ARTICLE

ACADEMIC-SCIENTIFIC LITERACIES: THE TEACHING OF WRITING AT THE FEDERAL UNIVERSITY OF TECHNOLOGY – PARANÁ

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ABSTRACT: This study is part of the Academic Literacy Project (2019-2022), a collaborative study carried out among four public universities in the State of Paraná. This paper aims at describing the academic-scientific literacy actions in the undergraduate courses of the Federal University of Technology – Paraná, by means of mapping the courses transcripts from Campus Curitiba. A mixed sequential exploratory method (TASHAKKORI; CRESWELL, 2007) was applied with interpretative, deductive, and inductive analysis procedures, considering the peculiarities of each course. At first, we built an inventory with keywords based on the conceptions of professional, academic, and scientific literacies. Next, an analysis of the content from the transcripts was carried out in the light of the theories and models of Academic Literacies (LEA; STREET, 1998; FIAD, 2011), named *study skills*, *academic socialization*, and *academic literacies*. Results indicate that there are few disciplines which offer the teaching of genre and, among the ones that do, focus on teaching of the *study skills* and *academic socialization models*.

Keywords: Academic literacies, scientific literacies, academic writing at university.

LETRAMENTOS ACADÊMICO-CIENTÍFICOS: O ENSINO DA ESCRITA NA UNIVERSIDADE

RESUMO: O presente trabalho faz parte do projeto Ações de Didatização de Gêneros em prol do Letramento Acadêmico (2019-2022), uma pesquisa de natureza colaborativa entre quatro universidades públicas do estado do Paraná. Nosso estudo objetiva descrever ações de Letramentos Acadêmico-Científicos nos cursos de graduação da Universidade Tecnológica Federal do Paraná por meio de um mapeamento das ementas dos cursos de bacharelado, licenciatura e tecnologia no Câmpus Curitiba. Para as análises, recorremos ao método misto sequencial exploratório (TASHAKKORI; CRESWELL, 2007), com procedimentos de análises interpretativas, dedutivas e indutivas, considerando particularidades contextuais dos respectivos cursos. Em uma primeira etapa, construímos um inventário com palavras-chave com base nas concepções de letramentos profissional, acadêmico e científico. Na sequência, realizamos a análise das ementas à luz das teorias e dos modelos de Letramentos Acadêmicos (LEA; STREET, 1998; FIAD, 2011) denominados *habilidades de estudo, socialização acadêmica* e *letramentos acadêmicos.* Os resultados apontam que poucas são as disciplinas que propõem o ensino de gêneros de texto e, dentre as apresentadas, estas limitam-se ao ensino com foco nas *habilidades de estudo* e na *socialização acadêmica.*

Palavras-chave: Letramentos acadêmicos, letramentos científicos, escrita acadêmica na universidade.

LETRAMIENTOS ACADÉMICO-CIENTÍFICOS: LA ENSEÑAZA SUPERIOR DE LA ESCRITURA EM LA UNIVERSIDAD TECNOLOGICA FEDERAL DEL PARANÁ

RESÚMEN: El presente trabajo hace parte del proyecto Acciones de Didactización de Géneros en pro del Letramiento Académico (2019-2022), una investigación de naturaleza colaborativa entre cuatro universidades públicas del estado de Paraná. Nuestro estudio plantea describir acciones de Letramientos Académico-científicos en los cursos de graduación de la Universidad Tecnológica Federal de Paraná por medio de un mapeo de los contenidos programáticos de los cursos de "licenciatura", "licenciatura" y tecnología en el Campus Curitiba. Para los análisis, recurrimos al método mixto secuencial exploratorio (TASHAKKORI; CRESWELL, 2007), con procedimientos de análisis interpretativos, deductivos e inductivos, considerando particularidades contextuales de los respectivos cursos. En una primer etapa, construimos un inventario con palabras-clave con base en las concepciones de Letramientos profesional, académico y científico. A continuación, realizamos el análisis de los contenidos programáticos bajo las teorías y los modelos de Letramientos Académicos (LEA; STREET, 1998; FIAD, 2011) denominados *habilidades de estudio, socialización académica y letramientos académicos.* Los resultados apuntan que pocas son las asignaturas que plantean la enseñanza de géneros de texto y, entre las que se presentan, estas se limitan a la enseñanza con foco en las habilidades de estudio y en la socialización académica.

Palabras clave: Letramientos académicos; letramientos científicos; escritura académica en la universidad.

INTRODUCTION

The vertiginous growth of federal universities proved to be, from a quantitative point of view, a success, since millions of Brazilians, many of them on the margins of higher education, had the opportunity to enroll in undergraduate courses in several universities in the country. According to the report called *The Democratization and Expansion of Higher Education in the Country* (*A Democratização e Expansão da Educação Superior do País*-2003-2014), by the Secretariat of Higher Education (SESu), the number of enrollments offered in public higher education increased by around 117% in this period (BRASIL, 2014, p. 32).

