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# ACADEMIC WRITING AND THE TRAINING OF RESEARCHERS: OVERCOMING EPISTEMOLOGICAL OBSTACLES IN THE PRODUCTION OF A SCIENTIFIC ARTICLE

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**Abstract**: Academic writing is a social activity, in which the construction of scientific knowledge takes the form of concrete texts that are part of the academic context. The individual who produces an academic text is challenged to write, socialize research and build scientific knowledge, as this task is not easy. The objective of this research was to analyze the construction of scientific articles developed by students based on the recursion proposal. The methodology had a quantitative approach with descriptive objectives and field procedures. The sample consisted of 60 students from Physical Education and Physiotherapy courses at a private Higher Education Institution in the city of Vitória-ES. The results showed that the experience of building a scientific article was empowering, as it is time to internalize basic knowledge to be an initial researcher. And in this climate of being able to make mistakes and do it over again, the way is opened to awaken the scientific spirit of students. The improvements obtained reflect the student's ability to do and redo their work with the aim of always improving it. The interventions carried out during the process of experiencing the production of the scientific article minimized the epistemological obstacles in the moments of doing.
**Keywords**: Scientific article. Academic writing. epistemological obstacles.

## INTRODUCTION

In the scope of current universities, one of the aspects that presents the greatest challenges is scientific research. In this context, the writing of a scientific research is extremely important, but doing it is not so simple. Students are afraid of research and the whole universe in which it is inserted. Experience with research is generally minimal among these subjects, which is why all this terror when there is a need to write.

The transition from High School to Higher Education is marked by feelings of fear, doubt, anxiety and uncertainty. In Basic Education, students are generally used to different textual genres, such as: letters, testimonials, journalistic reviews, chronicles, opinion articles, among others (SILVA, 2017).

When they reach Higher Education, different writing genres are presented: scientific articles, research projects, monographs, among others. In this sense, it is expected that students are not familiar with these genres and present difficulties in their construction process.

The results presented by the main evaluations regarding the quality of education in Brazil reveal a worrying picture regarding the issue of Reading. The average performance of Brazilian students in PISA (Program for International Student Assessment) in Reading showed a slight evolution in the period between 2000 and 2018 (2000 = 396, 2003 = 403, 2006 = 393, 2009 = 412, 2012 = 407, 2015 = 407 and 2018 = 413), but far below several countries that participated in this program.

For example, in Brazil, 50% of students reached at least level 2 of proficiency in Reading, being able to identify the main idea in a text of moderate length, find information based on explicit criteria and reflect on the purpose and form texts when explicitly instructed to do so. And only 2% of students managed to reach more advanced levels for these items (BRASIL, 2020).

In Higher Education, initiation to research goes through some obstacles when it comes to introducing scientific methods to students: the existence of a Scientific Methodology discipline and the use of bibliographies with diverse information on the subject. These mishaps are justified not by the fact of their actions per se, but because the student is often not sufficiently prepared to study in this new stage of their academic life.

In this context, many researchers have focused on the issue of academic literacy. For example: Fischer (2010, 2011) and Fiad (2011, 2013). These authors indicate the need for a maturation of both Higher Education Institutions and students with regard to the practice of academic writing.

After these considerations, the concept of scientific article is evoked. Scientific article is part of a publication with declared authorship, which presents and discusses ideas, methods, techniques, processes and results in different areas of knowledge (ABNT, 2003). Therefore, when the student experiences this process, he may have a good encounter with academic literacy and scientific literacy. For Chassot (2003), scientific literacy is the ability to understand science, society, technology and the environment, considering that the individual is a social and cultural product of the environment.

Thus, the objective of this research was to analyze the construction of scientific articles developed by students based on the recursion proposal.

## THEORETICAL FOUNDATION

### THE CONCEPT AND IMPORTANCE OF A SCIENTIFIC ARTICLE

A scientific article is defined as a form of synthetic presentation, in the model of scientific writing and in accordance with the norms of ABNT (Brazilian Association of Technical Standards), of the results obtained through research carried out on a theme. It aims to be a lean way of sharing knowledge, through its publication, the question investigated, the theoretical framework, the methodology employed, the results achieved and the main difficulties encountered in the data collection process or, in its subsequent analysis, to adapt the reader to the scenario explored (PEROTA; CARVALHO; BECCALLI, 2015; AQUINO, 2010).

