"... THE ONLY PROBLEM IS THAT THE CLASS IS 'COLD'...": AN ANALYSIS OF THE MENTAL SUFFERING OF STUDENTS IN REMOTE LEARNING

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Abstract

This article aims to study the mental suffering of students in vocational education. Its approach will be centered on French ergonomics and resists traditional approaches to formalizing practical- professional knowledge in the area of occupational health and safety. Conventional education systems, based on traditional classrooms, were adapted to adapt to the public health crisis of Covid-19 and started to adopt virtual classrooms. The solution found to continue with academic calendars was to adopt the remote system. Remote learning, however, is limited to act in the transmission of explicit knowledge, but not with the transmission of know-how. The initial hypothesis is that this type of teaching leads to an increase in students' mental suffering. The objective is to apply the SQR-20 questionnaire, investigate and score the strategies adopted by students to deal with the dilemmas in teaching and, with this, propose solutions that best suit the demands presented. It is expected that the results of this study can promote improvements in teaching-learning of remote activities and provide actions that enhance the health of students in educational institutions. Based on the results, 75.0% of the class presented mental suffering and developed characteristic anxiety disorders according to the SQR-20 questionnaire, which corroborates the high levels of anxiety in students in online education verified in the literature.

Keywords: Ergonomics; Remote teaching; teleworking; Professional Education.

1. INTRODUCTION: APART FROM THE COMPUTER, DON'T FORGET THE HUMAN SIDE.

The emphasis that will be dealt with in this article will be oriented from the theory of qualitative analysis to practical application cases. The main objective is to present the potential of cognitive ergonomics for research on illness in students (Flick, 2009).

The great advance that ergonomic methodology − and other qualitative methodologies − has been bringing to modern research, in recent decades, in various areas of research and study, is notorious and evident. There has been a lot of talk about "doing ergonomic analysis", following the "ergonomic point of view" and/or "ethnography of life" (Minayo, 2006).

However, classical ergonomics gives too much emphasis to anthropometric and technical characteristics, and less attention to psychic aspects (Lima, 2001; Wisner, 1987). However, especially at this time of online studies, emphasis should be placed on Cognitive

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Ergonomics (CE) and not only the classic one, as the activity and the human being should be approached in its entirety – socio-technical approach (Guérin et al., 2001). In this sense, CS is fundamental to understand the activity and its decision-making, as the work process goes beyond the monitors and the anthropometric aspects of the students.

Thus, it is necessary to pay attention to the mental work done and required and, in this sense, we must understand the relevance of the students' thought acts in the execution of their activities. Thus, Cognitive Ergonomics goes beyond the classical conception.

According to Lia Buarque de Macedo Guimarães (cited by Másculo & Vidal, 2011, p. 87),

> (...) Cognitive Ergonomics, also known as psychological engineering, refers to mental processes, such as perception, cognition, attention, motor control, and memory storage and retrieval, how they affect the interactions between human beings and other elements of a system, that is, the response given by the human being during his performance in a given system [emphasis added].

On the technological level, cognitive ergonomics is even more necessary, according to the didactic explanation of Paulo Victor Rodrigues de Carvalho (cited by Másculo & Vidal, 2011, p. 91): "(...) contribution of Ergonomics: to help understand how we "work" and, especially, how we work in a work situation, in order to be able to design artifacts and systems based on these functional characteristics". Also, according to Másculo and Vidal (2011, p. 94), "Relevant topics include mental workload, surveillance, decision-making, skill performance, human error, human-computer interaction, and capacity building/training".

It is perceived that the psychic load related to work or learning, which the vast majority of companies do not give due value, gains even more importance in the sense that the psychic can be affected in the face of the pandemic reality caused by Covid-19 (Ferreira, Cunha & Assunção, 2020).

