



"THE ONLY ISSUE IS THE CLASS BEING 'COLD'": AN ANALYSIS OF MENTAL SUFFERING AMONG 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: Beyond The Computer, Don't Forget The Human Side.

The emphasis that will be addressed in this article will be guided from the theory of qualitative analyses to practical application cases. The central objective is to present the potentialities of cognitive ergonomics for research on student illness (Flick, 2009).

The significant progress that ergonomic methodology – and other qualitative methodologies – has been bringing to modern research in various fields of study in recent decades is noticeable and evident. There has been much talk about 'doing ergonomic analysis,' following the 'ergonomic perspective,' and/or 'ethnography of life' (Minayo, 2006).

However, classical ergonomics places too much emphasis on anthropometric and technical characteristics and pays less attention to psychic aspects (Lima, 2001; Wisner, 1987). However, especially in this era of online studies, emphasis should be given to Cognitive Ergonomics (CE) and not just the classical form, as it is necessary to approach activity and the human being in its entirety – a sociotechnical approach (Guérin et al., 2001).

In this sense, CE is essential to understand activity and decision-making, as the work process goes beyond monitors and the anthropometric aspects of students. Thus, attention must be given to the mental work performed and required. In this regard, we must understand the relevance of students' thought processes in the execution of their activities. Therefore, 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, and how they affect interactions between humans and other elements of a system. In other words, it concerns the human response during their engagement in a given system [emphasis added]."

On the technological front, cognitive ergonomics becomes even more necessary, according to the didactic explanation by Paulo Victor Rodrigues de Carvalho (cited by Másculo & Vidal, 2011, p. 91): '...contribution of Ergonomics: helping to understand how we 'function,' and especially how we function in a work situation, in order to design artifacts and systems based on these functional characteristics.' Additionally, according to Másculo and Vidal (2011, p. 94), 'Relevant topics include mental workload, surveillance, decision-making, skills performance, human error, human-computer interaction, and empowerment/training.'

It is evident that the psychic load related to work or learning, which the majority of companies do not give due consideration to, becomes even more important in the sense that the psychological aspect can be affected in the face of the pandemic reality caused by Covid-19 (Ferreira, Cunha & Assunção, 2020).

Issues related to the psychological aspect are sometimes so silent, yet they affect an individual's productivity and health (Lima, 2001). In this regard, non-verbal communication takes center stage, encompassing all communication expressed by our bodies, from subtle facial expressions to behavioral cues, which, even in silence, are highly significant and can signify psychological problems. According to Silva & Pacheco (2020, p. 5), they wisely present the need for the use of a '...facilitating tool for identifying mental suffering, as this perception promotes dialogue, connection, and addressing the problem before it worsens.' It is worth highlighting the teachings of Silva & Pacheco (2020, p. 3):..."

"closely linked to the situation in which people are involved and their unspoken feelings, therefore related to the individual's experiences and their perception of the moment they are living [emphasis added]."

Furthermore, they highlight the relevance of the role of educational institutions, which, far beyond promoting the act of teaching – or simply providing a computer or platform – schools have the function of maintaining health and social relationships (Ferreira, Cunha & Assunção, 2020). Therefore, the current context may have intensified the psychological suffering of

students. Given this scenario, it is essential to emphasize the psychological burden 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, one must consider a complex interaction between biological, psychological, and social factors.

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

...the prevalence of individuals with acute stress in the first data collection, conducted from March 20 to 25, 2020, was 6.9% compared to 10.3% in the second collection, carried out between April 15 and 20, progressing to 14.7% in the most recent survey in June. For depression, the numbers increased from 4.2% to 8%, falling to 6.6% in June. In the case of acute anxiety crises, the number rose from 8.7% in the first collection to 14.9% in the second collection, remaining around 15% in June.

From the data presented above, it is evident that mental health problems in the workplace are related to the pillars of time, space, and conditions (Gandra, 2021). This analysis can be extended to students with the new reality of remote learning. According to the researcher, '...the WHO already points to an increase in suicide rates, depression, worry, fear, anxiety, domestic violence, fragility of support networks, and abusive use of alcohol and other drugs.'

