

<https://doi.org/10.23913/ride.v15i29.2028>

*Scientific articles*

## **Emociones presentes en el aula de alumnos de primer semestre que cursan la unidad de aprendizaje de programación en UPIBI-IPN**

***Emotions present in the classroom of first semester students taking the programming learning unit at UPIBI-IPN***

***Emoções presentes na sala de aula dos alunos do primeiro semestre da unidade de aprendizagem de programação da UPIBI-IPN***

**Ana Isabel García Monroy**

Instituto Politécnico Nacional, Unidad Profesional Interdisciplinaria de Biotecnología,  
México

[agarciamo@ipn.mx](mailto:agarciamo@ipn.mx)

<https://orcid.org/0000-0003-4814-6562>

**Engelbert Eduardo Linares González**

Instituto Politécnico Nacional, Unidad Profesional Interdisciplinaria de Biotecnología,  
México

[elinaresg@ipn.mx](mailto:elinaresg@ipn.mx)

<https://orcid.org/0000-0002-2924-0118>

**Lucero Martínez Allende**

Instituto Politécnico Nacional, Unidad Profesional Interdisciplinaria de Biotecnología,  
México

[lumartinez@ipn.mx](mailto:lumartinez@ipn.mx)

<https://orcid.org/0000-0003-3646-0386>

### **Resumen**

En la actualidad, la educación ha evolucionado rápidamente como resultado de diversas causas, como el confinamiento debido al covid-19, los cambios políticos nacionales, entre otros. Esto significa que hay una diversidad de emociones presentes dentro de las aulas, por lo que el objetivo del presente trabajo fue identificarlas y determinar cómo influyen en el proceso de enseñanza y aprendizaje, específicamente en el nivel superior. Para ello, se analizaron seis emociones básicas: ira, tristeza, alegría, miedo, sorpresa y aversión, lo cual



se efectuó mediante una medición cuantitativa y continua de variables dependientes a partir de la aplicación de un cuestionario compuesto por 16 ítems a 146 estudiantes de primer semestre de la Unidad Profesional Interdisciplinaria de Biotecnología. Los resultados muestran distintos estados emocionales presentes en los docentes que influyen en el proceso de enseñanza - aprendizaje de los estudiantes, lo cual desencadena una serie de eventos en los alumnos y en el ambiente del aula. Esto se manifiesta en estados de alerta, ansiedad y desorganización, los cuales se reflejan en un bajo rendimiento académico. Estos hallazgos abren líneas de investigación para modificar las condiciones de trabajo de los alumnos y sugieren la implementación de cursos de manejo emocional para los docentes con el fin de promover ambientes de aprendizaje más armónicos.

**Palabras claves:** docente, emociones, estudiante, limitantes, trabajo en aula.

### **Abstract**

Education today is evolving rapidly derived from various causes such as the confinement by COVID-19, national political changes, among others, this means that a diversity of emotions is presented within the classroom, so it is important to identify the emotions that are generated inside the classroom and how these influence the teaching and learning process of the student at a higher level. This research work aims to analyze the emotions present in the teacher and how they influence the teaching-learning process. To achieve the stated objective, the investigation was approached with the analysis of six basic emotions: anger, sadness, joy, fear, surprise, aversion, making a quantitative and continuous dependent variable measurement from the application of a questionnaire composed of 16 items to 146 fourth semester students of the Biotechnology Interdisciplinary Professional Unit.

The results obtained show different emotional states present in the teacher, there being an influence that affects the teaching-learning process of the students derived from the activation of a chain of events present in the students and in the classroom environment, resulting in alert states. anxiety and disorganization manifesting in poor academic performance, this opens lines of research in which the student's working conditions can be modified as well as suggesting a series of emotional management courses for teachers in order to lead to harmonious learning environments.

**Keywords:** Teacher, emotions, student, limitations, classroomwork

## Resumo

Atualmente, a educação tem evoluído rapidamente como resultado de diversas causas, como o confinamento devido à covid-19, mudanças políticas nacionais, entre outras. Isto significa que existe uma diversidade de emoções presentes nas salas de aula, pelo que o objetivo deste trabalho foi identificá-las e determinar como influenciam o processo de ensino e aprendizagem, especificamente ao nível superior. Para isso foram analisadas seis emoções básicas: raiva, tristeza, alegria, medo, surpresa e aversão, o que foi realizado por meio de uma mensuração quantitativa e contínua de variáveis dependentes a partir da aplicação de um questionário composto por 16 itens a 146 alunos do quarto ano semestre da Unidade Profissional Interdisciplinar de Biotecnologia. Os resultados mostram diferentes estados emocionais presentes nos professores que influenciam o processo de ensino-aprendizagem dos alunos, o que desencadeia uma série de acontecimentos nos alunos e no ambiente de sala de aula. Isto se manifesta em estados de alerta, ansiedade e desorganização, que se refletem no mau desempenho acadêmico. Essas descobertas abrem linhas de pesquisa para modificar as condições de trabalho dos alunos e sugerem a implementação de cursos de gestão emocional para professores, a fim de promover ambientes de aprendizagem mais harmoniosos.

**Palavras-chave:** professor, emoções, aluno, limitações, trabalho em sala de aula.

**Reception Date:** May 2023 **Acceptance Date:** July 2024

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## Introduction

The economic, political and social problems that arise today have their origin in emotions. In the words of Arias (1999), “most of humanity's ills are due to the fact that we insist on thinking when we should feel and we allow ourselves to be carried away by emotions when we should think” (p. 34). In addition to this, today education is evolving rapidly, which implies the emergence of a host of emotions, hence the importance of identifying those that arise inside the classroom and how they influence the teaching-learning process of the student.

In fact, it should be noted that the development of emotional skills in the classroom must be led by emotionally competent teachers in order to achieve harmonious development. According to Ibáñez (2002), “emotions constitute the most relevant aspect to facilitate learning in education: positive or pleasant emotions will allow the performance of actions favorable to learning, negative or unpleasant emotions will not allow it” (p. 31).



Based on the above, the following question was raised: what is the perception that students have of their emotions in the interaction with teachers? It is important to know this opinion, since sometimes it differs greatly from the emotions that the teacher feels. In this regard, it is worth pointing out that it is relevant not only to detect the most frequent emotions, but also which stimuli trigger them and which of these are limiting for the learning process.

According to Lapponi (2016), it is clear in this scheme that the classroom climate does not depend only on the behavior of the students, but on the reaction that the teacher has in response to it, involving in this response the expectations and attributions they make towards their students. students (beliefs) and the feelings they generate. Therefore, in classroom interaction, conditioned and conditioning images would be re-sent between the teacher and his students that can give rise to – on the one hand – behaviors of acceptance/support-criticism/rejection, approval-disapproval and affect-apathy/antipathy depending on whether or not they satisfy the teacher's expectations about the learning and behavior of their students. (p. 796).

### **Theoretical framework**

Emotions can be defined as the set of organic reactions that an individual experiences in response to certain external stimuli that allow them to adapt to a situation. According to Castillo (2021) “emotion is characterized by being a short-term mood alteration, but of greater intensity than a feeling, feelings are the consequence of emotions and are more lasting” (p.49). In other words, feelings are not only the consequences of emotions, but they are also more lasting and can be verbalized, as seen in Figure 1.

