

What variables help define an active teaching style at University?

¿Qué variables ayudan a definir el estilo docente activo en la Universidad?

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Abstract

Universities are called upon by society to deliver a more comprehensive education to their students as their true mission. Doing this means that they must not only develop innovative strategies in the classroom, but also consider the community as an agent in this educational process. Hence, the goal of this study was to identify variables in university teachers that were related to an active teaching style focused on student learning, as well as to examine whether their level of social participation and their use of methodologies such as service learning were linked to differences in teaching approach. We used a sample of 1550 university teachers of various ages and knowledge areas. They completed an online scale online—part of a broader instrument—designed and validated to identify their teaching styles. Comparisons of means were made based on their respective profiles. The results show that teachers tended to adopt student-centered learning approaches, but women, those who had completed training course, and those who had worked outside the university setting who demonstrated a more active, student-focused teaching style. There were higher scores on the scale from teachers who actively participated in charity or social organizations, and by those who applied service-learning methodology in their classes. These results should be taken with caution, as effect sizes were sometimes small. Despite the limitations, the study sheds light on differences in teaching practice, and also suggests that the design of teacher training plans incorporate innovative, sustainable activities that support a student-learning-centered model.

Key words: higher education, teaching style, active methodologies, service-learning, social commitment, teacher training.

Resumen

A la universidad se le reclama desde la sociedad civil una formación más integral del alumnado, considerando su

auténtica misión educativa. Para cumplir con su cometido, no solo es imprescindible el desarrollo de estrategias innovadoras en las aulas, sino que también se requiere la consideración del entorno comunitario como agente de ese proyecto formativo. Así, el propósito de este trabajo es averiguar las variables del profesorado universitario que se relacionan con un estilo docente activo, enfocado al aprendizaje de los/as estudiantes, así como analizar si su grado de participación social o el uso de metodologías como el aprendizaje-servicio se vinculan con diferencias en su modo de enfocar la docencia. Utilizamos una muestra de 1550 docentes universitarios, de distintas edades y áreas de conocimiento, que cubrieron online, en el marco de un instrumento más amplio, una escala diseñada y validada para identificar su estilo docente. Se emplearon pruebas de comparaciones de medias en función de sus perfiles. Los resultados indican que el profesorado se orienta hacia un estilo centrado en el aprendizaje del alumnado, pero son las mujeres, quienes han realizado cursos de formación o trabajado en otros sectores al margen de la universidad las que presentan un estilo docente más activo y focalizado en el estudiantado. Puntúan más alto en la escala aquellos que participan activamente en organizaciones de la sociedad civil, y los que han aplicado la metodología de aprendizaje-servicio en sus clases. Estos resultados deben ser asumidos con cautela, ya que en ocasiones el tamaño del efecto es bajo. Concluimos, asumiendo las limitaciones, que el estudio no solo arroja luz sobre diferencias en la práctica docente, sino que también favorece perspectiva edificante para el diseño y fomento en los planes de formación docentes de actividades innovadoras y sostenibles que avalen un modelo centrado en el aprendizaje del alumnado

Palabras clave: educación superior, estilo docente, metodologías activas, aprendizaje-servicio, compromiso social, formación del profesorado

Introduction

In recent years, Spanish universities have been encouraged to place more emphasis on teaching innovation in their classrooms in an attempt to tailor their methodological structures to a model that is centred on student learning (Álvarez Castillo et al., 2017). To that end, they have taken on board the arguments of the Council of the European Union (2013) by underlining the social dimension of higher education and accepting that educational excellence must not only be in terms of economic growth and competitiveness, but instead it must also contribute to social development and inclusion. Hence the invitation to member states to increase flexible learning opportunities by diversifying the way content is delivered and by adopting student-centered learning approaches.

Nowadays, few universities do not have organizational charts without a service, plan, or program aimed at driving and shaping innovation in their teaching personnel. These units should, however, be run by specialists in the field rather than, as in more than a few cases, by people selected via more political than technical decision-making. This is especially so if what we aim to do is to make changes that can have a positive impact on the quality of educational processes. Naturally, one of the competencies of teachers who seek to provide high-quality teaching is demonstrating a disposition towards methodological innovation (Lorenzo et al., 2019). This disposition may be apparent through the use of various didactic methods to awaken a love of learning in their students, through continued contact with the social and professional environment, through good management of student teacher interactions, or through developing an attitude of continued study that can bridge the gap between research and teaching.

