

Profile Perceptions of the University Classroom Climate

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Abstract

The main objective of the research was to outline the dominant and descended dimensions in a perception instrument, taking as a factor, the declared gender. The sample is random and the sample size reaches 235 university students. The study is based on a quantitative approach, its level of depth is descriptive and inferential, with a prospective, cross-sectional and non-experimental register. The Teaching Climate Scale Conducive to University Student Learning [ECAFEU] was used as a data collection instrument. The main results, after the respective factor analysis, give evidence of dimensional validity, whose factor loads for each item are significant to the corresponding factor. As a methodological strategy, the ECAFEU index is defined, from which 3 types of perception are identified, these being: positive, neutral or negative, the concept of dominance is also considered, referring to the dominant and descended dimension, in such a way as to generate a tool for guidance in decision-making. Regarding those students categorized as having a positive perception, the dominant dimension is dialogic communication between teachers and students, and the most descended dimension is represented by Environmental Conditions. The teaching modality (day and evening) is considered as a study factor, establishing significant effects in the configuration of dominance and in the ECAFEU index.

Keywords: Classroom climate, perception, profile, university teaching, dimensions, centrality.

Introduction

During university teaching, roles of joint collaboration must be assumed, which allow us to move towards an education that does not generate spaces of arbitrary negative discrimination, of any kind. Therefore, dogmas, dispositions, gender, and student preparation are critical to the achievement of successful learning outcomes (Nanquil, 2020; Deweck, 2015). With this problem in mind, the link between theory and practice become fundamental pillars when it comes to supporting professional decisions and acting in correspondence with educational needs (Elstad, Christophersen, & Turmo, 2019). Moreover, students should be rewarded for being able to select and explain the most suitable strategies to positively impact the people in their care and not just replicate without substantiating their decisions (Perrupato, 2020, Daumiller & Janke, 2019). It is necessary to train professionals who are able to work cooperatively and linked to other people and disciplines (Delgado-García, Conde & Toscano, 2022; Yi & LuXi, 2012). In

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this sense, the aim is for them to understand that the achievement of a common goal builds collective and shared knowledge (Reimers & Chung, 2016; Fullan and Langworthy, 2014; Brook, Sawyer, & Rimm-Kaufman, 2007). In general, these domains of classroom management reflect techniques focused on sociocultural contribution, which not only build methodical and productive classrooms, but also cooperative ones (Gaias, Johnson, Bottiani, Debnam & Bradshaw, 2019).

In accordance with the above, it is necessary to specify that in addition to considering intrinsic motivation, in order to favor academic performance and student status, it is very important to promote in students a correct organization of the time available, privileging executive functions such as study habits. In this way, the development of critical and reflective thinking will be progressively favored (Gallo, Adoumieh, Lugo & Martínez, 2021). Because of the above, critical thinking promotes skills that can be transferred to other contexts that favor learning to learn (MINEDUC, 2018, 2015; Stone and Perkins, 1999; Swartz, 2008). Reflective thinking facilitates the understanding of situations from different perspectives in order to think about and evaluate different solutions (Concha, Hernández, del Río, Romo, & Andrade, 2013). From this point of view, it is worth highlighting the leadership figure of the university professor, who is responsible for conducting such educational experiences and ways of implementing such a link. It is essential to highlight that performance samples must be evidenced taking into account the prescriptions of formative assessment, throughout the continuum involved in the process, in all its scope (Yepes & Gutiérrez, 2022). Formative and shared assessment induce students towards a positive perception during training, contrasting this position in particular with other ways of conceiving assessment (Alcalá, García & Pueyo, 2015). The use of formative assessment in university education favours the improvement of generic, as well as general and specific competencies (Cañadas, Santos and Ruiz 2021). In other words, insufficient exploration of fairly valued students' work does not allow them to differentiate and produce the connection of previous knowledge with new information (Amón, 2022).

The student-centred teaching process is an approach that is based on placing the student at the centre of their training process, adapting learning situations so that they are involved, participate and learn to be autonomous in decision-making regarding their educational development (González-Maura, López-Rodríguez, Valdivia-Díaz & Carvajal-Cuello, 2019; Fernández-García, Rodríguez-Álvarez & Viñuela-Hernández, 2021; Awacorach, Jensen, Lassen, Olanya, Zakaria & Tabo, 2021; Cicuto & Torres, 2020; Rigo, 2021; González-Contreras, Pérez-Villalobos, Hechenleitner, Vaccarezza-Garrido & Toirkens-Niklitschek, 2019; Sahin & Özpınar, 2020; Kassem, 2019; Benlahcene, Lashari, Lashari, Shehzad & Deli, 2020). The present exchange from a teacher-centered education to a student-centered one that is conceived as irrevocable (Jeon, 2018). Centralizing the training process in student learning is a crucial element in quality university education (Murtonen, Anto, Laakkonen, & Vilppu, 2022; González, López, Valdivia & Cuello, 2019). It is a perspective that aims to consider the individual needs of each learner and boost their commitment and motivation towards learning. In such a teaching context, the teacher acts as a facilitator, who guides, supports and provides feedback in an inclusive, effective and affective way to students during their university training process (Águila, Sánchez, & Alemán, 2023).

