



Writing strategies in the production of expository dissemination articles in university students

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ABSTRACT

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Academic writing fulfills an epistemic function as it transforms knowledge, creates ideas and becomes a tool for new and significant learning. However, academic writing is very challenging for university students. Therefore, this study aims to determine how writing strategies affect students at a university in Lima, Peru who produce expository dissemination articles. This research used a quantitative approach, an applied study and an experimental design with quasi-experimental characteristics. The sample consisted of 56 second-semester students, 26 of whom belonged to the control group and 30 to the experimental group. The instrument and the programme of 14 learning sessions were applied in the Zoom virtual classroom through synchronous and asynchronous classes. The results showed a value of $U = (Z = -5.262 < -1.96)$ and $(p = 0.00 < 0.05)$ which demonstrates that the programme applied in virtual environments had a significant effect on the experimental group. The four writing processes of planning, textualization, revision and editing are integrated into academic research in the educational field. This program's aim is to improve and strengthen university students writing skills.

Contribution/Originality: This quasi-experimental study contributes to the improvement of academic writing in university students through the application of four processes: planning, textualization, revision and editing with their respective strategies applied to virtual environments aiming to produce coherent, cohesive, adequate and grammatically correct quality texts.

1. INTRODUCTION

Language is a sociocultural and geographical phenomenon and a fundamental tool for social interaction as it allows individuals to interact with the environment in order to transform it in a given context for the collective benefit. Therefore, writing becomes a communicative act to transmit ideas, thoughts, judgements, arguments, etc., with cohesion, coherence and adequacy. Academic writing fulfils an epistemic function because it transforms knowledge, creates ideas and becomes a tool for new and significant learning (Ñañez & Lucas, 2017). The aforementioned function is materialized in documents prepared by higher level students during their professional training, such as: monographs, essays, expository dissemination articles, reports, theses, dissertations, etc.

Writing is one of the pillars of the acquisition and transmission of knowledge. The results of national and international assessments clearly show several deficiencies in this communicative competence. For example, the [Ministry of Education \(2019\)](#) in its report on the sample evaluation of writing in second-year secondary school students conducted in 2018 reports that 20.2% achieved a satisfactory level, 56% reached “in process” level and 23.8% achieved a beginner level. The results prove that most students struggle to write texts in different communicative situations, make errors related to coherence and cohesion, show lexical poverty, use accentuation and punctuation rules inadequately ([Ñañez & Lucas, 2017](#)). According to [Fidalgo, Collado, and Senís \(2019\)](#), writing in an academic-scientific style is a complex task that requires skills rarely acquired in other subjects.

Background studies on writing strategies, expository dissemination articles and documentary research suggest focusing more on the formative aspect of academic and scientific writing in both students and professors ([Chira, Castillo, & Regalado, 2021](#); [Fernández, Calle-Álvarez, Vergara, & Buriticá, 2022](#)). On the other hand, comparative studies by [Robledo-Ramón and García-Gutiérrez \(2021\)](#) found a significant difference between the textual products of lower-grade students and higher-grade students, both in number of words and paragraph organisation. Similarly, students and teachers have different perspectives on writing skills ([Dominguez \(2021\)](#)). According to [Demir, 2021](#); [Van, Krahmer, & Van Amelsvoort, \(2018\)](#), experimental research demonstrated that teaching strategies can improve academic writing. [Medina \(2021\)](#) developed a study on textual properties and collaborative learning in writing. He states that it is important to apply strategies in different textual production processes ([Aznárez, García, & López, 2022](#); [Fernandez & Becerra, 2020](#)).

Therefore, the current research is important due to its theoretical contribution. It also seeks to contribute to identify those aspects that directly or indirectly affect the production of expository dissemination articles. [Marzano \(1998\)](#) states that the conceptual base of an academic work is essential since it enhances the content of the research. On the other hand, the pre- and post-test evaluation is the methodological contribution of this study. In addition, methodological retribution was also committed in the development and implementation of the PLATERE (Planning, Textualization, Revision and Editing) programme on a representative and significant sample. [Arrogante \(2022\)](#) states that ensuring representativeness will provide the study with external validity. Finally, the epistemological contribution of this research is based on the positivist paradigm due to the need to develop a programme with writing strategies. In other words, the positivist approach focuses on explaining, controlling and predicting and also considers that the essence of knowledge is unique and the purpose of the study is to progressively discover and predict the occurrence of a situation ([Gomez, Deslauriers, & Alzate, 2010](#)). Therefore, the study is objective and factual and can be extrapolated in time and space.