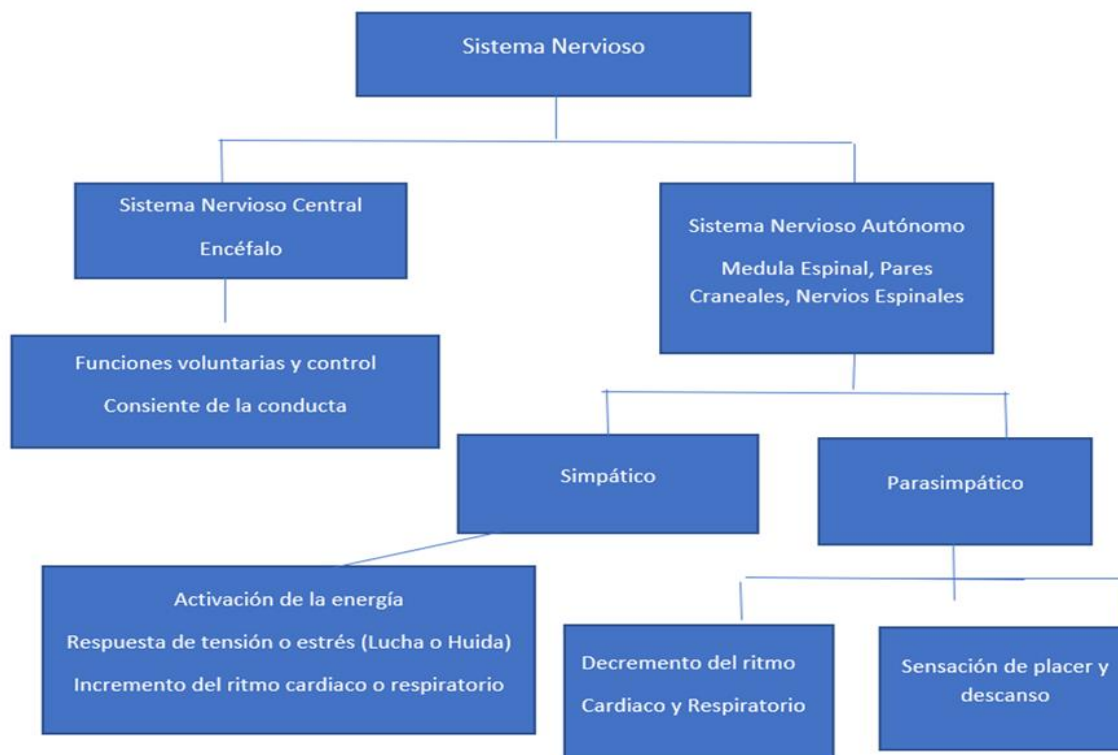
**Figure 1.** How emotion is generated



Source: self made

Emotions, therefore, are the cause of various organic reactions that can be physiological, psychological or behavioral, that is, they can be both innate and influenced by previous experiences or knowledge (figure 2). These organic reactions that generate emotions are controlled by the limbic system, which is made up of several brain structures that regulate physiological responses.

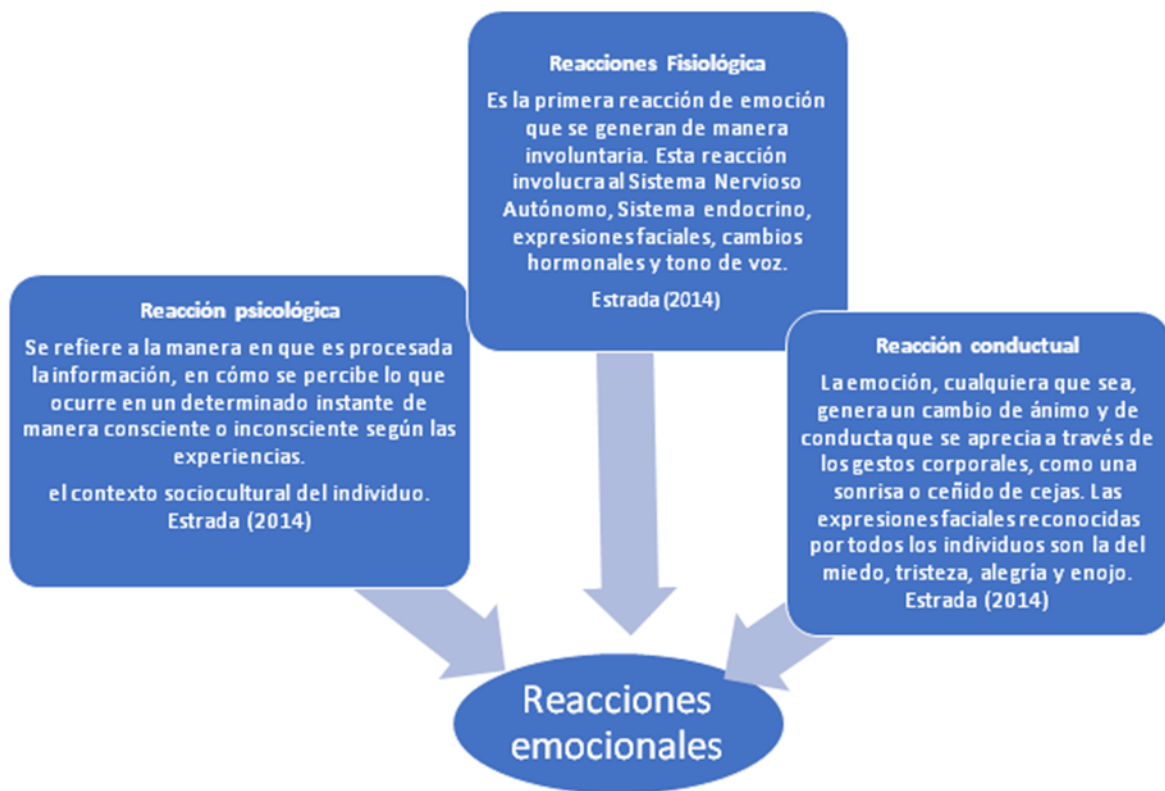
**Figure 2.** How emotions affect the nervous system



Source: self made

The limbic system is a network of neurons important in human behavior, where moods appear; hence it is sometimes called “the emotional brain.” However, an emotion can also produce a behavior that can be previously learned as an expression. In this sense, specialists in charge of studying emotions have determined three types of reactions, as shown in figure 3.

**Figure 3.** Reactions that generate emotions



Source: self made

Figure 3 shows the different reactions that emotions provoke, which generates a cluster of physiological, behavioral and psychological responses that can limit learning and affect the way information is processed, which can manifest itself in facial changes. In addition to this, Chóliz Montañés (2005) “points out that emotion are usually understood as a multidimensional experience with at least three response systems: cognitive/subjective, behavioral/expressive and physiological/adaptive.” (p. 3).

## Types of emotions

According to Barragán Estrada and Morales Martínez (2014), there are various types of emotions that are classified in an order, ranging from the most basic to those learned in various contexts, as seen in table 1.