This concern and awareness culminated in the development of the European Higher Education Area, in which both processes are commonly associated. However, as Del Pozo (2008/2009) reminded us, methodological innovation was not a fundamental element in the agenda of the Bologna process. In fact, nor was it included in the “harmonization” goal. It was not until the declaration of the Education Ministers’ conference in London (London Communiqué, 2009) that there was an explicit reference to the change from a teacher-centered model to student-centered learning. Nonetheless, that should not stop us from recognizing that the European Higher Education Area has provided a good opportunity for reflection, renewal, and improvement in our universities (Santos Rego, 2013).

This change is largely due to the need to respond to society's calls for universities that do not merely churn out professionals but are instead committed to the surrounding community and willing to work towards the common good as a way of combatting injustice and inequality (Lorenzo et al., 2019).

The change of model allows us to introduce the concept of "teaching style" (Fischer & Fischer, 1968). González-Peiteado and Pino-Juste (2014, 2016) noted that when we talk about teaching style, that refers to the particular, relatively stable way each teacher has of addressing the teaching-learning process. Teaching style is an important element given its impact on the organization and management of a class, on the methods and resources used, and on the form of communication and interaction (González-Peiteado, 2013). We should not forget, of course, that the way a teacher teaches is influenced by cognitive, social, and cultural variables, but also by experience, along with their theories or basic beliefs about what university teaching and education of students should be.

Whatever the teaching style, it is logical that it is linked to the different elements of the act of teaching—and related to the act itself—and significantly influences student learning and the quality of the process (González-Peiteado & Pino-Juste, 2016). In any case, teaching style influences student motivation, learning, and performance (Frunzâ, 2014; Jiang & Zhang, 2021). Along these lines, Huang and Zheng (2022) demonstrated the relationship between teaching style and learning efficacy. They examined the effect of teaching style in advanced mathematics courses on university students' learning efficacy, analyzing the mediating effect of motivation for learning. Their results showed that when teachers focused excessively on patterns of thinking and teaching and ignored students' problems with learning, understanding and mastery of mathematical knowledge was deficient.

In the literature there are two large general models which, depending on the time and the context, have been given various labels (González-Peiteado & Pino-Juste, 2016). In our case, we will refer to the classification from Gargallo et al. (2017): the teaching-centered model (instruction paradigm) and the learning-centered model (learning paradigm, student-centered model). This model, also called the "active" (González-Peiteado & Pino-Juste, 2016) or "open" (Renés Arellano et al., 2013) model, seeks to encourage student learning, autonomy, and their metacognitive self-regulatory abilities. According to Gargallo et al. (2017), it incorporates more innovative teaching, the use of meaningful evaluations, and a flexible curriculum. The role of the teacher is that of a mediator and shaper of good learning environments and experiences, while the student has a more active role and is the real protagonist of their learning. According to Martínez Martínez et al. (2019) and Renés Arellano et al. (2013), teachers who have high or very high levels of preference for this open style of teaching encourage active learning styles in their students. They are innovative, flexible, and spontaneous. They often introduce new content, motivate students with novel activities or with real problems from the students' surroundings. They encourage working in teams and generating ideas and they often change methodologies. They try to ensure that their students do not spend too much time on the same activity and leave students free to organize how much time they spend and the order in which they do tasks. They are usually well informed about current events and are open to class discussions.

The literature indicates that an education on these terms can give students notable benefits in terms of intrinsic motivation, possibly due to the direct opportunity to develop their self-efficacy (Waterschoot et al., 2019). However, it also affects a range of variables that are important for academic and personal success: engagement with learning, personal development, cognitive skills, academic performance, and psychological wellbeing (Reeve, 2009). In contrast, a controlling style of teaching is related with less student development and a tendency to behaviors such as procrastination (Codina et al., 2020).

It is exactly this context that helps explain the considerable growth in service-learning (SL) in our universities (Sotelino-Losada et al., 2021). In this methodology, teachers are no longer mere

transmitters of knowledge, they are also guides and accompany their students in co-constructing knowledge and putting it into practice, with the focus on meeting a need identified in the community. In this way, service-learning and the Sustainable Development Goals (SDG) are interconnected. There are three goals that are inherent to this methodology; goal number 4 (Quality education), number 17 (Alliances to achieve objectives), and number 10 (Reduce inequality). However, all SL projects can potentially involve other SDGs.