The general objective of this study is to determine the effect of the PLATERE programme on the production of expository dissemination articles among university students. Similarly, the following seven specific objectives are: to determine the effect of the PLATERE programme on the textual structure, textual organization, purpose, objectivity, topic, audience and linguistic marks of expository dissemination articles among university students.

2. LITERATURE REVIEW

2.1. Approaches to Academic Writing

Writing is a complex task that needs control processes that have been approached from four theoretical and methodological perspectives : cognitive, socio-cognitive, socio-cultural and shared social ([Castello, Montserrat, González, & Iñesta, 2010](#)).

[Flower and Hayes \(1980\)](#) formulate a cognitive model that shows the writing process and the procedures that the writer performs. In this model, three complex cognitive processes are described: planning, textualization and revision. Planning is the first phase of writing in which goals are formulated and allows the writer to examine and regulate the text as a whole ([Flower, Schriver, Carey, Haas, & Hayes, 1989](#); [Hayes, 1996](#)). Textualization or writing is the phase in which ideas are written according to the plan, applying the particularities of the type of text, norms,

adequate vocabulary, cohesion, coherence, punctuation marks and spelling (Cassany, 1993; Jolibert, 1997; Teberosky, 1995). Finally, revision is a cognitive process with the objective of solving problems found in the text in which one returns to what has already been written to reread and evaluate its relevance (Cassany, 1993; Chanquoy, 1997; Jolibert, 1997; McCutchen, 1996; Teberosky, 1995).

In the socio-cognitive model of writing, writing is a social and cognitive process in which the author uses various behavioural and cognitive methods to elicit and retain affective and motivational practices (Zimmerman & Risemberg, 1997). This approach emphasises the relevance of the cognitive and metacognitive strategies employed by the writer as an essential aspect of the writing process (Camps, 1990; Cassany, 1988). Collaborative writing serves dual purposes from a socio-cognitive orientation with a constructivist approach (Lei, 2016; Rahmat, Jauhari, Othman, & Mohd, 2018). First, share textual production techniques on a social level and subsequently internalise them into their own work. Secondly, to develop regulation skills for the negotiation, construction and production of ideas in the collective sphere (Ubilla, Gómez, & Sáez, 2017).

The sociocultural model of writing gives importance to the context in which the written text is produced. This approach views writing as a discursive, dialogical and situated activity carried out by cultural, social and historical groups within a specific context (Castello, 2007; Prior, 2006). According to the sociocultural model, teaching consists of cooperative steps in which teachers help students use their cognitive abilities and overcome their deficiencies during their learning stage (Gallimore & Tharp, 1990; Vigotsky, 1978; Wertsch, 1993).

The shared social approach may be viewed as a social regulation in which the products and processes of regulation are distributed in the group and represent the individuals responsibility towards the group (Jackson, MacKenzie, & Hobfoll, 2000). The student's contribution is more important than the professor's lecture in shared social writing. This method focuses on the learner's metacognitive knowledge. It is necessary to define a distinct role in how people interact with one another and knowledge (Arciniegas, 2016). Therefore, it is essential that students use various active and collaborative strategies to produce written academic texts (Ríos, 2021).

2.2. Writing Strategies

Writing is a complex task in which cognitive processes allow access to knowledge (Rodríguez, Izquierdo, & Faubel, 2018) such as planning, textualization, revision (Cassany, Luna, & Sanz, 2000; Flower et al., 1989) and editing (Cassany, 1993). It is possible to establish various writing strategies from these sub-processes (see Figure 1).