**Table1.** Type of emotions

Type of emotions		
Basic primary emotions	They are innate and respond to a stimulus. They are anger, sadness, joy, fear, surprise, aversion (Barragán Estrada and Morales Martínez, 2014).	
Secondary emotions	They are those that are generated after a primary emotion, such as shame, guilt, pride, anxiety, jealousy and hope (Barragán Estrada and Morales Martínez, 2014).	
positive emotions	They bring together and keep the situation pleasant They produce physical well-being (Barragán Estrada and Morales Martínez, 2014).	<ul style="list-style-type: none"> <li>• Cheerful</li> <li>• Humor</li> <li>• Keen</li> <li>• Happiness</li> </ul>
Negative emotions	They push away, reject or They seek to modify a harmful situation (Barragán Estrada and Morales Martínez, 2014).	<ul style="list-style-type: none"> <li>• Gonna</li> <li>• Fear</li> <li>• Sadness</li> <li>• Shame</li> <li>• Aversion</li> </ul>
The fear	It is a negative primary emotion that is activated by the perception of a present and imminent danger, which is why it is	

	<p>closely linked to the stimulus that generates it. It is an emotional warning sign that physical or psychological harm is approaching. Fear also implies an insecurity regarding one's own ability to endure or handle a threatening situation (Navarro, 2017, p. 184).</p>
The wrath	<p>It is a negative primary emotion that is triggered by situations that are valued as unfair or that violate moral values and personal freedom; situations that exert external control or coercion over our behavior, people who affect us with verbal or physical abuse, and situations in which we consider that unfair treatment and the blocking of goals occur (Navarro, 2017, p. 184).</p>
The sadness	<p>It is an emotion that occurs in response to events that are considered unpleasant. Denotes sadness or melancholy. Sadness is a form of unpleasure that is produced by the frustration of a pressing desire, the satisfaction of which is known to be impossible. The triggers for sadness are physical or psychological separation, loss or failure, disappointment, especially if hopes placed on something have faded (Navarro, 2017, p. 184).</p>
The surprise	<p>It is the briefest of emotions. It is a reaction caused by something unexpected or strange (Navarro, 2017, p. 184).</p>
The aversion	<p>It is the emotional response caused by disgust towards something or an unpleasant impression caused by something. It is a complex emotion that involves a response of rejection to a damaged object, a psychological event or repugnant moral values (Navarro, 2017, p. 184) .</p>
Joy	<p>It has multiple benefits for our health: on a hormonal level when we feel happy we generate a neurotransmitter called serotonin, which attenuates our stress and anxiety, among other things. One of the main biological changes produced by joy consists of the increase in the activity of a brain center that is responsible for inhibiting negative feelings and calming states that generate worry, at the same time that it increases the flow of available energy ( Navarro, 2017, p. 184).</p>



Source: self made

According to Anguio Cendán (2014), the development of emotional skills in the classroom must be led by emotionally competent teachers. To do this, it must be understood that human emotions are the result of a more deliberate action that, in addition to the immediate emotional state of our organism, takes into account other factors such as the external situation, the prior knowledge acquired, the repertoire of emotional behaviors and our ability to anticipate, plan, and make decisions about our future behavior. These variables are closely related to our cognitive abilities and, therefore, with the participation of systems located in the cerebral cortex, specifically in the areas that make up the prefrontal cortex.

Now, once we have explained what emotions are and how they are generated, the following questions arise:

- Can emotions be identified in classes? This is one of the first questions that arise and is related to the ability to perceive our most palpable emotions, such as anger, sadness or joy. However, it should be noted that other secondary emotions may be more difficult to identify, although it could be achieved if you pay more attention.
- What stimuli trigger emotions? This question was formulated taking into account the complexity of identifying which stimulus triggers emotions in the classroom, given the number of students and the variety of emotions, which represents a challenge to be able to notice which specific stimulus triggers them.
- What is the perception that environmental and biomedical engineering students have of their own emotions in their interaction with their teachers and peers? It is important to know the perception that students have, since sometimes it differs greatly from the teacher's perception.
- What are the emotions that arise in students most frequently? It is important to know not only which emotions arise the most, but also which stimuli trigger them. In this way, you can foresee which are limitations to the learning process are.

### **Emotional competencies**

1. Self-awareness: Knowledge of one's own and others' emotions (empathy) and the interaction between thought, action and emotion.
2. Regulation: Expression, regulation and coping.

3. Autonomy: Self-esteem, positive attitude, self-motivation, responsibility, critical analysis of social norms, resilience.
4. Social competence: Maintaining relationships with others: respect, receptive and expressive communication, cooperation, assertiveness, prevention and coping with conflicts, as well as management of emotional situations.
5. Skills for life and well-being: Adoption of healthy behaviors: setting goals, making decisions, seeking help and resources, enjoying, flowing.

For Bericat Alastuey (2012), the emotions felt by the subject should never be considered as simple mechanical or physiological responses to the variations produced in the environment, since the emotional experience of a subject depends on many factors, among which the following can be mentioned. : how you consciously and/or unconsciously value the facts; to what/who do you attribute the cause/responsibility of those events; your expectations regarding the situation; the active social identity at every moment; and the identification of the subject with other people, groups or collectives.

According to Cerdá Suárez (2014), teachers who perform well with students are creative, fair in their evaluations, motivating, sociable, patient, and responsible, have a sense of humor and encourage critical and analytical thinking among students. To achieve this, it is appropriate to create such an atmosphere in the classroom and encourage student participation and responsibility in the learning process. Table 2 shows the components of emotions and how they are manifested.

**Table2.** Component of emotions

Dimension	Contribution to emotion	Manifestation	Example (an assault)
Biological (physiological)	<ul style="list-style-type: none"> <li>• Excitement</li> <li>• Physical training.</li> <li>• Motor responses.</li> </ul>	Activation of the autonomic nervous system.  Physical sensations.	Rapid heart rate, sweating and nervousness
Subjective (cognitive)	<ul style="list-style-type: none"> <li>• Feelings</li> <li>• Phenomenological consciousness</li> <li>• Perception of the situation</li> <li>• Meaning to the experience</li> </ul>	Thoughts interpretations of the individual's own state.	“They are going to assault me! “They are going to take away my cell phone and my cards!”
Functional (purpose)	Goal-directed motivation	Desire to commit to the activity.  Decisions and actions.	Being able to take out my cards and hand over only the cell phone and the money
Expressive (social)	Communication	Facial expressions.  Body postures.  Vocalizations.	Arched eyebrows, open mouth, helplessness, frustration

Source: self made

## Methodology and material

For the development of this study on the teacher's emotions present in the classroom, a quantitative and continuous dependent variable was established. In addition, a measurement instrument was applied through a questionnaire made up of 16 questions with a rating scale. This instrument was validated using Cronbach's alpha coefficient with a value of 0.8.

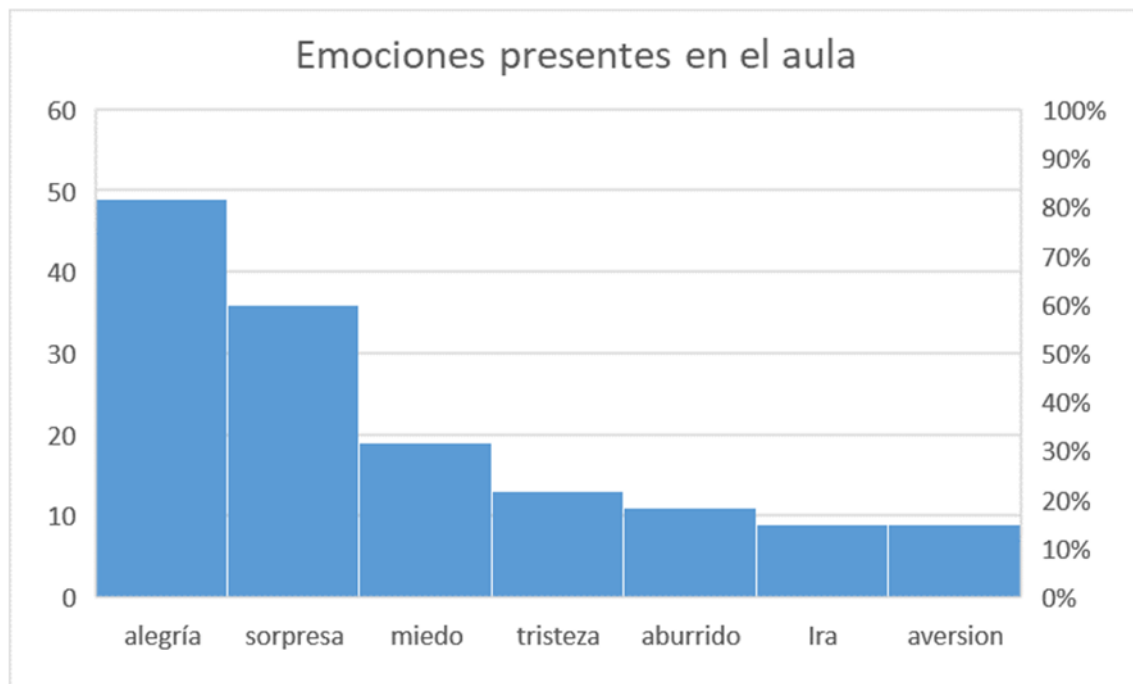
With the results obtained, the presence of emotions in the classroom was analyzed. Specifically, we had the support of a group of 146 higher-level students from the