However, the qualitative increase in courses deserves reflection.

In times of expansion of Brazilian public universities, Academic-Scientific Literacy has become a central issue, since the knowledge produced in these institutions must be shared with the national and international scientific community. Based on the Support Program for Restructuring and Expansion Plans for Federal Universities – REUNI, instituted by Decree 6096, of April 24, 2007, general guidelines were drawn up to resume the growth of public higher education, creating conditions for that federal universities could promote physical, academic and pedagogical expansions. Based on a study carried out by Trevizan (2014), we can visualize the quantity and nature of new courses at the Universidade Tecnológica Federal do Paraná (UTFPR), as shown in Table 1.

Table 1 – Number and profile of courses at UTFPR

	2007	2008	2009	2010	2011	2011
Technical	**21**	**23**	**19**	**18**	**16**	**12**
Technological	42	35	32	30	29	26
bachelor's degrees	24	29	34	44	49	51
Degrees	1	3	4	4	12	12
TOTAL	**88**	**90**	**89**	**96**	**99**	**94**

Source: Trevizan (2014).

Trevizan (2014) points out that, between 2007 and 2012, there was a decrease in technical and technological courses to the detriment of a considerable increase in bachelor and teaching degree courses. With this expansion of courses and vacancies for professors and students and, concomitantly, with the creation of quotas, through Law 12.711 of August 2012, 50% of enrollments are guaranteed for students who come entirely from public secondary education, ensuring an inclusive movement of these students. On the one hand, this movement to include economically underprivileged students is a Brazilian social achievement, but, on the other hand, it is challenging for university professors since the vast majority of these students do not have the skills and abilities minimally necessary to handle academic requirements. Such skills and abilities necessary for the good performance of a student in higher education, most of the time, are also not developed in privileged contexts, as in many private schools, since academic genres are not part of the scope of the guidelines for elementary and middle school. Thus, this gap causes a mismatch between what the university expects from these students' prior knowledge and the lack of formal teaching of Academic-Scientific Literacy. Therefore, the need to disseminate academic-scientific genres in all areas of higher education is irrefutable. On this issue, Fiad (2011) points out that

Much of the research on academic literacy comes from the observation of the writings of students from different social classes and ethnicities. Upon entering university, students are required to write different genres that they are not familiar with in their writing practices in other contexts (including school) and are poorly evaluated by their professors. In fact, as authors (LEA and STREET, 1998; JONES, TURNER, and STREET, 1999) point out, conflicts between what teachers expect from writing and what students write are beginning to become visible. In other words, there is no correspondence between the student's literacy and the literacy required at the university (FIAD, 2011, p. 362).

Validating the controversy pointed out by the author, today it is no longer possible to conceive reading and writing skills separately. Corroborating this issue, Lea and Street (1998, p. 157) points out that "learning in higher education implies adapting to new forms of knowledge: new ways of understanding, interpreting, and organizing knowledge".

In line with the vision of Lea and Street (1998) and Fiad (2011), this research was conceived as part of the collaborative project[3] "Genre Teaching Actions in favor of Academic Literacies" *("Ações de Didatização de Gêneros em prol de Letramentos Acadêmicos", 2019-2022)*, coordinated by Dr. Vera Lúcia Lopes Cristovão, professor at the State University of Londrina (UEL), whose general objective was to map and investigate the existing Academic Literacy actions in public Higher Education Institutions (HEIs) in Paraná. Thus, the scope of this research is limited to the scenario of UTFPR – Campus Curitiba and its general objective is to map the syllabi of all bachelor, teaching, and technology courses on the campus to look for evidence of Academic-Scientific Literacy. To achieve the general objective, three specific objectives were outlined:

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[3] The Project *"Ações de Didatização de Gêneros em prol de Letramentos Acadêmicos"* was approved by CNPq through Call CNPq nº 09/2018, Process: 310413 / 2018-4. The project was approved by the ethics committee, under number CAAE: 09695319.4.1001.5231.

i) to investigate the actions of Academic-Scientific Literacy in undergraduate courses at UTFPR-CT; ii) to analyze, within the conception of Academic Literacy by Lea and Street (1998; 2006), which literacy model is privileged in the teaching of writing at the university; iii) to propose research, teaching and extension actions for teacher and student training.

For the purposes proposed, this article is organized into four sections. First, we present the theoretical support that will support the research, whose central perspective brings literacies as a social practice in the New Literacy Studies approach. Then, we address the methodological path in which we explain how the data were generated and analyzed. Then, we present and discuss the data. Finally, we bring the final considerations and propose Academic-Scientific Literacy actions to enhance the dissemination of these text genres at UTFPR.

ACADEMIC-SCIENTIFIC LITERACY

The term literacy refers to the way a person behaves and participates within social spheres. Bazerman (2007, p. 14) points out that, in almost all human relationships, literacy is present, assuring that society "maintains and evolves through literacy practices". When thinking about the close relationship between reading and writing, the American researcher emphasizes the relevance of the school context when he states that the practices of "reading and writing are closely linked to the history of people's education" (BAZERMAN, 2005, p. 5). Thus, although literacy includes the aspect of acquiring a written code, this is not enough. It must be considered that many people around the world do not master this code in their language and, even so, actively participate in the social spheres to which they belong.