However, when this knowledge is addressed during training, such knowledge exclusively in theoretical, philosophical and legal aspects is detrimental to important practical aspects such as the use of resources and different teaching methodologies, curricular adaptations that favor the understanding of inclusive education (Poker, Valentim & Garla 2018; Martín, Villalobos, Muñoz & Wyman, 2017). There is a meagre amount of research that addresses people's perception of the student-centered classroom climate. Culturally sensitive classroom management practices can function as an amplification of the quality of classroom management, including intervention, monitoring, anticipation of and

responsiveness to setbacks, proactivity, and student involvement in the classroom (Gaias, Johnson, Bottiani, Debnam, & Bradshaw, 2019). Specifically, during university education, students are alienated from this educational space, in which they are the protagonists, they do not construct from the student-centered educational act a holistic perspective of reality and professional daily life in an integrated way. It is evident what it entails to highlight the relevance of students' participation in the construction of their new knowledge (Cicuto & Torres, 2020; Rigo, 2021; Baysal, Mutl & Nacaroglu, 2023). Therefore, it is imperative to design, implement, and evaluate strategies that promote collaborative learning, problem-solving, creativity, and critical reflection. Similarly, the incorporation of reflective practice, (both individual and team), allows an opportunity to deepen the understanding of what is learned and the faculty to exploit student-centered teaching (Scherer, O'Rourke, Seman-Varner & Ziegler, 2020). And as a result, students hone the responsibility to make decisions, outline questions, investigate, and apply what they have learned in situations pertinent to their future occupational field. Thinking schemes and reflective thinking models are subordinated by the learning climate (Maksum & Khory, 2020; Silva, Oliveira, Branco & Flores, 2022; Kartal, 2020).

One of the key components to implement this approach in the university classroom is that the teacher is able to learn to recognize the diversity of specific knowledge that their students have, their skills, dispositions and interests. This is because, because most students are over eighteen years old, they have a cognitive and experiential background that allows them to meet the demands of student-centered tertiary education. They need to develop in order to integrate into the university in a healthier way (Sahão & Kienen, 2021; Knobel & Reisberg, 2022).

Cao, Phan & Nguyen, 2022, infer that no new approaches to teaching and learning have been implemented during training, nor have new products and technologies been made to support and improve teaching. For this reason, university learning experiences must be articulated and concatenated, in such a way as to regulate the complexity of the educational task and the difficulty perceived by the student. This progressive process can be interpreted as a scaffolded instruction (Lassila & Ahn, 2022). In summary, the essential purpose is for students to develop autonomy, learn to work cooperatively and communicate effectively during their training process and especially when they have to practice their profession. The lack of effective communication within the classroom can favor undue involvement in learning, causing a low commitment between teachers and students (Albalawi & Nadeem, 2020). The indispensable relationship of the various fields and communication arises from the fact that teachers are communicating new information fundamentally with an innovative character to introduce and promote knowledge (AlAhmad, 2021).

It is necessary for the university teacher to evaluate the content and change educational stimuli in the classroom or to simultaneously use several clarity procedures, which certifies the highest luminescence height for the student body (Gose & Siemietkowski, 2018; Derakhshan, Zhang & Zhaleh, 2023). We need to continually prove our worth as university teachers (Hoben, Badenhorst & Pickett, 2020). From this perspective, educators analyze their varnishes on how to involve students in the learning process and question how they are perfected to deploy collegial and supportive relationships with their students (Larsen & James, 2022). And as an effect, they concentrate efforts on improving learning and experiences during the training pathway, which is essential to effectively support the brain well-being of students (Marangell & Baik 2022).

Material and methods

This study is positioned from the quantitative perspective, an instrument and a measurement will be used at a single moment, therefore, the study is cross-sectional with

a database that will be built during the research process, the level of depth is exploratory and inferential descriptive.