The scientific article is usually composed of textual elements (Introduction, Theoretical Foundation, Methodology, Analysis and Discussion of Data and Conclusion) and post-textual elements (References). Although appendices and annexes are post-textual elements, they are not common in this work format. The pre-textual elements (Abstract, cover page, cover page and summary), generally, do not appear in this type of organization of academic writing, with the exception of the Abstract, since in the scientific article it represents the business card of the work, it can be considered a textual element (PEROTA; CARVALHO; BECCALLI, 2015).

In general, according to Aquino (2010), after choosing the title, the textual elements of the scientific article are important, as they include the following information presented in Table 1.

Thus, this whole process involves experimenting with the scientific method. The stages of this method can be represented by: observation of a phenomenon, elaboration of a research problem, carrying out a bibliographical review, formulation of hypotheses, data collection, analysis and discussion of data, and conclusion (AQUINO, 2010).

Luiz (2018) draws attention to the culmination of a scientific research. The cycle is complete when what was produced is disclosed. The main means of scientific dissemination are events (conferences, meetings, seminars, among others) and periodicals (magazines or books). Publications are important, as they allow measuring and evaluating an area of knowledge as emerging, consolidated or declining, through the quantitative and qualitative analysis of the studies carried out.

Andrade and Lima (2007) state that there are some reasons for writing a scientific article: scientific dissemination, own and institutional recognition, the possibility of presenting

| TEXTUAL ELEMENTS | CHARACTERISTICS |
|---|---|
| ***Abstract**** | It seeks to summarize, in a synthetic way, the scope of the work as a whole, indicating its context, objective, methodology, result and conclusion. |
| ***Introduction*** | Element that attracts the reader to your theme. It discusses the theme, research problem, justification, studies carried out and objectives. |
| **Theoretical foundation** | Involved with the development of textual topics, citations, number of paragraphs, CONCEPTs and studies carried out. |
| **Methodology** | It indicates how the work was carried out and under what conditions. The characterization of the research is important, as it reveals: the approach and objective, procedure, subjects and/or materials, data collection instruments and data analysis. |
| **Data Analysis and Discussion** | Time to organize, transform data into information for further discussion. It is hoped that, after these actions, the results will be compared with other studies. |
| ***Conclusion*** | Completion of work. It is expected that there will be an indication of the objectives achieved, a summary of the main results, contributions of the study, critical points or difficulties and future suggestions. |
| ***References**** | It includes the list of works consulted to compose the work. Very important to give reliability and credibility in the writing, since they inform the origin of the collected information. |

*Despite the Abstract being a pre-textual element, it was considered as a textual element in the construction of a scientific article;

**The References represent a post-textual element, but were included in this table in order to explain their functions in an academic work.

Table 1 - Characteristics of the textual elements of a scientific article

Source: Adapted from Aquinas (2010).

| EPISTEMOLOGICAL OBSTACLES | CHARACTERISTICS |
|---|---|
| **1. The first experience** | Experience is placed before and above criticism, that is, images are preferred over ideas.. |
| **2. General knowledge** | All other explanations will derive from first general knowledge, i.e. the same answers are given to all questions. |
| **3. Verbal obstacle** | Tendency to associate a concrete word with an abstract one, that is, the use of metaphors and analogies before theory. |
| **4. Unitary and pragmatic knowledge** | Generalizations support a pragmatic or utilitarian explanation of a complex phenomenon. |
| **5. substantialism** | Materialization promoted by the use of images or the attribution of qualities to something that does not have this type of characteristic. |
| **6. Realism** | The substance of an object is accepted as a personal good, that is, one takes possession of it as one takes possession of an advantage.. |
| **7. Animism** | Attribution of life and human characteristics to inanimate things to explain phenomena. |

Table 2 - Epistemological obstacles

Source: Adapted from Bachelard (1996).

research progress and the possibility of obtaining professional experience. It can be observed that there will always be a personal factor involved, which makes scientific-academic production an undertaking that needs a personal motivation for it to occur.

Thus, many institutions expand their work, promoting courses, lectures and events with the aim of engaging the development of scientific research to increase publications and the amount of information related to a theme.

## ACADEMIC WRITING, EPISTEMOLOGICAL OBSTACLES AND THE TRAINING OF RESEARCHERS

The university is constituted by the pillars of teaching, research and extension. The objective is to train professionals, produce new knowledge and share this knowledge with society. Therefore, it is in this environment that academic work has its importance. They provide opportunities for the systematization of learning and the deepening of various topics of interest and relevance in the profession.

In this sense, according to UNIVESP (2023, p. 1):

> [...] academic writing, or scientific writing, is the language used to disseminate knowledge through the publication of texts within the scientific community. It must be used in academic works, such as articles, dissertations and theses, for example. Academic writing is characterized by impersonality ([...] the text cannot reveal personal opinions) and argumentation (the text must promote critical reflection) (UNIVESP, 2023, p. 1).

