

## **LEARNING STYLES AND THE USAGE OF THE INFORMATION AND COMMUNICATION TECHNOLOGIES IN LAW SCHOOL<sup>1</sup>**

### ***ESTILOS DE APRENDIZAJE Y TECNOLOGÍAS DE INFORMACIÓN Y COMUNICACIÓN EN EL CURSO DE DERECHO***

### ***ESTILOS DE APRENDIZAGEM E TECNOLOGIAS DA INFORMAÇÃO E COMUNICAÇÃO NO CURSO DE DIREITO***

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**ABSTRACT:** This research aimed to identify the learning styles with the usage of technology on students and professors of law school. The Learning Styles Scale was used in situations of technology use by Roza (2017), which was applied to 444 Law School students in two private institutions as well as to 23 of their professors. As for the data analysis, descriptive statistics, and multivariate analysis of variance (MANOVA) were used to verify the possible influences of gender and student phase on students' styles. The results showed a predominance of the theoretical style among all students. Among the professors, the pragmatic style prevailed. Although the theoretical style was predominant, the other styles were also contemplated. Therefore, the importance of using different technological tools and educational strategies that contemplate the different learning styles of students is visualized.

**KEYWORDS:** Learning styles. Law. Educational technology.

**RESUMO:** Esta pesquisa teve como objetivos identificar os estilos de aprendizagem no uso da tecnologia em alunos e docentes de curso de Direito. Foi utilizada a Escala de Estilos de Aprendizagem em situações de uso de tecnologia de Roza (2017), que foi aplicada em 444 estudantes do curso de Direito de duas instituições particulares, bem como em 23 docentes desses cursos. Para análise de dados, foi utilizada estatística descritiva e análise multivariada da variância (MANOVA) para verificar as possíveis influências do gênero e da fase do estudante sobre os estilos dos alunos. Os resultados mostraram uma predominância do estilo teórico entre todos os estudantes. Entre os professores predominou o estilo pragmático. Embora o estilo teórico tenha sido predominante, os outros estilos foram também contemplados. Portanto, visualiza-se a importância da utilização de diferentes ferramentas

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tecnológicas e estratégias educacionais que contemplem os diferentes estilos de aprendizagem dos alunos.

**PALAVRAS-CHAVE:** Estilos de aprendizagem. Direito. Tecnologia educacional.

**RESUMEN:** Esta investigación tuvo como objetivo identificar los estilos de aprendizaje en el uso de la tecnología en alumnos y profesores de cursos de Derecho. Se utilizó la Escala de Estilos de Aprendizaje en situaciones de uso de tecnología por Roza (2017), que se aplicó a 444 estudiantes del curso de Derecho en dos instituciones privadas, así como a 23 profesores de estos cursos. Para el análisis de datos, se utilizaron estadísticas descriptivas y análisis de varianza multivariante (MANOVA) para verificar las posibles influencias del género y la fase del alumno en los estilos de los estudiantes. Los resultados mostraron un predominio del estilo teórico entre todos los estudiantes. Entre los profesores, prevaleció el estilo pragmático. Aunque predominaba el estilo teórico, también se contemplaron los otros estilos. Por lo tanto, se puede ver la importancia de utilizar diferentes herramientas tecnológicas y estrategias educativas que contemplan los diferentes estilos de aprendizaje de los estudiantes.

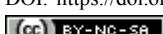
**PALABRAS CLAVE:** Estilos de aprendizaje. Derecho. Tecnología educacional.

## Introduction

A new form of social organization, called the information society, emerged in the second half of the 20th century, arising from the technological revolution (ROZA, 2017). Changes in this new society took place in the economic, social and human scenario, as the development of digital technologies influenced not only social relations, but also production, industrialization and the educational environment, allowing children themselves access to the information and knowledge of the world, through the media (RIEDNER; PISCETOLA, 2016).

