Writing in the discipline of education: beliefs of future teachers regarding their academic literacy

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This study investigates the beliefs of future educators regarding academic literacy processes, focusing on the particularities associated with the Education disciplines. It examines how university students in Early Childhood Education and Primary Education degrees perceive the importance of communication skills, training in academic writing in discipline, and the suitability of teaching strategies in their academic and professional development. Using a quantitative descriptive approach, data were collected from a representative sample of 1000 Spanish university students through a validated questionnaire. The data were analyzed using IBM SPSS Statistics 29.0.2.0 statistical software, and Chi-Square tests were conducted to determine the statistical significance of observed differences. The results highlight a dissonance between the importance students attribute to skills associated with academic literacy and the actual educational reality in university syllabi. Additionally, participants perceive relevant differences between academic writing in the education discipline, more closely linked to the development of reflective and research-oriented teachers in practice, and that of other areas of knowledge. In this regard, specific discursive genres considered most representative and necessary for professional teaching development have been identified. Based on the findings, recommendations are provided to enhance training in these areas, aiming to prepare educators for the evolving challenges of the educational environment.

KEYWORDS

writing, academic literacy, education, students' beliefs, discursive genres

1 Introduction

The growing interest in academic literacy has generated an extensive research literature, mainly focused on addressing the challenges faced by students when coming into contact with reference knowledge areas (Núñez and Errázuriz, 2020; de Amo, 2021). Formative needs have been projected, in particular, in the development of communicative, cognitive and social competences (Carlino, 2013; Navarro et al., 2019; Fregoso Peralta et al., 2021; García-Areiza, 2022; Li, 2022), as well as in the interaction processes inherent to the discursive culture of each discipline (Chacón-Chacón and Chapetón, 2018).

These studies prioritize the analysis, on one hand, of the integrative relationship between writing and knowledge and, on the other, of the singularity of the scientific

production of each discipline (Carter et al., 2007; Bazerman et al., 2016; Basgier and Simpson, 2020). Therefore, academic literacy is conceived as a specific formative process in which the teacher acts not as a mere supervisor of grammatical incorrectness or facilitator of creative writing proposals (Giraldo-Gaviria and Caro Lopera, 2022), but as a real dynamising agent of comprehensive and relevant knowledge of scientific knowledge (Hardy and Clughen, 2012; Bazerman et al., 2016; Basgier and Simpson, 2020; Bean and Melzer, 2021). In this regard, academic literacy in the discipline of education must also be oriented toward the development of emotional, social and cognitive competences and strategies that enrich the teaching-learning process, foster the integral development of students and prepare teachers to face educational challenges with creativity and innovation.

In this sense, the aim is to familiarize students with contextualized literary practices in order to be able to generate knowledge through the use and mastery of the discursive conventions of each speciality. From this perspective, writing and reading in each academic context involves:

a) To favor the analysis and systematization of information from theoretical models of interpretation in accordance with the nature of the disciplinary reality.
b) To promote the generation of scientific knowledge based on the contrast of ideas, theories, approaches… associated with the epistemological and methodological bases of the field of reference.
c) To drive a reflective knowledge adaptable to the diversity of professional contexts that enables the resolution of problems framed in the dynamics of the field of knowledge.
d) To stimulate, from the multiplicity of perspectives, argued debate, promoting spaces for the exchange of knowledge within the specific academic community.
e) To provoke in students processes of metacognition from which to reflect on how to learn and produce knowledge.
f) To promote the efficient use of the specific communicative resources of the field of knowledge.

In short, the approach to literacy must focus on the epistemic function of writing and be projected in the development of the skills needed to participate fully in a given scientific community and to transmit knowledge effectively within it. Each field of knowledge differs from the rest in its general aims or objectives, in the preferential discursive genres, in the approaches and modes of approach, in its symbolic artifacts, in the ways of communicating and in the criteria for determining the level of excellence, quality or appropriateness of a research, product or professional practice (Carlino, 2008; Shanahan and Shanahan, 2012). It is in this framework, that of Writing in the Disciplines, that our work must be situated, and more specifically in the field of initial teacher training for early childhood and primary education teachers. This aspect is particularly relevant, since the way in which literacy practices are learned during university studies has repercussions, as Cartolari and Carlino (2012) observe, on the way they are taught during their professional development as teachers.

1.1 The presence of academic literacy in syllabi

Entry into the written culture of each discipline depends, to a large extent, on the degree of relevance of university syllabi in relation to the development of key academic competences (García-Areiza, 2022) and of the study and communication techniques necessary to generate and transmit scientific and professional culture efficiently and effectively (Carlino, 2008; Estrada-García, 2018; Núñez and Errázuriz, 2020). From this perspective, reading and writing are conceived as priority instruments for comprehensive and relevant learning, for the production and application of scientific knowledge (Navarro, 2021) or for the construction of ideas, mental models and contrasted theories. Thus, students develop systems of interpretation and action associated with the disciplinary field of reference.

In this respect, Marín (2006) argues that it is crucial to establish an effective connection between the curriculum and academic literacy so that students can learn to read and write different types of texts, suitable for different purposes and audiences. This implies that curriculum design at the undergraduate level must be intentional and reflective, considering the historical, cultural and political contexts that frame education (Bazerman, 2020).

Belandria and Monsalve (2021) emphasize the critical relevance of inserting writing systematically into the academic curriculum. According to the authors, making writing the backbone of the educational process promotes a learning culture where the student becomes an active constructor of his or her own intellectual development. From this approach, writing is not simply understood as a skill to be acquired. It is, above all, the means by which students can explore, construct and communicate knowledge to shape their academic career and engage in their field of study or discipline (Bazerman et al., 2016).

In this context, several authors (Carlino, 2006; Zayas, 2012; Camps, 2013; Chacón-Chacón and Chapetón, 2018; Natale, 2020; Aguilar-González, 2021; Coronado-López, 2021) have argued for the development of new pedagogies that contribute to the strengthening of academic discursive communities, which in turn facilitates students to persevere and complete their university studies (Chacón-Chacón and Chapetón, 2018). These communities focus their interest on how individuals integrate and function within different academic contexts and how it influences the development of their discursive skills and the generation of knowledge (Calle-Arango, 2018).

However, each university field of study has its own discursive genres (Calle-Arango, 2018), that are typical forms of knowledge production and reception in that specific discipline, from lab reports in the sciences to critical essays in the humanities. Students must learn to recognize and use these genres effectively to succeed in their studies (Bazerman, 1988; Marinkovich et al., 2016; Gabbiani and Orlando, 2018). In following established molds, they can organize their ideas coherently, present arguments systematically, and provide empirical evidence in a clear and convincing way. Ultimately, this discursive structure facilitates the building of a cumulative body of knowledge and effective communication among members of the educational community.

Students entering university face a range of challenges related to academic literacy. These challenges range from understanding

the discursive genres specific to their discipline to adapting to academic expectations of critical reading and reflective writing (Tentolouris, 2023). There are studies that confirm the deficits of new university students linked to academic writing and reading processes (Lobato-Osorio, 2019; Herrera, 2021). In the social sciences and education, these difficulties are magnified due to the interpretive and critical nature of these fields, where the analysis of complex texts and the production of sound arguments are indispensable skills (Zayas, 2012). Therefore, the ability to mobilize discursive resources and to present ideas clearly and persuasively must be acquired and perfected. This is essential for their participation in academic discourse communities and their contribution to knowledge (Swales, 1990). For this reason, writing and reading are essential practices in academic research: discursive genres (scientific articles, research projects...) are the instruments through which knowledge is communicated and shared in the academic community (Bazerman et al., 2016). These contextualized practices can reproduce established conventions or give rise to the creation of new discursive forms that transform the reality of scientific institutions and societies (Chacón and Torres, 2020).