To write is an action loaded with subjectivities and experiences. This way: "[...] writing opens the door to being the way to contribute to the solution of individual and collective clarifications and as a support for historical and social inclusion in the investigative world" (BIANCHETTI, 2008, p. 262). When writing a text, various mental activities emerge, such as: objectives, planning, memory, problem solving, reflection, among others (BEREITER; SCARDAMALIA, 1987), and at the time of its construction, one perceives the difference between thinking, speaking and write (FURLANETTO, 2001).

The difficulties pointed out by Higher Education students are justified by the absence of frequent writing practices and the gaps left by Basic Education (CHRISTOFOLI; VITÓRIA, 2013). Upegui (2011) states that there are traps internalized throughout life that affect the writing process. This fact increases the difficulty of the process and can result in blocks that imprison thinking and doing.

For Bachelard (1996), epistemological obstacles are part of the action of knowing. Common sense knowledge can be an obstacle to scientific knowledge, as this is abstract thinking. Thus, it is necessary to overcome or overcome several epistemological obstacles for the construction of the scientific spirit to be effective, as they are considered obstacles to learning.

Thus, epistemological obstacles hinder the construction of scientific thinking. These obstacles are listed by Bachelard (1996), according to Table 2 below.

Table 2: it shows some characteristics of Bachelardian epistemology. It is discontinuist, as it promotes a break with previous (common) knowledge, but also seeks reconciliation with it. It is at this intersection that the scientific spirit is constituted, but it is necessary to undo the non-scientific spirit that is born of the first experience.

In this context, when performing academic writing, originality (authorship, identity, voice, position, attribution, citation and paraphrase) must be presented. It is important to use reliable research sources appropriately (TOMAÉL et al., 2001), based on a deep and

critical reading, in which interpretation takes precedence over reproduction and that the paraphrase is not in the style of patchwriting, that is, a kind of plagiarism in which some changes and substitutions are made in the original text (ALVES; MOURA, 2016).

A certain resistance is notable with regard to the normalization of scientific papers, but it is important for the flow of information to be better presented, reducing the noise between researchers and readers.

Carlino (2005) understands academic writing, in Higher Education, as a process of academic literacy. It must provide opportunities for learning and practicing notions and strategies aimed at a discursive culture, contemplating argumentation, logical reasoning and critical positioning, for example. Among the strategies for overcoming the difficulties manifested by students, the implementation of Writing Centers stands out, in which more experienced students are monitors to guide less experienced students (CARLINO, 2003).

Higher Education must have excellence in the execution of its educational actions to contemplate the demands of the social context that needs a qualified structure. Article 43 of the Law of Guidelines and Bases of National Education (LDB), which discusses Higher Education, shows that Higher Education institutions must:

> [...] to encourage cultural creation and the development of the scientific spirit and reflective thinking, encourage research and scientific investigation work, aiming at the development of science and technology and the creation and dissemination of culture and this way, develop the understanding of man and of the environment in which he lives, raise the permanent desire for cultural and professional improvement and enable the corresponding implementation, integrating the knowledge that is being acquired into an intellectual structure that systematizes the knowledge of each generation (BRASIL, 1996, p. 1).

From the discussions presented here, it is possible to observe that the production of good academic writing needs planning and organization, quality time to operate with the ideas, elaborate the thought, materializing it in the objective world (UPEGUI, 2011). With regard to difficulties, Machado (2012) says that it is necessary to overcome insecurities and fears, because being a researcher is a process of continuous maturation and the movement of taking risks is essential (FAVA-DE-MORAES; FAVA, 2000).

## METHODOLOGY

The research had a quantitative approach with descriptive objectives and field procedures. The sample consisted of 60 students from Physical Education and Physiotherapy courses at a private Higher Education Institution in the city of Vitória-ES in the year 2021. The monitoring of the production process of scientific articles took place in synchronous and asynchronous formats through the Microsoft Teams®, during TCC classes in Health.

For the development of the process, four moments were planned: I) Explanation about the model of the scientific article to be constructed; II) Guidelines for the development of each textual element of the scientific article; III) Evaluation and feedback of the first versions of the scientific articles sent; IV) Evaluation and feedback of the second versions of the scientific articles sent.

Data collection was carried out by monitoring the performance of activities and by presenting the first and second versions of the scientific articles produced. It is important to emphasize that these collections were based on recursion, in which doing and redoing are possible based on dialogues to meet the items necessary to compose the scientific article. It was in these dialogical moments that the

interventions took place.

