











Analysis of the school enviroment in a university of the South of Sonora

Análisis del clima escolar en una universidad del Sur de Sonora

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Abstract

The purpose of this proposal is to evaluate the level of school climate in students at a university in Southern Sonora to formulate recommendations aimed at improving or strengthening it. A self-administered instrument adapted from Gutiérrez (s/f) was applied, originally composed of 35 items, the final version applied was composed of 39 items grouped into two dimensions, general coexistence climate and satisfaction and fulfillment of expectations. In the analysis of the results, means were formulated by item, dimension and general school climate, the variables that summarize the characteristics of the participants were considered as categorical variables and were used to analyze whether or not they influence the evaluation of the school climate, at a general level. and by dimensions, an analysis was carried out through the Statistical Package for Social Sciences (SPSS) program. The levels of school climate, general coexistence climate, as well as satisfaction and fulfillment of expectations turned out to be high.

Resumen

La presente propuesta tiene por objeto evaluar el nivel de clima escolar en los estudiantes de una universidad del Sur de Sonora para formular recomendaciones tendientes a su mejora o fortalecimiento. Se aplicó un instrumento auto administrado adaptado de Gutiérrez (s/f), originalmente integrado por 35 reactivos, la versión final aplicada estuvo compuesta por 39 reactivos agrupados en dos dimensiones, clima de convivencia general y satisfacción y cumplimiento de expectativas. El análisis de los resultados se formuló medias por reactivo, dimensión y clima escolar general, las variables que resumen las características de los participantes fueron consideradas como variables categóricas y se emplearon para analizar si influyen o no en la evaluación del clima escolar, a nivel general y por dimensiones, se hizo un análisis a través del programa Statistical Package for Social Sciences (SPSS). Los niveles del clima escolar, del clima de convivencia general, así como la satisfacción y cumplimiento de expectativas resultaron ser altos.

Analysis of the school enviroment in a university of the South of Sonora		
Objetives	Metodology	Contribution
Evaluate the level of school climate in the students of the Bachelor's Degree in Tourism Business Administration of the Technological Institute of Sonora (ITSON) Navojoa to formulate recommendations aimed at its improvement or strengthening.	Using a quantitative methodology, the level of school climate in students of Bachelor of Tourism Business Administration (LAET) from a university located in the south of the state of Sonora.	This analysis evaluates the level of school climate in students at a university in Southern Sonora and generates recommendations aimed at improving or strengthening it.

Análisis del clima escolar en una universidad del Sur de Sonora		
Objetivos	Metodología	Contribución
Evaluar el nivel de clima escolar en los estudiantes de Licenciado en Administración de Empresas Turísticas del Instituto Tecnológico de Sonora (ITSON) Unidad Navojoa para formular recomendaciones tendientes a su mejora o fortalecimiento.	Empleando una metodología cuantitativa, se determinará el nivel de clima escolar en estudiantes de Licenciado en Administración de Empresas Turísticas (LAET) de una universidad ubicada en el sur del estado de Sonora.	Este análisis evalúa el nivel de clima escolar en los estudiantes de una universidad del Sur de Sonora y genera recomendaciones tendientes a su mejora o fortalecimiento.

Students, School enviroment, University

Estudiantes, Clima escolar, Universidad

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## Introduction

The value of school climate as a regulating element of the environment where learning and teaching take place is clearly unquestionable, and it is related to it as one of the determinants of the quality of educational institutions, regardless of their educational level.

The Organisation for Economic Co-operation and Development (OECD, 2017), states that school climate has been associated with important school outcomes. Growing evidence suggests that school climate can affect students' learning levels and academic performance, altering their perception of the environment around them and the interpersonal relationships they have (Gomes and Morais, 2019).

The research by Retamal and González (2019), brings together some dimensions involved in school climate: fair rules, good treatment, teacher support, student participation, sense of belonging and connectedness, learning orientation and school safety.

The assessment of school climate in an educational institution enables it to recognise the likely causes of problems that hinder the achievement of its institutional goals.

Likewise, it is recognised that an adequate climate is one in which the dynamics of relations between the different actors converge in which communication and collaboration are favoured; there are appropriate means of communication, as well as distinctions and encouragement for the different actors based on their performance.