Our aim with this study is to shed light on the variables that are related to teaching style in university teachers. We have three specific objectives. Firstly, to determine the extent to which the characteristics of university teachers are related to an open teaching style. Secondly, to examine whether their level of social participation is linked to differences in the way they approach university teaching. Finally, to explore the correspondence between knowledge and use of SL and teaching style.

Method

Sample

The sample comprised 1550 university teachers aged between 24 and 76 years old, with a mean age of 50.15 years ($SD=19.670$). Just under half (46.3%) were women, 53.7% were men. The knowledge areas they belonged to were Social and Legal Sciences (35.3%), Experimental Sciences (18.6%), Health Sciences (18.1%), Arts and Humanities (15%), and Technical Education (12.9%).

Most of the sample (53.7%) had permanent positions in their universities. Teaching experience ranged from 1 to 54 years, with a mean of 19.52 ($SD=11.582$). Almost two-thirds (64.4%) collaborated—or had collaborated in the previous five years—with some kind of association, non-governmental organization (NGO), foundation, or civic social body. A similar percentage (66.4%) had participated in a teacher training program in their university in that previous two years. Almost half of the sample (49.2%), in addition to working in the university, worked or had worked in other settings. Just over a third (37.6%) were aware of service-learning methodology (SL), and 10% had applied it in their classes.

Instruments

For this study, we used the “Questionnaire on General Competencies of University Students. Teaching Staff” (COMGAP). Specifically, we used a validated scale that incorporated this instrument, aimed at measuring the participants’ teaching styles, which is described in more detail in Santos Rego et al. (2017). The scale comprises 12 questions using a 5-point Likert-type scale where 1 is never and 5 is always, with items asking how often the teacher uses certain practices in their teaching (see Table 1). The scale has high internal consistency ($\alpha=.82$) and groups the items in three factors that explain 53.60% of the variance: collaboration with external agents in teaching (4 items, $\alpha=.76$); teaching strategies in the classroom (4 items, $\alpha=.62$); and the role of the students (4 items, $\alpha=.74$).

TABLE I. Description of the items in the teaching style scale

Item	Description
Item 1.	I present practical cases for analysis as support for student learning
Item 2.	I usually invite external professionals to the university to explain their work
Item 3.	I use continual evaluation (e.g., essays, reports, portfolios, etc.)
Item 4.	The students actively participate in my classroom sessions
Item 5.	I encourage activities that promote critical thinking (debates, questions in class, etc.)
Item 6.	I use the students' experiences to relate to the material
Item 7.	I recommend that my students visit exhibitions or attend events related to the subject.
Item 8.	I promote and organize complementary activities outside of teaching hours (visits, conferences, etc.)
Item 9.	I use working in teams as a teaching strategy
Item 10.	I use technology to encourage student participation and interactivity (online tutorials, virtual classrooms, forums, etc.)
Item 11.	I try to ensure an atmosphere of good interpersonal relationships in my classes
Item 12.	I encourage my students to attend activities or seminars in other subjects

Source: Compiled by the authors

In addition, the questionnaire includes questions gathering information about the teachers' sociodemographic profiles: age; knowledge area; years of teaching experience; position in the university; collaboration with NGOs, charities, foundations or other social bodies; participation in university training programs; work in other areas; and knowledge and application of service-learning methodology.

Procedure

The questionnaire was applied during academic year 2019-2020. It was distributed online, via an instructional email, to teachers at 7 Spanish universities via the SurveyMonkey platform. The study complied with the guidelines of the Bioethics Committee at the University of Santiago de Compostela and was approved on 11/02/2019. It complied with the extant legislation on data protection and digital rights.

Firstly, in order to verify that the factorial structure defined in the validation of the scale was a suitable representation of the information provided by the data from the study sample, we performed a confirmatory factor analysis (CFA). Following that, we performed a cluster analysis to facilitate the interpretation of the question about whether teachers had collaborated with NGOs or other social bodies. The aim was to group the multiple response options depending on the type of collaboration, as that meant identifying different profiles in the participating teachers. Clustering was done by applying the two-step cluster model, the advantages of which are the automatic determination of the optimum number of clusters, the acceptance of categorical and continuous variables, and the power of working with a large amount of data (Rubio-Hurtado & Baños, 2017).