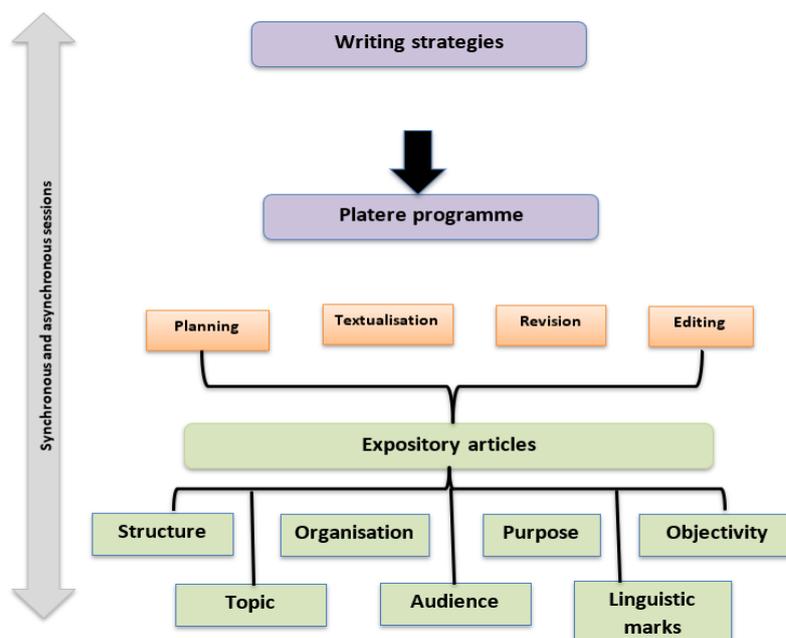


Figure 1. Programme of academic writing strategies.

Planning is the beginning of the writing process (Cassany, 1993; Jolibert, 1997; Teberosky, 1995) that generates ideas (Aznárez-Mauleón & López-Flamarique, 2020). Similarly, those students who develop technique at this stage have diverse ideas (Aznárez et al., 2022). Some planning strategies consist of generating and organising ideas, proposing objectives, determining the target audience, reviewing sources or elaborating the writing outline (Cassany et al., 2000; Flower et al., 1989).

The second stage is textualization, a continuous process involving transformation in which ideas become texts. Textualization is a process in which students express their communicative intentions using textual norms. The writing process, speed and final product depend on it (Rodrigues, Gonçalves, & Silva, 2020). Some writing strategies include writing ideas on paper as intended, writing with a selective focus on various aspects of the text, employing language that allows the reader to interact with the text, introducing reading resources and presentation techniques: textual markers, signs, titles, summaries, outlines, etc. (Cassany et al., 2000).

The third stage is revision. In this stage, the writer reads or rereads the text, paying attention to several aspects (coherence, cohesion, normative, etc.) with the aim of avoiding mistakes. This requires a lot of attention (Cassany, 1995) and an articulated relationship between ideas, structure and purposes (Demir, 2021). The two revision strategies are reading and redoing. Reading consists of comparing what has been written with what has been planned. Redoing consists of prioritising errors of content and finishing with errors of form (Cassany et al., 2000).

Finally, text editing has undergone a drastic evolution due to technology, reaching an undeniable association (Cassany, 1995). It represents the simplification of writing through the use of word processors, digitalization, ease of revision and the necessary mastery of scientific dissemination (Valverde, 2018). In this stage, it is necessary to achieve a final version that meets the expectations of the writer, incorporate paragraphs, chapters or sections, paper size, font type and size, capitalisation, pagination, indentation, margins and spaces between lines, apply bold or italics, consider graphics or not, style, etc.

2.3. Expository Dissemination Article

Students should be aware of the various textual genres used in academic environment. In this pandemic context, senders and receivers create texts in digital media that contain various discourses. Muñoz-Basols and Sinusia (2021) propose the need for teaching through textual genres to enhance written communicative skills. Among the genres proposed are: narration, exposition, description, argumentation and others.

Scientific dissemination is important because it helps people understand the vast scientific production that is developing globally when considering the need and demand for science in an academic context. Cassany (1995) states that it is necessary to define the context in order to recognise the characteristics and fulfil the purpose that has been set.

In this sense, students should produce scientific divulgation articles to facilitate their construction, theoretical mastery, develop a sense of responsibility for scientific knowledge and its divulgation in the community. Herrera (2018) mentions that it is essential for the general public to have access to science-related topics in a predominantly expository style so that research does not lose its original meaning.

On the other hand, given the importance and social need to produce and transmit knowledge, a science divulgator can be a scientist or an interested academic. In order to improve and enhance academic writing, courses designed for university students should be taken into consideration (Herrera, 2022).

The aspects or resources considered in this type of text are paraphrasing, comparison, exemplification, quotations, analogies, rhetorical questions, formal but simple language, paralinguistic and paratextual facilitators. The basic structure of the expository text is introduction, development and conclusion Melguizo-Moreno and Gallego-Ortega (2020). In this regard, Herrera (2018) proposes a structure that considers the title, entrance and exposition. The latter must present the introduction, development, conclusion and information sources.