Environmental Engineering and Biomedical Engineering majors, all belonging to the first semester. These students participated in the programming learning unit, which is classified as critical due to its high failure rate, which reaches 40%.

## Results

The first question posed was the following: what types of emotions arise in you most frequently in the classroom? Figure 4 shows the trend according to the students' responses.

**Figure 4.** Types of emotions present in higher level students

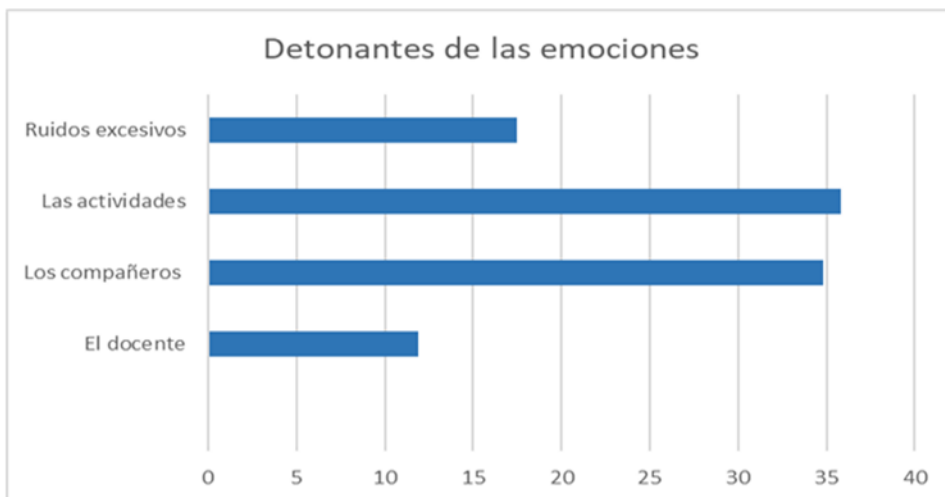


Source: self made

In the previous figure, it is observed that the students express joy and surprise, but they also express fear, sadness, aversion and anger. According to Henao Arias and Marín Rodríguez (2016), in the case of teachers, joy varies depending on the relationship they have with the students. That is, when there is more trust with the students, the teacher feels calmer, which strengthens the bond between them?

The second question posed was what are the triggers of your emotions in the classroom?

**Figure 5.** Emotional triggers perceived by students in the classroom



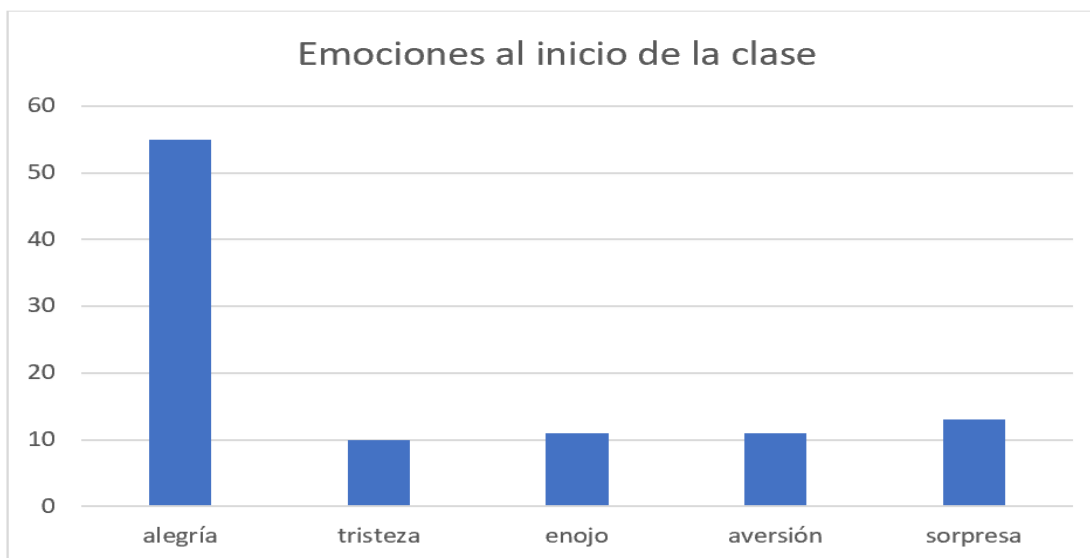
Source: self made

It is observed that the highest percentage obtained was 34.8%, corresponding to classroom activities, which are closely related to the teacher, since he is in charge of designing them. Likewise, it should be noted that 10% mentioned the teacher, which would add up to 44.8% of his direct responsibility for the students' emotions. Another trigger that obtained a high index was the interaction between classmates or peers, with 32.6%.

According to Muñoz de Moralesy Bisquerra Alzina (2006), whose model analyzes psychosocial stressors, psychological stress is not only found in the environment nor is it an exclusive consequence of personality characteristics, but depends on a particular type of person person-environment relationship. In this case, the entire environment is causing stress: the activities, the classmates, and the teacher.

The third question posed was: What is the predominant emotion with which they come to class?