Problems related to the psychic are sometimes so silent, but they affect the individual's productivity and health (Lima, 2001). In this sense, non-verbal communication stands out, which is all communication expressed by our body, whether by simple facial expressions or even behavioral ones, which, even silently, are very significant and can symbolize psychic problems. For Silva & Pacheco (2020, p. 5), they still wisely present the need to have the use of a "(...) a tool that facilitates the identification of mental suffering, since this perception promotes dialogue, bonding and coping with the problem before it worsens". It is worth highlighting the teaching of Silva & Pacheco (2020, p. 3):

> (...) Most of the signs of this form of expression have cultural significance and are closely linked to the situation in which people are involved and their feelings

> therefore related to the person's experiences and how is their perception of the moment in which they live [emphasis added].

In addition, they point out the relevance of the role of educational institutions that, much more than promoting the act of teaching – or simply offering a computer or platform – schools have the function of maintaining health and social relations (Ferreira, Cunha & Assunção, 2020). Therefore, the current context may have intensified the student's psychic suffering. In view of this scenario, it is essential to highlight the psychic load and its consequences on the student's health.

In the same line of reasoning, according to Ferreira (et al., 2020), when it comes to mental and behavioral disorders, a complex interaction between biological, psychological, and social factors must be considered.

In view of this, when analyzing the suffering of Brazilians in the period of social isolation, Gandra (2021, n.d.), reports an increase in mental illnesses, namely:

> (...) The prevalence of people with acute stress in the first data collection, carried out from March 20 to 25, 2020, was 6.9% against 10.3%, in the second, carried out between April 15 and 20, evolving in June, in the most recent survey, to 14.7%. For depression, the numbers jumped from 4.2% to 8%, falling in June to 6.6%. In the case of acute anxiety crises, the number rose from 8.7% in the first collection to 14.9% in the second collection, staying around 15% in June.

From the data presented above, it can be seen that mental health problems at work are related to the pillars of time, space, and conditions (*Gandra, 2021*). And this analysis can be extended to students with the new reality of remote teaching. Also according to the researcher "(...) the WHO already points to an increase in suicide rates, depression, worry, fear, anxiety, domestic violence, fragility of protection networks and abusive use of alcohol and other drugs".

Not only in the work environment, but also among students, there is an increase in complaints related to the psychological, such as stress, anxiety and mental suffering. And, unfortunately, these problems can perpetuate for the student's professional side and decrease academic performance. It is worth mentioning the words of Capdeville (2020);

> Studies indicate that this phenomenon has been associated with sick leaves, illnesses, fatigue, tiredness, difficulties in adapting to the

academic environment, lack of time to dedicate to leisure and personal life, obsession with technical work, excessive personal demands, frustrations related to the course and difficulties inherent to the teacher-student-professional-patient relationship [emphasis added].

In this sense, after the emergence of the pandemic and the remote teaching measures, it can be inferred that there was an increase in the demand for cases of depression, anxiety, and stress, psychological disorders that directly affect the individual's quality of life, whether at work, in academic activities, or even in personal activities, given that they are related to well-being, satisfaction or comfort of the citizen.

1.1. Ergonomics and quality of life, in times of online teaching

According to Másculo and Vidal (2011) it is essential to differentiate "activities" called "quality of life" in companies, and a life with quality for the individual, after all the latter is what really impacts the health and productivity of a person, as it is a quality life that generates benefits.

As a form of instrument to assess quality of life, Másculo and Vidal, (2011) present an interaction between the classic way, in the area of psychology, of assessing stress, anxiety, depression and social adaptation with the cognitive-behavioral and ergonomic approach.

Analogous to what occurs in organizations, for students and the academic environment, psychological disorders are causes of other problems, such as human error, unsatisfactory productivity, absenteeism, presenteeism, in addition to other physical diseases related to the emotional, for example gastritis, asthma or other respiratory diseases, which are psychosomatic diseases, as well as tachycardia, dizziness, headaches and muscle pain, tingling sensation, irritability, anguish, sweating, insomnia, and tension (Gameiro, 2021; Barcelos, 2020).