Not only in the workplace but also among students, there is an increase in complaints related to psychological well-being, such as stress, anxiety, and mental suffering. Regrettably, these problems can persist into the student's professional life and diminish academic performance. It is worth highlighting the words of Capdeville (2020):

Studies indicate that such a phenomenon has been associated with absences, illnesses, fatigue, exhaustion, difficulties in adapting to the academic environment, lack of time for leisure and personal life, obsession with technical work, excessive personal demands, frustrations related to the course, and inherent difficulties in the teacher-student professional-patient relationship [emphasis added]

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

1.1. Ergonomics And Quality Of Life In Online Teaching Times

According to Másculo and Vidal (2011), it is essential to differentiate between "activities" referred to as "quality of life" in companies and a life with quality for the individual. After all, the latter is what truly impacts a person's health and productivity, as a life with quality generates benefits.

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

Similar 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, as well as other physical illnesses related to emotions, for example, gastritis, asthma, or other respiratory diseases, which are psychosomatic illnesses. Additionally, psychological disorders can cause and also maximize the negative side of reality or circumstances, stimulating a disproportionate fear (Ramos, 2020).

Furthermore, illnesses linked to psychological well-being negatively affect physiological responses responsible for the perception of danger, with the aim of preparing the individual to hide, flee, or fight. In this condition, the individual tends to overvalue the degree and perspective of danger, also underestimating coping ability in the situation (Gameiro, 2021; Barcelos, 2020).

Unfortunately, mental health has repercussions not only on a personal or healthcare system level but also on the economy, as it causes work absenteeism, escalating to the point of characterizing the individual as incapacitated (Michel, 2008). Therefore, it is essential for ergonomists to be attentive to signs of emotional wear and tear, such as palpitations, loss of concentration, understanding, and reasoning, as well as emotional instability and exhaustion, which can manifest through heart diseases, digestive issues, depressive episodes, and anxiety and panic crises.

In this context, Capdeville (2020) points out the symptoms that students may present throughout their education in the health field, but in the current circumstances, especially in remote (online) learning, these symptoms extend to other academic areas and also to educators. According to Capdeville (2020, p. 256):

"...among the most prevalent symptoms during health education are fatigue, exhaustion, difficulties in adapting to the academic environment, lack of time for leisure and personal life, obsession with technical work, excessive personal demands, frustrations related to the course, and inherent difficulties in the teacher-student relationship..."

Furthermore, this newly imposed reality of remote learning, across all education levels, 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, teaching methods, and practices with the same agility as the world changes.'

Another noteworthy factor is that in-person teaching, besides its role in learning, also stimulates the social development of students, whether through the concept of sharing space with others, or learning how to behave in a 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. Thus, a healthy and appropriate environment is conducive to greater productivity, whether in labor or intellectual pursuits, and better learning.

It is crucial to consider that the scarcity of material resources, along with inequality in values and cultural conditions among individuals, creates even greater gaps in addressing the new imposed reality.

In this context, given the vulnerability that the moment brings, the sudden shift to almost exclusive remote teaching leaves many students without the necessary access or conditions for such remote activities. Therefore, the aim is to investigate the impact on the mental health of students through interviews and the application of the SQR-20 questionnaire.

This research is justified by two main reasons: social and academic. On the social front, it is anchored in the provision of services and the return of knowledge to society. On the academic front, this project allows for student-research interaction through fieldwork, providing an experiential aspect within the research.

2. Methodological Approach

Ergonomics is a scientific discipline that studies, researches, develops, and implements rules and standards with the aim of organizing work in a way that is compatible with the physical and mental individualities of the person (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 the human into the environment, taking into account comfort and efficiency, as well as human limitations,

such as anatomy, physiology, and psychology. Additionally, 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 relationships between the machine and the human within a specific work environment, with the purpose of ensuring the well-being, health, and optimal performance of the worker [emphasis added].

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

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

The central concern of ergonomics is to highlight the relationship between production goals, available resources, and the health of the population. Through ergonomic analysis, it is possible to approach the difficulties faced in everyday work, which may arise from the conflict between system rationality and operational rationality (Alves, 2002).

From the ergonomic perspective, to understand a person's work, it is necessary to observe and analyze the unfolding of their activity in real situations, in their context, seeking to identify everything that changes and makes the worker make micro-decisions to solve the small but recurring problems of daily production (Assunção & Lima, 2003).

Whatever the demand that prompted the study, the ergonomist tries to grasp the repercussions of the work situation on individual and collective activity and on the acquisition and development of workers' skills (Assunção & Lima, 2003). They analyze tasks in the context in which they are performed. The mechanisms through which humans achieve 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 manages to "carry out" their task (Lima, 2001).