**Figure 6.** Type of emotion present in the students when they start their classes



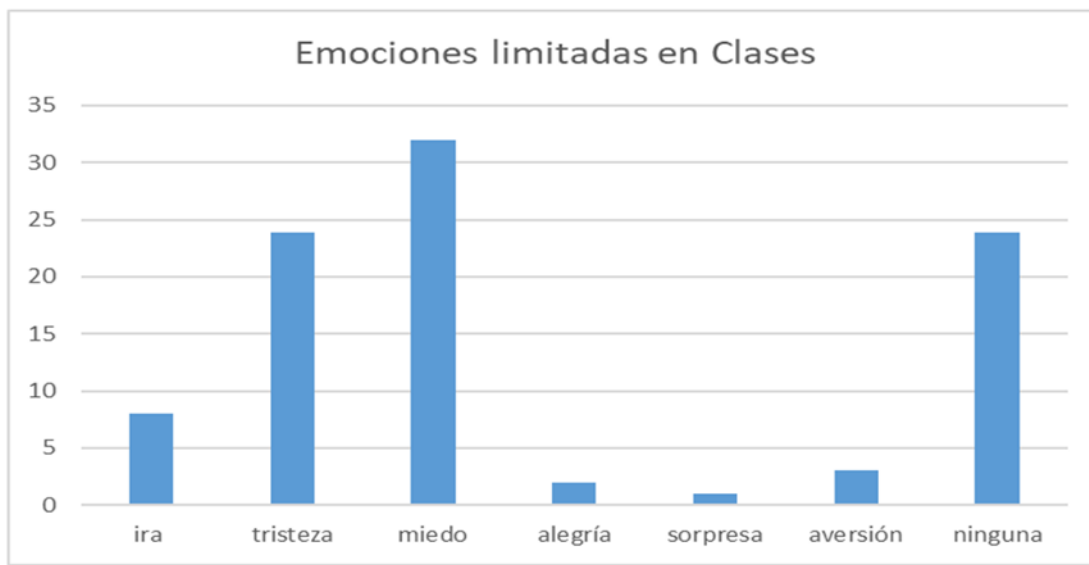
Source: self made

It is important to note that for the students the teacher arrives with joy in most cases, but it is significant to see that for 13.3% he does so with surprise. Furthermore, for 11.1% the teacher arrives angry or expresses aversion, which serves to raise the following question: why do students perceive that the teacher is angry or expresses aversion?

According to Ibáñez (2002), if emotions define the spaces of possible actions to be carried out, then they constitute the most relevant aspect to facilitate learning in education; In other words, positive or pleasant emotions will allow the performance of favorable actions for learning, while negative or unpleasant emotions will not allow it. In the case of classroom interaction, the emotions that underpin the students' actions would be decisive for the course their learning follows. Therefore, it is crucial to identify the causes of fear, sadness, anger, aversion and boredom in students in order to take appropriate actions (Párra. 3).

The fourth question posed was, do you consider that some type of emotion is limited during the class?

**Figure 7.** Emotions that become limited or repressed in the classroom



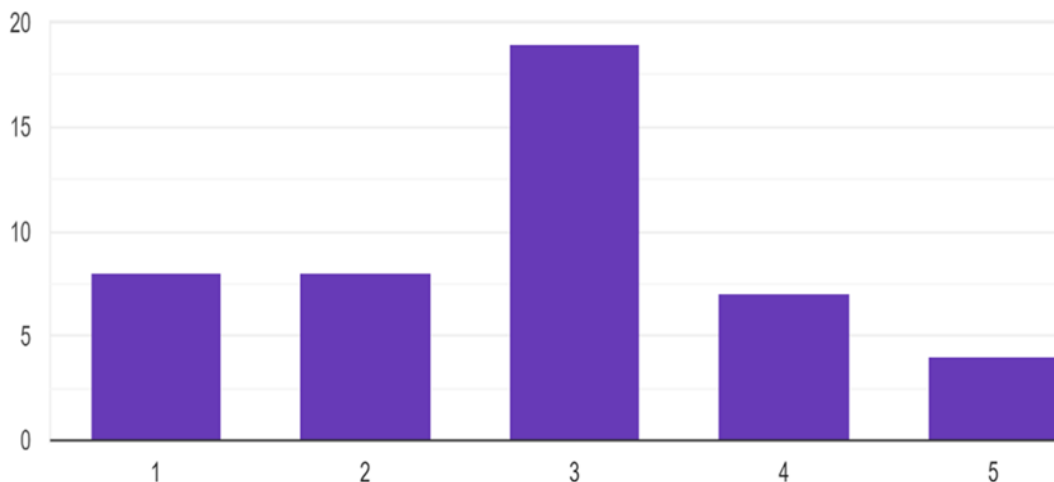
Source: self made

In the previous figure it can be seen that for the students the limiting emotions are sadness and fear. The first causes a decrease in energy and enthusiasm for daily activities and, as it deepens, can lead to a slowdown in the body's metabolism and intrusive thoughts about the situation. On the other hand, fear is an alarm system of the brain that is activated in the face of a possible real or perceived threat; hence it is a useful and adaptive response that entails changes in behavior, thinking and the body.

For Smith (2019), students who are dealing with their own emotions may be investing cognitive resources simply to get through the day, which makes it impossible for them to fully participate in the teaching process. (p. 8).

The fifth question posed to the students was, from 1 to 5, to what degree do you think the teacher influences the emotions that limits you?

**Figure 8.** Degree to which the teacher influences the students' emotions|



Source: self made

In the previous figure it can be seen that for 19% the teacher sometimes influences limiting emotions, for 6% many times and for 4% always. This indicates that for 29% of students the teacher has a significant impact on their limiting emotions.

According to Sala Roca (2002), the emotional dimension is key in personal interactions. Teaching practice is developed in interactive contexts, so the emotions that are implicitly transmitted will have a fundamental role not only in the emotional development of the students but also in the emotionality of the teacher himself and the effectiveness of his work. (P. 3).

The sixth question posed to the students was: on a scale of 1 to 5, how do you consider the degree of assertiveness in the communication you establish with the teacher?



**Figure 9.** Degree of assertiveness in communication between teacher and student

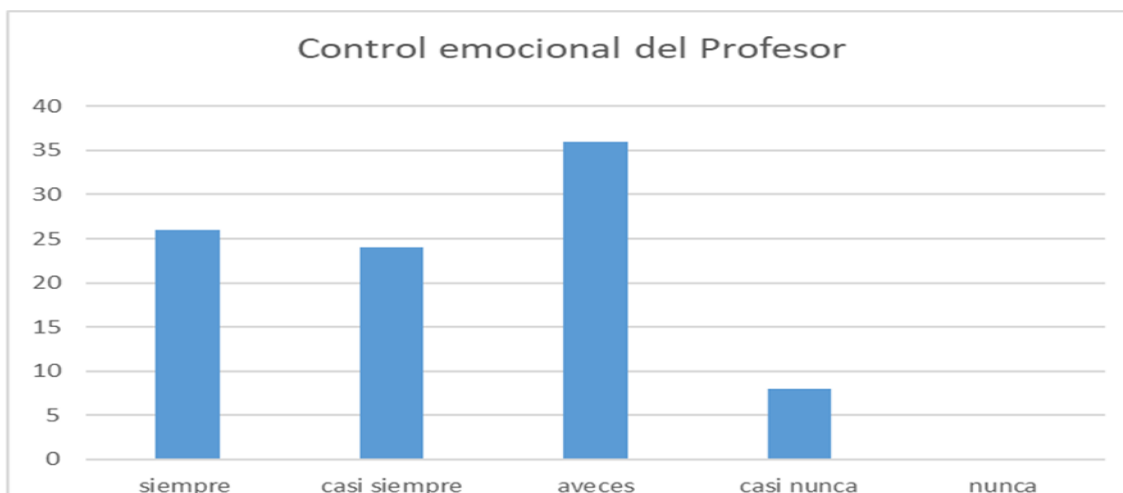


Source: self made

In the previous figure it can be seen that for the student the teacher has assertive communication with the students within the classroom. According to Bohórquez Guamán (2023), this exchange is fundamental in any social organization, since it allows the transmission of opinions, emotions and attitudes; hence it is vital for the teaching-learning process.

The seventh question asked was: on a scale of 1 to 5, how do you consider the teacher's emotional control when he expresses some anger in the class?