Discursive genres, according to Zayas (2012), can be understood as literate practices that are embedded in particular social activities and operate on verbal constructions that reflect the culture and conventions of a community. This perspective highlights the need to identify and understand the peculiarities of each genre in order to achieve teaching and learning goals. The consistency and strength of genres provide learners with the necessary support to participate in discourse communities as active members. Marín (2006) points out that competent academic writing is linked to a deep knowledge of the state of the disciplinary environment that helps students to ask questions and develop new hypotheses.

Instead, it should be noted that the teaching of discursive genres extends beyond the traditional classroom to encompass students' social practices in digital environments. Zayas (2012) stresses the importance of recognizing that there are valid forms of reading and writing that take place outside the academic environment and are influenced by digital culture and social networks. These alternate forms of communication have changed people's relationship to reading and writing, in some ways displacing the conventional practices associated with university culture. However, it is crucial for effectively navigating this dual world that students understand the differences between academic and informal discursive practices.

As already noted, discursive genres in academic disciplines constitute the templates through which knowledge is articulated. In fields such as social sciences and education, they range from theoretical essays and case analyses to research reports and critical reflective articles (Hyland, 2007; Boillos, 2019). In this sense, each has specific purposes, structures and conventions that students must learn to manage in order to contribute to academic and professional dialogue. For example, the research essay allows for in-depth exploration of theories and concepts through the integration of empirical evidence and critical analysis, while the case analysis in education provides students with the opportunity to apply pedagogical theories to concrete situations, thus enabling reflective and problem-solving processes.

Therefore, the effective insertion of students in academic discursive communities represents one of the greatest challenges for universities (Chacón-Chacón and Chapetón, 2018). Research

in higher education has highlighted the importance of students' integration into the discursive community of their discipline, both from orality and from writing practices (Cantero, 2018; Jarpa and Becerra, 2019). These studies underline the need for didactics of academic writing linked to the institutional and academic organization of the disciplines (Carlino, 2013; Fregoso Peralta et al., 2021).

In recent years, emerging discursive genres, especially in digital contexts, have gained significant epistemological status. Virtual writing, through media such as chat and email, has been recognized as an important area of study in education (Garzón, 2017; Bach and Costa-Carreras, 2020). These studies reveal that, despite certain digital skills, there is a need to strengthen their strategic and pragmatic-discursive communicative competences to effectively navigate these new discursive genres. Therefore, their inclusion in school and university education shows the relevance of teaching that not only addresses traditional genres, but also adapts to contemporary and emerging literate practices (Amo, 2019).

1.2 Academic literacy in the specific field of education

Education is a multidisciplinary field in which aspects of basic training (psychological, sociological and pedagogical), of a didactic-disciplinary nature (teaching and learning of the different curricular subjects), as well as practical knowledge in the classroom developed through the Practicum. The competence profile of the teaching staff is oriented toward observing, analyzing and evaluating the complexity of school phenomena. According to educational regulations (Orden ECI/3857/2007, 2007), the future teacher should: 1) know the curriculum; 2) design and develop teaching and learning processes adapted to the level and needs of primary school pupils; 3) manage learning spaces in accordance with basic democratic principles; 4) coordinate, collaborate and work in teams; 5) communicate effectively with the different members of the educational community and 6) reflect on their own practice in order to innovate and improve their teaching work.

From this perspective, the specificity in the initial formation of future teachers in Education lies in practical reflection, in the construction of professional knowledge in and for classroom experience (Pérez-Gómez, 2010), which involves processes of observation, detection of problem areas, analysis, deliberation, self-regulation of teaching, design and implementation of improvement actions, evaluation, etc. (Schön, 1987, 1998; Stenhouse, 2004; Imbernón, 2020). It is based on a concept of teaching as research that focuses on the systematic and intentional processes of problem diagnosis, information search, observation and data collection, differentiation of alternatives, design and planning of the enquiry, development of hypotheses, discussion among peers, search for information from experts, development of analysis processes, formulation of arguments and synthesis proposals. This idea of the teacher as a critical-reflective professional must be stimulated through the use of personal-reflective writing (and reading), which acts as the axis of learning and the construction of professional and practical knowledge (Recio et al., 2020).

In this sense, priority is given to writing conventions and discursive genres (of a transversal and specific nature) linked to

this inquiry orientation: teaching programmes, teaching diaries, teaching portfolios, written reflections, debates, written narratives, observation and communicative interactions in class, reports, arguments, interviews. In this way, the ability to participate actively and critically in academic discussions and research activities related to pedagogical practices is developed. During the literacy process, the aim is to improve students' oral and written communication skills, as well as to consolidate their ability to organize ideas, analyze information, argue and communicate effectively in different professional contexts. The focus is therefore on the development of writing:

a) Analytical and reflective (Contreras, 2016; Pañagua et al., 2019; Contreras et al., 2022), as a mediation tool in teacher learning and professional development, as it favors self-exploration and deep understanding of classroom practice, as well as critical examination of the didactic strategies used and decision-making for improvement.

b) Narrative (Bolívar and Domingo, 2019), focusing on the (auto)biographical elements in the life stories of teachers and other educational agents.

c) Persuasive, which, in order to convince, influence or persuade, presents logical arguments, classroom narratives or stories, appeals to emotions, etc.

d) Procedural, aimed at providing instructions or sequences of actions for carrying out educational tasks or developing teaching materials.

In this respect, it is of interest to know how prospective teachers perceive their academic training and what they consider essential for their active participation in their scientific community and for their professional development as teachers. The belief system directly influences pedagogical practices and the way in which practical knowledge is generated and teaching strategies are designed and implemented. How do the communicative skills developed during university education influence the professional projection and teaching effectiveness of future educators? What pedagogical strategies are most effective in improving students' communicative competence in the context of initial teacher education? How does the inclusion of debate and critical reflection activities in the university syllabi impact on the development of communicative skills and the capacity for critical analysis of education students? How do students perceive the relationship between academic literacy and their ability to produce and understand scientific texts, and how does this affect their academic and professional performance? What role do specific discursive genres play in the training of reflective teachers and how can universities better integrate the teaching of these genres into their syllabi?

Therefore, the present study focuses on exploring and understanding university students' perceptions of academic literacy and discursive genres relevant to their professional development as teachers. This general research aim is concretised in the following specific objectives:

- To identify students' predominant beliefs about the importance of academic literacy in their training as future educators.

- To explore students' perceptions of the relationship between academic literacy and the development of professional competences in the field of education.

- To analyze students' beliefs about the reading and writing strategies used in the academic context of education degrees.

- To investigate students' attitudes toward disciplinary writing and its influence on the learning process in education.

- To examine students' views on the relevance of academic literacy for their future performance as teachers in school settings.

- To assess students' beliefs about the integration of academic literacy into the curriculum of undergraduate education and its impact on their preparation for teaching practice.

2 Materials and methods

To achieve the research purposes, a descriptive quantitative methodology was designed (Alban et al., 2020), focusing on the collection and analysis of numerical data to provide a detailed description of a particular phenomenon of study. Its selection is determined by its ability to handle large amounts of data and its effectiveness in providing a clear picture of trends and patterns within a structured dataset to gain insight into the reality of the study phenomenon (Hernández-Sampieri, 2018).