The AET (Ergonomic Work Analysis) will assist in answering the following questions: how does remote learning affect the mental health of students?

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

This is a descriptive, prospective study with a quantitative and qualitative cross-sectional approach (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, were developed using Microsoft Excel software for Windows. The questionnaire was divided into four specific factors of the collection instrument (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 Discussion

A total of 16 students, participants in the technical safety at work course at a public institution, both male and female, aged between 18 and 50 years (average of 28 years \pm 9

years), with diverse educational levels, took part in this research. Table 1 numerically demonstrates the distribution of responses 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 | | Não | |
|--|-------|-------|------|-------|
| | N= 16 | | 100% | |
| Depressive-anxious mood | | | | |
| Have you been feeling sad lately? | 14 | 87,5% | 2 | 12,5% |
| Do you feel nervous, tense, or worried? | 14 | 87,5% | 2 | 12,5% |
| Do you get easily frightened? | 11 | 68,8% | 5 | 31,3% |
| Have you been crying more than usual? | 9 | 56,3% | 7 | 43,8% |
| Somtic symptoms | | | | |
| Do you have a lack of appetite? | 11 | 68,8% | 5 | 31,3% |
| Do you sleep poorly? | 12 | 75,0% | 4 | 25,0% |
| Do you experience 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 indigestion? | 8 | 50,0% | 8 | 50,0% |

| Decrease in vital energy | | | | |
|---|----|-------|----|-------|
| Do you have difficulty thinking clearly? | 9 | 56,3% | 7 | 43,8% |
| Do you feel tired all the time? | 10 | 62,5% | 6 | 37,5% |
| Do you have trouble 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% |
| Do you have difficulties at work (is your job strenuous, causing you distress)? | 6 | 37,5% | 10 | 62,5% |
| Depressive thoughts | | | | |
| Are you unable to play a useful role in your 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, worthless person? | 6 | 37,5% | 10 | 62,5% |
| Have you had thoughts of ending your life? | 2 | 12,5% | 14 | 87,5% |

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

As a consequence of this depressive-anxious mood, 75.0% of students have lost interest in things, and 81.3% have found difficulties in carrying out their daily activities with satisfaction. This is reflected in the reality of the courses, given the increased number of absenteeism, presenteeism, and student dropout in class, hovering around 50% of the classes. The data support the findings of Capdeville (2020), indicating that an increase in psychological complaints such as stress, anxiety, and mental distress directly leads to increased absences, illnesses, fatigue, difficulties in adapting to academic life, and a lack of time for leisure and personal life.

Somatic effects are evident, as 68.8% report a lack of appetite; 75.0% have been sleeping poorly; 68.8% frequently experience headaches; 68.8% have unpleasant sensations in the stomach, while 50% report indigestion. According to Michel (2008), mental health affects the body, revealing signs of emotional strain, such as loss of concentration, understanding, and reasoning, as well as instability, which can manifest through digestive issues.

It is observed that remote classes have caused greater emotional strain. Students had to adapt abruptly to the new teaching methodology, requiring adaptability from many students. Reports of learning difficulties leading to dropout are common.

According to the interviewed student, headaches are a result of daily routines. She reports:

"Practically every day, more so during the night, due to the routine of day-to-day life, and when the night comes, I am already quite exhausted, very tired, so that's when I have them more frequently! [...] At this moment, for example, the class I had earlier was very exhausting." (Student)

Further questioning delved into the aspect of her tiredness. She reports that fatigue is related to "... the feeling of conveying a lot of information to be assimilated, so it becomes a bit exhausting." It is evident that headaches are associated with her daily life and the amount of information in the classroom, not solely related to remote learning aspects alone.

When asked about what she meant by "a lot of information," she says, "I mean, talking a lot, the class was around an hour and a half, so there is a lot of information in the head."

The data indicate that students generally need to manage their time and environments to

maintain a balance, i.e., allocate time for studies and other tasks and, after completing all this, adjust operational methods to avoid mental overload.