In this new society, also called the knowledge society or network society, there are no barriers regarding time and space that prevent people from communicating. This is a new era that enables different ways of learning, leaving the school's physical space as the only place for the construction of knowledge (COUTINHO; LISBÔA, 2011).

This new society also imposed major challenges on the school, as it has to be able to develop skills in students to live in a global world, which values a creative being and capable of presenting innovative solutions for future problems (COUTINHO; LISBÔA, 2011). Students, unlike past generations, think and process information differently, and this fact cannot be ignored by the teacher, nor its implications for the teaching-learning process (SILVA, 2017). Persisting in a pedagogical model based on lectures and with little creativity can discourage students throughout a course (GOES *et al.*, 2014).



Also, from the second half of the 20th century, based on a new concept of learning, centered on the active role of the student and contrary to traditional methodologies, several authors have been dealing with the study of learning styles (SILVA, 2011). Learning styles are the preferences of each individual, being part of their personal characteristics and influencing the way of learning the content (AMARAL; BARROS, 2007). According to Gonçalves et al. (2016), learning style is the way to absorb, process and retain information. Like learning styles, cognitive styles have also been the object of studies, but due to the lack of a common concept among authors about them, the literature has presented different definitions of these constructs.

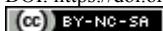
In an attempt to contribute to the research carried out on styles in the use of technology in the teaching and learning process, this research aimed to identify the learning styles in the use of technology for learning in law students and faculty, as well as the influences the student's gender and stage on the styles of the students. As a specific objective, this work presented the theoretical assumptions of styles in the use of technology.

## **Technology in education**

The term information technology can be defined as any technology used in the treatment of information, encompassing various resources, including the Internet, computers, tablets and smartphones, applications, telecommunications systems (ROZA, 2017). Digital information and communication technologies (DICT), which are increasingly present in our society, in almost all social strata, allow their users to communicate even if they are in different places. The way people communicate has changed, making it almost impossible not to see someone accessing their cell phone at any time and place to communicate (SILVA, 2017).

The amount of information available to individuals in today's society requires the citizen to develop skills to select the most relevant, discarding unnecessary ones, which requires the development of skills to relate, analyze, synthesize and evaluate. For this, the school can contribute with alternatives, such as the use of information technology, so that there is no repetition of old methodologies, such as copying, reproduction and memorization (LÂNGARO, 2003).

With the new knowledge society, the profile of classrooms has changed, as they are full of students with a thirst for information and speed in selecting new interests. These



changes in society also influenced the attention rates of students, causing them to lack concentration due to the shared amount of data (CINTRA; SUEDE; REIS, 2017).

DICT have been shown to be important allies to teaching, as they are resources that not only stimulate the senses but, also, provide the sharing of information and allow for new forms of communication, relationships, knowledge construction, opening up new pedagogical possibilities (SOUZA, 2015; KENSKI, 2003; PÚBIO JR., 2018).

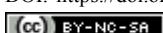
Some advantages have driven the use of technologies in the educational field: it facilitates the understanding of the content; respects the student's learning time; allows the student to train as often as necessary; enables feedback (GOES *et al.*, 2014).

The DICT have created spaces for interaction and knowledge construction, just by having someone connected in a network to exchange information, ideas and knowledge (LEMOS; AMARAL; OLIVEIRA, 2015). Even in inclusive education, they have proven to be instruments that favor accessibility, equal opportunities and the inclusion of students with special needs (SOUZA, 2015).

With the use of DICT in the teaching-learning process, knowledge is no longer centered on the figure of the teacher, as students no longer look up him to become their observer, thus seeking the potential of each individual (SILVA *et al.*, 2010). Still, the student must be seen by teaching as an active subject, with the ability to determine their self-learning, favoring, among other things, reflective thinking and the solution of hypotheses, based on participatory and interactive strategies (GOES *et al.*, 2014).