2.1 Sample selection

From a study population made up of university students in the field of education (degree in Early Childhood Education and Primary Education), a representative sample of 1000 students from various Spanish institutions were drawn, selected by stratified sampling (Casal and Mateu, 2003) to cover the different academic years or levels. Taking into account the phenomenon of feminisation in these degrees, the distribution of the sample according to gender was as follows: 23.4 % of men, 76 % of women and 0.6 % of others, aged between 18 and 25 years (specifically 40.4 % between 18 and 20 years and 48 % between 21 and 25 years) and 11.6 % over 25 years. The sample comprises students from the Social Sciences branch, more specifically university students of Education, coming from the University of Zaragoza (32 %), University of Almería (47.2 %), University of Burgos (9 %) and University of Murcia (11.8 %). The target population of this study consisted of students of the degrees in Early Childhood Education and Primary Education of several Spanish universities. For the selection of the sample, non-probabilistic convenience sampling was used, which allowed access to a broad spectrum of students within these disciplines. The final sample consisted of 1000 students, which guaranteed a significant representation of the population studied. The universities were accessed both face-to-face and virtually, taking advantage of the opportunities offered by each institution to facilitate data collection. The degree of significance of the study was set at 0.05, ensuring that the results obtained were statistically relevant. In addition, a maximum

estimation error of 3% was considered, indicating a high level of precision in the data collected. These methodological parameters reinforced the validity and reliability of the findings obtained in the research.

2.2 Instruments

Data collection was carried out through a questionnaire adapted to the target context, previously validated by Núñez and Muse (2016) to ascertain university students' perceptions of academic literacy. In addition, certain essential criteria on reading and writing were incorporated, inspired by the findings and recommendations of Guzmán-Simón and García-Jiménez (2015). The questionnaire was distributed virtually via Google Forms. Participants had the option to respond anonymously and were informed about the confidentiality of their data and the objectives of the research. In addition to the socio-demographic profile, the questionnaire was articulated around three categories: 1) relevance of communicative competence in academic training for teachers' professional development; 2) training in disciplinary writing for knowledge generation; and 3) importance of teaching methodology in the academic literacy process. Each of these was specified in different dimensions and indicators (Table 1).

For the validation of the instrument (Núñez and Muse, 2016), the following procedures were followed: 1) validity of the contents of the questionnaire by 8 experts in different areas of knowledge linked to education; 2) pilot test in a 4th grade class in the different grades of the sample (110 students) in order to test the reliability (Ruiz-Bueno, 2014) through the analysis of internal consistency of the items (Cronbach's alpha coefficient 0.935) and 3) development and application of the final questionnaire.

2.3 Analysis

Due to the sample size, the data collected through the survey were analyzed using IBM SPSS Statistics 29.0.2.0 statistical software, which allowed for efficient and accurate manipulation of the data sets. For each cross-variable, Pearson's Chi-Square test was performed to determine whether the differences observed between the different categories analyzed are statistically significant; this indicates that the results are not random, but reflect real patterns in the data, thus providing testable evidence about the relationships between the variables of interest (Inga-Paida et al., 2020). Similarly, the results were broken down into three categories according to the nine dimensions of the questionnaire (Núñez and Muse, 2016).

3 Results

3.1 Communicative competence

The results reveal the importance given to the development of communication skills among future teachers for their professional growth and job projection. Sixty-eight percent of the respondents value positively the skills needed to interact with different educational agents (students, teachers, families...) and to transmit content in a clear and accessible way. They are attributed a crucial value, as they allow the establishment of effective relationships, the creation of trust and involvement among students, as well as the active construction of knowledge.

Despite this recognition, it should be noted that a significant segment of the sample (32%) does not consider communicative competence as a key element in the exit profile of university students, although the regulations establish as necessary competences in initial teacher training, among others, knowledge of the teaching and learning process of written language, coping with language learning situations in multilingual contexts and stimulating the communicative skills of their future students.

Concerning this, the skills of communicating effectively, clearly and coherently to convey feelings, ideas or arguments according to the context and the situation are mainly embodied, according to the participants, in optimal oral expression (well-structured and with appropriate metalanguage), techniques of organization and presentation of information with effective discursive strategies, reading skills (decoding, literal reading, identification of textual structure, extraction of relevant information, generation of inferences and expectations, assessment of the credibility and reliability of information sources, interpretation...), written composition abilities (writing academic papers based on the conventions of discursive genres...), reading skills (writing academic papers based on the conventions of discursive genres...), reading skills (writing academic papers based on the conventions of discursive genres.

However, 89.6% of those surveyed stressed the importance of planning their interventions before expressing themselves. In this respect, 69.8% consider it essential to compare sources in order to develop a reasoned and argued discourse. Similarly, two thirds of the sample emphasize the ability of teachers to formulate questions, as this enables them to promote constructive dialogue in class, stimulate critical thinking and the active participation of their students, as well as the understanding of curricular knowledge. In this way, teaching practice is improved and the learning experience of their class is enriched.

In this sense, almost all of the participants in the survey consider debate (a structured way of exchanging ideas and opposing points of view) to be an accredited pedagogical tool for promoting the development of verbal and non-verbal communication skills, as well as critical thinking and argumentative structure. However, a high percentage (61.6% of students) confess that they hardly participate in these dialogic formats, intervening only when the teacher requests it (24.6%). This aspect compromises, to a certain extent, the comprehensive development of the future teachers' communicative and pedagogical skills.

Finally, almost all the students surveyed identify connections between the development of communication skills in academic contexts and the construction of knowledge. This implies that they recognize that the ability to communicate effectively plays a fundamental role in understanding and producing knowledge in a meaningful and profound way.

Therefore, academic writing is appreciated as an essential skill in the professional practice of future teachers, as it enhances the ability to express ideas, theories, approaches and findings in persuasive, reflective and explanatory ways. By including diverse genres and formats, it provides a means of exploring, analyzing and presenting information and arguments within a disciplinary

TABLE 1 Categories, dimensions and identifiers of the applied questionnaire.

Categories	Dimensions	Identifiers
Communicative competence	Relevance of communicative competence in the formation of future teachers	• Importance of the development of communication skills for professional growth and job projection in the field of education. • Relevance of reading comprehension and writing academic texts in teacher formation. • Interest in communicating the knowledge generated.
	Importance of academic writing in the construction of teachable knowledge	• Value given to scientific writing in future professional practice. • Identification of written and oral academic discourse. • Importance of context in reading.
The role of the university in academic literacy	The relevance of academic writing in syllabi	• Adequacy of academic writing to the graduate competence profile. • Presence, frequency and nature of training activities for the development of academic writing. • Approach used in the literacy process.
	Perceived value of teaching strategies for academic literacy	• Predominant pedagogical practices. • Diversity of teaching strategies used.
	Feedback and academic literacy support	• Perception of the effectiveness of feedback. • Monitoring and revision of texts. • Influence on motivation, involvement and engagement in the development of academic writing skills.
	Adequacy of teaching resources and materials	• Adequacy of the material provided. • Need for additional resources.
Formation in academic writing	Perception of training received in writing processes	• Prior preparation for university work. • Attendance at academic events. • Perception of formative needs. • Receipt of guidance in writing. • Use of discursive genres.
	Writing strategies	• Recognition and reflection on effective reading and writing strategies adapted to the discipline in order to understand and produce complex academic texts.
	Formation in academic discursive genres	• Identification of the specific discursive genres of their area of knowledge. • Ability to produce academic texts in their discipline following the conventions and structures of each discursive genre. • Adaptation of writing style and linguistic register to the specific characteristics of each discursive genre and its audience. • Use of the technical and specialized language of the discipline in different contexts of academic communication. • Reflection on disciplinary discursive practices and their importance in the construction and communication of knowledge.

field. From this perspective, reading and writing are conceived as processes conditioned by the context of production and reception. Participants are aware that the purpose (from reporting the results of action research to persuading the scientific community about the validity and credibility of a thesis or principle), the discursive genre (respect for established conventions), the degree of formality (use of metalanguage appropriate to the communicative situation) and the audience are determining factors when expressing or understanding a scientific text.

