,1%
Exams / online with time limit	96,6%	82,8%
Video indication	37,9%	82,8%
Group work	65,5%	69%
Use of applications and platforms	31%	75,9%
Delivery / sending of texts for reading	86,2%	93,1%
Indication of websites or articles for reading	37,9%	72,4%

Source: Autoras, 2022.

Chart 02 shows that some methodologies showed a lower variation before and during the pandemic due to the permanence of the conception of education that guides the teaching performance of these teachers. This was the case of methodologies such as lists of exercises, tests, group work and delivery of texts for reading. Methodologies such as indication of videos, use of applications and platforms and, indication of websites or articles for reading, showed greater variation before and during the pandemic, perhaps imposed by the context of ANP's.

Due to the pandemic, the methodologies and tools used for teaching have undergone adaptations. But were the measures adopted sufficient to obtain satisfactory learning for the initial training of future teachers? In response to this questioning, 48.2% of the interviewees believed that they did not, because, in their perception, the menu was not fully followed or they could not follow the new routine. However, 41.6% of respondents believed so, because in addition to realizing that the issue was being followed even with the arrival of the pandemic, it provided learning beyond the syllabus itself, which is necessary for current teaching practice. Of those surveyed, 10.2 percent locked up courses because of the pandemic or said they were indifferent to the subject.

Students were also able to describe their degree of satisfaction with the methods and platforms used during the pandemic. From this, 3.4% said they were very satisfied and 41.4% said they were satisfied, adding to the 44.8% satisfaction. Another 44.8% declared themselves reasonably satisfied, while 6.9% said they were dissatisfied and 3.4% very dissatisfied, adding up to a 10.3% degree of dissatisfaction. These data demonstrate that despite the sudden implementation of ANPs, the methods used fulfilled their purpose of mediating teaching and learning, although not in a degree of excellence. In addition to this data and:

Given the situation, it is understandable that some students do not agree with the proposed tasks, or even with the classes taught by the teachers. The contexts are different for everyone: teachers and students mainly. All having to learn new ways of learning and teaching (PRESTES, VARGAS, BRACHTVOGEL, BOFF, 2020, p.4).

In this sense, and in ANP's, the participation of students in the course of classes changed considerably, by various factors, ranging from emotional to technological, and 48.3% of respondents could not deal with the emotional and the demand for studies in this period. However, even bringing some difficulties, it made it possible to learn and experience new methodologies, which, consequently, demanded new skills for teaching practices.

Teaching methodologies vary from teacher to teacher, or from one teacher in initial training to another, but one thing they were all required to have in common: the use of technology. In this period, the preparation of the class was not summarized, basically speaking, in the lesson plan, board and chalk, but rather in the inclusion of new tools and new materials. This demanded, at the very least, the preparation of slides and videos, search for platforms and applications, among other tools little used in face-to-face teaching, so far. In addition to bringing reflection on that material, trying to visualize if it would comprehensively reach all students, seeking to minimize the effects of not being in the classroom in person. All this experience brought new perceptions and possibilities for the teacher in initial formation. This is reflected in the answers of the interviewees when asked to what extent the ANP's and the use of technologies helped their training as a future teacher. Of the respondents, 79.3% of the students said it was because they brought experiences that served as learning. In agreement with the data presented, Gonçalves and Avelino (2020) express that the pedagogical mediation that is carried out by technological means, enriches and changes the way of dealing with the content applied. This enables new ways of teaching and learning, as well as promoting different perceptions and experiences to students.

According to Kumanaya, Santos and Moreira (2020), it is important to emphasize that, in addition to the methodologies and didactic materials used in classes, the interaction between students and teachers is extremely important for teaching and learning. And, the physical space contributes to this interaction, and this movement in the classroom is much more defended, by students and teachers, even with the technologies offered, besides being easier for the teacher to be able to motivate the student.

Corroborating the above, with the student-teacher interaction during the pandemic period at IFSC-SJ, from the perspective of the interviewees, this was very good for 1.3% of the students and 41.4% of the students found it equally good or regular. However, 6.9% of the students interviewed found this interaction bad. According to Cunha, Silva and Silva (2020), the absence of social interaction with the teacher can significantly affect the performance of students. And, with the unexpected change from the face-to-face mode to ANP, this interaction changed and gradually had to be adapted. Porém, even not having face-to-face contact with teachers, students in initial teacher training received support through the communication platforms provided by the teachers themselves, being mainly WhatsApp, but also the Integrated System of Management of Academic Activities (SIGAA) and institutional e-mail. Thus, the students did not have

defined times to send their doubts, being able to send them at any time of the day, showing that this opening ended up providing more opportunities for communication with the teachers.

The process of evaluating students in times of pandemic, according to the students interviewed, was mainly due to weekly evaluative activities and tests with time limit for completion. For most of the interviewees, 75.9%, the teachers were flexible concerning the contents and deadlines for the delivery of the works, tests or activities. However, some of the interviewees pointed out different behaviors in relation to some of these pr offenders, as we can see in the statements below:

"A lot of teachers put in the effort while others just let it roll." (TheCademic 06)

"My answers are contradictory because I have had contacts with teachers who are in my opinion giving their best and favoring our learning even in the remote teaching format, but there are other teachers who pass the idea of just passing to the video the class of deposit of information from the face-to-face format to video format." (A cademic 08)

"Unconcerned about whether or not in-person classes will return." (TheCademic 15)

"Some teachers struggled with the new tools, but they were open to learning and often the students themselves were able to assist by giving resource suggestions." (Academic 01)

"I didn't take any chemistry courses." (Academic 07)

In the first stage of this research, the interviewees reported a high rate of failures. This fact demonstrated the need for deepening in this issue, seeking to understand the reasons that led them to such reproaches. And, among the reasons cited by the students, in Stage 02 of this research, are the lack of organization of time for studies, unforeseen events and the emotional state impaired due to the pandemic. These data are in line with the reflections of social isolation and the adaptations that the same one demanded.

