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How is Classroom Climate Affected by Teaching Support in a Master in Teacher Training
¿Cómo afectan los apoyos docentes en el clima del aula en el alumnado del Máster de Formación del Profesorado?

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RESUMEN

Los beneficios de una relación positiva entre el alumnado y el profesorado son múltiples, ya que mejora su compromiso académico, la regulación del esfuerzo y la dedicación a las tareas escolares (Gutiérrez y Tomás, 2018; Gutiérrez et al., 2018). El objetivo general de este estudio consistió en conocer si los apoyos docentes centrados en las relaciones interpersonales podían influir en el clima del aula en estudiantes del Máster de formación para profesorado de forma presencial. En este estudio participaron 183 estudiantes (61.4% mujeres, 61.4% hombres y 0.3% otros) comprendidos entre los 22 y los 63 años (media=27.4 años, desviación típica=11.5). Este estudio es cuantitativo no experimental de corte transversal y diseño descriptivo correlacional. Se utilizó el Cuestionario de Apoyos Docentes (MOCSE-TSQ) y Cuestionario de Proceso de Enseñanza-Aprendizaje para el alumnado (MOCSE-O-PRO4DStudent). En los resultados se encuentran relaciones positivas de moderadas a fuertes y estadísticamente significativas entre todos los factores. Además, existencia de diferencias en el clima del aula dependiendo del área de conocimiento del que derivaban los estudiantes matriculados en este máster. Se concluye que el clima de la clase puede mejorar teniendo en cuenta los apoyos docentes utilizados. Por último, se derivan recomendaciones prácticas destinadas al profesorado universitario para enriquecer su actividad docente.

PALABRAS CLAVE
CLIMA DEL AULA, APOYOS DOCENTES, RELACIÓN ENTRE IGUALES, EDUCACIÓN SUPERIOR

ABSTRACT

The advantages of building a good rapport between teachers and students are numerous since it reinforces their academic engagement, self-regulation of effort and commitment to schoolwork. (Gutiérrez y Tomás, 2018; Gutiérrez et al., 2018). The primary aim of this investigation was to determine whether pedagogical interventions centred on interpersonal connections could have an influence on the learning environment of a group of students pursuing an on-campus Master's degree in Teacher Traning. 183 participants, with 61.4% identifying as female, 61.4% as male, and 0.3% as other, took part in this study. Ages ranged from 22 to 63, with a mean of 27.4 and a standard deviation of 11.5. The study employed a quantitative, non-experimental, cross-sectional, descriptive and correlational design. The tools used for data collection were the Teaching Support Questionnaire (MOCSE-TSQ) and the Teaching-Learning

Process Questionnaire for Students (MOCSE-O-PRO4DStudent). Moderate to strong positive and statistically significant relationships were found between all factors. Furthermore, differences were found in classroom climate dependent on the study branch of the students enrolled in this master. Results allow to infer that teaching support had an impact on predicting classroom climate. Lastly, significant practical recommendations have been made for university lecturers to enhance their teaching practice.

KEYWORDS
CLASSROOM CLIMATE, TEACHER SUPPORT, PEER STUDENT RELATIONSHIPS, HIGHER EDUCATION.

INTRODUCTION

The educational activity of the university has evolved in recent years with a shift to a student-centred learning model. The main axis of this shift is aligned with methodological renovation, with the paradigm moving from knowledge transmission to competence acquisition. Traditional methodologies give way to active methodologies that result in increasing teacher-student interactions. As a consequence, the current university educational model tends to revolve primarily around the student, that is, it implies a dynamic, practical education based on active learning (Michavila and Zamorano, 2007). Positive teacher-student relationships are now seen as a relevant variable in social resources, particularly those that promote classroom comfort and pursue a suitable adaptation during academic interactions (Chang et al., 2022). Taking this as a starting point, the present research aims to look into teaching aids to determine their influence on classroom climate with all students involved coming from a master in teacher training.

TEACHING AIDS

The theoretical and practical foundations of the Theory of Self-Determination (SDT) rely on supporting student autonomy. The SDT distinguishes between two types of interpersonal teaching styles: the control style and the autonomy support style (Ryan and Deci, 2000b). The model aims to address motivation and personal psychological needs. When all needs are covered, adequate psychological well-being and good functioning emerge. Furthermore, it is pivotal that students develop internal motivational resources, which classroom climate may support or frustrate (Ryan and Deci, 2000a).