Araújo and Bezerra (2013) point out that the issues of writing and literacy are intertwined with text genres when they state that

[...] the human relationships established through writing occur through texts, which are always framed in genres that transit in a given linguistic community as subsidies for the participation of individuals in this community, which requires the acquisition of writing skills by parts of these individuals, that is, literacy, or the literate condition for certain purposes (ARAÚJO; BEZERRA, 2013, p. 9).

Within the higher education scenario, the idea of academic literacy was developed from the studies of Street (1984), Gee (1996), and Barton and Hamilton (1998), in the area of New Literacy Studies (NLS). This new vision provides recognition of the plurality of literacies that vary according to the cultural and social context in which it is conceived. Thus, Academic Literacies demand new ways of understanding, interpreting, and developing knowledge in new areas (LEA; STREET, 1998). Within this plurality of existing literacies, it is possible to state that not all literacy acquired in high school will be the same used in higher education. Therefore, it is necessary to develop actions that enable academic literacy practices in which the student can become familiar with the genres of this discursive community.

In this scenario, Lea and Street (1998) conceive Academic Literacies from three complementary approaches to writing in the university context, called the model of *study skills, academic socialization, and academic literacies*. The *study skills* model is the knowledge of formal language structures (mastery of grammatical and syntactic rules, punctuation, and spelling). From this perspective, the social nature of genres and the student's literacy history are not considered. Therefore, there is a prevalence of the technical aspect of textual production.

The *academic socialization* model is related to the presentation of new thematic and disciplinary areas of the academic environment. Within these practices, students are acculturated to different discourses and genres that are part of academic disciplines. According to Oliveira (2010, p. 6), "academic discursive genres are homogeneous and, once the student learns the conventions that regulate these genres, he will be able to engage in literate practices that permeate this instance". For Lea and Street (2006, p. 227), this model "assumes that disciplinary discourses and genres are relatively stable and that, once students have learned and understood the basic rules of a given academic discourse, they can reproduce it without any problems".

Finally, the model of *academic literacies* concerns the multiple literacies, which are present at the university level as social practices. According to the authors (LEA; STREET, 2006, pp. 227-228), the third model is the creation of meanings, identity, power, and authority. It is similar in many ways to the academic socialization model, "except that it sees the processes involved in acquiring appropriate and effective uses of literacy as more complex, dynamic, nuanced, situated, involving epistemological issues and social processes, including power relations between people and institutions and social identities". We understand that these models present a degree of complementarity because when developing their written

productions, the students need to know the formal and grammatical aspects of the language, develop reading and writing skills related to the academic context and understand the different ways of using writing that pervade the disciplines and thematic areas of their course, taking as a primordial point the previous history of literacy and the identity values brought with them.

The last concept used to support our analyzes and discussions is scientific literacy. According to Motta-Roth (2011, p. 21), scientific literacy is a global and complex process, described in four dimensions: knowledge of science and technology, scientific attitude, understanding and production of scientific texts, and the ability to make policy choices. Reaffirming the author's position, we understand that it is up to the teacher to introduce students to the ideological aspects implicit in the genres and contribute to the appreciation of the critical citizen. Therefore, from now on our terminological choice will be Academic-Scientific Literacy, as it agrees with the definitions of the Academic Literacy models by Lea and Street (1998; 2006), and corroborates the definition of scientific literacy proposed by Motta-Roth (2011).

Regarding some actions carried out in Brazil in the teaching of Academic Literacy in universities, one of them was the Reading and Writing Initiatives in Higher Education Project (*Projeto Iniciativas de Leitura e Escrita no Ensino Superior*-ILEES), which aimed at identifying, mapping, and describing initiatives for teaching reading and writing in undergraduate courses at universities in Latin America. According to Bork et al. (2014), research carried out in Brazil identified some pedagogical trends in the area of Portuguese and English, described by 24 professors from Brazilian universities through an online questionnaire. As a result, the most used genre teaching action for the promotion of Academic Literacy was the offer of a discipline/course in academic writing, mainly in the first year of the undergraduate course of degrees in Language and Literature. The second action showed the existence of five writing centers in some Brazilian universities (CRISTOVÃO; VIEIRA, 2016), the most recent being the Academic Publication Advisory Center (CAPA) of the Federal University of Paraná (UFPR). Following our discussion on the theoretical aspects that guide our research proposal, we move on to the methodological route.