The use of technologies in teaching is recognized worldwide as beneficial to the innovative process of learning environments, as it contributes to the formation of critical thinking, complex decision-making, problem solving, teamwork, and is guided in the active participation of students, developing their autonomy and criticality. (SALVADOR *et al.*, 2015).

Silveira, Novello and Laurino (2018) believe that the use of digital technologies in teaching will provide subjects with several possibilities for knowledge construction, exchange and construction of new knowledge, in addition to the development of interactive activities. However, the importance of overcoming the mistaken view that the use of technology in teaching ends in itself has been emphasized, since it is not a self-sufficient tool, being unable to solve all the problems of teaching its application pure and simple. Referring to innovative nursing education, Salvador *et al.* (2015) emphasize that, in addition to the use of technological tools in this teaching-learning process, the following challenges are established: adequate teacher preparation, transformation of teacher-student interaction, changes in the



structures of educational institutions. Thus, according to these authors (SALVADOR *et al.*, 2015), the pedagogical approach of the teacher in the use of technologies in teaching is more important than the technology itself, since such technological tools allow teaching practices in which there is co-participation between students and teachers, accompanied by interactivity and creativity.

Universities, in recent times, have been going through several transformations, allowing the processes of academic structural organization to include as themes the use of technological tools in the pedagogical process and in teacher education, operating through different digital tools, aiming to meet the demands of individuals and society, enabling the construction of a new culture (SILVEIRA; NOVELLO; LAURINO, 2018).

### **Methodological procedures**

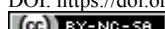
The field research used the SCALE OF LEARNING STYLES IN SITUATIONS OF TECHNOLOGY USE, by Roza (2017). The scale was applied to law students, at two institutions, and to professors of these courses. This instrument was built from studies on learning styles addressed, mainly, by Alonso, Galego and Honey (1997), Kolb (1984) and Mumford and Honey (1992).

A total of 444 law students from two private universities located in the interior of São Paulo (called Institution 1 and 2) participated in the research, 186 men and 258 women, with a mean age of 28.98 years. The detailed characteristics of the student sample are shown in Table 1.

**Table 1 – Student characteristics**

<b>semesters</b>		<b>subjects</b>				<b>age</b>		
<b>Institution 1</b>	<b>Institution 2</b>	<b>N</b>	<b>men</b>	<b>women</b>	<b>average</b>	<b>sd</b>	<b>min.</b>	<b>max.</b>
1 <sup>st</sup> semester	1 <sup>st</sup> semester	50	17	33	26.8	7.95	18	47
	2 <sup>nd</sup> semester	90	34	56	21.42	5.68	18	36
2 <sup>nd</sup> semester	1 <sup>st</sup> semester	13	7	6	31	9.18	20	52
	2 <sup>nd</sup> semester	117	52	65	22.15	5.66	18	50
4 <sup>th</sup> semester		24	9	15	31	11.53	20	65
6 <sup>th</sup> semester		24	11	13	33.33	10.95	21	53
8 <sup>th</sup> semester		18	4	14	27.61	8.2	21	47
9 <sup>th</sup> semester		6	2	4	35.66	5.34	24	40
	9 <sup>th</sup> semester	87	41	46	26.31	6.45	21	49
	10 <sup>th</sup> semester	15	9	6	34.53	12.28	21	63
semester								

Source: Devised by the authors



According to Table 1, students from the first, second, fourth, sixth, eighth and ninth semesters participated in the research from institution 1, while students from the first, second, ninth and tenth semesters participated in the research. Also participating in the survey were 23 teachers from the two educational institutions, 15 males and 8 females, as shown in Table 2.

**Table 2** – Teacher characteristics

	Subjects			Age				Experience		
	n	men	women	average	sd	min.	max.	average	sd	min.
<b>Institution 1</b>	9	3	6	45.11	6.82	35	54	6.1	4.2	1
<b>Institution 2</b>	14	12	2	43.92	12.24	25	65	12.28	10.38	2

Source: Devised by the authors

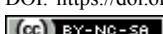
Data were tabulated in Excel® and, from this, tables were created to describe the sample. For inferential analysis of the data, SPSS software, version 20.0, was used to perform the Multivariate Analysis of Variance (MANOVA).