**Figure10.** Degree of emotional control of the teacher when expressing some type of anger at a moment in class

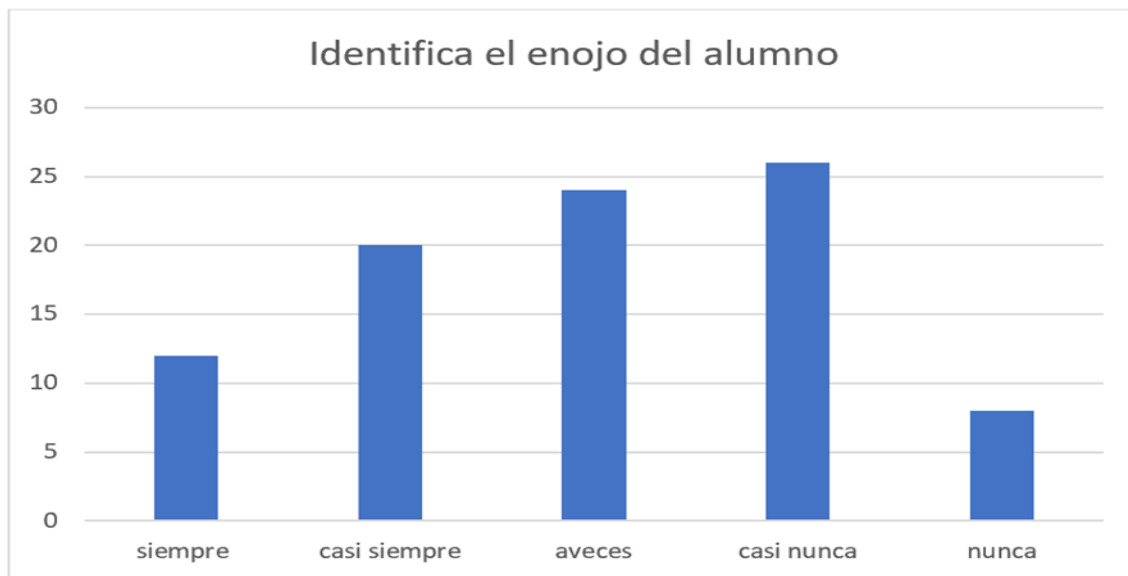


Source: self made

In this question it is observed that 18% of the students state that sometimes the teacher calms down when he gets angry. For Gargurevich (2008), a consequence of the lack of emotional regulation related to performance is the effect it has on higher cognitive processes, fundamental for learning and optimal academic performance. Therefore, it is crucial that the teacher learns to regulate his or her emotions so as not to affect the teaching-learning process.

The eighth question asked was: Does 1 to 5 indicates the degree to which the teacher identifies any anger present in the students during class?

**Figure 11.** Degree to which the teacher identifies any anger in the students during the class

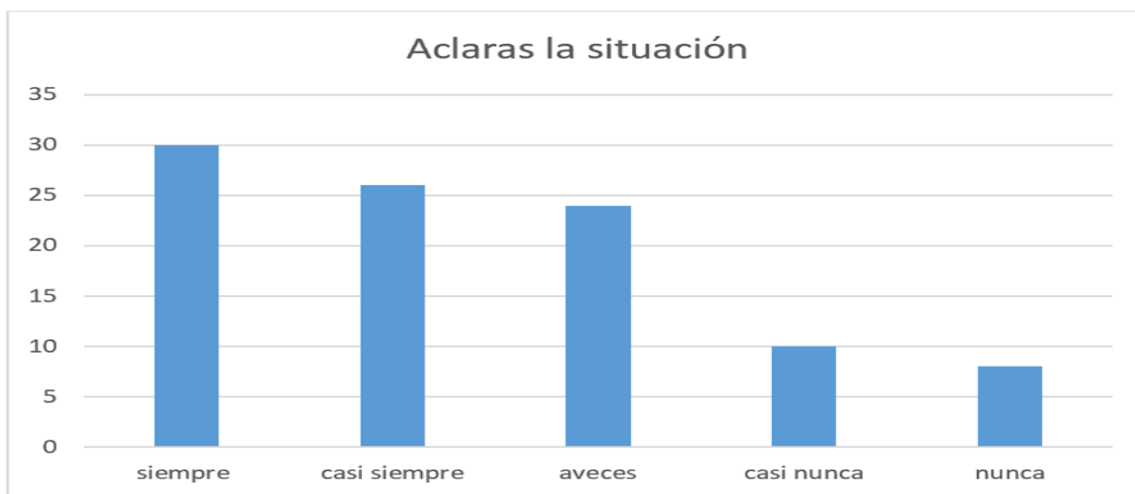


Source: self made

In this question it can be seen that most of the time the teacher identifies when the students are angry, although it should be noted that 18% of the students responded negatively. This question is crucial because if the teacher is unaware of the classroom environment, it is difficult to control a situation that could get out of control.

The ninth question posed to the students was: on a scale of 1 to 5, what is the degree to which the teacher manages his anger with a student during class and asks to clarify the situation?

**Figure 12.** Trend in the responses given by students when the teacher gets angry with a student and asks to clarify the situation

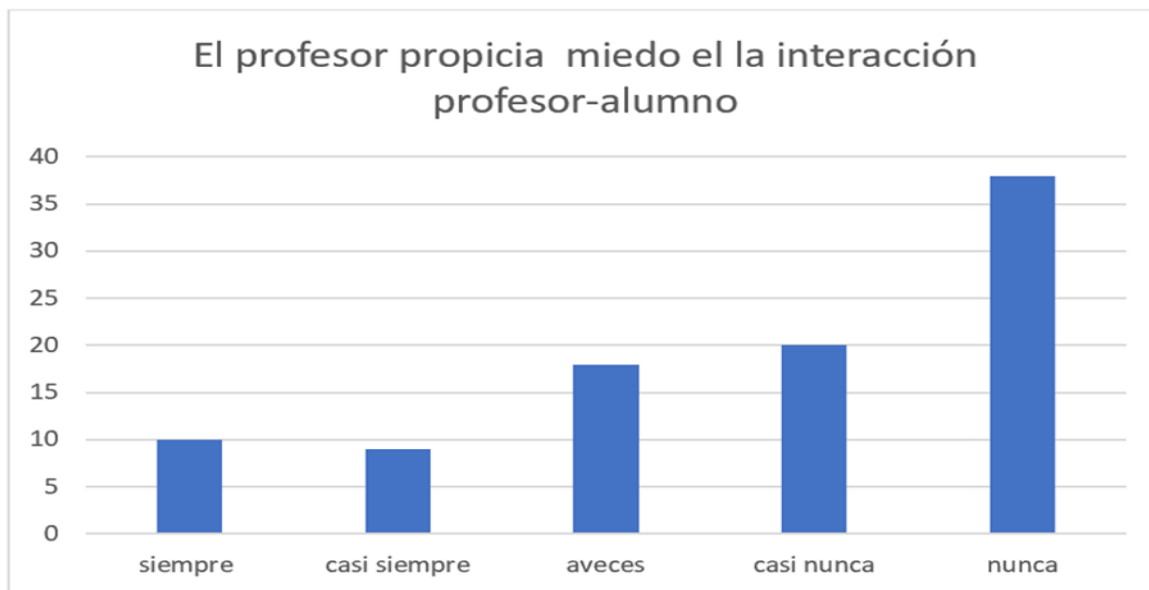


Source: self made

Regarding this question, it can be seen that 15% of the students mention that the teacher speaks to them with respect and explains what bothers them. However, it is also important to note that 10% commented that the teacher sometimes does it, 5% responded that it is rarely done, 3% that it is never done, and 18% mentioned that the teacher needs to speak with respect to the students. Students and ask them clearly why they are angry to avoid future problems.