3.2 The University's Role in Academic Literacy

Academic literacy is fundamental to students' academic and professional success. The university plays an unquestionable role in the development of this process by providing formative practices where students learn to compose academic texts in different contexts through constructive feedback from faculty or peers. Institutional educational efforts should primarily aim

to: 1) bringing students into contact with the specific norms or conventions of discourse in the academic community; 2) developing the skills of expression, comprehension and critical analysis of academic texts, examining the validity and coherence of the arguments provided, as well as contrasting the ideas put forward by consulting reliable sources or databases; 3) strengthening textual strategies of planning, writing and revision in order to present refined, effective, correct, appropriate, coherent and cohesive academic products.

Due to its importance in the comprehensive education of students, the university should try to integrate the teaching of academic writing into the curriculum of each subject area. In the analysis carried out in the verified reports of the degrees in Early Childhood and Primary Education, there are no specific subjects dedicated to the critical analysis and production of scientific texts, but academic literacy is planned from a holistic and interdisciplinary curricular approach in which the different subjects promote contextualized literacy practices. In addition, they organize activities in the external practice module aimed at forming reflective teachers, who know how to generate dynamics

of interaction and communication in the school environment and mobilize the social competences required to foster an environment that facilitates learning and coexistence.

The results reveal an explicit concern among students (91%) for specific training in academic writing and reading that favors the development of metacognitive strategies enabling reflection on how, on the one hand, to learn and produce scientific knowledge based on contrasting ideas, opinions, or approaches associated with the epistemological and methodological foundations of the reference field, and, on the other hand, to analyze and systematize information from theoretical models of interpretation according to the nature of the disciplinary reality. Additionally, 72.8% of the surveyed support the idea that training should be gradual or progressive throughout the entire university course.

They also believe that syllabi should be modified to include training proposals such as academic writing courses or writing workshops that guarantee the progressive and constant development of oral and written communication skills. In relation to this, they recognize that the Library Services offer specific activities on databases in the area of education, although they feel that more specific training in the structure of academic products (IMRaD, for example) or in effective argumentation and critical thinking linked to the discipline is lacking. In any case, they demand that the subjects facilitate the integration between the development of pedagogical-disciplinary competences and academic literacy.

Regarding the construction of critical written discourse, 68.4 % of the respondents admitted to having difficulties in writing a text fluently and correctly. These limitations are: 1) the organization of ideas and textual structure; 2) the citation and referencing of reliable sources; 3) the development of solid and coherent arguments; and 4) the use of a specific metalanguage with which to express ideas precisely.

In terms of discursive genres, only 19.2% of students report having received specific guidance on how to write and structure different types of academic texts (summaries, text comments, notes, reviews, etc.), making efficient use of the communicative resources specific to the field of knowledge. Conversely, 80.8% say that they have major training deficits in this respect, which prevent them from understanding and producing academic texts effectively. This concern is aggravated by the understanding that, as future professionals, they are responsible for promoting relevant learning for the next generations. Recognition of these gaps is mainly linked to how to structure texts, what language to use, what arguments to make and what evidence to provide. Moreover, they feel that this lack of guidance can have a negative impact on their future professional performance. Therefore, they are in favor of a university educational approach less focused on the transmission of knowledge and more oriented toward the development of cognitive-linguistic strategies focused on knowledge construction, critical thinking and effective communication.

The discursive genres specific to the discipline in question are key tools for expressing ideas, arguing, generating and sharing scientific knowledge. In the field of education, the most commonly used are the following (Figure 1):

- The summary. The discursive genre that prevails most frequently throughout the university career (30% of the occasions). It consists of condensing or synthesizing complex and extensive information in a brief format. It facilitates the understanding and assimilation of content, as well as the dissemination of research results. In this sense, it is carried out in a wide range of academic contexts: research reports, bibliographic reviews, scientific articles and academic presentations, themes, final projects, essays, monographs, etc.
- Teaching units and didactic programmes. With a 30% frequency in the educational field, it is the most relevant genre in the professional development of teachers, as it provides a reference framework for the planning and development of teaching practice.
- Proposals for teaching innovation (15%). It represents a crucial instrument for promoting improvements in the teaching and learning process and seeking solutions to educational challenges. Its design and implementation allow the examination of different strategies, methods and approaches, as well as the development of critical reflection on one's own teaching practice.
- Portfolio (10%). This is a pedagogical tool consisting of a reflective collection of activities, work, projects, evidence of learning and student deliberations or speculations. This portfolio may include a wide variety of elements: diaries, essays, records of observations or reports, among others.
- Research projects, especially action research (5% frequency). With this genre, students become familiar with identifying problems, formulating solutions and implementing actions and reflecting on their degree of achievement.
- Essays and critical reflections (5% frequency). These are genres that require in-depth analysis of ideas, theories or problems, as well as the presentation of substantiated arguments and opinions.
- Concept maps (5% frequency). This is a discursive genre that facilitates the organization of knowledge, the establishment of connections and hierarchical relationships between ideas, as well as favoring metacognition, as it requires students to reflect on the concepts and the links between them.

Concerning the processes of reflection and critical evaluation of information during textual production, 82.5% of the participants indicate that they put their cognitive strategies into practice to solve problems related to the construction of knowledge. Academic writing involves much more than simply putting ideas down on paper. It requires a reflective and critical approach that allows students to analyze and evaluate their thoughts, arguments and communicative proposals. In this sense, respondents do not perceive textual production as a mere mechanical act, but as a complex, creative and reasoned process.

Along the same lines, 65.2% of students consider the argumentative debate generated from the multiplicity of perspectives as a key element during the process of textual production, because it ensures the exchange of knowledge and the contrast of ideas among the members of a specific academic community.

FIGURE 1
Discursive genres used by students. Source: Authors' own creation.
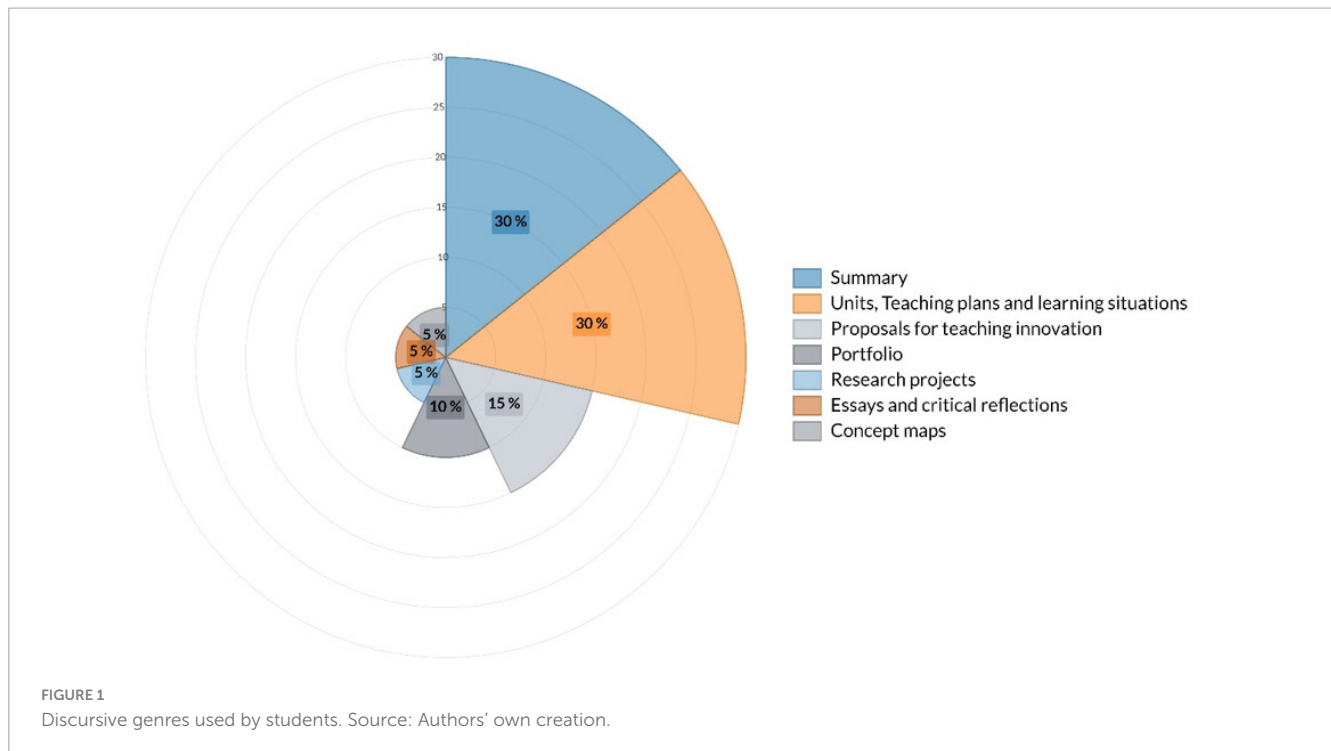
However, they do not perceive the relevance of their immersion in scientific culture through academic events in the form of conferences, congresses, symposia, research seminars, etc. Student participation in events of this nature is low, with 16.4% even confessing that, when they do attend, they do so at the teacher's request. It is true that 71.6% of those surveyed said that they had not attended due to lack of information or insufficient availability. In any case, they appreciate in these events the opportunity to access relevant information in the area of knowledge, to receive scientific formation on issues of disciplinary interest and to interact with academic experts.

