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The metatext of a research in the field of Statistical Education: the constitution of knowledge in professional training[1]

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ABSTRACT

The aim of this article is to present the results obtained from the synthesis of the analysis of a statistics teaching project in the initial training of mathematics teachers for the constitution of knowledge in professional training. The classes were used for text reading, statistical tasks, construction/analysis of didactic materials for instruction, statistical competencies and their development in Basic Education. Grounded in discursive textual analysis and based on the category of "Teaching Knowledge" and its subcategories, "Subject Matter Knowledge," "Curricular Knowledge," and "Knowledge derived from professional formation," a word cloud was constructed to group and organize words graphically based on frequency, in order to conduct a quantitative lexical analysis. To observe the connectivity among the active words in the excerpts, a similarity analysis was carried out, which made it possible to identify co-occurrences, that is, the syntactic or semantic combination of words. This interpretation made it possible to identify, as a result, the concern of graduates on how to teach Statistics and develop their own concepts.

KEYWORDS: Teacher Knowledge. Statistical Education. Discursive Textual Analysis.

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O metatexto de uma pesquisa no campo da Educação Estatística: a constituição dos saberes da formação profissional

RESUMO

O objetivo deste artigo é apresentar o metatexto construído a partir da síntese da análise dos resultados do desenvolvimento de um Projeto de Ensino de Estatística na formação inicial de professores de matemática para a constituição dos saberes da formação profissional. As aulas foram utilizadas para leitura de textos, realização de tarefas estatísticas, construir/analisar materiais didáticos para o ensino, as competências estatísticas e o seu desenvolvimento na Educação Básica. Pautado na análise textual discursiva e a partir da categoria "Saberes docentes" e das subcategorias, "Saberes disciplinares", "Saberes curriculares" e "Saberes provenientes da formação profissional", foi construída uma nuvem que agrupou e organizou as palavras graficamente em função da sua frequência, isto é, realizou-se uma análise lexical quantitativa. Para observar a conexidade entre as palavras ativas nos excertos, realizou-se uma análise de similitude, o que possibilitou identificar as coocorrências, isto é, a combinação sintática ou semântica das palavras. Essa interpretação possibilitou encontrar como resultado, a preocupação dos licenciandos em como ensinar Estatística e desenvolver seus conceitos.

PALAVRAS-CHAVE: Saberes Docentes. Educação Estatística. Análise Textual Discursiva.

El metatexto de una investigación en el campo de la Educación Estadística: la constitución de los saberes de la formación profesional

RESUMEN

El objetivo de este artículo es presentar el metatexto construido a partir de la síntesis del análisis de los resultados del desarrollo de un Proyecto de Enseñanza de Estadística en la formación inicial de profesores de matemáticas para la constitución de los saberes de la formación profesional. Se utilizaron clases para la lectura de textos, realización de tareas estadísticas, construcción/análisis de materiales didácticos para la enseñanza, competencias estadísticas y su desarrollo en la Educación

Básica. Basado en el análisis textual discursivo y a partir de la categoría "Saberes docentes" y las subcategorías "Saberes disciplinares", "Saberes curriculares" y "Saberes provenientes de la formación profesional", se construyó una nube que agrupó y organizó las palabras gráficamente en función de su frecuencia, es decir, se realizó un análisis léxico cuantitativo. Para observar la conexidad entre las palabras activas en los extractos, se realizó un análisis de similitud, lo que permitió identificar las coocurrencias, es decir, la combinación sintáctica o semántica de las palabras. Esta interpretación permitió encontrar, como resultado, la preocupación de los egresados sobre cómo enseñar Estadística y desarrollar sus conceptos.

PALABRAS CLAVE: Conocimientos del profesorado. Educación estadística. Análisis textual discursivo.

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Introduction

To justify this research, we have used, as one of the guiding threads, the gaps in the initial training of mathematics teachers for the teaching of Statistics and Probability in Basic Education, such as the approach of these contents in a single discipline, as pointed out by Silva (2011). In this sense, we advocate the importance of providing situations that enable student teachers to question different approaches to Statistics and discuss curriculum issues, thereby fostering the development of statistical competencies in future teachers. It is expected that they can replicate the constructed knowledge in a Mathematics Teacher Education program in Basic Education.

Two other guiding threads are the practices in which the student teachers will engage and the specific actions of a teacher educator to encourage such engagement (PAMPLONA; CARVALHO, 2011). From this perspective, investigating and providing opportunities for the development of specific and pedagogical knowledge becomes relevant to the teacher

education process in the initial Mathematics education regarding the teaching of statistical competencies.