Procedure

To carry out this study, authorization was obtained from directors and academics to enter the respective classrooms and apply the Teaching and Learning Climate Scale (ECAFEU) to university students. After approval, students were informed that their participation was voluntary. Likewise, it was revealed to them that their confidentiality and anonymity would be respected throughout the investigative process. Likewise, it was explained regarding the chain of protection of the data and its processing, as well as the way to pour their opinions into the respective consultation instrument. Subsequently, questionnaires were applied in the classroom, an instance managed by 2 assistants. The participants took between twelve and sixteen minutes to complete the instrument, and at the end, the files were given to the assistants, who verified if the consultants had omitted any required data or had not completed any consultation reagent. To determine the reliability of the ECAFEU instrument, Cronbach's α and McDonald's ω tests were applied.

The study group to which the instrument was applied belonged to a private university in Santiago de Chile. The sample was random, which was confirmed with the following premise: there is no intention that it is precisely the respondent who was invited to respond. For this reason, voluntariness and anonymity were fully complied with.

On the other hand, in order to facilitate the interpretation and analysis of the scores obtained, 3 categories or levels of perception are defined. This categorization has been structured from the frequentist perspective, to avoid null frequency categories, as detailed below: This ECAFEU index has been established as a mechanism for operationalizing the scores, it is configured on a scale of 0 to 1 to facilitate the interpretation of the results in percentage terms, where 0 is the most descended and 1 represents the maximum perception. It has been categorized into 3 levels, which are identified as: a) level of negative perception (0.00-0.316); b) neutral perception level (0.316-0.760) and c) positive perception level (0.760-0.867). This specification allows us to explore in detail whether the dominant or descending dimensions change or are shaped differently depending on the level of perception. The following descriptions justify the frequentist view of the categorization of perceptual levels.

Table 1 General descriptions for the index

Statistician	Table of Contents-ECAFEU
Stocking	0.803
Standard deviation	0.123
Asymmetry	-1.23
Error est. asymmetry	0.159
Kurtosis	3.62
Error est. kurtosis	0.316

Regarding the scale, after the inferential analysis, the validity of the ECAFEU scale was confirmed, suggesting that the general Cronbach's α is 0.975 and McDonald's ω is 0.977. As indicated in these results, the dimensions are independent and all reactants have a positive factor charge. This was verified by verifying factorial assumptions. In this sense, the main factor corresponds to gender, which has 3 levels, a) female, b); and (c) other. It should be noted that the results for this factor are obtained from the non-parametric Kruskal-Wallis test. The application of this instrument aims to establish whether significant differences tend to have a profiling connection with the type of gender.

Therefore, it is expected to verify whether this factor is defining significant differences. The other dimensions have only differences at the descriptive level, they are not so representative within this multidimensional analysis, they are the product of the randomness of the sample.

Instrument

For this research, the Teaching Climate Scale Conducive to Student-Centered Learning (ECAFEU) was used (González-Maura, et al. 2019). This instrument consists of twelve dimensions and sixty reagents, 5 for each dimension. A Likert scale is used to determine the degree of agreement or disagreement of the students in the sample with respect to the statements presented to them, where: TD is equivalent to "Strongly disagree"; D, "Disagree"; NA/ND "Neither Agree Nor Disagree"; A "Okay"; and TA, "Strongly agree." The scores assigned to each aspect of the Likert scale are: TD= 1; D= 2; NA/ND = 3; A = 4; and TA = 5.

Dimensions of the ECAFEU

Dimension 1. Dialogic communication between teachers and students: Faculty clearly explain the contents of classes and converse with their students outside the classroom to address problems and concerns. In addition, they are able to understand their students' problems. On the other hand, students feel encouraged to participate in classes to clarify their doubts and consider that teachers take into account their suggestions and concerns during their development.

Dimension 2. Affective relationships between students: The students in the group-class know each other well, they perceive facilities to do work in teams. They also have fun doing work projects together, find support in their classmates for studying, and are concerned about their classmates' problems.

Dimension 3. Accompaniment and guidance of the student in learning: The teachers guide the students regarding how the program of the subject will be worked from the first day of classes, offer specific guidelines for the development of the learning tasks and are always willing to clarify the doubts of the students. For their part, students appreciate that their teachers recognize the efforts they make to improve their results in studying, and as a result, they feel cared for and supported in the study of the subjects.

Dimension 4. Cooperative learning: In the classes, tasks are carried out that require teamwork, in which each student is assigned a task for which he or she must respond. Therefore, the fulfillment of the team's task depends on the integration of the individual work carried out by each student, and as a consequence they feel committed to the quality of the result of the team's work and support each other to carry out the assigned tasks.