Likewise, the analysis of the data obtained in the questionnaire shows that feedback in academic practices emerges as a crucial aspect of academic training. The perception of the effectiveness of constructive feedback varies among students. A high percentage (74.3%) value it positively, as regular monitoring and systematic review help to identify areas for improvement, as well as to understand how to strengthen their textual production skills. This support is also perceived as an element that favors students' motivation, involvement and commitment to the development of academic writing skills.

It also emphasizes the need for varied and updated didactic resources: examples of academic texts, style guides, templates and practical exercises for understanding concepts, academic writing techniques, etc. These allow them to go deeper into specific topics, explore different writing styles and widen their understanding of the academic writing process.

3.3 Academic writing training

The students' perception of the university formation received in scientific writing allows, on the one hand, to explore the

areas in which their academic literacy needs to be reinforced and, on the other hand, to design pedagogical strategies aimed at palliating these lacks. The first aspect analyzed was preparation prior to entering university. More than half of the sample (61.5%) considered that their difficulties in academic literacy were partly due to deficiencies in their pre-university schooling, especially in the way they organized their academic discourse, the use of bibliographical references, research skills and the way they expressed or communicated their evidence-based conclusions.

Already during the process of enculturation in their university stage, where they must appropriate norms, conventions, beliefs, cultural practices, procedures and behaviors associated with the disciplinary community of reference, 67.3% of the surveyed express that they have not received specific instruction in essential communicative competences during their formation in the degree course. In this respect, less than 25% say that they have been instructed mainly in general aspects of preparation for class presentations and written and oral exams. This result makes explicit the importance given, to some extent, to oral communication in the academic environment.

19% of the participating students acknowledge that some teachers have personally provided specific training in academic writing, while 7.0% report the existence of subjects specifically devoted to these skills. These percentages are significantly low compared to the 72.8% who report no explicit guidance in academic literacy.

The pedagogical practices adopted by teachers, according to the students' perception, vary in frequency and type (Figure 2). 28.7% say that some teachers provide guidance documents for writing academic texts (reports, reports, programmes, teaching units, etc.). Less frequent are in-class corrections of submitted work (6.2%) and peer reviews (10.6%). Only 5% of the students mention that teachers write fragments of academic texts together with them. 6.8%

FIGURE 2
Academic literacy-related pedagogical practices. Source: Authors' own creation.
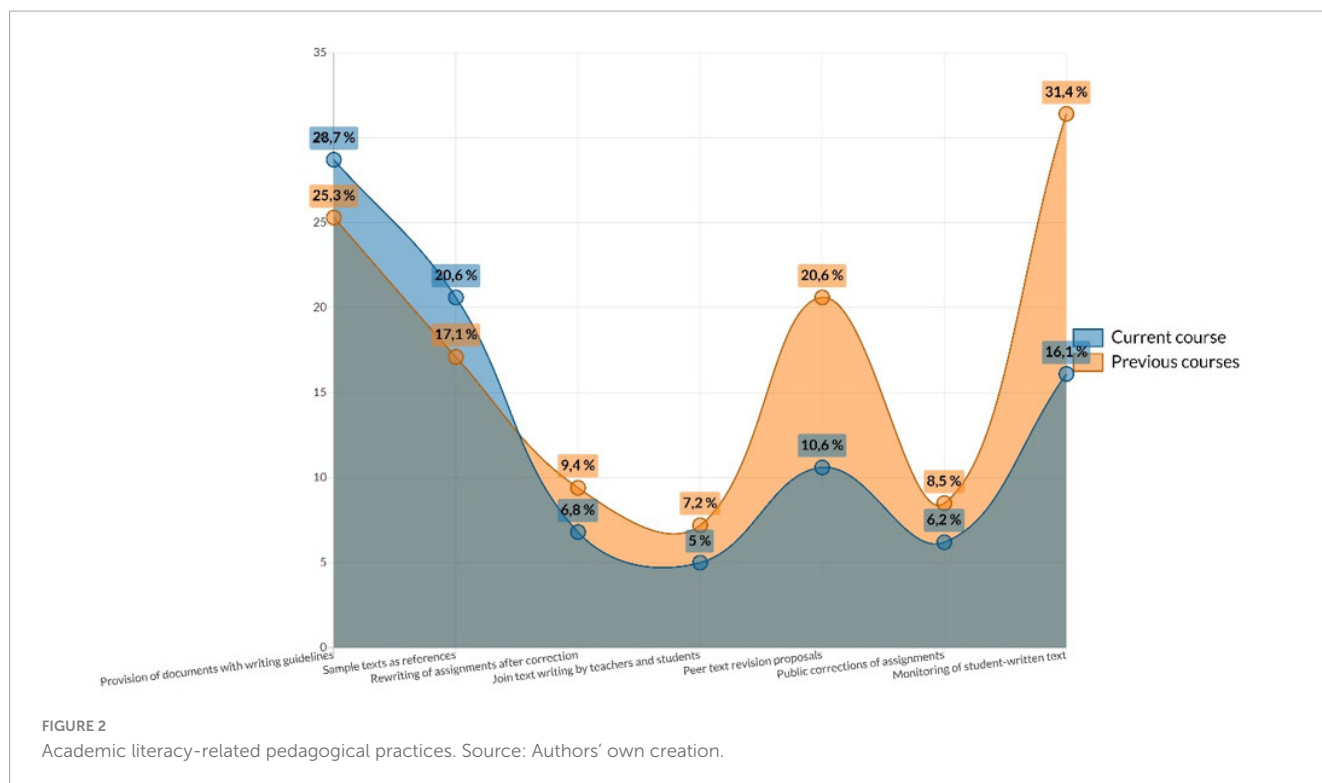
indicate that they are asked to rewrite the academic product after correction. In any case, the majority perception is that hardly any learning strategies for scientific writing are proposed.

However, the evolution of learning practices shows some concerning trends, such as the decline in the public correction of assignments, collaborative writing and the monitoring of the knowledge generation process by teachers. From this perspective, respondents demand concrete strategies to revitalize these learning activities and thus guarantee a quality educational experience. In this context, 96.2% call for more infrastructures dedicated to the improvement of writing and reading and more specific teaching materials linked to the identification of the discursive genres of their disciplines.