2.4. Communicative Competences at a Higher Level

The concept of communicative competence has varied over time. Chomsky (1965) proposed the term “Linguistic Competence” as a system of rules that are internalised by the speaker, make up his verbal knowledge and enable him to understand various linguistic utterances. In Lyons (1970) supported the social character of competence and highlighted the importance of adaptation to context. In this sense, pragmatic competence was introduced and was also admitted by Chomsky (1980), restricting it to knowledge of the conditions and adequate use of language according to different purposes. Hymes (1972) proposed communicative competence as the ability acquired by the learner to know how to use a language correctly in different social situations.

The competence-based focus in universities arises from the need to cope better with social and technological development as well as the current requirement of adaptation to change (Corvalán & Hawes, 2006). In fact, communicative competence receives special attention in universities. In that regard, Montgomery (2003) states that science exists because there are scientists who write and expose. Furthermore, Ortiz-Colón, Ágreda, and Rodríguez (2020) affirmed that technological knowledge is about experimenting with technology.

3. METHODOLOGY

This research used a quantitative approach, an applied study and an experimental design with quasi-experimental characteristics because it considered the evaluation, comparison, interpretation, establishment of precedents and definition of causalities and implications (Hernández, Fernández, & Baptista, 2014). The population consisted of students in their second semester at a private university in Lima, Peru. The type of sampling applied was non-probabilistic and intentional due to the characteristics and context of the research (Hernandez & Mendoza, 2018). The sample consisted of 56 students, so (the control group had 26 and the experimental group had 30).

The instrument used was the rubric to assess expository texts developed by Melguizo-Moreno and Gallego-Ortega (2020) to assess the expository dissemination articles written by university students. The evaluation criteria considered were textual structure organisation, purpose, objectivity, audience, topic and linguistic marks. The instrument was validated by expert judgement and the Cronbach's alpha coefficient was 0.903 (an indicator of very high reliability) (Ruiz, 2002). The rubric was used as a pre- and post-test for the control and experimental groups. The data collection was carried out as follows: The informed consent was explained and applied to the students. Then the students wrote their expository disclosure text for 90 minutes, individually, synchronously and virtually through the Zoom application. The text had to contain a title, an introduction, two body paragraphs and one conclusion paragraph. Then we proceeded to evaluate the textual production with the rubric mentioned above.

A programme called PLATERE was designed to teach scientific writing. It was implemented in the subject of academic writing and lasted 14 sessions of 90 minutes each which were carried out synchronously through the Zoom application. The programme emphasised the different discursive strategies, precision, formality, objectivity, lexical richness, relevance and application of current regulations. Similarly, according to the regulations for their professional careers, various citations and referencing were carried out in two styles: American Psychological Association 7th Edition and Vancouver. Feedback was provided synchronously and asynchronously by peers and then by the professor using the Canvas platform.

After conducting the data collection as outlined by Hernandez and Mendoza (2018), the analysis was carried out with SPSS software in which the coding of variables and dimensions was reviewed to ensure the quality of the data obtained and the rigorousness of the results (Lavado, 2020). Descriptive and inferential analysis and the Kolmogorov-Smirnov statistics were applied to perform the normality test. Then the non-parametric test U of Mann Whitney was applied for group comparison (Hernandez & Mendoza, 2018).

The study complied with all ethical aspects of the research and the standards provided by the Declaration of Helsinki (World Medical Association, 2013). The following principles were stated: autonomy of the students to participate in the study through informed consent, respect for the participants, beneficence and fairness to treat the

participants with equity and transparency. Permission was sought from the director of the Academic Unit of General Studies for the application of the instrument and the programme. In addition, the project was presented to the ethics committee of the university which evaluated and approved it under Resolution No. 1848-2022 Norbert Wiener Private University.

4. RESULTS

The results obtained in this study allow us to visualise the variable of interest which is the level of production of expository dissemination articles produced by university students before and after the intervention with the PLATERE programme with the participation of 56 students.

4.1. Descriptive Statistics

Table 1 shows the gender and age variables that characterise the sample. The predominant percentage of females over males and the concentration of students between 16 and 33 years of age (80.2%) stand out which should be taken into account for future extensions of the research.

Table 1. Socio-demographic characteristics of the target population

Characteristics of the study population	Percentage	
Gender	Male	37.5%
	Female	62.5%
Age	16 – 24	53.6%
	25 – 33	26.6%
	34 – 42	14.1%
	43 – 51	3.1%

The descriptive data in Table 2 highlights the differences in the mean and median of the groups compared. The difference in the mean for the control group is 1.69 while for the experimental group it is 7.17. Similarly, when comparing the results of the pre- and post-test, there is a difference of 2 points in the control group and a difference of 7 points in the experimental group. In addition, the standard deviation shows that the behaviour of the total data for the post-test presents greater variability in relation to that of the pre-test in the experimental group.