Lastly, once the scale factors were confirmed and the clusters for the collaboration variable established, we used comparisons of means: Student t and ANOVA with Sheffe's post-hoc test, depending on the case. The aim was to determine whether there were differences in teaching style, measured by the scores in the factors in the scale, according to the different variables that determined the profiles of the participating teachers. The effect sizes were calculated in these tests using Cohen's d for the t test and η^2 for the ANOVA. The results were interpreted according to Cohen's (1988) classification: 0.2, small; 0.5 moderate; and 0.8 large for Cohen's d, and 0.01, small; 0.06, moderate; and 0.14, large for η^2 . The level

of significance for all tests was $\alpha = 0.05$, and they were performed using IBM-SPSS v24 and AMOS v24.

Results

Construct validity

For the CFA with three factors, we considered the evidence of the construct’s factorial structure provided in the validation of the instrument (Santos Rego et al., 2017). Figure I and Table II show the indices of fit and the mediation model of the scale, respectively.

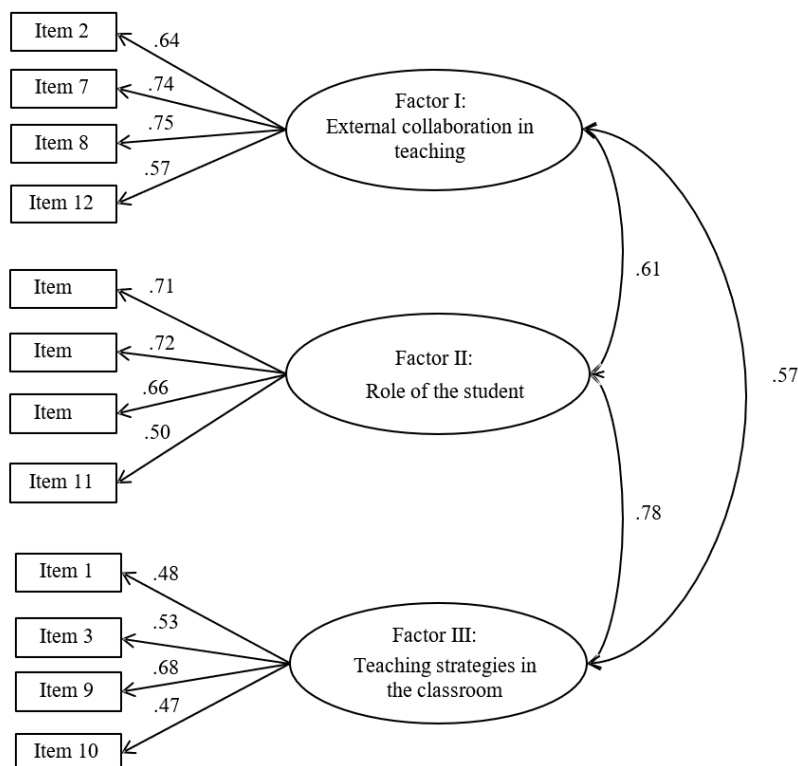
The results of $\chi^2=374.193$, $p<.001$ indicate the distance between the hypothetical and sample variance/covariance matrices. This value not being significant would indicate the absence of a discrepancy between the two. However, as this is a statistic that is highly sensitive to sample sizes greater than 250 individuals (Hair et al., 2009), other indices should be presented: GFI, CFI, RMSEA, and SRMR. Looking at the values for the model in each of these indices (Table II) confirms a good fit, in line with the most prevalent criteria in the literature (Hooper et al., 2008).

TABLE II. Goodness of fit indicators for the model

χ^2	df	p	χ^2/df	GFI	CFI	RMSEA [CI]	SRMR
374.193	51	<.001	7.337	.96	.933	.064[.058,.070]	.0396

Source: Compiled by the authors

FIGURE I. CFA model for the teaching style scale.