With regard to the degree of student satisfaction in relation to formation in critical reading of academic texts, 71.8% are confident in their level of textual comprehension, although it is true that they express some dissatisfaction with: a) the quality of teaching materials used by university lecturers to work on critical reading; b) the type of pedagogical strategies and teaching methodologies used; and c) the kind of teaching guidance received for the development of reception skills. It is important to highlight that the difficulties found are particularly notable among students in the first years of undergraduate studies, a fact that suggests a process of progressive improvement in this competence during academic education.

Instead, it should be noted that the consideration of context in reading is a priority for 92.8% of the respondents (Figure 3). They coincide in appreciating the importance of context in the correct interpretation of the text, as it provides information on: a) the conceptual framework of the discipline, theoretical approaches and methodologies of analysis; b) the circumstances of the argumentation presented in the text; c) the writing purposes
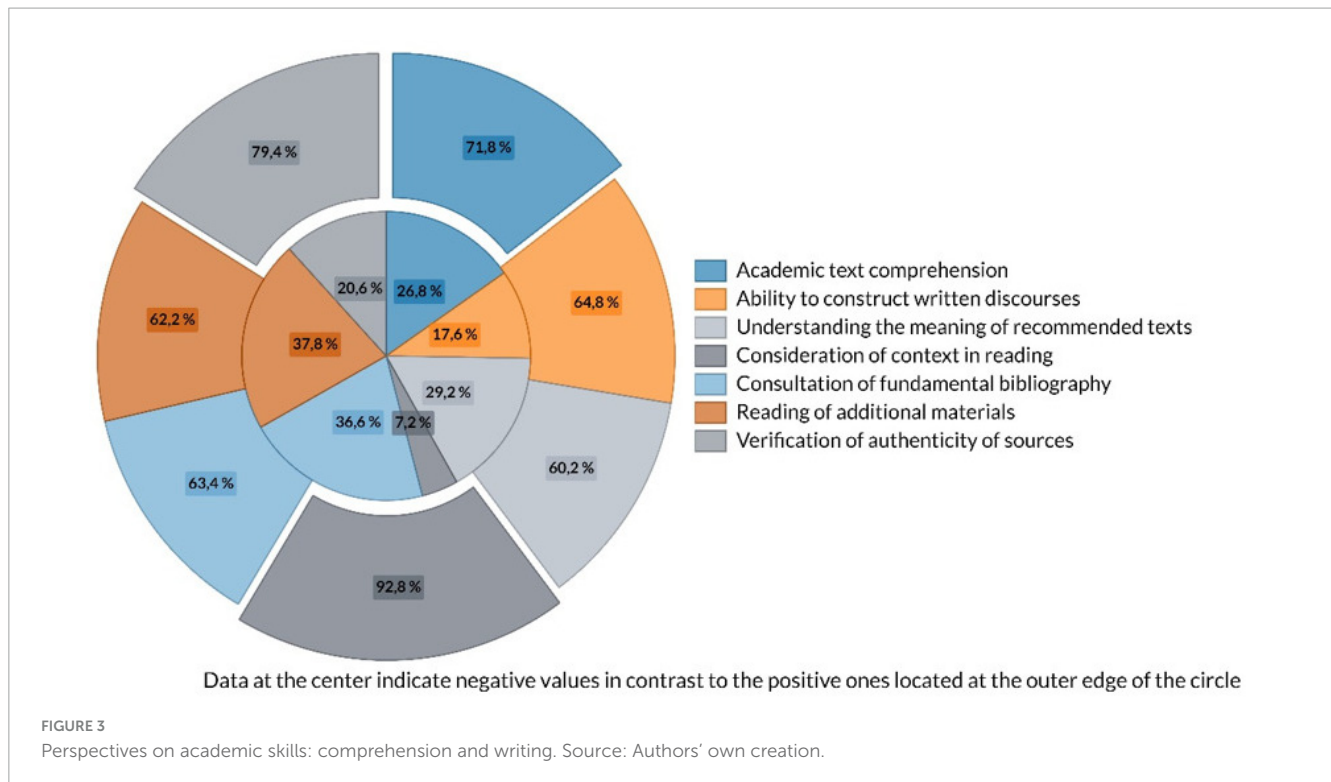
of the author(s) of the text and d) the historical, socio-cultural or educational conditioning factors of academic production.

A relevant fact found is related to the poor habit of consulting the bibliography recommended in the subject. 63.4% of students confess to never doing so. Despite this, 62.2% consider it essential to read additional materials (articles, books and chapters) to complement the class notes and guarantee academic success. Concerning this, 79.4% pointed out the importance of checking and verifying the authenticity of the sources examined, as almost all of them use the Google search engine for further information.

As far as the construction of written discourse is concerned, 64.8% of the students state their ability to compose disciplinary texts. Only 17.6% of the students recognize that they experience significant difficulties when facing this type of academic tasks: lack of knowledge of adequate planning when composing written texts, poor ability to organize textual ideas, expressive limitations when presenting a clear and precise text, and poor command of the disciplinary metalanguage.

In addition, respondents express the need to promote debates as a primary pedagogical tool to encourage critical reading of academic texts and the development of cognitive-linguistic skills. The exposition and contrast of opinions and perspectives on a research topic or theme favors critical reflection, the exchange of ideas among peers, as well as the validity and relevance of the data provided. It also facilitates the processes of negotiation of meanings and the shared construction of scientific knowledge, without forgetting that it allows vicarious readings and complex argumentative structures. Despite this recognition, participation in debates on the reference texts is limited: 61.6% are not very involved and 10% not at all.

An important finding is to be found in the choice of writing support, as it influences, according to the respondents, the quality

Data at the center indicate negative values in contrast to the positive ones located at the outer edge of the circle

FIGURE 3
Perspectives on academic skills: comprehension and writing. Source: Authors' own creation.

of their written composition. Among those who choose and prefer the analog medium, 64.4% indicate that they need to invest additional time in order to write correctly and adequately. In the group of those who prefer digital media, only 21.8% admit to having sufficient ability to write essays, book and article summaries, teaching units, educational projects and reports in external placements fluently and accurately.

Another of the findings is the relevance given by the students to training in academic discursive genres. They consider it essential to develop the ability to identify the specific genres of their discipline: essays, reports, reviews, classroom observations, teaching units, etc. In this way, they learn to recognize and apply the conventions and rules associated with each academic discursive mold: coherent organization of information, logical presentation of arguments, use of evidence to support argumentation.

Students must develop the ability to produce academic texts in their discipline following the conventions and structures of each discursive genre. This involves the ability to organize information coherently, present arguments logically, use appropriate evidence to support their statements and assertions, adapt style and linguistic register to the audience and master metalanguage. It also encourages reflection on prevailing literate practices and their role in the process of knowledge generation.

By valuing practices such as: the provision of guidance documents, public correction of assignments, collaborative writing of texts, monitoring and support of teachers and peer review, it calls for the adoption of an approach based on the training of a reflective teacher and focused on the development of critical, expository, argumentative and persuasive skills. The acquisition of skills required for academic success, professional teaching performance and the development of critical, reflective, creative and autonomous thinking is therefore promoted.

4 Discussion and conclusion

The results of this research show the differentiated orientation in the academic literacy of university students linked to the disciplines of education. This specificity is manifested in their perception of the relevance of oral and written communication skills in their formation as future teachers, specifically critical reading strategies, reflective writing and effective communication in their teaching practice. This recognition contrasts with the low satisfaction expressed by participants regarding the weight given to these skills in the syllabi. This is a dissonance between student demand and actual university provision, which makes explicit the need for greater attention by higher education institutions to the development of writing and reading skills. Previous research has found that Spanish undergraduate syllabi lacked specific academic literacy programmes (Amo and Domínguez Oller, 2024).