Table 2. Descriptive data of the total scores on the level of production of expository dissemination articles

Central tendency calculations	Total pre-test		Total post-test	
	Control group (N=26)	Experimental group (N=30)	Control group (N=26)	Experimental group (N=30)
Mean	14.31	12.70	16.00	19.87
Median	14.00	13.00	16.00	20.00
Standard deviation	1.225	1.557	1.470	2.688

Figure 2 shows that there is a significant percentage decrease between the pre- and post-test in the levels considered in the instrument (deficient, acceptable, good and excellent) where the decrease in the deficient level stands out, with differences in text structure (10.7% to 1.8-8.9%), organisation (17.9% to 1.8%-16.1%), purpose (8.9% to 3.6%-5.3%), objectivity (17.9% to 1.8%), (-16.1%), topic (-17.9% to 0%), audience (58.9-48.2% to 10.7%) and linguistic marks (66.1-37.5% to 28.6%). There is a significant increase in the level of performance for the production of the textual type studied. In addition, the greatest impact can be seen in the purpose dimension (16.1%) and the topic dimension (12.5%).

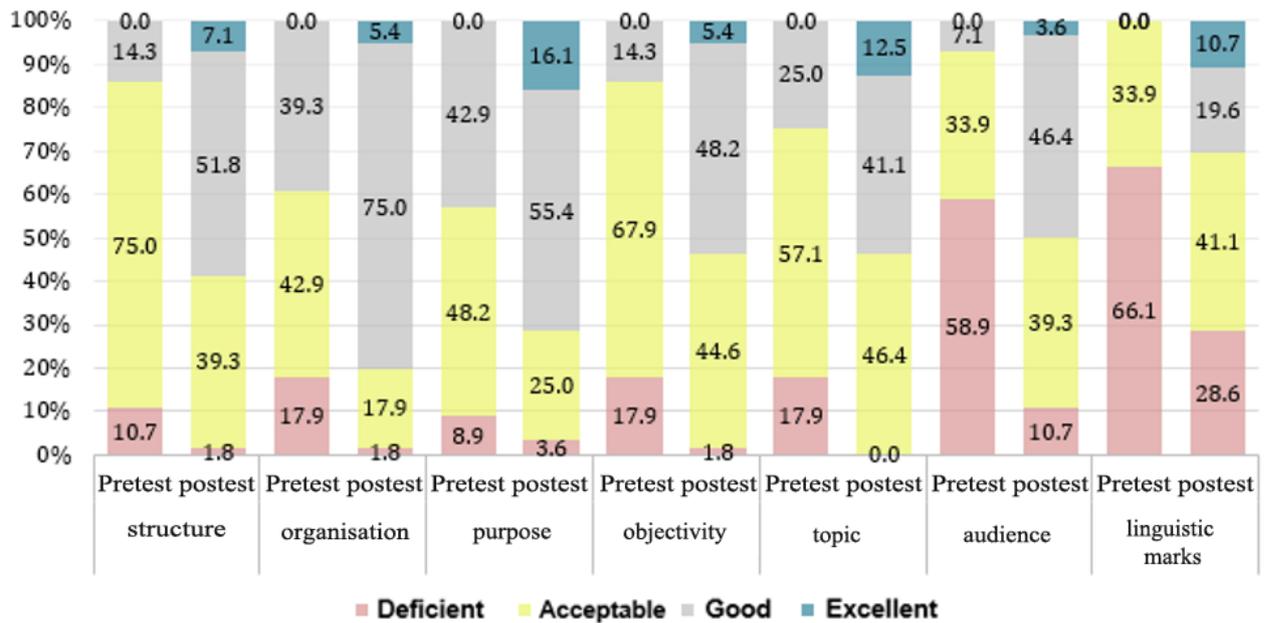


Figure 2. Comparative data of the dimensions studied in the production of expository dissemination articles.

4.2. Inferential Statistics

On the other hand, the data distribution for the variable presents a sig. <0.05 for the Kolmogorov Smirnov normality test. Therefore, the hypothesis test was carried out with the non-parametric Mann-Whitney U statistic. Regarding the general hypothesis, the results showed that the application of the PLATERE programme has significant effects on the production of expository dissemination articles among university students because a sig. < 0.05 was obtained (see Table 3).

Table 3. General hypothesis testing.