The tenth question posed was the following: on a scale of 1 to 5, to what degree did the teacher provoke fear in you during class?

**Figure 13.** Trend in the response regarding the degree of fear in the teacher-student interaction within the classroom

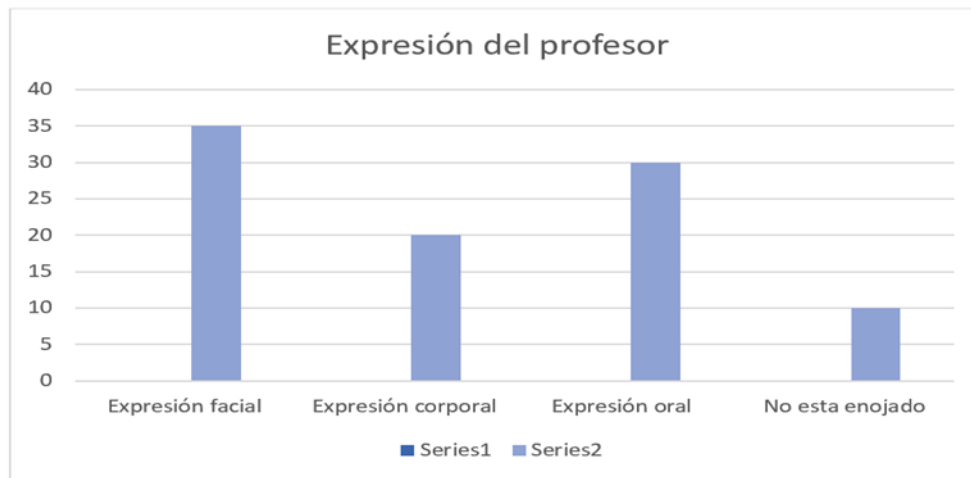


Source: self made

The previous graph shows that 20% of the students do not feel fear in the interaction with the teacher, but attention should be paid to the other percentages, since 18% mentioned that the teacher (sometimes, many times and always) causes fear. In this regard, Trujillo González *et al.* (2020) explain that the emotional well-being of teachers has a positive impact on the emotional development of students, hence their skills in this area favorably affect academic performance and the classroom climate.

The eleventh question posed was: under what expression can you infer whether the teacher is angry at the start of class?

**Figure 14.** Type of expression that the teacher shows when he is angry

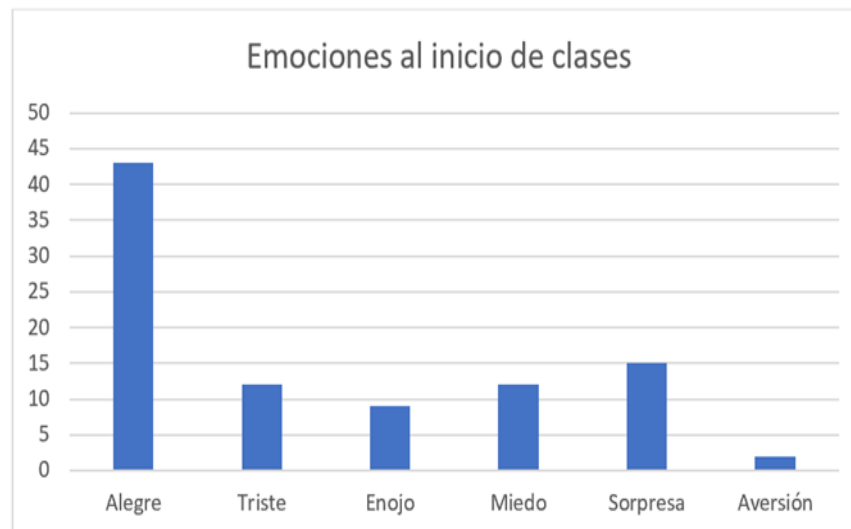


Source: self made

In the previous figure, it can be seen that the students perceive the teacher's anger due to the type of facial expression and the way in which he speaks to them.

The twelfth question posed was, with what type of emotion do you generally start the student day on a daily basis?

**Figure15.** Emotion present in the students at the beginning of the school day

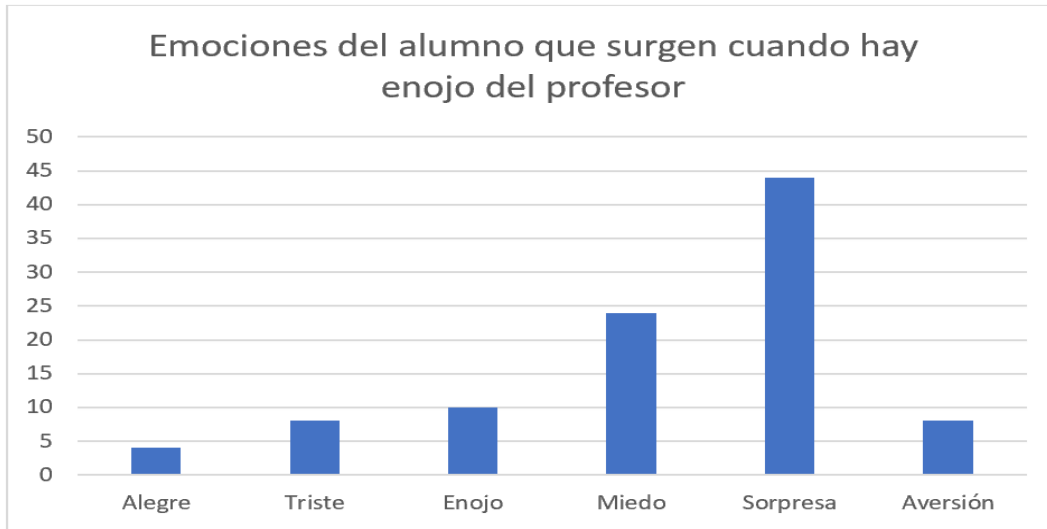


Source: self made

In this graph you can see that 35% of the students come to class happy, 10% come sad and 2% angry (the latter are limiting emotions).

The thirteenth question asked was the following: when you observe anger in the teacher, does this emotion influence you? What type?

**Figure 16.** Type of emotion present in the student when the teacher comes to the classroom angry

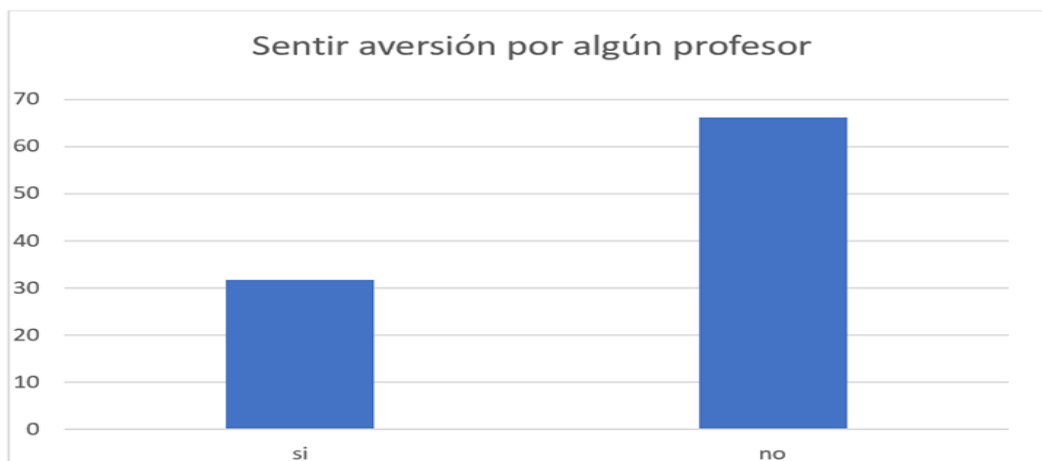


Source: self made

It can be seen in the graph that when the teacher presents himself with anger or a negative emotion, he provokes limiting emotions in the students such as surprise, fear, anger, sadness and aversion.