The idea of students' autonomy support was first introduced by Deci and Ryan (1985), who stated that teachers must acknowledge the students' feelings on top of providing basic information and opportunities to learn autonomous problem solving, one of the most valued skills in academia (Pereira, 2021). Certainly, there is an existing body of research working on student-teacher-relationships, specifically on those based on autonomy support (Jung et al., 2010). In general, teachers are encouraged to ground this kind of relationships on confidence and support, stimulating students in a positive way so that they can feel they are able to carry out their academic tasks successfully (Oriol-Granado et al., 2017). Along the same line, many studies establish the benefits of a

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positive, closer rapport between teachers and students based on autonomy support on the part of the teachers for deep learning to emerge, together with positive emotions, achievement and persistent behaviour (Buff et al., 2011). According to Oriol-Granado et al. (2007), positive affection and autonomy support are proven to have a significant influence on student performance. It has also been specified that, whenever the environment is conducive to acquiring personal resources, students feel more confident about carrying out their schoolwork, and, correspondingly, obtain a higher level of self-efficacy (Sweetman and Luthans, 2010).

The work of López-Angulo (2021) calls attention to the positive influence of enabling a close link between student and teacher from the very onset of their shared university life, thus becoming a protective variable against students' drop-out attempts during their freshman year. Likewise, the study of Gutiérrez et al. (2018), coinciding with some other researchers (Tzé et al., 2014; Patall et al., 2018), exposes that the stronger the students perceive teacher autonomy support, the stronger their academic engagement becomes.

It has also been attested that situation in which the student has a high perception of autonomy give rise to higher levels of self-efficacy and academic satisfaction, and again, academic engagement is reinforced (Bernardo-Gutiérrez et al., 2018; Haerens et al., 2018).

Additionally, it has been proven that whenever the students have a higher perception of teacher autonomy support, more and higher levels of well-being are connected to academic experiences, with a subsequent strengthening of their intention to stay and keep studying. For all purposes, autonomy support is a determining factor in the student's learning process (Ma, 2021). Now it needs to be noted that the teachers' interpersonal style may exert a positive influence on autonomy support (Moreno-Murcia et al., 2019; Abellán-Roselló et al., 2023). Two aspects, both enabling student autonomy and perceiving teacher support towards autonomous work, may well be considered the best predictors of academic success in higher education (Gutiérrez and Tomás, 2018).

Teaching-learning processes for classroom climate improvement
Classroom climate is the context generated during the interaction between students and teachers or between the students and their peers. Importantly enough, the concept includes the perception the students have of the support received. It can easily be predicted that social support from peers and classmates is paramount since it helps in stressful situations (Vega et al, 2017). As for results, it is necessary to mention that, concerning social support, significant differences as a function of sex have been reported: For males, friends are the most relevant figures, whereas for females, different persons are preferred (Lòpez-Angulo et al, 2020). Social support perceived on the part of friends contributes positively to well-being during the freshman year, since it paves the way for sharing communal areas, opinions and experiences (Van der Zanden et al., 2018). Also, social support perceived from peers is stronger than that perceived from the family, simply because academic issues are more often discussed with classmates (Feldman et al., 2008; Vega et al., 2017).

Along the teaching-learning process, multiple interactions between teachers and students take place along a preconceived training program. Biggs (2005) defines social academic climate as the perception a student has of the interpersonal relationships that take place in the classroom or at the premises. School climate is related to discipline

and authority, but, most of all, to the configuration of a suitable environment for teaching and learning.

Needless to say, teacher emotional support is of capital importance, since, in creating create a healthy climate in the classroom, it contributes to the objective of satisfying the students' psychological needs (Chang, et al., 2022).

The work done by Ríos et al. (2011), involving college students from different disciplines, exposes those interpersonal relations among students are positively valued and the majority agrees to the teaching methodology used in the classroom, considering it mostly allows for a conductive learning environment. Besides, the type of interpersonal relationships established with their teachers are positively assessed by most of the students. Based on all this, it can be inferred that university teachers have changed their role from mere transmitters to guides, thus better enabling learning. This new scenario unfolds the possibility to provide students with a stronger support and individual monitoring (González-López and De León, 2014).

Zurita et al. (2017) state that students of the fourth year of Early Childhood and Primary Education (majoring in Physical Education and Special Education) praise the quality of teachers, specifically those features related to the attention given and punctuality. There exist differences based on the study brunch, with better results for those majoring in Physical Education. Further research is recommended on the topic of classroom climate in university contexts at all levels, undergraduate and master, in all different scientific fields.