In addition, psychological disorders can be caused and also maximize the negative side of reality or circumstances, stimulating a feeling of disproportionate fear (Ramos, 2020).

In addition, diseases linked to the psychological negatively affect the physiological responses responsible for the perception of danger, which aims to prepare the subject to hide, flee or fight. In this condition, the individual tends to overvalue the degree and perspective of danger, also to despise the ability to cope with the conjuncture (Gameiro, 2021; Barcelos, 2020).

Unfortunately, mental health has repercussions not only in the personal sphere or in the health system, but also in the economy, as it is a cause of absence from work, when it is not aggravated to the point of characterizing the person as incapable (Michel, 2008). Thus, it is essential for ergonomists to be aware of the signs of emotional exhaustion, such as palpitations, loss of concentration, comprehension and reasoning, as well as emotional instability and

exhaustion, which can manifest through heart, digestive, depressive diseases and episodes of anxiety and panic attacks.

In this sense, Capdeville (2020) points out the symptoms that may be presented by academics throughout their training in the health area, but which, in the current circumstances, especially remote teaching (online), extend to other academic areas and also to teachers. Second, Capdeville (2020, p. 256).

> (...) Among the most present symptoms during health education are fatigue, tiredness, difficulties in adapting to the academic environment, lack of time to dedicate to leisure and personal life, obsession with technical work, excessive personal demand, frustrations related to the course and difficulties inherent to the teacher-student relationship (...).

In addition, this new imposed reality of remote teaching, in all areas of education, drastically impacts the quality of life of teachers, students, and the educational system. As Capdeville (2020, p. 259) rightly states, "there is a need to invent and reinvent educational processes, dialogical relationships, didactics and methodologies, and practices with the same agility in which the world changes (...)".

Another factor that deserves to be highlighted is that the face-to-face teaching method, in addition to the learning function, also stimulates the social development of the student, either through the notion of sharing space with the other, also by learning how to behave in the social environment and respect the rights and freedoms of others (Lourenço, 2020).

It is known that the conditions of the environment are directly related to intellectual development. In this way, a healthy and appropriate environment is conducive to greater productivity, work or intellectual, and better learning.

It is of indispensable value to consider that the scarcity of material resources, in addition to the inequality of values and cultural conditions among individuals, create even greater abysses in the conduct to face the new imposed reality.

In this sense, given the vulnerability that the moment places on us, the sudden change in the almost exclusive form of teaching, many students without proper access or conditions for this type of remote activities. Therefore, it seeks to investigate the impact on students' mental health through interviews and application of the SQR-20 questionnaire.

This research is justified by two main reasons: social and academic. In the social line, based on the provision of services and the return of knowledge to society. In the academic line,

this project allows student-research interaction through the practice of fieldwork, providing an experience within the research.

2. METHODOLOGICAL PATH

Ergonomics is a scientific discipline that studies, researches, elaborates and executes rules and norms with the objective of organizing work, making it compatible with the physical and psychic individualities of the individual (Guérin et. al., 2001). According to Másculo and Vidal (2011), the name "Ergonomics" is derived from two Greek words, ergos (work) and nomos (laws, norms and rules). In other words, ergonomics aims to integrate man into the environment, taking into account comfort and efficiency, as well as human limitations, such as anatomy, physiology and psychology. Still, according to Michel (2008, n.d.):

> Ergonomics is a set of rules and studies that aims at the healthy and productive organization of work. It deals with the relations between machine and man within a given work environment, with the purpose of the well-being, health and good performance of the worker [emphasis added].

In this sense, the World Health Organization (WHO) defines ergonomics as a science that aims at maximum performance, with minimum human errors and risks to the worker (Beusenberg et. al, 1994). For the International Labor Organization (ILO), biological sciences are applied to ergonomics with engineering sciences, aiming to adapt working conditions to the characteristics of human beings, making work efficient and ensuring the well-being of the worker.