## Results

This study identified the learning styles in the use of technology in students and professors of the Law course of two institutions. The students were distributed by this research into Group 1 and Group 2. Group 1 was composed of students who were attending between first and fifth semester, while in Group 2, the students were attending between sixth and tenth semester. This research considered the gender and semester variables in which the student was attending for statistical analysis. Law professors from these institutions were also evaluated, and the variables considered were gender and institution.

The Learning Styles in Technology Use Situations Scale built by Roza (2017) comprises the following styles: Theoretical style (13 items), Pragmatic style (10 items), Interaction style with the environment (8 items) and Style interaction through the medium (8 items).

After analyzing the responses of students from Institutions 1 and 2, we had the results presented in Table 3, which presents the minimum and maximum scores, averages and standard deviation values by group and by gender. Students in Group 2 scored, on average, more than students in Group 1, in all styles. As for gender, following the analysis by Groups,

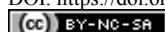


although the values are remarkably close, in relation to students in the group in the first half of the course (Group 1), women scored more than men in pragmatic styles and interaction with the environment, while men consequently scored higher in theoretical styles and interaction through the environment. In Group 2 (students from the second half of the course), women scored more in all styles than men. In a general analysis, the average scores of the two groups analyzed, in each of the four learning styles, were similar, with no major differences between them. Likewise, regarding gender, with similar scores for male and female, when compared in the same style.

**Table 3 – Student learning styles by gender and group**

Group	Style	Gender	n	Min.	Max.	Average	sd
1	Theoretical	Female	174	5	12	8,51	1,818
		Male	120	5	12	8,68	1,834
		Total	294	5	12	8,64	1,681
	Pragmatic	Female	174	2	10	6,72	1,605
		Male	120	2	10	5,66	1,433
		Total	294	2	10	6,82	1,668
	Interaction with the environment	Female	174	2	8	5,72	1,247
		Male	120	2	8	5,66	1,433
		Total	294	2	8	5,73	1,203
	Interaction through the environment	Female	174	2	8	5,22	1,479
		Male	120	2	8	5,45	1,377
		Total	294	2	8	5,32	1,358
2	Theoretical	Female	83	3	12	8,98	1,561
		Male	67	3	12	8,52	2,032
		Total	150	3	12	8,78	1,799
	Pragmatic	Female	83	3	10	5,90	1,361
		Male	67	2	10	5,56	1,437
		Total	150	2	10	6,88	1,861
	Interaction with the environment	Female	83	3	8	5,90	1,361
		Male	67	1	8	5,56	1,437
		Total	150	1	8	5,75	1,404
	Interaction through the environment	Female	83	3	8	5,49	1,354
		Male	67	2	8	5,47	1,459
		Total	150	2	8	5,48	1,398

Source: Devised by the authors

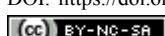


Regarding the learning styles of the teachers, the teachers from institution 1 scored, on average, more than the teachers from institution 2 in all styles (Table 4). As for gender, following the analysis by institution, in Institution 1, men had the highest averages in theoretical, pragmatic and interaction styles with the environment, while female teachers had the highest average only in the style of interaction through the environment. In Institution 2, female teachers had the highest averages in all styles, with a greater difference in the Interaction style through the environment (women = 4.5 and men = 1.08).