Inferential calculations	Test statistic	
	Total pre-test	Total post-test
Mann-Whitney U	161,000	79,500
Wilcoxon's W	626,000	430,500
Z	-3,887	-5,142
Asymptotic sig. (Bilateral)	0.000	0.000

Table 4. Specific hypothesis testing on the dimensions of expository dissemination article production.

Dimensions	Test type	Mann-Whitney U	Wilcoxon's W	Z	Asymptotic sig. (Bilateral)
Structure	Pre-test	339,000	804,000	-1.106	0.269
	Post-test	157,500	508,500	-4.270	0.000
Organisation	Pre-test	206,000	671,000	-3.269	0.001
	Post-test	280,500	631,500	-2.378	0.017
Purpose	Pre-test	340,500	691,500	-0.904	0.366
	Post-test	240,000	591,000	-2.737	0.006
Objectivity	Pre-test	342,000	807,000	-0.957	0.339
	Post-test	288,000	639,000	-1.875	0.061
Topic	Pre-test	233,000	698,000	-2.898	0.004
	Post-test	269,500	620,500	-2.174	0.030
Audience	Pre-test	368,500	833,000	-0.406	0.685
	Post-test	192,000	543,000	-3.553	0.000
Linguistic marks	Pre-test	329,000	794,000	-1.222	0.222
	Post-test	182,000	533,000	-3.604	0.000

Hypothesis tests were also applied for the dimensions (see Table 4). It was concluded that there are statistically significant effects in six components of the variable: structure, organisation, purpose, theme, audience and linguistic marks with a (sig. < 0.05) in the case of objectivity (sig. > 0.05). The observed effect is not significant.

5. DISCUSSION AND CONCLUSION

According to the general hypothesis, the results obtained are similar to the findings of Demir (2021) and Van, Krahmer, and Van Amelsvoort (2018) who demonstrated the effectiveness of didactic strategy programmes to improve academic writing. Benítez, Guariguata, and Pérez (2021) state that pedagogy contributes to text structuring improvement, communicative purpose definition, increasing their ability to organise information and also increasing resources for greater cohesion in the text made by the students. On the other hand, the contributions of Chira et al. (2021) and Fernández et al. (2022) suggest the need to develop the academic and scientific writing training of students and professors. Thus, there is a need to investigate and apply programmes, projects, modules or didactic units that promote the improvement of writing skills at all educational levels.

On the other hand, the verification of the specific hypotheses achieved improvements in the experimental group in the construction of the expository dissemination article regarding structure, organisation, purpose, objectivity, topic, audience and linguistic marks. These results match the findings of Condori, Paredes, Ostos, Paduro, and Quiñones (2022) regarding the implementation of textualization strategies. It is also consistent with the specifications by Demir (2021) in regard to self-editing to reduce linguistic errors with Aznárez et al. (2022) concerning the difference found in the ideas in favour of students who had developed planning and the significant difference in textual quality for those who preferably work on planning and revision. These results motivate professors and students to execute these strategies for the correct construction of academic texts.

In conclusion, the application of the PLATERE programme had favourable and significant effects on the improvement of the production of expository dissemination articles. They also improved in each of the dimensions evaluated such as textual structure and organisation, purpose, topic, audience, objectivity of the article and linguistic marks. In other words, the application of planning, textualization, revision and editing strategies during the PLATERE programme improved academic writing performance.

However, the research also revealed that there are shortcomings in the expository dissemination article in each of the dimensions assessed. The lowest mean corresponds to the use of linguistic marks followed by the audience dimension. The highest averages correspond to the dimensions of text purpose and use of objectivity in writing the expository dissemination article.

At the same time, this study provides an intervention proposal that can be used to improve academic writing and contribute to the empowerment of competences that will enable the transmission of scientific knowledge with the characteristics of exposition. Finally, the deficiencies in the production of academic writing create the need for further research on the subject and to propose strategies for each of the writing processes and tools that allow the implementation of more effective and appropriate didactic strategies.

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Institutional Review Board Statement: The Ethical Committee of the Norbert Wiener Private University, Peru has granted approval for this study on 2 June 2022 (Ref. No. 1848-2022).

Transparency: The authors state that the manuscript is honest, truthful, and transparent, that no key aspects of the investigation have been omitted, and that any differences from the study as planned have been clarified. This study followed all writing ethics.

Competing Interests: The authors declare that they have no competing interests.

Authors' Contributions: All authors contributed equally to the conception and design of the study. All authors have read and agreed to the published version of the manuscript.

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