Aim of the study

The general aim of this study was identifying whether teaching support centred on interpersonal relations could have an influence on classroom climate, with all subjects involved coming from a Master in Teacher Training. As specific aims, the following were considered:

– To relate the variables of classmate support: acknowledgement of engagement and effort as well as support for students' autonomy of the Teacher Support Questionnaire, with the dimension of classroom climate from the Teaching-Learning Process Questionnaire.

–To predict whether classroom climate can be improved based on the strategies used by teachers specifically for this purpose (peer support among students, acknowledgement of engagement and effort, students' autonomy support, teacher-student relationships, peer student relationships, influence of affective relationships).

–To test whether classroom climate is affected by each student's field of study in the Master in Teacher Training.

Participants

This study involved 183 subjects (61.4% women, 61.4% men and 0.3% other) between 22 and 63, (mean age = 27.4, standard deviation = 11.5). All students were enrolled in the Master's degree in Teaching for Compulsory Secondary Education, and they are distributed according to the following proportion: 16% Experimental Sciences and Technology, 17% Professional Training, 21% Geography and History, Languages, 18% Mathematics, 7% Music, 9% Plastic Arts and 12% Physical Education. They were selected according to a convenience sample method from those enrolled in two public Spanish universities. All students attended on-campus face-to-face classes.

Proceedings

This research was endorsed by all university centres involved and informed consent was obtained from participants. Assessment was administered in two different moments along the school year, through each student's personal computer using a link to an online questionnaire. The first moment (T1) occurred during the first week of classes and it lasted 10 minutes. The second moment (T2) occurred during the last academic week, lasting 10 minutes too. All students freely volunteered and the study was conducted in compliance with the ethical conditions required by the current code of ethics.

Instruments

The Teacher Support Questionnaire (MOCSE-TSQ) (Doménech-Betoret & Abellán-Roselló, 2021) was used for the first moment (T1). The scale consists of 55 items distributed into 10 factors. In this study, the following have been used: F4. Peer support among students; (5 items; α= .79), F6. Acknowledging engagement and effort (5 items; α= .82); and F8. Students' autonomy support (5 items; α= .86). All factors were evaluated in a Likert scale of 6, (being 6 = "very high" and 0 = "very low"). These factors were chosen for their relation to classroom climate. For the second moment (T2), the Teaching-Learning Process Questionnaire (MOCSE-O-PRO4DStudent) (Doménech-Betoret & Abellán-Roselló, 2021) was used. This scale comprises 60 items distributed into 4 dimensions. The second dimension was preferred in this case as it is related to personal interactions (classroom climate) and is composed of 3 factors: F1. Teacher-Student Interaction (8 items; α= .88); F2. Peer student interaction and perceived support (5 items; α= .87); and F3. Perceived affective relationships (6 items; α= .91). Responses for all items were evaluated on a 6-point Likert Scale (6 = "very high" to 0 = "very low"). The aforementioned scales consider items as quantitative, since all preference changes are seen as equivalent when moving from a category to the next one. It also uses more than 4 steps as indicated by literature (Doménech-Betoret & Abellán-Roselló, 2021).

Data Analysis

The present study is a quantitative, non-experimental, cross-sectional, descriptive and correlational design. Statistical analysis was carried out using the SPSS 25.00 (IBM SPSS, 2018) software. The internal consistency evaluation of the questionnaire was analysed with the help of the Cronbach's alpha coefficient. It was concluded that the Cronbach's alpha reached over .70, equating to an acceptable reliability level in educational research (Cohen, et al., 2018).

Associations between different factors were assessed via the Pearson correlation (r). A correlation of < .19 was considered very weak, from .20 to .39 weak, from .40 to 59 moderate, from .60 to .79 strong and from .80 onwards very strong, both for positive and negative values (Cohen, 1988).

Then, simple linear regression analyses were carried out in order to determine whether classroom climate may be predicted through teacher's actions and support. In the linear regression analysis, the size of the effect of the predictor variables was determined by beta estimations. The size of the effect was estimated as follows: 0 - .1 weak effect, .1 - .3 average effect, .3 - .5 moderate effect, and >.5 strong effect (Cohen, et al., 2018).

Next, an ANOVA was conducted according to the student's field of study. The main effects were tested ($p < .05$), post-hoc comparisons were carried out with the Bonferroni method, and the η2p value was used in order to estimate the strength of the association. A statistical signification of $< .01$ and $p < .05$ was established for all tests.