Despite the losses highlighted by the students, the interviewees also reported benefits they found in the implementation of the ANP's, where the majority of these, 72.4%, highlighted the fact that it was not necessary to travel to the institution. Another benefit highlighted by 69% of respondents is the fact that the lessons are recorded, as they made it possible to review the content. The same 69% reported allowing for flexibility of schedules. In addition, greater comfort during classes was reported by 37.9% of respondents, and 20.7% found classes more attractive. Another 17.2% found greater possibility of interaction with professionals outside the Campus and 10.3% had greater interaction among students. In contrast, 6.9% of respondents found no benefits and 3.4% were different, as cited below:

"More appropriate weekly assessments, not leaving everything to just one test." (Academic 06)

Corroborating with the data presented in the paragraph above, where the interviewees highlight as a benefit the recorded classes, Moreira, Santos and Kumanaya (2020) also highlight in their research, as the main positive factor about the ANP's, the fact that the classes are recorded, as it enables the revision of the subject, providing students with greater difficulties the opportunity to study the content again.

From so many obstacles faced in the pandemic period, Gomes (2020) highlights how challenging the process faced by the teacher in initial training is, since the various obstacles have negatively aggravated the development of tasks necessary for the effectiveness of this cycle. In contrast, Moreira, Santos and Kamanaya (2020) believe that through the emergency, and taking into account the methods and tools used, the remote learning system has achieved its goal of maintaining a routine of studies.

Amid so many impacts, positive and negative, how is the initial teacher training of these students? According to respondents, 79.3% of them said that the pandemic brought experiences that served as learning and for 69% provided more knowledge in remote learning and its technologies. Still on teacher training, 65.5% claimed that the pandemic period and the adaptations it brought provided greater reflection on their teaching action. These data show us that, despite the losses that the isolation surgery has brought, it has yielded knowledge that would not be built at that moment, knowledge that only adds to this teacher in initial training.

Through the reports of the students and according to Silva (2020), it can be seen that the pandemic will change many ways of structuring the organization of pedagogical work, either by the actions that were taken during it, or by the results obtained from these activities, which were developed at home and by what will be reflections of this presence for teachers and future teachers.

## **5 FINAL CONSIDERATIONS**

With the arrival of the pandemic, it is not difficult to see that education has undergone major changes. With this research, it was possible to conclude that in the IFSC-SJ these changes were poorly planned, due to the speed at which the pandemic advanced, and that the planning failed ended up affecting the expected results of the teaching and learning processes. However, even with the premature changes, it was possible to provide a teaching process that reached many of the students (to all the interviewees), to maintain the routine and the learning process.

Maintaining the habit of studies, in ANP format, it was known that many could be the challenges faced in this period and, for many of the students interviewed, the largest of them was the conception, which is reflected in the learning of this individual. However, even with this and/or other difficulties, many were able to continue the teaching process during the pandemic period.

To be able to maintain this new format, the teaching of chemistry has received many technological aids for this journey so challenging and, after all this process, tends to never be the same again, in the face of so many innovative methods.

Before, what was just a face-to-face class, today can be a synchronous or asynchronous class. These moments can also count on an inverted class or a gamification class, for example, methodologies little used in face-to-face classes. This, without mentioning the various tools used for their elaboration. And with all this change of format and possibilities, it is possible to realize that teachers do not have the same profile and that this was reflected in the course of classes in ANP's format.

Several methodologies were used, such as recorded video lessons, indication of websites and texts for reading, list of exercises, among others. However, most students say they are satisfied, or reasonably satisfied, about the methodologies applied during this period.

As for the evaluations, the teachers used different ways of evaluating the students, namely, tests with time limit for delivery, experiments, weekly and non-weekly evaluative activities, participation in classes and self-evaluation. According to the students' reports, the teachers were flexible regarding the deadlines for the delivery of the activities in this turbulent period.

The pandemic has brought many challenges, but it has provided students with learning experiences, as well as providing more knowledge in remote learning and its technologies. In this period of adaptations, this experience can promote a greater reflection on the teaching action of these students, which will be reflected in their training as a future teacher.

It was very important to research analyze this scenario, both for the great changes and for the impacts that the pandemic has brought and has been bringing to the educational process. It is necessary to take this reflection to other people, seeking to understand the various points of view, as well, de fact, what this scenario has been leaving legacy. Unique moments of teacher education and training need to be better reflected, it implies in dialogue with different groups of teachers, involving teacher trainers, in training and teachers active in EB to boost the teacher training of all involved (LOHN, 2020). It is necessary to know these transformations and, only in this way, it is possible to evaluate the critical points that have been affected. The impacts of the pandemic will be felt in the short, medium and long term, which will require teachers and teachers in initial training to readapt and redesign their educational practices. We are making history and we need to describe it.

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