Alain Wisner (1987) defines ergonomics as follows: "It constitutes the set of scientific knowledge related to the human being and necessary for the design of tools, machines and devices that can be used with maximum comfort, safety and efficiency".

The central concern of ergonomics is to highlight the relationship between things, for example, between production goals, available means and the health of the population. Through ergonomic analysis, it is possible to approach the difficulties faced in daily work, which may originate from the conflict between the rationality of the system and the operative rationality (Alves, 2002).

From the perspective of ergonomics, in order to understand what a person's work is, it is necessary to observe and analyze the development of their activity in real situations, in their context, trying to identify everything that changes and makes the worker make micro decisions

in order to solve the small but recurrent problems of the daily production (Assunção & Lima, 2003).

Whatever the demand that provoked the study, the ergonomist tries to apprehend the repercussions of the work situation on individual and collective activity and on the acquisition and development of workers' competencies (Assunção & Lima, 2003). It analyzes tasks in the context in which they are performed. The mechanisms through which the human being achieves the desired goals are at the center of this analysis, which aims, in the end, to provide elements for the transformation of situations. The ergonomic analysis of work aims, above all, to understand how the worker "performs" his task (Lima, 2001).

AET will help answer the following questions: how does remote teaching affect students' mental health?

The sample will consist of students from the Technical Course in Occupational Safety of a Technical School of a Federal University. The objectives of this research will be operationalized through two instruments: (1) Questionnaire for data collection: Structured questionnaire SQR-20 will be used to collect data related to mental suffering, already validated in several countries (Beusenberg et. al, 1994; Santos et. al, 2010); (2) and Open interviews to compare the results (Guérin et. al, 2001; Lima, 2001). The self-confrontation interview deepened the positive answers ("yes") given in the SRQ-20 questionnaire.

This is a descriptive, prospective, quantitative and qualitative cross-sectional study (Guirado et. al, 2016). For data analysis, the absolute frequency (FA) and relative frequency (RF) of each listed variable were calculated. The table presented in the results section, as well as the descriptive calculations used, was developed using the Microsoft Excel software for Windows. The questionnaire was divided into four factors specific to the data collection instrument used (factor I: anxious and depressive mood; factor II: somatic symptoms; factor III: decreased energy; factor IV: depressive thoughts), according to Guirado et. al. (2016).

3. RESULTS AND DISCUSSIONS

Participants were 16 male and female students of the technical course in occupational safety at a public institution, with ages ranging from 18 to 50 years (mean of 28 years $\pm$ 9 years) from different levels of schooling. Table 1 – numerically demonstrates the distribution of the answers according to the categories of Guirado et. al. (2016).

Table 1 - Test Results: SRQ 20 – Self Report Questionnaire with categories according to Guirado et. al. (2016).

DATABASE	YES		NO	
	N= 16		100%	
DEPRESSIVE-ANXIOUS MOOD				
Have you been feeling sad lately?	14	87,5%	2	12,5%
Feels nervous, tense, or worried	14	87,5%	2	12,5%
Are you easily scared?	11	68,8%	5	31,3%
Have you been crying more than usual?	9	56,3%	7	43,8%
SOMATIC SYMPTOMS				
Do you have a lack of appetite?	11	68,8%	5	31,3%
Do you sleep badly?	12	75,0%	4	25,0%
Do you have frequent headaches?	11	68,8%	5	31,3%
Do you have tremors in your hands?	4	25,0%	12	75,0%
Do you have unpleasant sensations in your stomach?	11	68,8%	5	31,3%
Do you have poor digestion?	8	50,0%	8	50,0%
DECREASE IN ENERGY V TAL				
Do you have trouble thinking clearly?	9	56,3%	7	43,8%
Do you feel tired all the time?	10	62,5%	6	37,5%
Do you have difficulties making decisions?	9	56,3%	7	43,8%
Do you find it difficult to carry out your daily activities with satisfaction?	13	81,3%	3	18,8%
Do you get tired easily?	10	62,5%	6	37,5%
He has difficulties in the service (his work is painful, does it cause him suffering?)	6	37,5%	10	62,5%
DEPRESSIVE THOUGHTS				
It is unable to play a useful role in its life?	6	37,5%	10	62,5%
Have you lost interest in things?	12	75,0%	4	25,0%
Do you feel like a useless, useless person?	6	37,5%	10	62,5%
Have you had any idea of ending your life?	2	12,5%	14	87,5%