Results

Table 1 shows the relationships between factors of the Teaching Support Questionnaire as well as factors of the second dimension of the Teaching-Learning Process Questionnaire for students. Positive relationships have been found, from moderate to strong, and they are statistically significant among all factors. Particularly noteworthy are the correlations between students' autonomy support and peer student support (r = .654, p < .01) or between teacher-student interaction and student autonomy support (r = .605, p < .01). (See Table 1)

Table 1.
Pearson´s Bivariate Correlations among Factors.

	1	2	3	4	5	6
1. Peer student Support	1					
2. Acknowl. Engagem./Effort	.255*	1				
3. Autonomy support	.654**	.337*	1			
4. Teacher-Student Interaction	.465**	.258*	.605**	1		
5. Peer Student Interaction	.474**	.190*	.517**	.520**	1	
6. Affective Realationships	.226**	.104*	.259**	.394**	.291*	1

**p< .01; *p< .05

As for regressions in classroom climate measured in T2, teaching support, when aimed at social interactions, resulted in a statistically significant predictor for the three factors. Results confirm that classroom climate can be predicted to be favourable or unfavourable through these three factors with a small margin of error in the three dimensions (F (30.021), $\Delta R2=.256$) with the regression line y = 4.226x +.857+.054+.518. (See Table 2)

Table 2.
Results of the regression análisis of academic performance measured through engagement.

Processes/Predictors	F	R^2	ΔR^2	β
Classroom Climate	30.021***	.476	.256	
Peer Student support				.236
Acknowledging Engagement / Effort				.374
Students' autonomy support				.045

***p< .001

Table 3 shows results of the ANOVA corresponding to differences in classroom climate depending on the students' field of knowledge. Statistically significant differences were found in relation to the three factors included in the second dimension of the Teaching-Learning Process Questionnaire (F (32.076), p=.000, η2p = .153; F (26.547), p=.021, η2p = .035, F (10.125), p=0.01, η2p = .130). An a-posteriori pairwise comparison (Bonferroni) exposed statistically significant differences among students from different study branches, with Professional Training as the one with the best perceived classroom climate. (See Table 3.)

Tabla 3.
ANOVA results of a factor for the differences of perception of the influence of classroom climate according to the student's field of knowledge

Factor	Field	Mean	TD	Mean square e	ANOVA test F	p	η2p
F1. Teacher-Student Interaction	Exp. Sc	4.25	.27				
	PT	4.36	.34				.153
	G&H	3.97	.39				
	Lng	3.54	.41	.922	32.076***	.000	
	Math	4.13	.22				
	Mus	4.69	.36				
	P. Art	3.98	.16				
	PE	5.01	.32				
F2. Peer student interaction	Exp. Sc	3.44	.46				
	PT	4.85	.46				.035
	G&H	3.22	.67	.968	26.547***	.021	
	Lng	4.10	.32				
	Mat	4.23	.12				
	Mus	4.96	.26				

	P. Art	4.21	.41				
	PE	4.99	.33				
F3. Affective	Exp. Sc	3.90	.52				
Relationships	PT	4.63	.47				.130
	G&H	3.47	.53				
	Lng	4.55	.21	.767	10.125**	.001	
	Math	4.65	.36				
	Mus	4.38	.58				
	P. Art	4.67	.41				
	PE	5.12	.32				

***p< .001, **p< .01, *p< .05*

DISCUSSION

Results reveal the existence of positive and statistically significant relationships among factors related to teaching support (peer student support, acknowledgment of engagement and effort and student autonomy support) and the factors of the Teaching-Learning Process for students (teacher-student interaction, peer student interaction and perceived support, and perceived affective relationships). These results confirm previous research such as that of Buff et al., (2011) and Oriol-Granado et al., (2017), who specified that positive affection and autonomy support exerted a significant influence on academic performance. In addition, correlations between student autonomy support and peer student support must be underlined, with results coinciding with those by Jang et al., (2010). Likewise, results by Gutiérrez et al., (2018), exposed that a greater perception of autonomy support on the part of the students produces a stronger academic engagement. On the one hand, and in the same line of thought as Chang et al., (2022), the correlation obtained in this study between teacher-student interaction and student autonomy support must be highlighted, as it contributes to a healthy climate in the classroom. On the other hand, it should be pointed out that teaching aids aimed at social interactions (teacher-student and peer student interactions) turned out to be statistically significant predictors of the three factors (teacher-student interaction, peer student interaction and affective relationships).

It can be concluded that all actions carried out by teachers aimed at improving the classroom climate are key to enhancing aspects of the learning process along the higher education stage, one thing well worth to remember when teachers-to-be at a master's degree level are being trained.