METHODOLOGY

This research is part of the field of Applied Linguistics, which investigates and seeks solutions to problems related to language in real life. In our case, we want to contribute to promoting the teaching of Academic-Scientific Literacy in undergraduate courses at UTFPR. To achieve our objective, we elaborated a methodological design consisting of the exploratory sequential mixed method, defined as "research in which the investigator collects and analyzes data, integrates the results and makes inferences using both qualitative and quantitative approaches or methods in a single study" (TASHAKKORI; CRESWELL, 2007, p. 4). We also used the descriptive method, to describe the characteristics of a given population or phenomenon, or establish relationships between variables (GIL, 2008).

The research scenario was in Curitiba, at UTFPR, a public institution, located in the state of Paraná, southern Brazil. At the CT Campus, the institution has 12,832 undergraduate and graduate students, and our research is limited to the 15 bachelor, five undergraduate, and four technology courses that UTFPR offers. For data generation and analysis procedures and to structure and delimit the object of study, data generation began in October 2019. The study was carried out in two stages: in the first, the discipline contents were analyzed of all bachelor, teaching, and technology courses at UTFPR. To this end, we used the teaching plans of the disciplines available on the University Portal. We emphasize that when the information found on the portal did not satisfy our search, we resorted to the matrices of the courses available in the Academic System to refine the data. However, the unavailability of this document in some courses, such as the Electrical Engineering course, for example, made it necessary to consult the curricular matrices in the "Matrices and Professors" tab in the Institution's Corporate System, which is restricted to professors. Then, a list of keywords based on the concept of Academic Literacy (LEA; STREET, 1998) was listed to guide searches in the discipline contents.

With access to the curriculum matrices of the courses, the sorting and selection of the discipline contents were carried out manually, composing specific tables for each course. The distribution of columns in the documents separated the categories of *study skills*, *academic socialization,* and *academic literacies*, as well as the name of the discipline and the transcription of its respective syllabus. In addition, the categories were organized into oral and written modalities to obtain accurate analyses, as can be seen in Chart 1.

Chart 1 – Data from a discipline of the Administration course at the Curitiba Campus

Course	Study skill	Academic socialization	Academic Literacies	Course	Study skill	Academic socialization
Administration	Written modality	Oral modality	Written modality	Oral modality	Written modality	Oral modality
CE70C - Comunicação Oral e Escrita	Linguistic variation; Orality and writing; The adequacy of the language to the social situation and the textual genre. Linguistic analysis practice: textual cohesion and coherence. Grammatical topics relevant to writing; Proofreading and rewriting texts.	Linguistic variation; Orality and writing. The adequacy of the language to the social situation and the textual genre.	Reports, business/institutional genres, curriculum vitae. Planning and preparation of meetings and seminars. Communication in group work. Organizational communication problem solutions. Basic genres of academic environment summary and review.	Strategies for practicing formal orality. Organization and planning of meetings and seminars. Reports, business/institutional genres, curriculum vitae. Planning and preparation of meetings and seminars. Communication in group work. Organizational communication solutions and problems.		

Source: Prepared by the authors.

The Oral and Written Communication discipline of the Business Administration course includes the teaching of some oral and written genres, such as organizing seminars and reports, which were classified in the models of *study skills* and *academic socialization*. We observed that the syllabus does not present discursive elements that indicate the teaching of power and ideological relations that underlie such genres, belonging to the academic literacies model.

Qualitative and quantitative, this research is also composed of numerical data that facilitate understanding and interpretation. After constructing the tables with the respective discipline contents, two documents with quantitative data were prepared. The first document, referring to the number of disciplines, shows the relationship between the number of compulsory disciplines in the course and the number of disciplines in which the categories defined by Lea and Street (1998) were identified. Similarly, the second document presents, by percentages, the ratio of compulsory disciplines in contrast to disciplines that teach academic literacies based on the total workload of the course and the workload of disciplines that fall under *study skills, academic socialization,* and *academic literacies*. After this step, graphs were created to refine the data analysis. Thus, we have an overview of the teaching of Academic-Scientific Literacies in the institution's undergraduate courses.

In the second stage, still in progress, we will survey actions, needs, motivations, and difficulties encountered, from the perspective of managers, teachers, and students of the CT Campus in favor of Academic Literacy. This mapping will take place through questionnaires and interviews so that we can create an Extension Program called the Integrated Academic-Scientific Literacy Laboratory (LILA), whose future actions and activities will be conceived and developed in the form of courses, workshops, and events, among others.
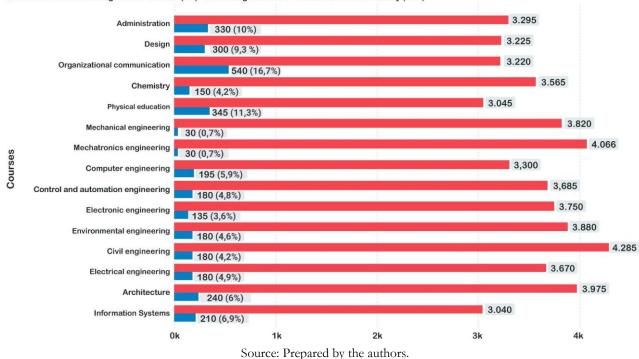
Because of the steps taken, the construction of the tables can be understood as the most detailed and subject to observations concerning the analysis process. Primarily, it is essential to point out that the weighting and analysis of the discipline contents were limited to the compulsory disciplines of the courses, not including the optional ones, for example.