Dimension 5. Autonomous learning: Learning tasks require considerable independent work for information seeking, problem solving through research methods and techniques, and as a consequence they feel able to argue and defend the results of their tasks before the group. For this reason, they perceive that the tasks they perform require the search for information through the internet and, as a result, they feel responsible and committed to the results of their learning.

Dimension 6. Organization and discipline in the development of the teaching-learning process: The classes that are taught are well organized, there are established rules of conduct that must be followed by all students. These guidelines are analyzed and accepted by all. In addition, teachers apply this regulatory framework flexibly and students feel the need to comply with the rules established for classes.

Dimension 7. Environmental conditions: The classrooms in which the classes are held have the necessary lighting, are ventilated, and there are no noises that affect the development of the classes. In the same way, the seating arrangement facilitates teamwork and at the same time the students feel comfortable.

Dimension 8. Methodological innovation: In the classroom, teachers implement new ideas and teaching methods to improve student learning and often implement innovative and diverse ways of teaching with the use of ICTs. Teachers like it when students try to do original projects during lessons, work procedures help students to "learn how to learn", and as a consequence, teachers take into account the opinion of students when assessing new ideas and teaching methods that are applied.

Dimension 9. Link between theory and professional practice: The contents of the classes are useful for the performance of the profession. In these classroom spaces, theoretical and practical content is combined, as well as the application of knowledge to the solution of problems in professional practice. Likewise, situations of the exercise of the profession are analyzed and the professional practices that are carried out are sufficient.

Dimension 10. Values: Teachers set an example for students and relationships based on mutual respect between classmates are evidenced. During the development of these, the importance of professional ethics is analyzed and social responsibility is systematically addressed upon graduation from their academic program, in the solution of problems of the region in which they will work professionally. For this reason, the tasks that are carried out in class require honesty in their completion.

Dimension 11. Evaluation: Students are concerned about evaluations and grades. They conceive that assessment helps them to improve their learning problems, they are able to self-assess their learning outcomes and assess the learning outcomes of their peers. And indeed, they appreciate that the evaluation of their teachers is fair.

Dimension 12. Satisfaction in the teaching-learning process: Within the groups, students feel comfortable with the classes, which increase interest in the profession and stimulate motivation to learn. This is a consequence of the good relationships between the students and the atmosphere of trust in the classes implemented by the teachers.

Results

The presentation of results is presented in a hierarchical manner in three moments, the first referring to the characterization of the sample and the behavior of the scores according to dimensions. Subsequently, the results refer to metric aspects of the instrument, to finally present an analysis of inferences according to factors of interest.

The sample is characterized by a size of 235 sample units, distributed according to gender as shown in Table 1.

Table 2. Gender Distribution

Gender	Frequency	% of Total	Cumulative %
Female	188	80.0 %	80.0 %
Male	44	18.7 %	98.7 %
Other	3	1.3 %	100.0 %

On the other hand, the instrument in question is made up of twelve dimensions, which characterize the total score of the instrument. In order to show the internal configuration of the total score, the concept of orienting dimension is defined, characterizing the dominant dimension, which refers to the dimension with the highest score in most of the sample units and the descended orientation in most cases. This definition makes it possible to guide interventions or prioritize in the case of making decisions in context.

Table 3. Dominant Dimension Frequencies

Key Dimension	Frequency	% of Total	Cumulative %
D1	59	25.1 %	25.1 %
D2	18	7.7 %	32.8 %
D3	49	20.9 %	53.6 %
D4	27	11.5 %	65.1 %
D5	21	8.9 %	74.0 %
D6	16	6.8 %	80.9 %
D7	6	2.6 %	83.4 %
D8	8	3.4 %	86.8 %
D9	12	5.1 %	91.9 %
D10	8	3.4 %	95.3 %
D11	3	1.3 %	96.6 %
D12	8	3.4 %	100.0 %

In Table 2, the dimension that presents the highest score in most of the sample units has been blackened, that is, the dominant dimension in this case is D1, with 25.1% of the cases, similarly, the dimension that presents the least number of times as dominant or maximum score is D11 with 1.3%. It is important to note that D1, D3 and D4 identify more than 50% of the sample units that identify them as dominant.

In addition, the following table is presented, in which the frequencies of the dimensions that obtain the lowest scores are defined.