Finally, based on the outcome of this study, it can also be stated that classroom climate is affected by field of study, that is, there exist differences in classroom climate depending on the study branch of the students of this master. This is so because statistically significant differences were found in all three factors (teacher-student interaction, peer student interaction and perceived support, and perceived affective relationships), with Professional Training being the academic field with the best perceived classroom climate.

However, there are a few noteworthy limitations to this study. Firstly, only very few studies can be found on the subject of classroom climate in higher education, and there exists even fewer studies that connect the subject with teaching aids for personal

interactions, despite the importance conferred to them by the most active, up-to-date methodologies. Secondly, the number of the sample participants should be increased and different testing should be performed aimed at finding out whether there are significant differences between the variables already studied and gender of students and/or teachers, as well as using new variables such as overall academic satisfaction, motivation towards learning or self-efficacy. All these factors have already been dealt with, however related to classroom climate in different educational stages.

From the outcome of this study, many key practical recommendations for university teachers can be drawn out so that they can take their teaching program a step further. Findings illustrate how both an effective teaching support and a positive classroom climate play a prominent role in academic performance, prevent drop-out attempts, support autonomous learning and generate a stronger academic engagement in the students of this master, enhancing their capacity as teachers-to-be and ensuring a healthy professional life. It must be mentioned that the Organic Law 8/2013, December the ninth, for the Improvement of Educational Quality, develops a restructuring of the education system that makes the choice of academic itinerary and the access to Basic Professional Training happen earlier. So teacher training is of capital importance for the improvement of the educational system since it improves academic performance, just as with the students of the Master in Teacher Training.

Los resultados de la presente investigación muestran la existencia de relaciones positivas y estadísticamente significativas entre los factores relacionados con los Apoyos Docentes estudiados (Apoyo entre estudiantes, Reconocimiento a la implicación y al esfuerzo y Apoyo a la autonomía del estudiante) y los factores del Proceso de Enseñanza-Aprendizaje para el alumnado (Interacción profesorado-alumnado, Interacción compañeros y apoyo percibido y Relaciones afectivas percibidas). Estos resultados apoyan resultados de investigaciones anteriores de Buff et al. (2011) y Oriol-Granado et al. (2017) que consideran que el afecto positivo y el apoyo a la autonomía influyen significativamente sobre el rendimiento académico. Además, en el presente estudio se pueden destacar las correlaciones existentes entre el Apoyo a la Autonomía del estudiante y Apoyo a los estudiantes, cuyos resultados también coinciden con estudios anteriores Jang et al., (2010). También los resultados del estudio de Gutiérrez et al. (2018) inciden que una mayor percepción de apoyo a la autonomía por parte del alumnado genera un mayor compromiso académico. Por un lado, se debe destacar la correlación que se obtiene en el presente estudio entre la Interacción del profesorado-alumnado y el Apoyo a la autonomía del estudiante al contribuir a crear un clima saludable en el aula, resultados que están en la línea de la investigación de Chang, et al. (2022). Por otro lado, hay que señalar que los apoyos docentes relacionados con las interacciones sociales (alumnado-docente e interacción entre iguales), resultaron ser predictores estadísticamente significativos de los tres factores (interacción profesor-alumno, interacción compañeros y relaciones afectivas. Por todo ello se puede concluir que el trabajo que el docente haga en clase para mejorar el clima del aula es un factor clave a la hora de mejorar aspectos del proceso de enseñanza y aprendizaje en la etapa de educación superior, concretamente cuando estamos formando a docentes en el nivel de máster.

Finalmente, con los resultados extraídos de este estudio, también se puede afirmar que existe influencia en el clima de la clase según el área del estudio del alumnado, es decir,

existen diferencias en el clima de clase dependiendo del área de conocimiento en la que están matriculados los estudiantes en este Máster, ya que se obtienen diferencias estadísticamente significativas en los tres factores (Interacción profesorado-alumnado, Interacción compañeros y apoyo percibido y Relaciones afectivas percibidas), destacando la rama de Educación Profesional como la que mejor clima de la clase percibe en los tres factores.

Conflict of interests
The authors and editors declare no conflict of interests.

Author Contribution:
Conceptualization, Fernández-Rodicio, C.I.; methodology, Abellán-Roselló, L.; software, Abellán-Roselló, L.; validation, Abellán-Roselló, L.; formal analysis, Abellán-Roselló, L.; investigación, Fernández-Rodicio, C.I.; resources, Fernández-Rodicio, C.I. and Abellán-Roselló, L.; data analysis, Abellán-Roselló, L.; outline, Fernández-Rodicio, C.I.

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