**Table 4 – Teachers' Learning Styles by Gender and Institution**

Institution	Style	Gender	n	Min.	Max.	Average
1	<b>Theoretical</b>	Female	6	3	12	7,66
		Male	3	8	13	10
		Total	9	3	13	8,44
	<b>Pragmatic</b>	Female	6	7	9	8,33
		Male	3	9	10	9,66
		Total	9	7	10	8,77
	<b>Interaction with the environment</b>	Female	6	1	8	5,66
		Male	3	5	7	6
		Total	9	1	8	5,77
2	<b>Interaction through the environment</b>	Female	6	3	6	4,66
		Male	3	2	6	4
		Total	9	3	6	4,44
	<b>Theoretical</b>	Female	2	9	9	9
		Male	12	5	12	7,75
		Total	14	5	12	7,92
	<b>Pragmatic</b>	Female	2	6	9	7,5
		Male	12	1	10	6,5
		Total	14	1	10	6,64
	<b>Interaction with the environment</b>	Female	2	5	6	5,5
		Male	12	1	8	4,41
		Total	14	1	8	4,57
	<b>Interaction through the environment</b>	Female	2	3	6	4,5
		Male	12	0	3	1,08
		Total	14	0	6	1,57

Source: Devised by the authors



Aiming to verify possible influences of gender and group variables and their interactions in learning styles, the Multivariate Analysis of Variance (MANOVA) was performed. According to the results shown in Table 5, there were no statistically significant differences in learning styles in relation to gender and group variables, nor in relation to the interaction between these variables.

**Table 5** – Multivariate Analysis of Variance by Gender and by Groups

Variable	Style	Square Average	F	Sig.
gender	Theoretical	3.085	0.929	0.336
	Pragmatic	0.028	0.009	0.925
	with the environment	5.709	3.122	0.078
	through the environment	0.415	0.202	0.653
groups	Theoretical	3.775	1.137	0.287
	Pragmatic	1.466	0.472	0.493
	with the environment	0.275	0.150	0.699
	through the environment	2.768	1.351	0.246
gender x groups	Theoretical	3.894	1.174	0.279
	Pragmatic	0.194	0.062	0.803
	with the environment	0.420	0.229	0.633
	through the environment	0.188	0.091	0.762

Source: Devised by the authors

According to Table 5, there were no statistically significant differences in learning styles in relation to gender and group variables, nor in relation to the interaction between these variables.

## Final considerations

This research aimed to identify the learning styles in the use of technology in law students and professors and the influences of gender and student stage variables on these students' styles, in addition to presenting the theoretical assumptions of learning styles and styles of technology use.



Given the changes brought about by the current society, called the information society, resulting from the development of digital technologies, influencing all sectors of society, including education, it is necessary to investigate the learning styles in the use of information technologies and Communication.

Each individual has their way of interacting with situations that arise in the learning environment, called learning styles, and the insertion of information and communication technologies in people's lives, interfering in the way of acquiring knowledge, will also end up generating preferences of use of technological resources.

It so happens that the insertion of computerized learning environments will demand a differentiated effort from the teacher (BITTAR, 2000). The formation of teachers, according to experiences carried out at school with information technology, has proven to be fundamental, requiring a quite different approach, since the implementation of information technology in the educational field encompasses more than the teacher's mere knowledge of computers or methodologies for its use in a discipline (VALENTE; ALMEIDA, 1997).

In this sense, according to Valente and Almeida (1997), the proposal for pedagogical change through the introduction of informatics in education, as stated in the Brazilian Informatics Program in Brazil, does not aim to create conditions for the teacher to master the computer or the software, but it helps them to develop knowledge about the content to be taught and about how the computer can be used in the development of that content.

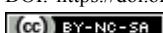
Therefore, in the teaching activity, the importance of how knowledge will correctly reach students through pedagogical practice is perceived, that is, how the teacher will play the role of mediator in the teaching process and learning (FIGUEIREDO; NOBRE; PASSOS, 2015).

Regarding learning styles, it was found in this research that the compatibility between the styles of the teacher and the students can be a great ally of the teacher, bringing many benefits to the teaching and learning process. The bibliographical research, through the database, also pointed out the scarcity of research on the use of digital technologies in Law courses, since no study was found.

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