The fourteenth question posed was, have you ever felt a teacher dislike you in any class?

**Figure 17.** Tendency to dislike a school teacher

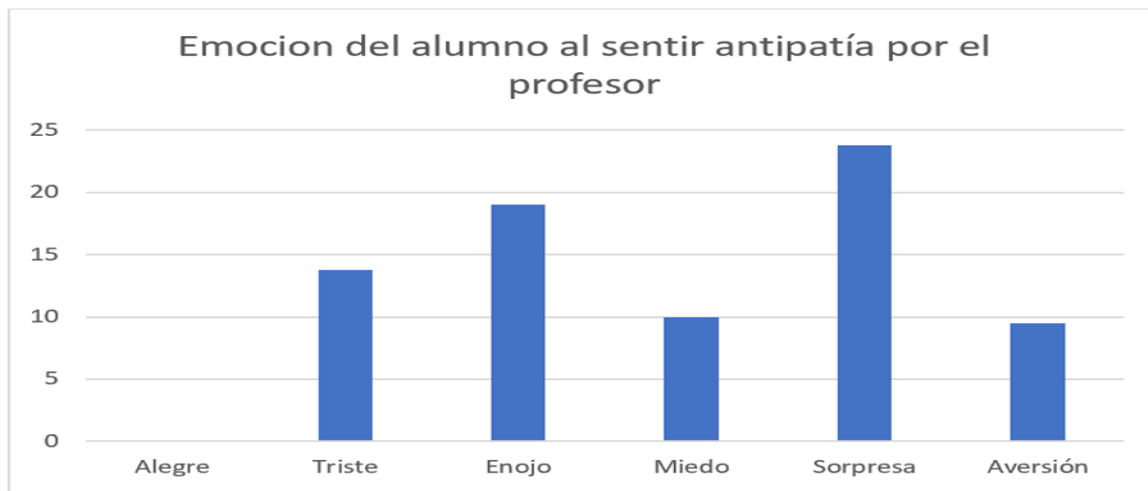


Source: self made

This graph is striking, given that 31.6% of the students have felt rejected by the teacher.

The fifteenth question posed to the students was the following: what emotion does the teacher's dislike generate in you?

**Figure 18.** Type of emotion expressed by the student when feeling antipathy on the part of the teacher



Source: self made

In this graph you can see that limiting emotions are being provoked in the students, such as anger, sadness and surprise in 23.8% of the cases. Furthermore, 11% of students experience fear and 9% aversion.

### Analysis

Regarding the first question, the predominant emotions are joy and surprise. The first generates neurotransmitters such as serotonin, which helps reduce stress and anxiety, while the second is brief, although both create an environment conducive to learning. However, there are counterproductive emotions such as anger, sadness, fear and aversion that also occur in students, which cause stress, anxiety, insecurity, mental blockage and sadness, among others.

Regarding the second question, about emotional triggers in the classroom, 48% of the students mentioned that the teacher is the main person responsible. According to Prieto Jiménez (2008), "we must not forget that the teacher is not a mere transmitter of knowledge, but is also a strong socializing agent and that, through his teaching, he

transmits a series of values that will permeate, directly or indirectly, in the training of students” (p. 325). In other words, the teacher designs and plans the strategies applied in the classroom, which coincides with what was mentioned by Soto and Bertoglio (2001).

Regarding question 3 (what is the predominant emotion with which teachers come to the classroom), it should be noted that the majority do so in a happy and relaxed manner. However, it is important to note that 23% of students mentioned that sometimes teachers come to the classroom sad, angry, or disgusted. In this regard, it is crucial to relate these answers to those of question 12, since it can be seen that the emotional state of both the teacher and the student at the beginning of the school day are similar.

Regarding question 4 (what are the limiting emotions in students), the answers agree that negative emotions such as anger, fear, sadness and aversion are the ones that limit the most and seek to modify a harmful situation ( Barragán Estrada and Morales Martínez , 2014).

In relation to question 5 (about how the teacher influences limiting emotions), 29% of the students indicated that the teacher has influence on these emotions, which underlines the importance of the teacher's role in the school context and their responsibility. to establish a positive relationship with students, since it is a generator of emotions in the classroom.

Regarding question 9, 15 % of the responses indicate that the teacher speaks with respect, but 18% mention that sometimes. According to Von Hildebrand (2004), respect can be considered one of the greatest virtues ( *mater omnium virtutum*), since it constitutes the fundamental attitude for all the others, hence its importance for success in the teacher-student relationship.

Regarding the question about the identification of anger in the teacher, it is observed that this triggers limiting emotions that generate insecurity and mental blockage, which affects the teacher-student relationship and potentially the teaching-learning process.

Regarding the question about whether the students have felt a teacher's aversion towards them, 31% of the students responded affirmatively, a high percentage that, according to Navarro (2017), implies a response of rejection to an object, a psychological event. or repugnant moral values. When students feel rejected, this can lead to disinterest, annoyance, distress, and lack of passion, which negatively affects their learning.



## Discussion

In previous works, research has been done on: Ibáñez, N. (2002), emotions in teachers when teaching mathematics at higher levels. They consider it important to do research in this regard to understand and, if possible, create appropriate learning environments, where the focus of attention is not only the students' learning but also their satisfaction and well-being and that of the teachers. We consider it important that teachers know and identify emotions and their triggering conditions so that they can understand and regulate them, and sensibly manage the negative emotions that regularly arise in the interactions between co-workers, parents and the students themselves.

In the present study, we have managed to identify the emotions present in the classroom, how they are generated and how the teacher influences the limiting emotions.

## Conclusions

As can be seen from the results, the different emotional states of the teacher directly or indirectly affect the teaching-learning process of the students, since emotional activation can lead to states of excitement or depression. Specifically, one of the emotions that were most manifested and affected the students was negative emotions, which generated insecurity and activation of the sympathetic nervous system.

Furthermore, throughout this research it was proven that emotions significantly influence the teaching-learning process. Therefore, it must be taken into account that the teacher not only imparts knowledge, but also guides, guides and accompanies the learning process. In the words of Fortoul (2008), teaching is the action of imparting knowledge to students, and learning arises from the teacher-student interaction in a given context.

## Future jobs

- Validate the questionnaire presented in this work with other academic units.
- Apply it to other academic units to have a more global overview of how the teacher's emotions affect the student.
- Apply it to private schools to compare the degree to which emotions affect these institutions.

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Contribution Role	Author(s)
Conceptualization	Ana Isabel García Monroy
Methodology	Engelbert Eduardo Linares González
Software	Lucero Martínez Allende
Validation	Engelbert Eduardo Linares González
Formal Analysis	Lucero Martínez Allende
Investigation	Ana Isabel García Monroy
Resources	Engelbert Eduardo Linares González
Data curation	Lucero Martínez Allende
Writing - Preparation of the original draft	Engelbert Eduardo Linares González
Writing - Review and editing	Engelbert Eduardo Linares González
Display	Ana Isabel García Monroy
Supervision	DOES NOT APPLY
Project management	Ana Isabel García Monroy
Fundacquisition	Ana Isabel García Monroy