Data analysis was carried out by verifying the improvement that occurred (in number of times) in the construction process of scientific articles, by describing the strengths and weaknesses observed, and by the effect size of the interventions carried out, considering the before and after construction. of 20 scientific articles (n = 20).

To determine the improvement that occurred and the effect size of the interventions carried out, the Microsoft® Excel 2019 software and a scale of concepts were used, ranging from 0 to 5, where 0 = did not include all necessary items and 5 = included all necessary items (Tables 1, 2, 3, 4, 5 and 6). The calculation of the effect size was performed after using the Kolmogorov-Smirnov normality test, and the sample was normal, and a confidence interval of 95% was considered. Effect size values d > 0.8 are considered large, thus conferring a great impact on the evaluated phenomenon (SAWILOWSKY, 2009).

## DATA ANALYSIS AND DISCUSSION

Data analysis and discussion took place from Graphics, indicating (for each textual element) the number of scientific articles that had an advance in academic writing by contemplating the necessary items (according to tables 1, 2, 3, 4, 5 and 6). At that time, notes were also made on the strengths and weaknesses observed during the construction process of scientific articles in each textual element.

It was also demonstrated the improvement that occurred (in number of times) in the process of construction of scientific articles by means of a mathematical ratio between the number of scientific articles with the concept 5 after the intervention carried out and the number of scientific articles with the concept 5 before the intervention takes place. The effect size on the evolution of academic writing after the intervention was also analyzed to indicate when the greatest impact of this intervention occurred.

## ANALYSIS AND DISCUSSION ON THE TEXTUAL ELEMENTS DEVELOPED

Graphic 1 shows that, for the construction of the Abstract, there was an improvement of 4.7 times, because before the intervention, only 3 scientific articles contemplated the 5 necessary items (contextualization, objective, methodology, result and conclusion) and after this value arrived to 14, considering n = 20.

It was also observed that, after the intervention, the scientific articles shifted to concepts 4 and 5 (Graphic 1), indicating an adequate understanding of academic writing for this textual element. Even so, one of the main difficulties of this textual element was the synthesis with the limitation of 500 words.

For the Introduction, an improvement of 12 times was indicated (Graphic 2), since it started with 1 scientific article, which included what was necessary (theme, research problem, justification, study results and objectives), and ended up with 12.

Thus, after the intervention, there was a shift from scientific articles to concepts 4 and 5 (Graphic 2), also indicating an adequate understanding of academic writing for this textual element.

The greatest difficulties, in this textual element, were: presenting a logic in writing, objectives with verb in the infinitive and indication of examples of study results or information from national or international bodies in the area.

According to Graphic 3, in the Theoretical Basis, the improvement was 8 times, starting with 1 scientific article, which included the necessary items (textual topics, citations, number of paragraphs, concepts and studies

| **Summary items**: contextualization, objective, methodology, result and conclusion. | |
|---|---|
| **CONCEPT** | **CHARACTERISTICS** |
| **5** | Presence of five required items. |
| **4** | Presence of four required items. |
| **3** | Presence of three required items. |
| **2** | Presence of two required items. |
| **1** | Presence of a required item. |
| **0** | Missing five required items. |

Table 1 - Concepts related to the items necessary for the construction of the Summary

Source: Prepared by the author (2023).

| ***Introduction theme***: theme, research problem, justification, studies carried out and objectives. | |
|---|---|
| **CONCEPT** | **CHARACTERISTICS** |
| **5** | Presence of five required items. |
| **4** | Presence of four required items. |
| **3** | Presence of three required items. |
| **2** | Presence of two required items. |
| **1** | Presence of a required item. |
| **0** | Missing five required items. |

Table 2 - Concepts related to the items needed to build the Introduction

Source: Prepared by the author (2023).

| **Theoretical Foundation Items**: textual topics, citations, number of paragraphs, CONCEPTs and studies carried out. | |
|---|---|
| **CONCEPT** | **CHARACTERISTICS** |
| **5** | Presence of five required items. |
| **4** | Presence of four required items. |
| **3** | Presence of three required items. |
| **2** | Presence of two required items. |
| **1** | Presence of a required item. |
| **0** | Missing five required items. |

Table 3 - Concepts related to the items necessary for the construction of the Theoretical Foundation

Source: Prepared by the author (2023).

| **Methodology Items**: approach and objective, procedure, subjects and/or materials, data collection and data analysis instruments. | |
|---|---|
| **CONCEPT** | **CHARACTERISTICS** |
| **5** | Presence of five required items. |
| **4** | Presence of four required items. |
| **3** | Presence of three required items. |
| **2** | Presence of two required items. |
| **1** | Presence of a required item. |
| **0** | Missing five required items. |