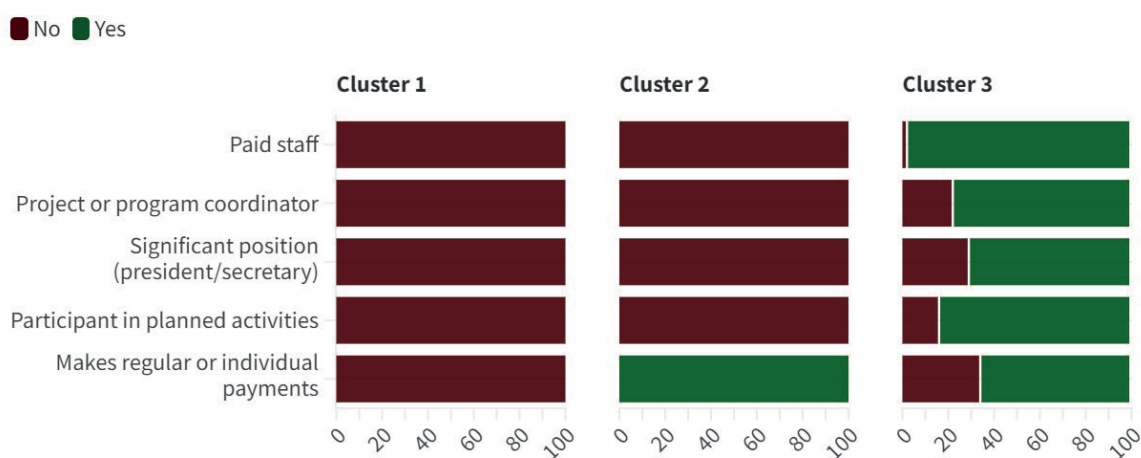


Source: Compiled by the authors

Cluster analysis of the variable “Contribution to an NGO, charity, or other civic social body”

To determine the type of contributions teachers made to NGOs or similar bodies, 4 response options were set, coded as independent binary variables: periodic or single monetary payments; participation in planned activities; project or program coordinator; and senior role (president, secretary, or paid position). The cluster analysis was done using the log-likelihood distance measure, as the variables are categorical. On executing the algorithm, it offered three clusters as the optimal solution. The silhouette value—a measure of how similar an object is to its own group (cohesion) compared to other groups (separation)—was 0.8, and as that is close to 1, it indicates a good fit of the model.

FIGURE II. Composition of each cluster of the variable “Contribution to an NGO, charity, or other civic social body”



Source: Compiled by the authors

After reviewing the composition of each cluster (Figure II), we labelled the groups as follows:

- The first group represented 37.6% of the sample. It contained teachers who have no relationship with any NGOs, through payment, participation, or work. This group was labelled “non-contributing” teachers.
- The second group represented 37.5% of the sample and was made up entirely of teachers who made either single or periodic monetary payments but did not actively participate in the organization. This group was labelled “financially contributing” teachers.
- The third group represented the remaining 24.8% of the sample and was made up of teachers who, even if they did make payments, were actively involved in an NGO or other body’s activities (whether as a participant in planned activities, performing a specific role, coordinating a project, or being paid personnel). This group was called “actively involved” teachers.

Comparative analysis based on the scale factors

In response to the objectives set for this study, the results of the comparative analysis of the factors found in the teaching style scale are presented below (Table III). In general, the factor about participation of external agents in teaching had the lowest score ($M=2.91$, $SD=.928$), although attending planned activities in other courses and the recommendation to visit exhibitions or attend events in other subjects were the teachers’ preferred options in this dimension. The next highest scoring factor was teaching strategies in the classroom ($M=3.85$, $SD=.753$), with the items “encourage activities

that promote critical thinking” and “try to ensure that there is a good climate of interpersonal relations in my classes” being the teachers’ favorites. The highest scoring factor was the role of the student ($M=4.00$, $ST=.698$), with the highest scoring items being presentation of practical cases for analysis and continual evaluation.

TABLE III. Descriptive statistics for the items and factors in the teaching style scale

Factor	Items	Mean (SD)
Factor 1	<i>External collaboration in teaching</i>	2.91 (.928)
	Item 2. I usually invite external professionals to the university to explain their work	2.48 (1.260)
	Item 7. I recommend that my students visit exhibitions or attend events related to the subject	3.31 (1.180)
	Item 8. I promote and organize complementary activities outside of teaching hours (visits, conferences, etc.)	2.57 (1.238)
	Item 12. I encourage my students to attend activities or seminars in other subjects	3.27 (1.171)
Factor 2	<i>Role of the student</i>	4.00 (.698)
	Item 4. The students actively participate in my classroom sessions	3.93(.904)
	Item 5. I encourage activities that promote critical thinking (debates, questions in class, etc.)	4.02(.943)
	Item 6. I use the students’ experiences to relate to the material	3.53 (1.074)
	Item 11. I try to ensure an atmosphere of good interpersonal relationships in my classes	4.49 (.773)
Factor 3	<i>Teaching strategies in the classroom</i>	3.85 (.753)
	Item 1. I present practical cases for analysis as support for student learning	4.08 (.903)
	Item 10. I use technology to encourage student participation and interactivity (online tutorials, virtual classrooms, forums, etc.)	3.64 (1.206)
	Item 3. I use continual evaluation (e.g., essays, reports, portfolios, etc.)	4.00 (1.09)
	Item 9. I use working in teams as a teaching strategy	3.69 (1.170)