Aiming at the future creation of LILA, the delimitation of the specificity of the academic-scientific

character guided the analysis of the generated data. In this sense, disciplines whose syllabi were considered based on other types of Literacy, such as Professional Literacy, were disregarded in this study. For this reason, syllabuses for teaching degrees aimed at teaching practice, although exploring the development of oral and written skills understood in what is considered literacies, are considered of a professional nature. It is noteworthy that scientific literacy (MOTTA-ROTH, 2011), also considered here, contemplates scientific literacy as a global and complex process. After presenting the methodological design, we move on to the results and discussions of the analyzes based on Lea and Street's Academic Literacy models (1998).

ANALYSIS RESULTS AND DISCUSSIONS

To disclose our results clearly and objectively, the analysis was carried out in two stages. First, we present a quantitative study referring to the total hours (TH) of undergraduate courses in comparison with the teaching hours of Academic-Scientific Literacy (THL) present in the syllabi. Subsequently, we analyzed the syllabi based on the three models of Academic Literacy (LEA; STREET, 1998; 2006) in the bachelor, teaching, and technology courses at the University. We started our analysis by comparing the TH of bachelor degree courses in comparison with the THL, as shown in Graph 1.
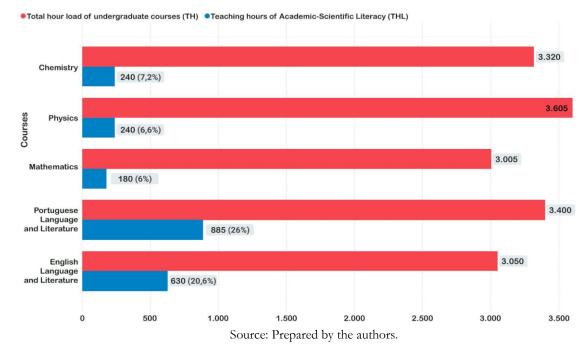
Graph 1 – TH *vs.* THL of the teaching of academic-scientific literacies in bachelor degree courses

Source: Prepared by the authors.

Bachelor degrees make up more than half of the undergraduate courses offered at UTFPR. As we can see in Graph 1, the fifteen courses, mostly in Engineering, have, on average, a TH corresponding to 2938 hours. Of these hours, the time assigned to Academic-Scientific Literacy is 215 hours, that is, only 7.3% of the course TH. From a general analysis of all the courses in this group, we highlight Organizational Communication, which has 540 hours (16.7%) to teaching writing, while Mechanical and Mechatronics engineering dedicates only 30 hours, corresponding to a lower percentage. at 1% of TH. From the data collection, it is visible that the bachelor degree courses have a few hours of teaching focused on the development and improvement of reading and writing strategies.
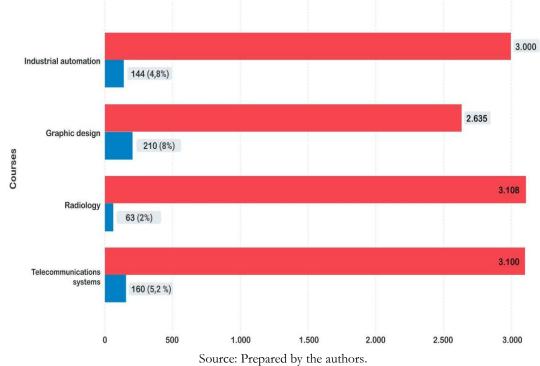
All of the institution's bachelor's programs offer at least one discipline of 30 hours, on average, in Oral and Written Communication, whose objective is to teach academic genres, such as abstracts and reviews. However, this discipline alone is not a *sine qua non*-condition for the student to become literate in academic-scientific genres in general. Teaching degree courses, by their very nature, have a different configuration from bachelor degree courses, as they offer greater hours of disciplines dedicated to the study and teaching of textual genres, as shown in Graph 2.

Graph 2 – TH *vs.* THL of the teaching of academic-scientific literacies in teaching degree courses

Source: Prepared by the authors.

Of the five courses that include the list of teaching degrees at UTFPR, the Physics and Mathematics courses are the ones that least offer disciplines that teach academic-scientific genres, that is, 6.6% and 6% compared to the TH respectively. Despite training teachers, these courses should offer greater hours dedicated to the teaching of textual genres that also circulate in social practices in which both mathematical and physical skills and those of written production happen simultaneously and complementary, such as writing reports. The undergraduate teaching course in Chemistry increases the percentage of hours (7.2%) dedicated to Academic-Scientific Literacy.