In addition, there is a high level of satisfaction of the actors with regard to the performance of the educational institution, their own and the rest of the educational actors; high expectations are formed and fulfilled on the basis of the achievements obtained; also the degree of motivation and commitment to work of all actors is high.

School climate is also assessed as a multidimensional construct, which is integrated by safety, relationships, commitment to teaching and learning, organisational structure and functions, and institutional improvement actions.

Climate includes students' perceptions of their competence and school, relationships with teachers and peers; the way school life is experienced, which enables academic, social, ethical and emotional development.

The objective of this research is to evaluate the level of school climate in the students of the Bachelor's Degree in Tourism Business Administration at the Instituto Tecnológico de Sonora (ITSON) Navojoa Unit in order to formulate recommendations for its improvement or strengthening.

## Methodology

Using a quantitative methodology, we will determine the level of school climate in students of the Bachelor's Degree in Tourism Business Administration (LAET) at a university located in the south of the state of Sonora.

## Participants

The sample consisted of 67 students who, voluntarily and anonymously, decided to participate in the present study. It should be noted that 100 percent of the students were invited to participate, so it is considered that the application was to 100 percent of the universe of LAET students.

Since the sample is the population, it is expected to be sufficiently heterogeneous to formulate psychometric analyses based on the responses of the population.

## Instrument

A self-administered instrument adapted from Gutiérrez (n.d.), originally composed of 35 items, will be applied; the final version applied was composed of 39 items grouped in two dimensions, general climate of coexistence and satisfaction and fulfilment of expectations. Table

1 shows the dimensions, factors and items included in each aspect of the instrument.

A five-point Likert-type scale was used to answer it: 5=strongly agree, 4=agree, 3=disagree, 2=strongly disagree and 1=no items to answer; all participants should have items to answer all items.

Box 1

Table 1

School climate dimensions, factors and items

DIMENSION	REAGENT
General climate of coexistence	
Level of conflict in the school	1
Form of conflict resolution	2, 3
Dynamics of the relationship between actors	4 al 12
Existence of communication channels	13 al 21
Existence of a climate of trust	22 al 26
Satisfaction and fulfilment of expectations	
Degree of satisfaction of the actors with the general functioning of the school and with the performance of the other actors and themselves.	27 al 29
Comparison between initial expectations and achievement	30 al 32
Recognition and incentives for the different actors	33 al 37
Level of motivation and commitment to school work	38, 39

Source: Adapted from Gutiérrez (s/f).

Sociodemographic information was collected on the participants: sex, semester, marital status, employment status, age, whether or not they have a scholarship and whether or not they have dependents.

For the analysis of the results, means were formulated by item, dimension and general school climate. The variables that summarise the characteristics of the participants were considered as categorical variables and were used to analyse whether or not they influence the evaluation of school climate, at a general level and by dimensions, by means of analysis of variance models.

Additionally, three levels of School Climate were determined: high, medium and low, and the colours of a traffic light were assigned to help in the visualisation of the level, as follows (table 2):

Box 2

Table 2

Levels of school climate

Level	Lower value	Higher value	Traffic lights
Low	1.00	2.33	
Medium	2.34	3.66	
High	3.67	5.00	

Source: Own elaboration (2024)

Results

This section describes the school climate results, based on the participation of 67 students (total enrolment), so the sample represents 100.0 per cent of the population. The results are presented in general terms and then according to student characteristics, represented by categorical variables as shown in Table 3.

Box 3

Table 3

Overall school climate results

Item	Media	Level	Traffic lights
School Climate (general)	4.18	High	
General Climate of Coexistence	4.22	High	
Satisfaction and Fulfilment of Expectations	4.20	High	

Source: Own elaboration (2024)

The average value for school climate was 4.18, which places it at the high level within the classification. The same is true for the two dimensions of climate, given that they present values above the reference value for the high level (3.67), since the average values obtained were 4.22 and 4.20 respectively for the general climate of coexistence and satisfaction and fulfilment of expectations. The characteristics of the participants are grouped as shown in table 4:

Box 4

Table 4

Characteristics of the participants

Variables	Participation	Percentage
Sex		
Male	15	22.4%
Female	49	73.1%
Other	3	4.5%
Semester		
Second	23	34.3%
Fourth	9	13.4%
Sixth	11	16.4%
Eighth	16	23.9%
More than eight	8	11.9%
Marital status		
Single	62	92.5%
Married	3	4.5%
Unmarried	2	3.0%
Employment status		
Study only	34	50.7%
Study and piecework	12	17.9%
Part-time work and study	11	16.4%
Full-time study and work	10	14.9%
Scholarship		
Without scholarship	50	74.6%
With scholarship	17	25.4%
Age grouped		
18-19 years old	25	37.3%
20-21 years old	17	25.4%
22 years old	11	16.4%
Over 22 years old	14	20.9%

As mentioned above, we worked with 100 per cent of the LAET students at the Navojoa Unit. Based on the responses to the instrument, a posteriori validity and reliability tests were carried out. In relation to the validity of the instrument, the concurrent validity test was applied, through contrasted groups, by means of the Chi-Square test, with values whose bilateral asymptotic significance was less than 0.05, where the 39 items met the requirement of frequency distribution, formulated according to the suggestions of Sierra (2001), Kerlinger and Lee (2008) and Anastasi and Urbina (2009).

This allows us to determine that the instrument has a high level of construct validity.

Regarding the validity of the instrument, the most common definition refers to the degree to which it measures what it is believed to be measuring, that is, the ability to express or symbolise the reality to which it alludes (Argibay, 2006; Campo-Arias and Oviedo, 2008; Kerlinger and Lee, 2008; Anastasi and Urbina, 2009; Quero, 2010; Sánchez, et al, 2011; Hernández, Fernández & Baptista, 2014); Prieto and Delgado (2010) define it as the 'degree to which empirical evidence and theory support the interpretation of test scores related to a specific use' (p. 71), which essentially mirrors the most common definition; they also point out that validity is the most important psychometric property referring to the quality of test inference. Additionally, Argibay (2006) points out that testing the validity of a questionnaire is more complex than determining its reliability, since the former involves theoretical elements, while the latter is an empirical aspect.

With regard to the construct validity of a questionnaire, it is defined as the level at which it can be stated to measure a construct, variable or theoretical trait (Creswell, 2003; Anastasi and Urbina, 2009; Hernández, Fernández and Baptista, 2014). Argibay (2006), for his part, states that it consists of attempting to demonstrate that the behaviours measured by the questionnaire can be qualified as valid indicators of the construct to which they refer. Moreover, construct validity is recognised as the most important form of validity and as one of the most representative scientific advances in modern measurement theory and praxis (Argibay, 2006; Kerlinger and Lee, 2008; Hernández, Fernández and Baptista, 2014). It is also the most difficult to test (Argibay, 2006).

### Construct reliability

To determine reliability, a procedure was applied that obtains internal consistency coefficients, specifically MacDonald's Omega. Reliability refers to the level at which the measurement agrees with itself, that is, it refers to the accuracy with which an instrument measures what is desired (Kerlinger and Lee, 2008; Campo-Arias and Oviedo, 2008; Quero, 2010; Prieto and Delgado, 2010; Hernández, Fernández and Baptista, 2014).

Regarding the value of reliability, Kerlinger and Lee (2008) state that some authors have assumed the value of 0.7 as the limit between acceptable and unacceptable reliabilities; however, they also point out that there is no evidence to favour this criterion, which they consider arbitrary; citing Nunally (1978), the authors argue that a satisfactory level of reliability will depend on how the measure is used. On the other hand, they recognise that in some cases values of 0.5 or 0.6 are acceptable, while in other cases values of 0.9 are barely acceptable.

For their part, Anastasi and Urbina (2009) do not suggest a reference value for reliability; while Hernández, Fernández and Baptista (2014) agree with Kerlinger and Lee in stating that there is no value from which to determine the reliability or unreliability of the instrument; therefore, the researcher reports the value and leaves it to the examination and judgment of the users of the study or other researchers, also mentioning the method used; however, they do point out some values that other authors consider, which range between 0.6 and 0.9.