Source: Compiled by the authors

Following the general description of the sample, we moved on to the comparative analysis considering the teachers’ sociodemographic profiles. The results of the binary variables in the study (Table IV) indicate the following:

- Gender was a discriminant factor in determining teaching style. Women had significantly higher scores in the three factors.
- Teachers with temporary contracts had higher scores in teaching strategies and in the role of students than teachers who had completed the civil service exams and had permanent contracts. However, this variable was not related to the involvement of external agents in teaching.
- Teachers who had received training or who had worked outside of university teaching had significantly higher scores in the three factors than teachers who had not.

TABLE IV. Tests of differences of means (Student T) between binary variables

	Variable	Categories	n	Mean	SD	t	df	Cohen's D
Factor 1 EXTERNAL COLLABORATION IN TEACHING	Sex	Male	761	2.81	.926	-4.363***	1423	.232
		Female	664	3.02	.917			
	Administrative situation	Permanent contract	762	2.89	.904	-.540	1423	.029
		Temporary contract	663	2.92	.955			
	Received training	No	464	2.75	.932	-4.596***	1423	-.260
		Yes	961	2.99	.917			
Other jobs	No	710	2.81	.945	-3.871***	1423	-.205	
	Yes	715	3.00	.901				
Factor 2 ROLE OF THE STUDENT	Sex	Male	761	3.88	.728	-6.840***	1422.991	.360
		Female	664	4.13	.637			
	Administrative situation	Permanent contract	762	3.93	.693	-3.722***	1423	.198
		Temporary contract	663	4.07	.696			
	Received training	No	464	3.87	.764	-4.656***	801.189	.278
		Yes	961	4.05	.655			
Other jobs	No	710	3.92	.701	-3.883***	1423	.206	
	Yes	715	4.07	.688				
Factor 3 TEACHING STRATEGIES IN THE CLASSROOM	Sex	Male	761	3.74	.792	-6.083***	1422.857	.320
		Female	664	3.98	.684			
	Administrative situation	Permanent contract	762	3.79	.772	-3.145***	1423	.167
		Temporary contract	663	3.92	.725			
	Received training	No	464	3.70	.801	-4.994***	831.474	.293
		Yes	961	3.92	.718			
Other jobs	No	710	3.77	.768	-3.935***	1423	.208	
	Yes	715	3.93	.729				

***p<0.001; **: p<.01; *: p<.05

Source: Compiled by the authors

Looking at the results of the comparisons for non-dichotomous variables in Table V suggests the following:

- Belonging to one knowledge area or another was significantly related to the scores in the three factors, with moderate effect sizes. Teachers in the areas of Arts and Humanities, and Social and Legal Sciences demonstrated a more active teaching style.
- The results indicate that teachers with 15 years of experience or less made more use of teaching strategies in the classroom and promoted situations allowing students to take on a more active role, although the effect was small in these cases. There was no indication of such differences in the dimension referring to collaboration with external agents in teaching.
- Teachers' ages did not seem to be a discriminant factor in external collaboration in teaching. However, there were higher scores from teachers aged 41-50 than in those over 60 in the use of teaching strategies in the classroom and in the role of the students.
- With regard to contributions to NGOs and other similar bodies, determined by the cluster

analysis, teachers who actively participated had higher scores in all of the factors than teachers who did not or who contributed only financially.

- Finally, teachers who used service-learning methodology had significantly higher scores in all three factors than teachers who were unaware of it and those who were aware of it but did not use it.

TABLE V. Comparison of means (ANOVA) for non-binary variables.