One of the most relevant findings of this research is the variability observed in teaching practices related to academic writing and reading. A great diversity of teaching formats has been identified: from traditional teaching approaches, such as lectures and readings, to more interactive methods, such as group discussions, case studies and practical classroom activities. The most frequent is the provision of guidance and explanatory documents (reading material, study guides, presentations, etc.). Other strategies, which are hardly promoted, are the public correction of assignments and the joint writing of texts. However, this variety of practices suggests a lack of agreement on the approach to academic literacy or, in particular, a common (or uniform) intervention approach that can be applied consistently and systematically. This issue has important implications for the robustness and effectiveness of university formation. While providing guidance documents can be a useful tool for promoting

collective reflection and learning, fostering responsibility and engagement in learning and facilitating formative feedback, their effectiveness may vary depending on the quality and relevance of the documents provided, as well as on the students' ability to follow the guidance received during the course of their learning. On the other hand, although public correction of assignments and co-writing of texts may be appropriate for the exchange of ideas and feedback, they may also generate insecurity or anxiety among learners, especially if they are not handled in a careful and respectful way. Moreover, it is necessary to consider that not all students can benefit in the same way from these strategies, because they have different learning styles or individual preferences and tastes. In this sense, the university institution should promote the professional development of its teaching staff by involving them in didactic formation programmes, the exchange of good practices, as well as the exploration of new methodologies and pedagogical resources. However, it should be noted that the variability observed in teaching practices related to academic writing and reading should not be seen only as a weakness. The variability observed in teaching practices related to academic writing and reading should not be seen only as a weakness. This diversity may be a sign of the ability of educational programmes to offer teaching adapted to the individual needs of students. Methodological flexibility allows educators to address different learning styles and contexts, thus enriching the educational experience. This diversity in teaching practices therefore underlines the commitment of institutions to creating an inclusive and effective learning environment.

The demand for improvement of oral and written communication skills reflects students' commitment to their academic development and recognizes the overriding value of writing and reading in multiple contexts and disciplines. However, the lack of adequate teaching resources is a gap that could hinder the achievement of this goal. In this sense, the importance of a coherent and realistic institutional investment to close this gap is highlighted.

In accordance with the results obtained, our findings are in line with the conclusions drawn by Boillos (2019), who advocates for an educational system that manages to develop in students the necessary skills to handle different communicative situations within the discourse community in which they find themselves. This need is reflected in the positive valuation students give to communicative competence, not only as an academic requirement, but also as an essential competence in their future professional development. The importance attached to planning interventions and contrasting opinions prior to the presentation of arguments justifies the relevance of strategic communicative preparation, as Hyland (2007) emphasizes. This aspect has a bearing on genre-based learning, as students are expected to put their linguistic, sociolinguistic and pragmatic knowledge at the service of communication and the production of any discursive genre. Similarly, the discrepancy observed between the assessment of communicative competence and its practice, especially in the contrast of opinions, suggests a rupture between the recognition of its importance and its actual implementation in communicative practice. In other words, it is a question of placing the student in real situations specific to his or her communicative context in which he or she will have to make strategic use of his or her previous knowledge (Boillos, 2017).

Specific formation in communicative competences is emphasized as a critical element in the syllabi: a significant proportion of students emphasize the absence of instructions on academic writing. In this sense, the respondents see in this necessary formation an opportunity to reflect on how to learn and produce scientific knowledge (Sánchez-Upegui et al., 2013) by provoking metacognition processes based on the contrast of ideas, theories, approaches... associated with the epistemological and methodological bases of the reference field (Pardo-Rodríguez and Pirela-Morillo, 2020).

In addition, it concludes with the requirement to adapt writing situations to contextualized literate practices so that students can: 1) analyze and systematize information from theoretical models of interpretation and 2) generate knowledge through the use and mastery of the discursive conventions of each disciplinary reality, results that are aligned with the findings of Carlino (2009), Schiavinato et al. (2021), and González (2022).

The limited formation perceived by some students, mainly focused on preparation for oral presentations and exams, suggests a partial recognition of the importance of oral communication in the academic environment (Montijano Cabrera and Barrios Espinosa, 2016). It also highlights the demand for a broader and more systematic formation that covers various aspects of communicative competence based on the appropriate use of reflective knowledge and critical thinking during the process of textual production to solve problems framed in the dynamics of the field of knowledge (Padilla and Carlino, 2010; Chartier, 2020). This fact has been analyzed in different studies from the initial and advanced levels of teaching to cover pedagogical strategies ranging from the promotion of discussion (Mérida Serrano et al., 2017), debate or exhibitions (Calderón, 2003) to stories and the analysis of argumentative texts, making efficient use of the specific communicative resources of the field of knowledge, in which they favor the transversality and value of these skills throughout the entire educational trajectory, including in the academic context (Cantero, 2018). For this reason, García-Parejo and Ahern (2023) corroborate the inclusion in teaching of work and practices based on discursive genres specific to the discipline of early childhood and primary education. Along the same lines, Gravett et al. (2017) and Falcón-Linares (2021) emphasize the importance of preparation and knowledge of studies to foster in-depth discussions and interesting engagements among students.

Another relevant finding of this research is that university education students receive instruction in specific discursive genres related to reflective teacher formation: pedagogical reflection, case analysis, report writing, classroom observation, teacher diary, etc. In this sense, participants remarked on the importance of these discursive genres in the development of key professional competences, such as the ability to reflect on one's own practice, to analyze complex educational situations and to communicate ideas and learning effectively. Formation in these discursive genres is perceived as fundamental to cultivate critical reflection and self-evaluation as an integral part of the process of teacher professional development.

While it is true that, in principle, the results agree with Bigi et al. (2019) in that genres such as essays, exams, expository texts and concept maps prevail in the educational sphere, an evolution of writing practices toward formats that favor critical analysis, clear exposition of ideas and reflection on the learning

process is detected, relegating other genres such as dictations and summaries to a secondary role. Regarding this data, the educational portfolio, as a structured and reflective collection of work, projects, evidence of learning and educational experiences, is beginning to have a greater presence as a discursive genre. It promotes metacognition and the development of self-reflection and self-evaluation skills. This result aligns with the findings of Pozo-Llorente and García-Lupión (2006): this educational portfolio fosters constant communication, which results in a deeper understanding of the students' learning methods and the teacher's teaching techniques. This trend not only reflects the current preferences in student demand for academic texts, but also highlights the need for a formation that prepares students to deal with this type of tools effectively and critically (González, 2022).

As for students' self-perception in relation to the production and reception of academic texts, they show a lack of confidence and security in their reading and writing skills, which translates into a reluctance to participate actively in classroom practices and a lack of involvement in the execution of tasks that require these skills.

Likewise, they consider argumentative debate generated from a multiplicity of perspectives to be essential in order to enable the exchange of knowledge and the contrast of ideas between members of a specific academic community (Caldera and Bermúdez, 2007). This is consistent with the theory of critical academic literacy (Tentolouris, 2023), in which students' ability to master academic writing is not adequately fostered in university programmes, which focus exclusively on preparing them to meet the specific requirements of different disciplines, providing them only with standard and decontextualised linguistic tools. Moreover, it is noted that some students do not review the essential bibliography of their subjects, underlining the gap between educational practice and academic literacy principles (Bazerman, 2013).

Moreover, the variability in preferences, the effectiveness of writing methods among students and the consideration of context in the interpretation of texts condition the approach to academic literacy. In the study conducted by Navarro et al. (2019), five key qualities were identified for disciplinary writing to be effective and adaptable to different genres: a) having adequate structure; b) presenting a logical connection between ideas (coherence); c) promoting reflective and rigorous thinking based on in-depth analysis and critical evaluation of ideas; d) providing a clear and understandable explanation of concepts; e) providing textual content relevant to members of the community. Furthermore, the study points out that the acquisition of formative discourse genres often occurs informally through cultural practices, and are rarely taught explicitly in the educational curriculum, findings that are in line with those of Bombini and Labeur (2013).