In sum, a low reliability value may be acceptable if the measurement instrument has high validity. Furthermore, considerations for determining a reference value focus on the type of decision to be made when using the measurement instrument: if the decision is made at an early age, is reversible, concerns groups (not individuals) or has temporal effects, a low reliability value is acceptable (Kerlinger and Lee, 2008).



For the purposes of the present research, 0.8 will be considered as a reliability reference value, taking into account that the instrument has high construct validity (determined by means of the test of contrasted groups); at the same time, the decisions that will be taken derived from the use of the instrument can be considered as diagnostic or early-age according to Kerlinger and Lee (2008). On the other hand, Prieto and Delgado (2010) state that reliability and validity should be understood as a matter of degree and not as a characteristic that instruments have or do not have.

Some authors suggest that when the instrument is multidimensional, it is necessary to report the McDonald Omega coefficient, which estimates internal consistency better in these cases, compared to Cronbach's alpha coefficient (Campo-Arias, 2013), also when the items consider a Likert-type scale, since the alpha coefficient considers that the variables are continuous, which is not the case when a Likert-type scale is used.

The reliability of the instrument was determined through the internal consistency of the scale, by means of MacDonal's Omega coefficient, obtaining an overall value of 0.979 (considering the 39 items). Additionally, the coefficient was calculated for the dimension of general coexistence climate (only items 1 to 26 were included) and satisfaction and fulfilment of expectations (considering items 27 to 39), obtaining values of 0.973 and 0.952, respectively.

Based on the tests formulated in the previous and current sections, it can be affirmed that the school climate results have a high degree of validity and reliability.

## Conclusions

It is important to mention that the levels of school climate, the general climate of coexistence, as well as the satisfaction and fulfilment of expectations in the students of the educational programme are high, that is to say, the total of the 39 items present high average values, for this reason the level of school climate can be specified as a healthy, equitable and fair climate.

Gender had a partial influence on the perception of the school climate, since women observe a higher level in the climate in general and in the dimension and fulfilment of expectations, this is attributed to the fact that women maintain a greater optimism in relation to the climate and environment at the university than the rest, it is not assumed that this is due to issues of preferential treatment based on gender, it is also important to mention that fourth semester students perceive lower levels except in the dimension of satisfaction and fulfilment of expectations which are located at a medium level.

As part of the recommendations that can be formulated, it is recommended to implement actions aimed at maintaining and eventually improving the current level of school climate perceived by the students of LAET, Navojoa Unit.

It is necessary to regularly evaluate the school climate to gather feedback not only from students, but also to evaluate the convenience of including teachers from the educational programme and use this information to implement improvements, it is essential to promote open and transparent communication, to establish effective communication channels between students, teachers and administrators as it can help to address problems and resolve conflicts in a constructive manner and to foster an inclusive environment, implementing programmes and activities that promote diversity and inclusion, where all students feel valued and respected regardless of their ethnic, cultural, religious, gender or sexual orientation background, celebrating achievement and success through recognition based on academic performance, participation in extracurricular activities (sports and cultural, leadership, community service or other outstanding student achievements).

Organise special award ceremonies or recognition events where awards are presented and students' achievements are celebrated in front of the school community.

In general terms, the objective of the study was met, as the level of school climate among students at LAET Navojoa Unit was evaluated and recommendations were made to contribute to its eventual improvement or strengthening.

The relevance of structuring research on the subject from an interdisciplinary, multidimensional approach, with a rigorous contextual and theoretical framework, and with the participation of the different actors of the academic community, is highlighted.

Declarations

Conflict of interest

The authors declare that they have no conflicts of interest. They have no known competing financial interests or personal relationships that might have appeared to influence the article reported in this paper.

Authors' contribution

Moncayo-Rodríguez, Lizette Marcela: Main idea of the article.

Herrera-Quijada, Julio Antonio: Application of instrument.

Sosa-Covarrubias, John: Design of results.

Galván-Corral, Alberto: Methodological design, author recognised by the SIN level I CONAHCYT.

Availability of data and materials

The information was obtained from various sources and previous research at the Instituto Tecnológico de Sonora Unidad Navojoa, where the school climate was evaluated in some of its undergraduate educational programmes.

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Abbreviations

ITSON	Sonora Institute of Technology
LAET	Degree in Tourism Business Administration
OCDE	Organisation for Economic Co-operation and Development

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