Table 4. Descended Dimension Frequencies

Key Dimension	Frequency	% of Total	Cumulative %
D1	15	6.4 %	6.4 %
D2	33	14.0 %	20.4 %
D3	18	7.7 %	28.1 %
D4	8	3.4 %	31.5 %
D5	7	3.0 %	34.5 %
D6	12	5.1 %	39.6 %
D7	106	45.1 %	84.7 %
D8	7	3.0 %	87.7 %
D9	3	1.3 %	88.9 %
D10	2	0.9 %	89.8 %
D11	19	8.1 %	97.9 %
D12	5	2.1 %	100.0 %

In the preceding table, it shows the centralization of low scores in dimension D7, with 45% of the sample units. In addition, D10 has the fewest number of people, for which it is the one with the lowest score.

Finally, the dominant and descended dimensions conditioned by gender do not present descriptive differences. It is indicated that, in this result, the option of another gender was not considered, because it had practically zero frequencies in all dimensions. In the case of the descended orientation, the results are similar, but in relation to dimension 7 Environmental conditions.

The Instrument and Its Metric Characteristics

The metric processes were structured in statistics of internal consistency, which have been estimated using Cronbach's α statistic and McDonald's ω confirmatory. In the case of validation, dimensional analysis using confirmatory factor analysis was used.

Table 5. Statistics for estimating the Reliability of the ECAFEU Scale

Dimension	Cronbach's α	McDonald's ω
D1	0.892	0.896
D2	0.798	0.807
D3	0.895	0.896
D4	0.784	0.786
D5	0.826	0.832
D6	0.875	0.878
D7	0.828	0.830
D8	0.896	0.898
D9	0.862	0.874
D10	0.860	0.869
D11	0.823	0.829
D12	0.880	0.886
General	0.975	0.977

Based on the preceding table, it is evident that the estimates of internal consistency, both at the dimensional level and in general terms, present significantly high scores, allowing to support the metric attribute of consistency. Finally, there is no need to remove any reagents or questions.

In terms of validity, confirmatory factor analysis is used, seeking evidence in the factor loads of each of the reactants to the corresponding dimensions. Previously, the necessary assumptions that justify the factor analysis are verified, these being the Bartlett statistic ($\chi^2 = 10819, gl = 1770$) and the KMO statistic, being in the latter, for all cases greater than 0.5, justifying a factor analysis. $p - \text{valor} < 0.001$

The following summary table gives evidence of the factor loads and their significance in each dimension, all of which are significant, therefore, the dimensions of origin are justified or supported by the data, as presented in the following table:

Table 6. Factor Burdens

Factor	Indicator	Estimator	USA	Z	p	Factor	Indicator	Estimator	USA	Z	p
D1	D1. R. 1.	0.639	0.0457	13.98	< .001	D7	D7. R. 31.	0.526	0.0644	8.17	< .001
	D1. R. 2.	0.718	0.0461	15.58	< .001		D7. R. 32.	0.723	0.0833	8.67	< .001

	D1. R. 3.	0.793	0.0503	15.77	< .001		D7. R. 33.	0.902	0.0795	11.35	< .001
	D1. R. 4.	0.685	0.0543	12.61	< .001		D7. R. 34.	1.076	0.0736	14.62	< .001
	D1. R. 5.	0.799	0.0586	13.64	< .001		D7. R. 35.	1.126	0.0748	15.05	< .001
D2	D2. R. 6.	0.666	0.0612	10.88	< .001	D8	D8. R. 36.	0.764	0.0547	13.97	< .001
	D2. R. 7.	0.792	0.0610	12.99	< .001		D8. R. 37.	0.760	0.0547	13.91	< .001
	D2. R. 8.	0.732	0.0563	13.01	< .001		D8. R. 38.	0.719	0.0522	13.77	< .001
	D2. R. 9.	0.765	0.0602	12.71	< .001		D8. R. 39.	0.754	0.0468	16.13	< .001
	D2. R. 10.	0.358	0.0608	5.90	< .001		D8. R. 40.	0.769	0.0513	15.00	< .001
D3	D3. R. 11.	0.641	0.0512	12.52	< .001	D9	D9. R. 41.	0.677	0.0461	14.68	< .001
	D3. R. 12.	0.702	0.0496	14.16	< .001		D9. R. 42.	0.771	0.0475	16.24	< .001
	D3. R. 13.	0.689	0.0487	14.15	< .001		D9. R. 43.	0.805	0.0497	16.19	< .001
	D3. R. 14.	0.736	0.0498	14.78	< .001		D9. R. 44.	0.724	0.0522	13.88	< .001
	D3. R. 15.	0.754	0.0457	16.50	< .001		D9. R. 45.	0.516	0.0649	7.96	< .001
D4	D4. R. 16.	0.563	0.0480	11.73	< .001	D10	D10. R. 46.	0.650	0.0568	11.46	< .001
	D4. R. 17.	0.636	0.0655	9.70	< .001		D10. R. 47.	0.639	0.0568	11.24	< .001
	D4. R. 18.	0.578	0.0653	8.86	< .001		D10. R. 48.	0.675	0.0435	15.52	< .001
	D4. R. 19.	0.617	0.0542	11.39	< .001		D10. R. 49.	0.705	0.0471	14.98	< .001
	D4. R. 20.	0.600	0.0577	10.41	< .001		D10. R. 50.	0.745	0.0543	13.72	< .001
D5	D5. R. 21.	0.533	0.0597	8.92	< .001	D11	D11. R. 51.	0.566	0.0575	9.83	< .001
	D5. R. 22.	0.615	0.0493	12.48	< .001		D11. R. 52.	0.698	0.0555	12.57	< .001
	D5. R. 23.	0.624	0.0546	11.44	< .001		D11. R. 53.	0.827	0.0616	13.41	< .001
	D5. R. 24.	0.595	0.0459	12.99	<		D11. R.	0.773	0.0757	10.2	<