Table 4 - Concepts related to the items necessary for the construction of the Methodology

Source: Prepared by the author (2023).

| **Data Analysis and Discussion Items**: data organization, data characterization, discussion, comparison of results with other studies and summary of results in the last paragraph. | |
|---|---|
| **CONCEPT** | **CHARACTERISTICS** |
| **5** | Presence of five required items. |
| **4** | Presence of four required items. |
| **3** | Presence of three required items. |
| **2** | Presence of two required items. |
| **1** | Presence of a required item. |
| **0** | Missing five required items. |

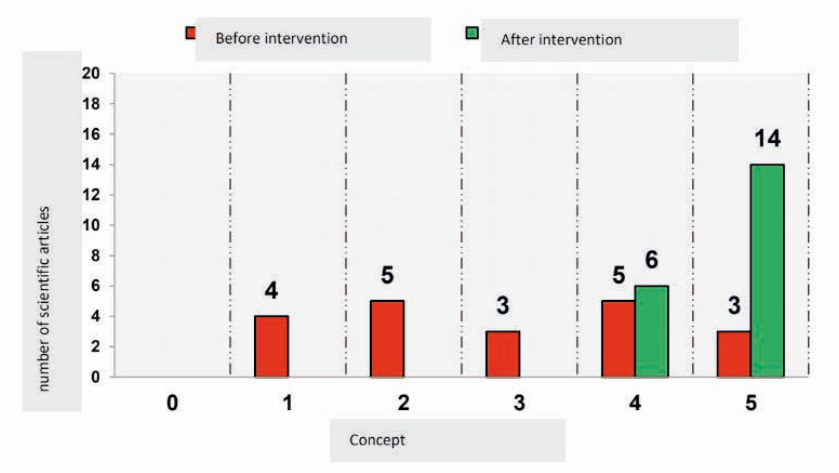
Table 5 - Concepts related to the items necessary for the construction of Data Analysis and Discussion

Source: Prepared by the author (2023).

| ***Conclusion Items***: indication of the achieved objectives, summaries of the main results, contributions of the study, critical points or difficulties and future suggestions. | |
|---|---|
| **CONCEPT** | **CHARACTERISTICS** |
| **5** | Presence of five required items. |
| **4** | Presence of four required items. |
| **3** | Presence of three required items. |
| **2** | Presence of two required items. |
| **1** | Presence of a required item. |
| **0** | Missing five required items. |

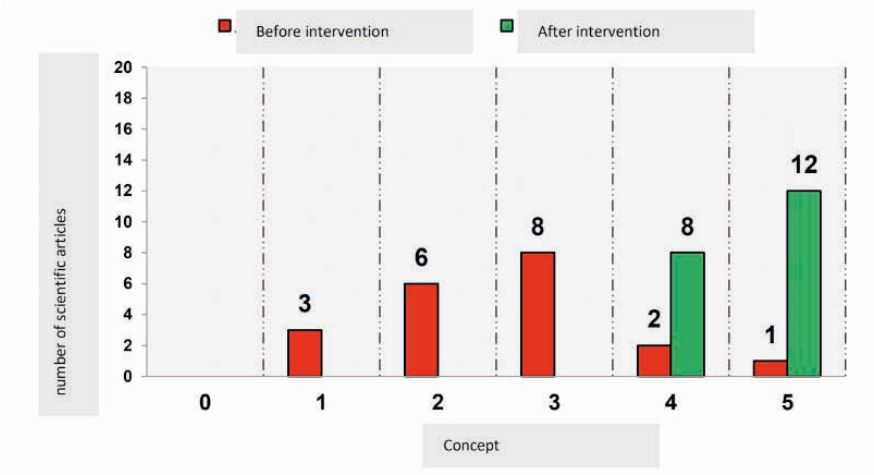
Table 6 - Concepts related to the items needed to build the Conclusion

Source: Prepared by the author (2023).