As expected, the teaching degree courses in Portuguese and English Language and Literature bring in their matrices several disciplines that have the teaching of Academic-Scientific Literacies as their scope. Thus, the Portuguese course has 26% of its hours dedicated to the teaching of genres that circulate in the academy, while the teaching degree in English Language and Literature has 20.6% for this purpose. The third list of courses analyzed is technology. Graph 3 shows the four courses.

Graph 3 – TH *vs*. THL of teaching academic-scientific literacies in technology courses

Source: Prepared by the authors.

From a general analysis of all the courses in this group, we highlight Graphic Design, which dedicates a larger percentage, with 210 hours (8%) to teaching Academic-Scientific Literacy, which is not a significant workload. The other courses in the category have fewer hours, such as Industrial Automation with 144 hours (4.8%), Radiology with 63 hours (2%), and Telecommunications Systems with 160 hours (5.2%), corresponding to a percentage equivalent to the TH of the courses. As can be seen, technology courses are not, in essence, concerned with working with academic-scientific genres.

After reporting the data referring to the hours, we present, in the sequence, the study of the discipline contents that offer the teaching of writing, analyzed based on the Academic Literacy models (LEA; STREET, 1998; 2006) within the courses of bachelor, teaching degrees, and technologies. We started our analysis with bachelor degree courses, which have a higher incidence among the *study skills* and *academic socialization* models, while the third model, *academic literacies*, comprises an insignificant portion of the analyzed discipline contents. Of the 69 compulsory subjects that teach academic writing, the most evident model is *academic socialization*, with 98.5% of occurrences in the syllabi, followed by *study skills*, with 34.7%, and, finally, the model *academic literacies* with 13%. We emphasize that the percentages add up to more than 100% because the models by Lea and Street (1998; 2006) are complementary and not exclusive. In addition, the low representativeness of the third model prevents students from being able to "alternate their styles and genres of writing between one environment and another, to implement a repertoire of literacy practices appropriate to each environment and to deal with social meanings and identities that each one evokes" (LEA; STREET, 2006, p. 227).
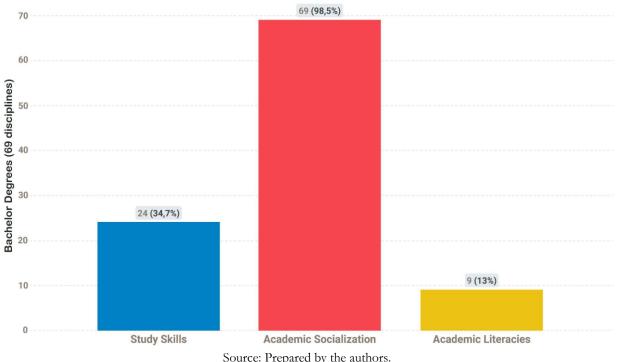
Among the disciplines that present characteristics of the *study skills* model, whose focus is the linguistic structure, those of Oral and Written Communication and Research Methodology stand out. The first discipline is present in the syllabi of twelve courses, and the second of Methodology Research, in seven courses. We also highlight that all courses have at least one discipline whose objective is to teach genre based on the *study skills* model, except for the Electronic Engineering, Computer Engineering, and Information Systems courses.

The Academic Literacy model most observed in the syllabi was that of *academic socialization* since students are acculturated to speak, write and use typified genres typical of the university context (LEA; STREET, 1998; 2006). This typification is found in the disciplines of Oral Communication and Final Course Thesis (FCT) 1 and 2, present in all bachelor degree courses. Such disciplines bring, in their contents, activities related to the elaboration and development of research projects and data collection and analysis.

Although engineering courses cover more than half of the bachelor degree courses, these are the ones with the lowest number of disciplines teaching Academic Literacy in the *academic socialization* model, with the offer of 26 disciplines. On the other hand, the Administration, Design, Physical Education, Information Systems, and Architecture courses have 42 disciplines for teaching within the aforementioned model.

Continuing our investigation, we present a more detailed analysis of the Academic Literacy models (LEA; STREET, 1998; 2006) found in disciplines that offer the teaching of academic text genres. As noted earlier in Graph 1, only 7.3% of TH is destined for this purpose. Of the 69 disciplines of the bachelor degree courses that present in their syllabi the teaching of textual genres from the academic scenario, 24 of them show the *study skills* model, 68 focus on the *academic socialization* model and only 9 of them point to the *academic literacies* model, as shown in Graph 4.

To illustrate the data reported above, we bring some excerpts from course syllabi that give evidence of the three models. We started with the Linguistic Communication discipline contents for the Control and Automation Engineering course. As we can see in Chart 2, this discipline encompasses characteristics of the models of study skills and academic socialization that are complementary. Therefore, there are linguistic elements centered on the form and structure of the texts (textual cohesion and coherence, grammatical topics relevant to writing, rules of use in the social situation), as well as references to the academic socialization model, such as the teaching of report writing, curriculum vitae, reviews, seminars, among other genres, whose main objective is the acculturation of students in social practices as advocated by Lea and Street (1998; 2006).