	Variable	Categories	n	Mean	SD	F	df	Diferences*	η2
Factor 1 EXTERNAL COL- LABORATION IN TEACHING	Knowledge areas	1. Health Sciences	251	2.78	.909	28.382***	4	2<3*** 2<5*** 1<3** 1<5*** 4<3*** 4<5*** 3<5*	.074
		2. Experimental Sciences	253	2.55	.860				
		3. Social and legal Sciences	515	3.05	.900				
		4. Technical Instruction	185	2.69	.937				
		5. Arts and Humanities	221	3.30	.868				
	Teaching experience	1. 15 years or less	555	2.93	.954	0.249	2		.000
		2. 16 to 30 years	642	2.89	.917				
		3. More than 30 years	221	2.90	.887				
	Age	1. Under 40	273	2.78	.931	2.839	3	-	.005
		2. 41-50	414	2.98	.968				
		3. 51-60	543	2.92	.910				
		4. Over 60	188	2.86	.861				
	Contri- bution to NGOs etc	1. Non contributing	510	2.72	.887	36.615***	2	1<3 2<3	.049
		2. Financially contributing	547	2.86	.942				
		3. Actively involved	368	3.24	.876				
	Awareness of SL	1. Unaware	791	2.76	.917	43.409***	2	1<2*** 1<3*** 2<3***	.058
		2. Aware, but does not use it	468	2.95	.902				
		3. Aware, and uses it	166	3.48	.824				
Factor 2 ROLE OF THE STUDENT	Knowledge areas	1. Health Sciences	251	3.91	.752	28.769***	4	4<3*** 4<5*** 4<1* 1<5*** 2<1** 1<3**	.075
		2. Experimental Sciences	253	3.78	.661				
		3. Social and legal Sciences	515	4.13	.645				
		4. Technical Instruction	185	3.71	.692				
		5. Arts and Humanities	221	4.25	.631				
	Teaching experience	1. 15 years or less	555	4.08	.702	8.179***	2	3<1*** 2<1*	.011
		2. 16 to 30 years	642	3.97	.657				
		3. More than 30 years	221	3.86	.761				
	Age	1. Under 40	273	3.99	.749	6.677***	3	4<2** 3<2**	.014
		2. 41-50	414	4.12	.628				
		3. 51-60	543	3.94	.667				
		4. Over 60	188	3.89	.802				
	Contri- bution to NGOs etc	1. Non contributing	510	3.90	.712	21.241***	2	1<3*** 2<3***	.029
		2. Financially contributing	547	3.95	.638				
		3. Actively involved	368	4.19	.698				
	Awareness of SL	1. Unaware	791	3.90	.722	32.855***	2	1<2*** 1<3*** 2<3***	.044
		2. Aware, but does not use it	468	4.04	.642				
		3. Aware, and uses it	166	4.36	.591				
Factor 3 TEACHING STRATEGIES IN THE CLASS- ROOM	Knowledge areas	1. Health Sciences	251	3.67	.819	17.296***		2<5* 2<3*** 1<3***	.046
		2. Experimental Sciences	253	3.66	.752				
		3. Social and legal Sciences	515	4.04	.664				
		4. Technical Instruction	185	3.82	.696				
		5. Arts and Humanities	221	3.86	.808				
	Teaching experience	1. 15 years or less	555	3.91	.744	2.976*	2	3<1*	.004
		2. 16 to 30 years	642	3.83	.742				
		3. More than 30 years	221	3.77	.787				

	Age	1. Under 40	273	3.81	.757	3.791**	3	4<2**	.008
		2. 41-50	414	3.92	.724				
		3. 51-60	543	3.87	.735				
		4. Over 60	188	3.71	.824				
	Contribution to NGOs etc	1. Non contributing	510	3.74	.770	15.968***	2	1<3*** 2<3***	.022
		2. Financially contributing	547	3.83	.757				
		3. Actively involved	368	4.02	.690				
	Awareness of SL	1. Unaware	791	3.79	.779	16.540***	2	1<3*** 2<3***	.023
		2. Aware, but does not use it	468	3.84	.737				
		3. Aware, and uses it	166	4.16	.582				

***p<0.001; **: p<.01; *: p<.05

Source: Compiled by the authors

Discussion and conclusions

The analysis in this study indicates that university teachers are oriented towards a teaching style that is centered on student learning, especially in the classroom teaching strategies and the active role of the student, which is consistent with the demands of a socially committed university (Santos Rego, 2013). As Santos Rego et al. (2015) noted, universities must consider their civic mission in such a way that they can be at the vanguard of programs and projects that can change and improve their surroundings and contribute to a more inclusive society. Our study also suggests that this may be related to a more collaborative teaching style and to greater student participation. This challenge also involves moving from a teaching-centered model to a learning-centered model (Gargallo et al., 2017; González-Peiteado & Pino-Juste, 2016).

However, it is more nuanced than that, and we have been able to identify some variables related to university teachers' teaching styles that should be considered when designing teacher training programs.