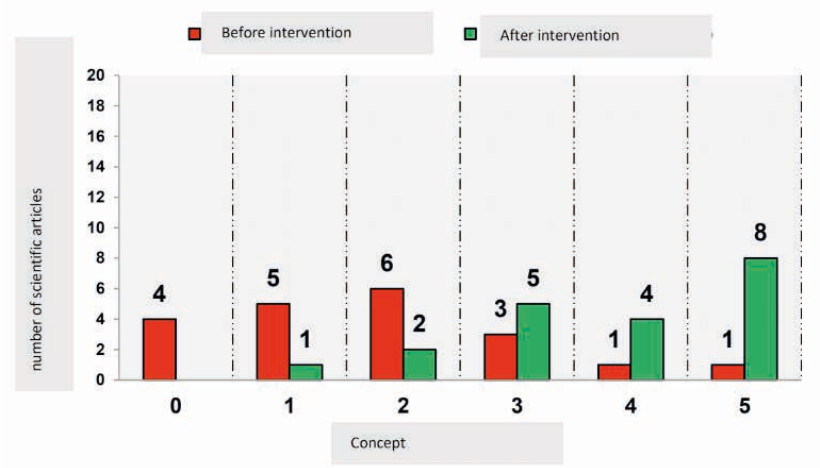

Graphic 1 - Concepts obtained for the Summary before and after the intervention

Source: Elaborated by the author (2023).



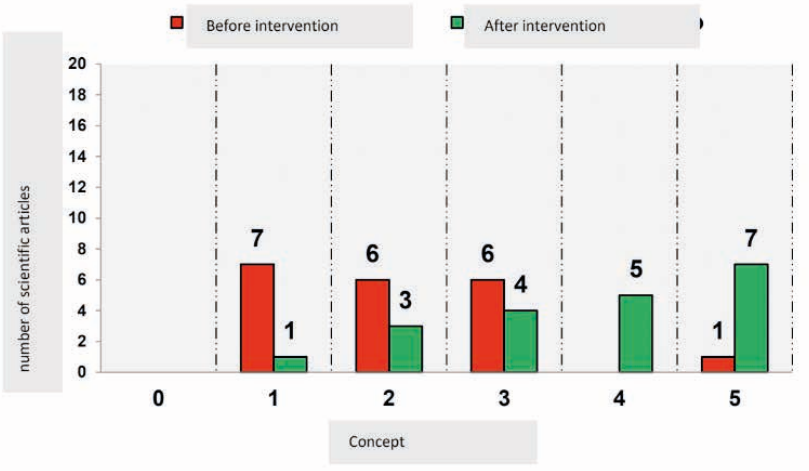

Graphic 2 - Concepts obtained for the Introduction before and after the intervention

Source: Elaborated by the author (2023).




Graphic 3 - Concepts obtained for the Theoretical Foundation before and after the intervention

Source: Elaborated by the author (2023).




Graphic 4 - Concepts obtained for the Methodology before and after the intervention

Source: Elaborated by the author (2023).

carried out), and ending with 8.

Although there is a displacement of scientific articles towards concepts 3, 4 and 5 (Graphic 3), there are still difficulties in understanding how to proceed in order to meet the criteria of academic writing on the Theoretical Foundation.

The critical points, present in the textual element in question, were: building texts with coherence, the paragraphs were too long, lack of citations in some points, lack of evidence of results of studies on the subject.

The Methodology had an improvement of 7 times, because before only 1 scientific article met what was necessary (approach and objective, procedure, subjects and/or materials, instruments for data collection and data analysis) and after 7 contemplated all items (Graphic 4).

There was some confusion or absence of some items necessary to compose this textual element. Graphic 4 shows the existence of scientific articles with some gaps to be reviewed.

As a point of observation, it is indicated the difficulty in completely describing the information necessary to compose the bibliographical research and the field research.

With regard to Data Analysis and Discussion, Graphic 5 indicates that the improvement was 8 times, since previously only 1 scientific article contemplated the necessary items (data organization, data characterization, discussion, comparison of results with other studies and summary of the results in the last paragraph) and then 8 were successful.

It was noticed that, in this textual element, the understanding of academic writing with the necessary items was easier (Graphic 5), since it deals with the practice of analysis and discussion, even considering that it started timidly in some scientific articles.

The difficulty observed in this textual element was to carry out more detailed analyzes (they remained superficial), considering the organization carried out in each scientific article and, many times, there was no relationship between the results obtained and those in the literature.