					.001		54.			1	.001
	D5. R. 25.	0.627	0.0462	13.56	< .001		D11. R. 55.	0.736	0.0584	12.60	< .001
D6	D6. R. 26.	0.612	0.0569	10.77	< .001	D12	D12. R. 56.	0.770	0.0507	15.19	< .001
	D6. R. 27.	0.811	0.0554	14.65	< .001		D12. R. 57.	0.777	0.0494	15.72	< .001
	D6. R. 28.	0.872	0.0608	14.34	< .001		D12. R. 58.	0.748	0.0486	15.40	< .001
	D6. R. 29.	0.809	0.0582	13.90	< .001		D12. R. 59.	0.778	0.0506	15.39	< .001
	D6. R. 30.	0.707	0.0505	14.02	< .001		D12. R. 60.	0.524	0.0580	9.02	< .001

Note: It is important to point out that, in addition, the dimensions are independent (See Table 6), therefore, there is no problem of overposition or double taxation. In general, it has significant covariances.

In accordance with the above, it is concluded that the instrument in question has the characteristics of reliability and desirable validity, therefore, they are a support for the replicability and consistency of the conclusions that emanate from it.

Operationalization of Variables and Inferential Contrasts

In order to facilitate the interpretation and analysis of the scores obtained, 3 categories or levels of perception are defined. This categorization has been defined from the frequentist perspective, in order to avoid categories of zero frequency. The categories defined are: Positive perception; Neutral Perception and Negative Perception.

This specification makes it possible to explore in detail whether the dimensions, dominant or descended, change or are shaped differently depending on the level of perception. For this reason, we present below the results that emerge from the operational framework described above. In this sense, the dominant dimension for participants with negative perception is dimension 3, that is: Accompaniment and guidance of the student in learning (f=26), this being consistent with those with neutral perception, however, for those with positive perception, the dominant dimension is clearly dimension 1, that is, dialogic communication between teachers and students (f=45).

In a complementary sense, the combination level of perception and descended dimension shows a consistency of dimension 7, that is: Environmental conditions, for the 3 levels; positive (f=32); neutral (f=41) and negative (f=33). This allows us to conclude that the levels of perception and the dominant dimension are dependent and therefore allow the group of people to be profiled differently according to their dominant dimension. This result is not consistent when compared with the descended dimensions, which show independence of the descended dimension and the levels of perception.

In each of the following results, the application of the One Way ANOVA statistic is presented, explaining the analysis factor, as well as the verification of assumptions. It has blackened those dimensions where the level of the factor generates significant differences. It is important to note that in all cases the non-parametric perspective predominates in the analysis.