Costa and Nacarato (2011), in their investigation of stochasticity in mathematics teacher education, discuss the curricula of Higher and Basic Education and how they can contribute to teaching practice, understood here as our fourth guiding thread. Lopes (2008) emphasizes a vision that is different from the predominant linear approach in mathematics curricula. It is believed that the proposal of a discipline, which can genuinely contribute to the teachers practice, can be added to teacher education curricula so that it reflects on Basic Education.

Given that, this article aims to present the metatext created from synthesizing the analysis of the results in developing a Statistics Education Project in the initial training of mathematics teachers to shape professional training knowledge.

Professional Formation Knowledge

In the face of Brazilian reforms, researchers have devoted themselves to the investigation of teaching, work, and knowledge that teachers mobilized throughout their careers. Several authors (SHULMAN, 1986, 1987; TARDIF; LESSARD; GAUTHIER, 2001; ROLDÃO, 2007; TARDIF, 2014) have investigated the teacher education central aspects that contribute to the teacher professional development from the perspective of competencies and skills development to support their pedagogical practices.

In this article, we explore the dimension of Statistics knowledge, encompassing both theoretical and methodological aspects. We believe that the teacher education process is rooted in knowledge, because

> [...] knowledge is always someone's knowledge who works on something with the purpose to achieve any goal. Furthermore, knowledge is not something that hovers in

> space: the teachers' knowledge is their knowledge and is related to their person and identity, their life experience, their professional history, their relationships with students in the classroom, and with other school actors in the school, etc (TARDIF, 2014, p. 11).

The constitution of teaching knowledge occurs continuously, from initial training, and extends throughout the teacher's life journey. Being in formation is about building ways of being and existing in the profession, acquiring a professional identity that comes from the teacher's desire. However, it is the responsibility of Teacher Education programs and a commitment of public policies. Therefore, initial training

> should promote the construction of teaching knowledge in a way that relates scientifically validated knowledge to what is being developed by the teacher, connecting the knowledge acquired in training with their life and professional experience (ALBUQUERQUE; GONTIJO, 2013, p. 79).

Tardif (2014) presents a perspective on teacher education that aims to integrate different forms of knowledge, including professional training knowledge, encompassing knowledge from Educational Sciences and pedagogical ideology, subject-specific knowledge, curriculum knowledge, and experiential knowledge.

Professional training knowledge comprises the set of knowledge transmitted by teacher education institutions, for which teaching and being a teacher become objects of study in the fields of humanities and educational sciences, producing knowledge and seeking to incorporate it into teachers' practice. Therefore, "this knowledge is transformed into knowledge aimed at the scientific or erudite training of teachers, and if incorporated into

teaching practice, it can be transformed into scientific practice, into the technology of learning" (TARDIF, 2014, p. 37).

Teaching practice is also an activity that mobilizes various forms of knowledge, referred to as pedagogical knowledge, related to teaching methods and techniques (know-how). It is scientifically validated and continuously shared with teachers throughout their education.

> Pedagogical knowledge appears as doctrines or conceptions derived from reflections on educational practice in the broad sense of the term. These are rational and normative reflections that lead to more or less coherent systems of representation and guidance for educational activities (TARDIF, 2014, p. 37).

Teachers need to develop practical knowledge related to scientific education. They emphasize that professional teacher training should occur in conjunction with practice.

Teaching practice also incorporates social knowledge defined and selected by the university, integrated in disciplines, known as disciplinary knowledge. This knowledge belongs to different fields of expertise (exact sciences, biological sciences, language, among others), taken by teachers to be taught, but not produced by them (GAUTHIER, 1998). It requires, therefore, knowledge and mastery of the content to be taught.

According to Tardif (2014), this knowledge is historically produced and accumulated by society, managed by the scientific community in which access to them is defined and selected through educational institutions.

Curricular knowledge depends on how educational institutions classify and present the knowledge created by society, as well as how it is delivered to students (termed disciplinary knowledge). In practical terms, this knowledge is embodied in the form of school curricula, which teachers are required to learn to implement (TARDIF, 2014). It's important to

emphasize that the teaching staff is not responsible for defining or selecting disciplinary and curricular knowledge that educational institutions convey. In line with the proposal advocated here, the content or curricular structures must be adhered to. Therefore, the recommended change pertains to the teacher's methodological approach in the classroom and how a statistics activity is conducted.

Experiential knowledge, on the other hand, is specific knowledge developed by teachers in the performance of their duties and professional practice. The production of this knowledge is constituted by experience in certain everyday situations, related to the school environment and the relationships with colleagues and students. In other words, such knowledge "arises from experience and is validated by it. It is incorporated into individual and collective experience in the form of habitus and skills, know-how, and knowing how to be" (TARDIF, 2014, p. 39).