Based on the results, 75.0% of the class presented mental distress and developed disorders characteristic of anxiety according to the SQR-20 questionnaire and, corroborate the high levels of anxiety in students in online education verified by Gandra (2021); Capdeville (2020); Másculo and Vidal (2011). The data show that 87.5% have been feeling sad lately; that 87.5% feel nervous, tense or worried; that 68.8% of students have been easily frightened; and that 56.3% have cried more than usual.

As a consequence of this depressive-anxious mood, 75.0% of the students have lost interest in things and 81.3% have found it difficult to carry out their daily activities with

satisfaction; which is verified in the reality of the courses, given the increase in the number of absenteeism; presenteeism and evasion of students in the classroom, revolving around 50% of the classes. The data corroborate the results of Capdeville (2020), which indicate that an increase in psychological-related complaints, such as stress, anxiety, and mental suffering, directly lead to an increase in absences, illnesses, fatigue, tiredness, difficulties in adapting to the academic environment, lack of time to dedicate to leisure and personal life.

The somatic effects can be seen as 68.8% report lack of appetite; 75.0% have slept poorly; 68.8% have experienced headaches frequently; 68.8% have had unpleasant sensations in the stomach, while 50% report poor digestion. According to Michel (2008), mental health causes reflexes in the body, revealing signs of emotional exhaustion, such as loss of concentration, comprehension and reasoning, as well as instability, which can manifest through digestive diseases.

It turns out that remote classes caused greater emotional exhaustion. Students had to adapt abruptly to the new teaching methodology, which required adaptability from many students. It is common to report learning difficulties, culminating in dropout.

According to the student interviewed, headaches are due to the daily routine, she reports:

> "Practically every day, more at night, due to the day-to-day routine, and when night comes I'm already very exhausted, very tired, so that's when I have it most often! [...] At that moment, for example, the class I had previously was very tiring". (Student)

The question about how tired she was was deepened. She reports that fatigue is related to *"... feeling like talking a lot of information to be assimilated, then it ends up being kind of exhausting".* It is clear that headaches are associated with their daily lives and the amount of information in the classroom and not simply with aspects related to remote teaching, in isolation.

When asked what she meant about *"a lot of information",* she says *"I talk about talking a lot, the class was about an hour and a half, so it's a lot of information in my head".*

The data indicate that students generally need to manage their time and their environments to maintain a balance, that is, to set aside time for studies and other tasks and, after all this is done, to adapt the operating modes so as not to overload themselves mentally.

The student reports that, associated with her day-to-day tasks and class, there is a great "concern". This concern overloads the time management of your time, since it cumulatively fulfills a series of obligations:

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> "My husband is a truck driver, so in this case I am practically like father and mother [...] my children are taking remote classes too, so it turns out that I'm a bit of a teacher [...] I usually divide their tasks to be more relaxed, so as not to overload too much, then as soon as they finish theirs I try to do mine [...] it overloads a lot is where there are these issues that also include insomnia, I think it's more of a stress! [...] The routine has completely changed, you know, so it's these concerns. (Student).