Table 7. Group Descriptions

Dimensions	Gender	N	Stocking	OF	USA
Dialogic communication between teachers and students	Female	188	4.091	0.7234	0.05276
	Male	44	3.786	0.8886	0.13396
	Other	3	3.600	1.2490	0.72111
Affective relationships among students	Female	188	3.972	0.7057	0.05147
	Male	44	3.741	0.8145	0.12279
	Other	3	3.800	0.2000	0.11547
Accompaniment and Guidance of the student in learning	Female	188	4.223	0.5844	0.04262
	Male	44	4.097	0.6674	0.10061
	Other	3	4.500	0.4330	0.25000
Cooperative Learning	Female	188	4.182	0.6670	0.04864
	Male	44	3.891	0.7514	0.11327
	Other	3	3.800	0.5292	0.30551
Autonomous learning	Female	188	4.270	0.6046	0.04409
	Male	44	3.855	0.8108	0.12223
	Other	3	4.467	0.3055	0.17638
Organization and discipline in the development of the teaching-learning process	Female	188	4.090	0.7507	0.05475
	Male	44	3.800	1.0060	0.15166
	Other	3	3.267	0.2309	0.13333
Ambient conditions	Female	188	3.348	0.9615	0.07013
	Male	44	3.432	0.9567	0.14423
	Other	3	2.533	0.5033	0.29059
Methodological innovation	Female	188	4.117	0.7591	0.05536
	Male	44	3.782	0.8689	0.13099
	Other	3	3.267	1.1015	0.63596
Link between theory and professional practice	Female	188	4.248	0.7192	0.05245
	Male	44	4.018	0.8250	0.12437
	Other	3	3.333	0.7024	0.40552
Values	Female	188	4.268	0.6816	0.04971
	Male	44	4.036	0.8843	0.13331
	Other	3	3.733	0.8083	0.46667
Evaluation	Female	188	3.922	0.7570	0.05521
	Male	44	3.495	0.8302	0.12516
	Other	3	3.467	1.2220	0.70553
Satisfaction in the teaching-learning process	Female	188	4.210	0.7290	0.05317

	Male	44	3.923	0.8564	0.12911
	Other	3	3.533	0.9018	0.52068
Table of Contents - ECAFEU	Female	188	0.814	0.1160	0.00846
	Male	44	0.763	0.1433	0.02161
	Other	3	0.717	0.0902	0.05210

Gender factor, Kruskal-Wallis test

We propose to design a methodological strategy for the analysis of the response to the instrument, that is, through the formulation of the ECAFEU index. In addition to the concept of dominant orientation.

In order to establish whether there was any kind of link between the dominant dimension and perception, a bivariate crossover is carried out in which it is established that for negative and neutral perception, the dominant dimension that characterizes the study group is dimension 3 Accompaniment and guidance of the student in learning. That is to say, according to the perspective perceived by the sample, the teaching staff guides the students regarding how the program of the subject will be worked from the first day of classes, in turn they present specific guidelines for the development of the learning tasks and are always willing to clarify the doubts of the students. For their part, students appreciate that their teachers recognize the efforts they make to improve their results in studying, and in addition they feel cared for and supported in the study of the subjects.

Positive categorization, on the other hand, is Dimension 1. Dialogic communication between teachers and students. In this case, the collegiate body clearly explains the contents of the classes and they should dialogue with their students outside the classroom to address their problems and concerns. In addition, they must demonstrate assertiveness to understand their students' problems. And as a result, students should feel encouraged to participate in classes to clarify their doubts since teachers take into account their suggestions and concerns. What is significant is that for the neutral and negative perception there is no dimension that profiles, identifies or differentiates them, on the other hand when we move to the positive perception there is a polarization of the scores, everything is focused on dimension 1 Dialogical communication between teachers and students, that is positive. Positive perception is not only associated with a score that can be extracted from the instrument answered, it is also associated with the particular dimension that is dialogic communication between teachers and students. On the other hand, the scores for the other dimensions are similar. In the case of dimension 3 Accompaniment and guidance of the student in learning, it has a neutral and negative category.

In order to outline the behavior of the scores of the different dimensions according to the category of perception, double-entry tables were made, the results of which are as follows: In the case of those descended for the negative, positive and neutral dimension, it is Dimension 7: Environmental conditions. A priori, the various classroom spaces have the necessary lighting, are ventilated, and there are no sounds that affect the development of the classes. In the same way, the seating arrangement facilitates teamwork and at the same time the students feel comfortable.

For all the factors analyzed, the normality tests were not verified ($p\text{-value} < 0.001$), therefore, the non-parametric Kruskal-Wallis test was used in order to establish whether the levels of the factors characterized significantly different scores. When we analyze the gender factor, among them there are some dimensions of the instrument for which significant differences can be appreciated, these are mainly positioned in the following dimensions: Cooperative learning ($p=0.024$); Autonomous learning ($p < .001$); Organization and discipline in the development of the teaching-learning process

($p=0.043$); Methodological innovation ($p=0.021$); Theory-professional practice link ($p=0.028$) Evaluation ($p=0.003$); Satisfaction in the teaching-learning process ($p=0.028$). And by effect, the ECAFEU Index ($p=0.018$). Therefore, significant differences can be seen at the level of 7 dimensions, which correspond to numbers 4, 5, 6, 8, 9, 11 and 12.