Experiential knowledge is characterized as

> A collection of current, acquired, and necessary knowledge within the scope of the teaching profession that does not come from educational institutions or curricula. This knowledge is not systematized into doctrines or theories. It is practical knowledge (and not about practice: it does not overlap with practice to better understand it, but integrates into it and as integral part of teaching practice) and forms a set of representations from which teachers interpret, understand, and guide their profession and daily practice in all its dimensions. Itconstitutes, in other wordss teaching culture in action (TARDIF, 2014, p. 48-49).

Therefore, the combination of professional training knowledge, disciplinary knowledge, curricular knowledge, and experiential knowledge results in a single specific knowledge that is based on and legitimized by

daily teaching practice, called professional knowledge. Consequently, according to Tardif (2014), professional knowledge is "plural knowledge, formed by the amalgamation, more or less coherent, of knowledge derived from professional training and disciplinary, curricular, and experiential knowledge" (TARDIF, 2014, p. 36).

According to this author, due to the diversity of origins and manifestations of knowledge, attempts to classify teaching knowledge through an isolated analysis of its origin, construction, or forms of appropriation are impossible. It is necessary to consider all these factors as a set of criteria that allow for examining the relationships between them and, from that point, producing a valid model for understanding and analyzing teaching knowledge.

Discursive Textual Analysis and the Statistics Teaching Project

Given the objective of investigating the contributions of providing a Statistics Teaching Project in the initial Mathematics teachers training for the development of statistical competencies for teaching practice and based on the collected records, the Discursive Textual Analysis methodology was chosen. This analysis can contribute to the development of qualitative research, as

> [...] it is proposed to describe and interpret some of the meanings that the reading of a set of texts can evoke [...] operates with meanings constructed from a set of texts. The textual materials constitute signifiers to which the analyst needs to assign meanings and significance. (MORAES; GALIAZZI, 2007, p. 13-14).

It is in this perspective that the choice of this method was crucial for data processing, as it allowed for the interpretation and understanding of

the reflections made by the research participants, while developing the descriptive memoir and learning narratives because "in discursive textual analysis, the text itself is considered a means of expression for the subject, so it is the analyst's task to classify it into units containing repeated phrases or words, in order to infer an expression that represents them" (LUCCAS, 2011, p. 198). We established a data analysis structure that allowed us to group participants' written production, making it possible to interpret the data based on similarities.

The methodology of discursive textual analysis consists of the following stages: disassembling the texts, establishing relationships, and capturing the newly emergent (MORAES, 2003).

The disassembly of the texts marked the beginning of the analysis, with the purpose of establishing units that characterize the phenomenon to be investigated. Thus, it began with the deconstruction of the texts to highlight the empirical corpus, which corresponds to the set of data collected and subjected to analytical procedures.

The next step was the establishment of relationships, that is the exploration of the collected material. The exploration of the records from the student teachers occurred manually, and the collected data were systematically grouped according to their semantic categories, in order to characterize them in terms of arguments.

The capture of the emerging new aspects "is related to the systematic process of reorganizing the data, which can be presented in tables, diagrams, figures, or even models that allow for synthesizing and highlighting their meanings" (PEREIRA, 2015, p. 92-93). The meanings and relationships are demonstrated through two representations: 1) word cloud and 2) similarity tree.

This procedure aims to construct analytical metatexts, composed of syntheses of the analysis based on the texts from the corpus. From these, the analyst can make broader inferences, demonstrate trends, present indices, and, consequently, draw conclusions and implications.

> Metatexts consist of description and interpretation, collectively serving as a means of understanding and theorizing the investigated phenomena. The quality of the texts resulting from the analyses depends not only on their validity and reliability but is also a consequence of the researcher assuming the role of the author of their arguments (MORAES, 2003, p. 202).

The Statistics Teaching Project (STP) was offered in a face-to-face mode within the Statistics course, during regular class hours and on Saturdays. The total course load for the STP for Basic Education was 36 sessions, each lasting 50 (fifty) minutes. These sessions were used for reading texts in the field of Statistical Education, performing statistical tasks, developing/analyzing teaching materials for Statistics and Probability, understanding statistical competencies and their development in Basic Education, conducting statistical research projects, and creating a personal memorial and learning narratives.

The STP consisted of basic Statistics and Probability tasks, readings of articles on Statistical Education, and a Statistical Research Project. In the table below, the titles of each of the selected tasks for the STP are listed.

FRAME 1 – Tasks performed in the STP

NUMBER	TASKS
1	Class profile
2	Statistics teaching case
3	Vitruvian Man
4	Simulation of a fair die
5	The 3Ms Game
6	Grades of a class
7	Weighing an object
8	How many fish are in a pond?

Source: Authors.