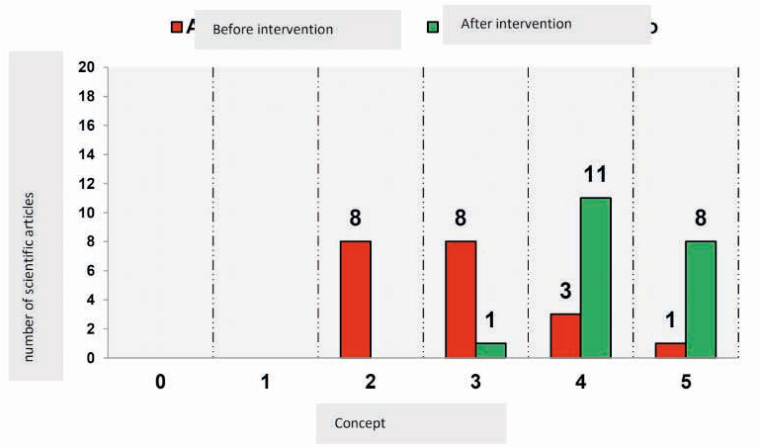
In the Conclusion, an improvement of 8.5 times was obtained (Graphic 6), ranging from 2 scientific articles that contemplated the expected items (indication of the objectives achieved, summaries of the main results, contributions of the study, critical points or difficulties and future suggestions ) to 17.

It is notable, according to Graphic 6, the displacement of scientific articles to concepts 3, 4 and 5 (mainly). This means that there was an adequate understanding of academic writing with regard to the items that must compose this textual element.

The difficulty, in this textual element, was shown in the absence of indication of critical points or difficulties, as well as in the feedback on the success in fulfilling the objectives.

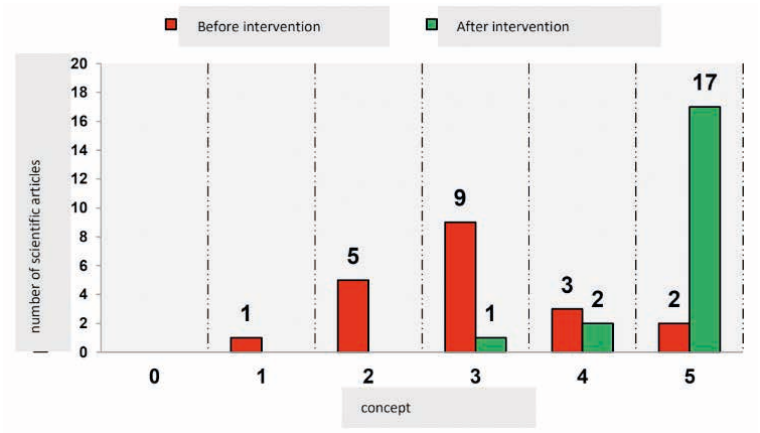
Regarding the formatting of the scientific article, according to ABNT norms and the construction of references, the improvement was progressive. This is due to the fact that these actions were carried out after the qualification of the scientific articles in relation to the contents developed based on the defined guidelines. Thus, the formatting was carried out (in real time) by the students, as well as the construction of the references, using a reference formatter site for this situation. With this, it was possible to have a dialogue with immediate feedback to correct the inconsistencies presented.

Therefore, the experience of building a scientific article was empowering, as it is time to internalize basic knowledge to be an initial researcher. And in this peaceful atmosphere of being able to make mistakes and do it again, the way is opened to awaken the scientific spirit of students.



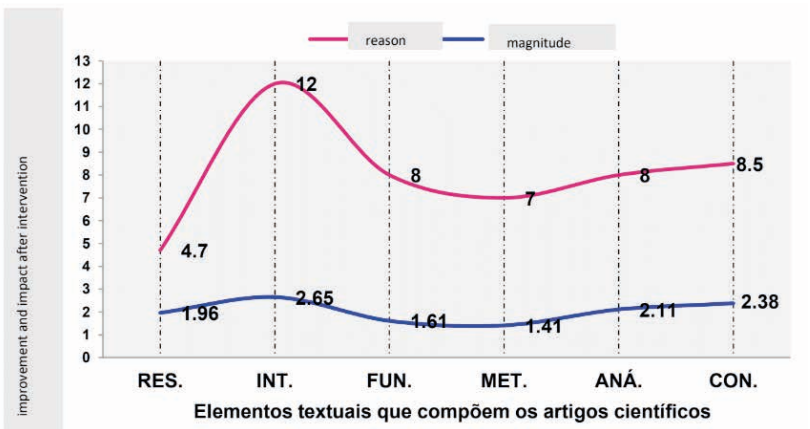

Graphic 5 - Concepts obtained for the Analysis and Discussion of the data before and after the intervention

Source: Elaborated by the author (2023).




Graphic 6 - Concepts obtained for the Conclusion before and after the intervention

Source: Elaborated by the author (2023).




Graphic 7 - Improvement and impact observed in the textual elements that make up the scientific articles after the intervention

Subtitlw: **RES.** = *Summary*, **INT.** = *Introduction*, **FUN.** = *Theoretical foundation*, **MET.** = *Methodology*, **ANÁ.** = Data Analysis and Discussion, **CON.** = *Conclusion*.