Discussion

The main objective was to generate profiles based on gender based on the dominant and descended dimensions in a perception instrument. In line with this, the analysis produced by the application of the ECAFEU made it possible to identify the factors that must be taken into account on the path towards student-centered teaching (González-Maura, López-Rodríguez, Valdivia-Díaz & Carvajal-Cuello, 2019). The authors Fernández-García, Rodríguez-Álvarez & Viñuela-Hernández (2021), studied the effectiveness of the teacher, taking into account the perception of the students; The reliability indices of the instrument are organized as follows: learning climate $\alpha=0.90$; classroom management, $\alpha=0.94$; clarity of instruction, $\alpha=0.93$; active teaching, $\alpha=0.93$; differentiation, $\alpha=0.86$ and teaching-learning strategies, $\alpha=0.89$. All dimensions fluctuate in high scores, as does the ECEFAE scale. On the other hand, Awacorach, Jensen, Lassen, Olanya, Zakaria & Tabo, (2021), also analysed the perception in relation to the centrality of learning; Participants generally expressed a high level of appreciation for this new approach. Likewise, the set of results obtained points to the need to structure curricula harmoniously focused on students (Cicuto & Torres, 2020). In the same vein, the results in students' perceptions show that a classroom climate that favors autonomy, responsibility, decision-making, the pursuit of personal goals, and participation coincides with being more involved with their academic learning (Rigo, 2021). Similarly, the sampled students report greater academic satisfaction with this way of teaching (González-Contreras, Pérez-Villalobos, Hechenleitner, Vaccarezza-Garrido & Toirkens-Niklitschek, 2019). The opposite is exposed in the study by Sahin & Özpınar, 2020, most students stated that they had not had teachers who taught in a student-centered way. On the other hand, in the research carried out by Kassem (2019), 2 groups were compared, one received student-centered teaching and the other traditional teaching; The results are eloquent, since those in which the educational process was centralized in the students, declared a greater adherence and positive predisposition towards academic tasks. In the research of (Baysal, Mutlu & Nacaroglu, 2023), the sampled student body ends up stating that student participation increases their motivation.

There is no point in outlining the effigy of a mediator or a facilitator, if the work of the university professor continues to be conceived as that of a replicator of knowledge. On the other hand, it is essential to avoid behaviors unrelated to the task, avoiding long waiting times, since, to a large extent, it represents a detriment to academic performance. Virtually all students procrastinate to some extent (Estremadoiro & Schulmeyer, 2021). Predictively, we can mention that the PBL-JD method led to an improvement in students' motivation to learn and an improvement in their perception of the classroom climate. Therefore, the pedagogical strategy to be selected in the university classroom must be contextualized to the requirements of the classroom (Taskin & Canli, 2021). Finally, our study shows a favorable trend towards collaborative work (Delgado, Conde & Toscano, 2022; Yi & LuXi, 2012).

Conclusions

The ECAFEU index has been established as a mechanism for operationalizing the scores, it is configured on a scale of 0 to 1 to facilitate the interpretation of the results in percentage terms, where 0 is the most lowered and 1 represents the maximum perception. This is categorized into 3 levels, which are identified as: a) level of negative perception

(0.00-0.316); b) neutral perception level (0.316-0.760) and c) positive perception level (0.760-0.867). This specification allows us to explore in detail whether the dominant or descending dimensions change or are shaped differently depending on the level of perception. In this sense, the processing and analysis of the data extracted from the application of the instrument allows the generation of profiles in students who declare themselves according to their gender.

In view of the above, the preference for another gender, from the cooperative point of view, presents the lowest values, but at an autonomous level they surpass the female and male genders. In this order of ideas, the dominant dimension that was established with positive perception is dimension 1, Dialogic communication between teachers and students. Therefore, we can see that there are significant differences, depending on gender. The female gender of the student body shows significant differences in the cooperative field with the highest scores, however, in the autonomous learning sphere it is the most decreased. When we focus on the dimension for which it has the lowest score, it does not depend on the level of perception. That is to say, if the dimension that has the highest score is 1 Dialogic communication between teachers and students, it can immediately be conjectured that the consultant will be a candidate to have a positive perception, but if we focus on the descended dimension, the issue of perception is neither representative nor distinctive, there is no relationship of implication.

Gender is observed as a factor that generates significant differences in some dimensions, for example, the female gender leads the score significantly at the level of cooperative learning. On the other hand, Autonomous Learning, the other genre, obtains the highest score, they feel more qualified to work independently. According to the dimension Organization and discipline in the development of the teaching-learning process, there is a hierarchical behavior. In the following order: Female, masculine and other, it is the most descended.

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