When asked about the regulation strategies adopted to overcome the difficulties, she reports that:

> "I can already organize this aspect, that of participating in online classes, of doing the tasks, so I'm already managing to adapt! [...] That's where I tell you, I'm trying to share, you know, I'm trying to divide, for example, one goes there and does two tasks in one day, then the other goes and does two more tasks, I'm trying to do this organization so I can control it!". (Student).

However, the interviewee describes that there is a double complexity in accessing online classes, one about her classes and the other about her children's classes. On this aspect she says:

> "[...] They still have that difficulty of entering the platform, of responding to the activities and many times I have to solve it, you know, so it's that business, right, I don't have a pedagogy course, I don't have, let's say, knowledge to be teaching". (Student).

The student describes an organization developed, in its adaptation strategy, so that her mind is not overloaded. However, she reports that there is often difficulty in separating the activities of her children and her, and this can increase her cognitive overload given that there is an accumulation of obligations, such circumstances are major causes of insomnia, sleepless nights, anxiety and worry.

According to Capdeville (2020), anxiety is present in the lives of students and has an impact on the lives of students, directly impacting their learning. The student describes that *"I'm having a lack of concentration, of focusing there, you know! [...] I have that lack of concentration on the text to be able to make the summary!"* element. According to Gameiro (2021) and Barcelos (2020), this lack of concentration is due to mental overload, generating unsatisfactory production.

Still on the subject of concentration, the student reports that the environment to which she studies is not suitable, contributing to the loss of attention. She describes that:

> "It's not easy, not in my house, because I have this little problem there, the children sometimes fight and I have to stop in the middle of class, for example there was a class where I had to leave the class here in the room and go break up fights in the room [...] In the case of noise, you

know, all the time noise, it's a boy screaming, a dog barking [...] having some noise around kind of takes away a little concentration, attention [...]. (Student).

All of this contributes to anxiety that, according to Capdeville (2020), comes with several negative feelings, excessive worry, fear of daily situations, mind overload, as if the person lived in a situation of alert always expecting the worst of everything, all these symptoms hinder the development of the person in general, in addition to going through all this suffering, many people face judgment and distrust, often from people close to them who disbelieve that such person may really be in need of help. She describes that:

> "We're feeling sad, it's not just me, there are some colleagues there too, because then we thought it was going to be something different, right, then the pandemic came and kind of changed everything, so it's a little discouraging to enter a classroom and see just me and another colleague, So that's it, without wanting to sadden us, we let ourselves down! [...] We kind of get a little depressed, like it wasn't the way we were thinking it was going to be there, it kind of saddens us!". (Student).

Asked how she thought it would be, she reports that it is related to social relationships in the classroom, she says: *"looking at each other interacting".* In this sense, an important aspect emerged, which is the intrapersonal relationship. When asked about this relationship, she reports: *"one there helps the other, right, take the experience of one, take the experience of another, and online it's kind of cold, not everyone talks or everyone participates! [...] My greatest sadness today I can tell you that it is remote classes".*

4. FINAL CONSIDERATIONS

Seeking to analyze the extent and nature of the use of online teaching is of great relevance for a number of reasons, already mentioned. Almost always, when talking about "remote teaching", the expression is loaded with abstractions and negative implications, which connote cold and distant treatment, which, in a way, erodes the student's trust in educational institutions. Thus, in addition to the negative effects created in the relationships between the student and the teachers, internal conflicts can be generated, generating psychic suffering. This research sought to partially understand the problem of remote teaching, studying the teaching-learning process in times of pandemic.

The empirical work aimed to understand the students' internal conflicts and translate, in part, the actions adopted in situations of cognitive overload, through self-confrontation between

the students and the interfaces – experiences and skills – and the aspects inherent to the situated context.

Thus, the findings brought here are based on valid interpretations of events in the real world. The students reported and manifested various forms of regulation strategies. The role played by social organization in the teaching-learning process was evidenced as an important factor for the effectiveness of student motivation, given that teaching-learning is based on the conditions of the context, behaviors and social relationships in the classroom.

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