For the respondents, the formation in academic writing and discursive genres is insufficient. On the one hand, they do not feel that they have not received specific guidance on how to deal with different types of academic texts and, on the other hand, that there is a greater offer of disciplinary events in which to interact. This is an important challenge pointed out by Núñez and Moreno-Núñez (2017). Studies such as Ruiz and Camps (2009), Carlino (2013), Olave-Arias and Cisneros-Estupiñán (2013), Astudillo (2023) highlight that this formative neglect may be due to the belief that students entering university have sufficient skills to cope with the specificity of the literate practices of each discipline. Ruiz-Torres et al. (2018) agree that, in the context of the knowledge

society, the quality of higher education is deeply linked to research activity, which comes in two fundamental forms: instruction in research methodologies and the conduct of research itself. The former refers to the use of research techniques in teaching with the aim of giving a scientific basis to the educational process and bringing students closer to research thinking and preparing them for its future implementation, i.e., promoting the development of research competences.

Creating an educational environment that actively integrates discursive genres, as mentioned above, demands the coordinated involvement of the teaching staff rather than isolated initiatives which, although valuable, can be disconcerting for students (Zayas, 2012). As reflected in the pedagogical practices adopted by the teachers, it can be seen that most of the activities proposed have a functional systemic nature (Hernández-Rincón et al., 2021), although the process of practices is unknown, the students are aware of their lack of knowledge with regard to their research formation and the approach of the discipline in which they are involved. Hernández-Rincón et al. (2021), given this fact, indicate that the didactic integration of the discursive genre in these teaching methodologies emphasizes not only the recognition of a transdisciplinary didactic approach that integrates linguistic, communicative and discourse, oral and written skills in contexts of authentic application, but also that it represents a challenge for educators with responsibility in the design of curricular and evaluative strategies that respond to the changing nature of discursive genres.

The discursive genres identified in the disciplines of education should be closely related to teaching practice and reflective teacher education, as noted by Bombini and Labeur (2013). The findings suggest the importance of integrating writing and reflection activities that focus on these specific genres, preparing students to become authentic research professionals through reflection and reflective practice. This promotes a comprehensive academic literacy of students, encompassing not only reading and writing skills, but also critical analysis, synthesis of information, evaluation of evidence and effective argumentation, which are crucial for academic and professional success. However, the results show limited or insufficient training in the development of analytical and reflective, narrative and persuasive writing. Students' perceptions of their competence in this type of writing and the frequency with which they are taught or asked to use it show that this discursive training is scarce compared to other genres; it is limited to superficial writing without exploring life stories and (auto)biographical experiences, critical argumentation or the construction of complex meanings through text (Barrantés, 2010; Pañagua et al., 2019).

Furthermore, the importance of emerging discursive genres, such as chat and email, in the educational curriculum should not be forgotten. This responds to the need to prepare students for the predominant forms of communication in today's digital society. Although students may possess basic digital competences, findings suggest that these are not sufficient to ensure effective communication in virtual environments, highlighting the need to strengthen their communicative and pragmatic skills to cope with these new genres (Níkleva and Núñez-Delgado, 2013; Garzón, 2017; Delfa, 2018; Bach and Costa-Carreras, 2020).

This study stresses the importance of not focusing exclusively on content when producing academic texts, but also on

comprehension and in-depth analysis of what is written. Furthermore, it suggests that it is beneficial to diversify pedagogical practices to adapt them to different teaching methods. It also emphasizes the need to develop and provide specific and accessible teaching resources that are tailored to the individual competences and needs of learners. In short, it supports the need for a broader and more flexible educational approach that takes into account the production and comprehension of texts, as well as the diversity of students' learning styles and needs.

Similarly, it is advisable to diversify pedagogical practices in order to adapt them to the teaching methods. In addition, the importance of developing and providing specific and accessible teaching resources to suit the individual abilities and requirements of students should be emphasized. In summary, the need for flexible and adaptive teaching that can meet the diverse learning needs of students is emphasized.

Finally, it should be noted the importance of encouraging students' active participation in academic events related to reading and writing, through incentives and increased awareness of the importance of these skills in both academic and professional contexts. Therefore, there is an urgent need to promote future research that will help to further explore these areas and evaluate the effectiveness of different pedagogical approaches in developing writing skills, with the aim of preparing students for the challenges of a changing world by considering writing and reading as the two fundamental pillars of learning and social participation.

Ultimately, it should be noted that the findings of this study have important implications for teaching practice and training throughout their professional development. Firstly, they highlight the need to further strengthen and consolidate the teaching of academic literacy skills in curricula to ensure that students develop the necessary competences to participate effectively and appropriately in their scientific and professional community. Also, they suggest the importance of giving more prominence to training in specific discursive genres related to pedagogical reflection in the curriculum of degree programmes. It should more explicitly incorporate reflective writing practices, case analyses and critical discussions as central components of teacher education courses and subjects.

5 Limitations of the research and prospective of the study

A significant limitation is identified in this study, linked to the discrepancy between participants' self-perception and their actual practice associated with academic reading and writing skills. This discrepancy suggests that students' perceptions may not be aligned with their authentic knowledge and skills (Níkleva and Núñez-Delgado, 2013). The answers provided by respondents reflect their beliefs about what is correct or desirable, rather than their actual actions in academic situations. To mitigate this dissonance, the data obtained could be supplemented with direct classroom observations and objective assessments of the skills mobilized during the reception and production of academic texts.

In this regard, it is important to recognize the limitations of this study, particularly in relation to students' estimates of the importance of academic writing skills. Although the results provide

valuable insights into student perceptions, it is crucial to question the relevance of these approaches. The knowledge gained can be used to design pedagogical strategies to address the identified discrepancies between student perceptions and educational reality. The observed disparity could be due to a lack of alignment between university educational requirements and course modules, as well as individual and motivational differences in the take-up of university educational provision. This may be essential to improve training programmes and ensure that they meet students' academic and professional needs.

Nevertheless, it should be noted that the present work provides a solid basis for future research in the field of academic literacy and writing in discipline. One of these lines could consist of a quantitative experimental (or quasi-experimental) study where a pedagogical intervention proposal is applied and the real impact on the improvement of communicative skills linked to the generation of scientific knowledge is evaluated.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. Written informed consent from the participants was not required to participate in this study as students were aware of their participation, and the completion of the questionnaires was completely anonymous and voluntary.

Author contributions

JA: Writing – original draft, Writing – review and editing. KB: Writing – original draft, Writing – review and editing. JD-O: Writing – original draft, Writing – review and editing. CP-G: Writing – original draft, Writing – review and editing.

Funding

Contract obtained in the call for applications for grants on a competitive basis for Novel Research Projects of the University of Almería's Own Research and Transfer Plan, financed by the Regional Ministry of University, Research and Innovation with funds from the European Regional Development Fund Operational Programme for Andalusia (ERDF) 2021-2027. Programme: Scientific Research and Innovation 54.A. FPI contract in the post-doctoral orientation phase obtained in the 2019 competitive call for grants of the University of Almería (Resolution of 2 July 2019, of the University of Almería, by which eight Pre-doctoral Contracts for the Training of Research Staff of the Research and Transfer Plan 2019 are called for public competition). Pre-doctoral contract for the Training of University Teaching Staff (FPU20) obtained in the 2020 call for applications on a competitive basis for research training in doctoral programmes linked to the attainment of a doctoral degree, financed by the Ministry of Universities of the Government of Spain.

Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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