We determined how certain sociodemographic variables are related to teaching style. In our study it was the female teachers who tended more towards extending education beyond the classrooms, including active teaching strategies, and involving students. This does not seem to be a recent trend. More than twenty years ago the study by Lammers and Murphy (2002) concluded that although there was a prevalence of lecturing in university contexts, women used these approaches significantly less than men. More recently, and along similar lines, González-Peiteado and Pino-Juste (2016) showed how students' education at university could influence how they thought about teaching styles. In their study with students studying education at the three public universities in Galicia (Spain), they also concluded that women were more likely to prefer an active style, which for the researchers included reflexive, cooperative, individual, innovative, and inquiring styles of teaching.

In addition, it was the teachers on temporary contracts (*non-funcionarios*), with less experience (15 years or less), aged 41-50, who scored highest in teaching strategies and in seeking an active role for students. In a study in a secondary school, Bou-Sospedra et al. (2021) concluded that the younger teachers opted for active teaching styles, while the older teachers tended to use a more structured style, and that teaching experience had no influence. This is consistent with Mazumder and Ahmed (2014), who found that younger teachers or teachers with less experience demonstrated more active teaching styles than older, or more experienced, teachers. Those authors attributed this to the possibility that they were more enthusiastic about the profession, or even to an erroneous concept based on teachers' egos, believing themselves to be much better than they really were. In addition to these two hypotheses, we believe that our results may be due to the higher demand for training

in teaching strategies that may be presented by those who are facing a new situation as university teachers.

There is no doubt that future university teachers must be trained in active methodologies, as that will allow them to construct, with suitable reflection, their own teaching styles. It is not for nothing that all of the literature clearly shows the influence of such methodologies on students' learning (Combey & Gargallo, 2022). Similarly, we firmly believe that teachers who are engaged with their own training and involved in their social environment can present better feelings of self-efficacy and critical thinking, skills that may directly influence how they shape themselves as teachers (Amirian et al., 2023). In fact, according to our results, doing training courses and having worked outside of the university lead to higher scores in the three factors in the scale. In other words, the training done in universities has a positive effect on the adoption of more student-centered methodologies or on opening up learning contexts.

Similarly, the results suggest that the knowledge areas of the arts and humanities and social and legal sciences have the highest concentration of teachers who exhibit more active teaching styles. This may be because both are areas with direct social applicability, based on the appreciation of culturally diverse environments (Santos Rego et al., 2020), meaning it is easier to incorporate innovations in teaching.

In addition to that, an effective contribution to community wellbeing may also have an impact on the sense of self-efficacy. In our study, students with high levels of social participation or who used SL methodology had higher scores in all of the dimensions examined. In that regard, in a study about service-learning for educating teachers in Spanish universities, Álvarez Castillo et al. (2017) noted that, both in Europe and in other parts of the world, there was a widespread culture of training university teachers in specific teaching skills. Despite that, we agree with Gargallo et al. (2017), who noted that it was no easy matter for universities to move from a teaching-centered approach to a learning-centered approach, given the need for structural changes in the heart of the institutions.

Finally, we recall what García (2006) noted, that teaching style is somewhere between the art and the technique of teaching, that there was no ideal form of teaching, but that it was possible to distinguish certain good practices that contribute to reducing classroom tension and creating a motivating atmosphere.

Obviously, active methodologies are not the answer to all of the challenges of 21st century education, but using them may be a step towards a student body whose experience in academia has a direct impact on their competencies. For example, in the case of service learning as an educational methodology, teachers consider it to be proactive, adaptable, flexible, and innovative because it can link educational content to real social issues, encouraging civic engagement and developing students' abilities and values. In this way, it not only promotes acquisition of academic knowledge in an active, practical way, but it also promotes an aware, participative, entrepreneurial student body (Santos Rego et al., 2020).

The point is that the efforts to empower higher education should not be limited to students, teachers should also be able to change through a teaching style based on collaboration, empathy with the students, and social change.

Despite that, it is worth noting that our study does have some limitations. Firstly, the lack of a more profound impact on specific practices of each teacher in their classrooms. This is something that may arise as a future line of study in our research, involving a qualitative study with a smaller sample of university teachers. That would also help corroborate some of our study's conclusions, as although there were indications of significance in some of the teacher profiles, the effect sizes were small in some cases, which suggests that the differences should be interpreted with caution.

Another limitation is that we only focused on a single protagonist in the teaching-learning pro-

cess and did not collect student perspectives, despite there being studies (Bou-Sospedra, et al., 2021) indicating a discrepancy in the teaching-learning process between the different educational agents. This is important because it would give us evidence to analyze how desirable it would be for teachers to change their teaching practices to balance learning style preferences and move closer to doing what they should be doing (Martínez Martínez et al., 2019).

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