Source: Elaborated by the author (2023).

## ANALYSIS AND DISCUSSION ON IMPROVEMENTS AND IMPACTS OCCURRED

At that moment, the contributions of the interventions carried out during the production process of the scientific article were evaluated. For this, the improvements pointed out in the previous discussion were related to their effect size to indicate the magnitude of interventions in each textual element.

It was observed that, according to graph 7, the greatest improvement (ratio = 12) occurred in the textual element Introduction. The mathematical reason presented shows that there was, initially, more difficulty in meeting the necessary items to compose this textual element. The idea of greater improvement is reinforced by the value of the effect size obtained (d = 2.65), meaning a very large magnitude of intervention.

Graph 7 also shows that the Summary textual element had the least improvement (ratio = 4.7). This means that, initially, there were scientific articles with their composition well aligned. But in relation to the magnitude, the value d = 1.96 represents a great improvement impact for this textual element.

Thus, when evaluating the improvement obtained in the other textual elements and the magnitude of the interventions carried out, a linear trend was observed with very similar values (graph 7): Theoretical Rationale (ratio = 8 and d = 1.61), Methodology (ratio = 7 and d = 1.41), Data Analysis and Discussion (ratio = 8 and d = 2.11) and Conclusion (ratio = 8.5 and d = 2.38). These values indicate a considerable improvement with a very large positive impact regarding the interventions carried out during the production process of the scientific article.

The process experienced was very formative. The improvements obtained reflect the student's ability to do and redo their work with the aim of always improving it. This is called recursion, a very important action in the field of meaningful learning. It is time to identify weaknesses, overcome them and present a new version of your production. And the effect size reflects the magnitude of the interventions carried out during the process. It indicates how much an action is significant and contributes to student learning.

Thus, after the discussions held, it appears that the results obtained in this research converge with the results of other studies. This convergence occurs in four axes:

1. Potentialities (OMITTO, 2022; CASTRO; DAMIANI, 2017; PINTO, 2016; FALCÃO JÚNIOR et al., 2012). These authors showed that students were motivated when they participated in training moments for the production of scientific articles and positively received the interventions carried out;

2. Weaknesses (OMITTO, 2022; MORAIS; POSSAMAI, 2021; RIGO et al., 2018; GALVÃO; LIMA; SILVA, 2017; ALVES; MOURA, 2016). For these authors, the difficulties faced by students are related to the lack of mastery of academic writing that can be influenced by factors such as lack of reading, insecurity about their own ideas, grammatical, semantic and syntactic knowledge. These difficulties can appear even when authors are experienced;

3. Challenges (RÓNAI; Sobreira, 2022; OLIVEIRA; MACÁRIO, 2021; SILVA, 2017; STOCKMANNS; PEREIRA, 2017). The notes made by the authors, in this axis, indicate that there is a lack of basic knowledge of students when they reach Higher Education, associated with a history of school failure. They reinforce that academic literacy must be recognized as a discursive and social practice;

4. Contributions (LEMOS, 2019; LILLIS, 2003). In this axis, the idea shared between the authors is that scientific research contributes to a better quality of life in society, so it is necessary to create conditions for it to be developed. One condition would be to explore the potential of talkbacks, being a space for students to reflect on their textual production.

## CONCLUSION

The proposed objective was contemplated, as it was perceived that the interventions carried out during the process of experiencing the production of the scientific article were potentiating, minimizing the epistemological obstacles in the moments of doing and the recursion of learning by doing and redoing reduced the anxiety of having to get it right always and first.

It is notable the difficulty of students when they are faced with reading the works indicated for assimilation from syntheses necessary for learning. Often, these works do not provide more direct guidance, which can overwhelm or confuse the student in their initial moment of study.

Informal writing itself is already a complicating factor, especially for those who are not used to writing texts. When academic writing is proposed, the student has to learn a niche of guidelines for it to be met. Thus, at that moment, there may be a blockage in the execution of this action.

Rigor in academic writing is necessary to set the tone of reliability and credibility in scientific research. The students, in the moments of production of the scientific articles, proved to be effective and efficient. Efficient, in the sense of performing the proposed task with quality, competence, excellence, with no or a minimum of errors, but not always reaching the proposed objective. Efficiency is linked to the correct way of doing the task to reach the planned objective.

Thus, from this study, actions are indicated to promote academic literacy, as it is understood that there is a need to develop the learning of writing in Higher Education. It must be a continuous practice inherent in academic life, undoing the idea of something complex and increasing student engagement in the practice of formal writing.

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