The student reports that, associated with her daily tasks and the class, there is a significant "concern." This concern adds to the time management, given that cumulatively she fulfills a series of obligations:

"My husband is a truck driver, so in my case, I'm practically both father and mother [...] my kids are also having remote classes, so I end up being a bit of a teacher [...] I usually divide their tasks to make it easier, not to overload too much, so as soon as they finish theirs, I try to do mine [...] it gets overwhelming, especially when it comes to these issues that also include insomnia, I think it's more stress! [...] the routine has changed completely, you know, so these concerns." (Student)

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

"I can already, a bit, organize this aspect, participating in online classes, doing the tasks, I'm already managing to adapt! ... So, I'm trying to divide, you know, I'm trying to divide, for example, one goes and does two tasks in a day, then the other goes and does two more tasks, I'm trying to make this organization so I can control it!" (Student)

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

"[...] they still have that difficulty of logging into the platform, answering the activities, and many times I have to solve it, you know, so it's that thing, right, I don't have a pedagogy degree, I don't have, let's say, the knowledge to be teaching." (Student)

The student describes a developed organization in her adaptation strategy so that her mind is not overloaded. However, she reports that, many times, there is difficulty in separating the activities of her children from her own, and this can increase her cognitive overload since there is an accumulation of obligations. Such circumstances are significant causes of insomnia, restless nights, anxiety, and concern. According to Capdeville (2020), anxiety is present in the lives of students and has an impact on their lives, directly affecting their learning. The student describes, 'I am having a lack of concentration, of focusing there, you know! [...] I have that lack of concentration in the text to be able to make the summary!'. According to Gameiro (2021) and Barcelos (2020), this lack of concentration is due to mental overload, resulting in unsatisfactory production. Still, regarding concentration, the student reports that the environment in which she studies is not suitable, contributing to the loss of attention. She describes that:

"It's not calm, not in my house, because I have this little problem, sometimes the kids 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 separate a fight in the living room... In the case of noise, you know, all the time noise, boys shouting, dogs barking... having some noise around kind of takes away a bit of concentration, attention [...]."

All of this contributes to anxiety, which, according to Capdeville (2020), comes with various negative feelings, excessive worry, fear of daily situations, mental overload, as if the person is living in a state of alertness, always expecting the worst of everything. All these symptoms hinder the person's overall development, and in addition to going through all this suffering, many people face judgment and distrust, often from close people who disbelieve that such a person may really need help. She describes that:

“a gente está se sentindo triste não é só eu, tem alguns colegas aí também, porque assim a gente pensou que ia ser uma coisa diferente né, aí veio a pandemia e meio que modificou tudo então chega a ser um pouco desanimador entrar numa sala de aula e ver só eu e mais uma colega, então isso daí sem querer entristecer a gente deixa a gente pra baixo! [...] a gente meio que fica meio depressiva, tipo não era do jeito que a gente estava pensando que ia ser aí meio que entristece!”. (Aluna).

"We are feeling sad, not just me, there are some classmates too, because we thought it would be something different, then the pandemic came and kind of changed everything, so it becomes a bit discouraging to enter a classroom and see only me and another classmate, so unintentionally it saddens us and brings us down a bit! [...] we kind of get a bit depressed, like it wasn't the way we were thinking it would be, so it kind of saddens us!"

Asked about how she thought it would be, she says it's related to social interactions in the classroom, she says: 'looking at each other interacting.' In this sense, an important aspect emerges, which is the intrapersonal relationship. When asked about this relationship, she says: 'one helps the other, takes the experience from one, takes the experience from another, and online is kind of cold, not everyone talks, not everyone participates! [...] my biggest sadness today, I can tell you, is the remote classes.

4. Conclusions

Analyzing the extent and nature of online teaching use is of great relevance for several reasons, as mentioned. Often, when talking about 'remote teaching,' the expression comes loaded with abstractions and negative implications, connoting a 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 students and teachers, internal conflicts can be generated, leading to psychological distress. This research sought to understand, in part, the issues of remote teaching, studying the teaching-learning process in times of a pandemic. The empirical work aimed to understand students' internal conflicts and translate, in part, the actions taken in situations of cognitive overload through self-confrontation between students and interfaces – experiences and skills – and the aspects inherent in the situated context. Thus, the findings presented here are based on valid interpretations of events in the real world. Students reported and manifested various forms of regulatory strategies. The role played by social organization in the teaching-learning process was highlighted as an important factor for effectiveness in motivating students, as teaching-learning is based on contextual conditions, behaviors, and social relationships in the classroom.

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