Graph 4 – Academic-Scientific Literacies in the disciplines of the bachelor's degree courses

Source: Prepared by the authors.

Chart 2 – Data from the Linguistic Communication course syllabus

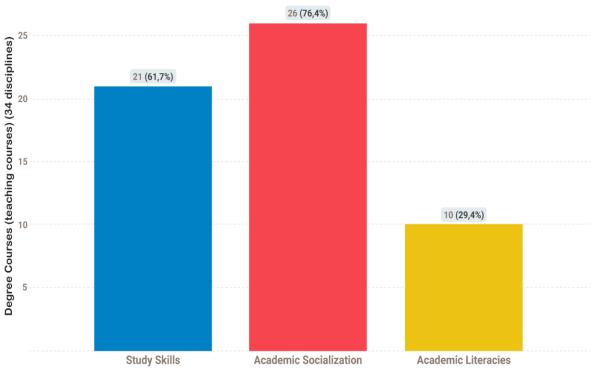| Course	Study skill	Academic socialization	Academic Literacies	Course	Study skill	Academic socialization
Control and Automation Engineering	Written modality	Oral modality	Written modality	Oral modality	Written modality	Oral modality
CE70C - Linguistic Communication	Linguistic variation; writing; The adequacy of the language to the social situation and the textual genre. Linguistic analysis practice: textual cohesion and coherence; Grammatical topics relevant to writing; Review and rewriting texts.	Linguistic variation; Orality; The adequacy of the language to the social situation and the textual genre. Linguistic analysis practice; textual cohesion and coherence.	Strategies for practicing formal orality. Organization and planning of meetings and seminars. Reports, business/institutional genres, curriculum vitae. Communication in group work. Organizational communication problem solutions. Basic genres of academic environment summary and review.	Strategies for practicing formal orality. Organization and planning of meetings and seminars. Communication in group work. Organizational communication solutions and problems.		

Source: Prepared by the authors.

The third model, *academic literacies*, is evidenced in the syllabi of the Final Course Thesis 1 and 2. Despite being similar to the *academic socialization* model in many respects, this model also considers the adequacy and effectiveness of the processes involved in the acquisition of literacy use "more complex, dynamic, nuanced, situated, which encompasses both epistemological issues and social processes including power relations between people, institutions and social identities" (LEA: STREET, 2006, p. 228). In the case of FCT disciplines, we emphasize that this genre is so sovereign that if the students do not master it, they will not be able to receive a bachelor degree. Power relations between teacher, student, and institution are intrinsically established in this type of textual genre.

We also showed that the traditional teaching of writing, in which the teacher focuses on linguistic and grammatical structures and memorization of decontextualized vocabulary allowed the situational teaching of writing since most of the syllabuses are committed to the model of *academic socialization*. Both the *study skills* model and the *academic socialization* model corroborate the research results of authors who claim that the referred models are a guide for curriculum development and instructional and research practices at universities (LEA: STREET, 2006, p. 228).

The last model, academic literacies, is not yet configured in such a way that both professors and students understand the context of production, in addition to the social and ideological aspects of the role of that genre in the university. In this model, the construction of meanings and identity processes (LEA; STREET, 2006) are constituted when the academic community understands what are the power games that underlie academic textual genres, what are the relationships of these powers between professors and students, professors and institutions and between students and institutions. It is desirable, for example, that students know how to move between genres and know how to use them according to the social practices in which they are inserted.

We now move on to the teaching degree courses, which have a considerable impact on Academic Literacies in their three models, especially in the third, *academic literacies*. Although there are only five courses, ten less than the bachelor degree, the two groups have a significant difference in terms of disciplines that address the teaching of written production. While the teaching degree courses have a total of 34 disciplines, which focus on teaching Academic Literacy, the bachelor degree courses have a total of 69. In simple average, these numbers represent 6.8% and 4.6% disciplines per course, respectively, adding a difference of 67% between the proportions.

Graph 5 – Academic-scientific literacies in the disciplines of the teaching degree courses

Source: Prepared by the authors.

Among the teaching degree courses, with the exception of Portuguese and English Literature, the main subject in common, Oral and Written Communication, discusses textuality, academic discourses and
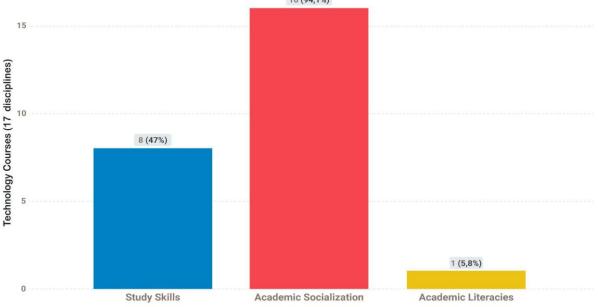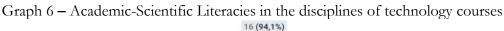
genre theory, themes related to *study skills,* and *academic socialization*. The discipline Research in Education, present in the five courses, addresses methodological guidelines (Scientific Literacy), permeating the academic discourse and presenting ethical principles that relate to academic research, characterizing the model of *academic literacies*.

Given the educational character of the teaching degree group, multiple disciplines involving the teaching of textual genres were identified, including in the Physics, Chemistry, and Mathematics courses. However, these disciplines, which mostly address the development of teaching/lesson plans, transcend the academic sphere and are configured as Professional Literacy.

Concerning *academic literacies*, all courses have syllabi that favor this model. For example, in the Compulsory Curricular Internship course in Chemistry, students are introduced to the report genre in the format of a scientific article, which demonstrates how two different genres can be interrelated. Concerning the Environmental Education discipline, present in the Chemistry and Physics courses, students are immersed in the creation and development of academic projects. In the Mathematics course, the subject Technology in Mathematics Teaching A leads its students to critically analyze textual genres of educational internet sites, corroborating the conception of the *academic literacies* model, since these students should understand the cultural, social, and historical aspects in the genres analyzed (LEA; STREET, 1998; 2006). Another discipline that converges with this model is Introduction to Western Literature, compulsory discipline in English language and Literature course, whose final objective is the production of a publishable article on literary analysis of one of the works studied. The FCT 1 and 2 disciplines, present in all degrees, require knowledge of the genres aimed at research projects: the parts that compose a research project, the writing, and presentation of the final paper. The third model, *academic literacies*, underpins the subjects of FCT 1 and 2, as it contributes to scientific work as postulated by Motta-Roth (2011) as it is a global and complex process.

In addition to bachelor and teaching degrees, UTFPR also offers technology courses at a higher level. In Curitiba, the institution's catalog consists of four courses: Industrial Automation, Graphic Design, Radiology, and Telecommunications Systems. In Graph 6, we present the Academic-Scientific Literacy models present in the disciplines.

Graph 6 – Academic-Scientific Literacies in the disciplines of technology courses

Source: Prepared by the authors.

When analyzing the disciplines that cover the Academic-Scientific Literacy models, we highlight the *academic socialization* model, which underlies 94.1% of the contents of the disciplines. Thus, we understand that its incidence is related to the student's need to transition in academic practices, and, for this reason, we considered disciplines corresponding to Research Methodology, Integrative Projects, and FCT.

The second largest model presented is the *study skills* model, given that 47% of the disciplines cover the instruction of formal aspects of the language. In addition to the previously mentioned disciplines producing academic genres, these also comprise the organization of the academic text and formatting

according to ABNT[4] rules.

However, only the Telecommunications Systems course evidences the presence of the third model, *academic literacies*, in the Integrated Project discipline, which corroborates a contextualized study of social practices. In most syllabuses, the absence of the third model can hinder students' adaptation to academic genres, as well as result in difficulty in constructing meanings and the student's identity in the academic environment (LEA; STREET, 1998; 2006).

FINAL CONSIDERATIONS

The mapping of the disciplines of the undergraduate courses that include the teaching of Academic-Scientific Literacy at UTFPR points out that the courses, in general, offer a low number of disciplines aimed at teaching academic writing, mainly in the institution's bachelor and technology courses. However, the University has already come a long way, since, in all undergraduate courses, there are at least some disciplines related to the production of texts with greater emphasis on models of *academic socialization* and *study skills* (LEA; STREET, 1998; 2006). Exceptionally, we found discipline contents that work with genres in terms of the *academic literacies* model, in which real production situations are contemplated along with a critical and ideological look at their uses in social practices. We highlight the relevance of the models listed by Lea and Street (1998; 2006), which should be considered mainly when course coordinators and professors restructure their curricula.

We observe, however, the need to increase actions in favor of Academic-Scientific Literacy at UTFPR, especially in those alluding to oral genres, such as presentations of seminars, project defenses, FCTs, dissertations, and theses, among others. Thus, the extension project Integrated Laboratory in Academic-Scientific Literacy (LILA) was conceived in partnership with the other universities of Paraná (UEL, UNESPAR, IFPR), all of them participants of the research project Actions of Teaching of Genres in favor of Academic Literacy (2019 -2022) to contribute to the dissemination of the genres that are part of the Academic-Scientific Literacy. Due to its collaborative character and network with other institutions, LILA seeks, in this way, to multiply literacy actions that intend to meet the academic-scientific literacy needs of the participating institutions, being able to share activities, courses, and workshops, among other possibilities, whether among professionals from the various areas of knowledge of UTFPR, or with partner institutions. We also aim to become a center for writing practices where we can continually exchange experiences, as well as carry out research and collective dissemination activities.

The development of activities in the mother tongue and/or in additional languages allows us to collaborate both in the dissemination of the teaching of Academic-Scientific Literacy in undergraduate courses and research, whether in national or international publications. The creation of LILA intends to contribute to the solidification of the teaching of academic writing in the Institution, and to collaborate with the University's internationalization policies.

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[4] ABNT - The Brazilian Association for Technical Standards

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