Basic Statistics tasks were proposed to cover the contents described in the Curricular Guidelines for Basic Education in the State of Paraná (PARANÁ, 2008). These contents include statistical research, reading and interpretation of graphs and tables, measures of central tendency, population, sample, and probability. The structure of the STP also allowed for the development of a statistical research project and its phases, following the approach of Martins and Ponte (2011). The purpose was to provide undergraduate students with discussions to develop their knowledge of how to teach statistical research by engaging in research themselves.

The selected texts (Frame 2) were published in qualified journals in the field of Education, according to CAPES[4] and were chosen in line with the objectives of the STP. These objectives aimed to facilitate the understanding of theoretical aspects related to Statistical Education by undergraduate students.

FRAME 2 – Articles selected for reading in the course

ARTICLES	AUTHORS
Teaching Statistics and Probability in Basic Education and Teacher Training.	Celi Espasandin Lopes
Statistical Education in the Context of Critical Education.	Celso Ribeiro Campos Otávio Roberto Jacobini Maria Lucia L. Wodewotzki Denise H. L. Ferreira
Interpretation of Measures of Central Tendency by Future Teachers and Educators in Conducting a Statistical Investigation.	Raquel Santos João Pedro da Ponte
The Literacy Present in the Construction of Tables by Adult Education Students.	Keli Cristina Conti Dione Lucchesi de Carvalho
Statistics in the Final Years of Elementary School: Contributions of a Contextualized Teaching Sequence.	Danieli Walichinski Guataçara dos Santos Junior

Source: Authors.

[4] CAPES: Coordination of Improvement of Personal Higher Education (http://www.capes.gov.br).

The selection of texts for the STP was based on the need for a theoretical foundation, considering its significance in an initial teacher training course. Theory and practice are inseparable. The chosen texts provide definitions of statistical competencies and activities that can assist teachers in developing these competencies, such as statistical investigation.

Hence, the texts were interspersed with the tasks, ensuring that theory remained closely linked to practice, as proposed by Tardif (2014), wherein different forms of knowledge should be integrated to achieve more effective teaching and learning.

Here, we present the treatment and interpretation of data related to the students' production through records in the descriptive memoir, learning narratives, and tasks developed. This analysis involves organizing the corpus into categories, subcategories, and units.

The metatext

The metatext produced, with descriptions and interpretations, aims to present the researcher's understanding of the whole, after analyzing the corpus, exploring the final research results.

The category "Teaching Knowledge" was established before the textual analysis, and the subcategories and units emerged from the analysis of the students' records. It highlights the formative context offered through the Statistics Teaching Project (STP) and presents results that can be considered relevant for the initial training of Mathematics teachers, especially in Statistics and Probability teaching. This category was divided into three subcategories: "Disciplinary Knowledge," "Curricular Knowledge," and "Knowledge from Professional Training."

The subcategory "Disciplinary Knowledge" was divided into two units of analysis:

a) "Difficulties/Importance/Reasons for Teaching Statistics" – The students expressed difficulties related to the content of Statistics. However, they also

recognized the importance of teaching Statistics in Basic Education and understood why it is crucial for students. They acknowledged the importance of teaching Statistics in a way that makes sense to the students.

b) "Statistical Competencies" – It was observed that this type of knowledge was expressed by the students in the construction and interpretation of graphs and tables, calculating measures of central tendency and dispersion, sampling, estimation, and probability. They recognized the importance of connecting the content to be taught with the students' reality, highlighting the need for statistical investigation. The familiarity with ideas related to Statistics and Probability, provided through the Statistics Teaching Project (STP), helped them integrate disciplinary knowledge with the organization and development of teaching activities.

The subcategory "Curricular Knowledge," which doesn't have specific units of analysis, reveals that the students understand which contents are proposed for Basic Education. However, it's not possible to say whether they comprehended all of them, since this category had limited excerpts which constrained the analysis. They emphasize the importance of teaching Statistics and Probability, especially in the early years, demonstrating the influence of the readings they conducted. For the development of a Statistics or Probability activity in Basic Education, they primarily used content related to graphs and tables, aligning the concepts with statistical competencies, showcasing the connection between disciplinary, curricular, and pedagogical knowledge.

The subcategory "Knowledge from Professional Training" included six units of analysis:

a) "Pedagogical Content Knowledge" - It was observed that the prospective teachers indicated the need for teaching what is understandable for students and, for this, they emphasized the importance of contextualizing Statistics and Probability. They mentioned the use of games such as playing cards, dice, and coins, as well as technological resources and statistical investigation. This repertoire of strategies demonstrated their ability to connect

pedagogical knowledge with specific knowledge, which can motivate students' understanding of the content and provide more effective learning.

b) "Educational Sciences Knowledge/Knowledge of Educational Theories and Principles" - The prospective teachers demonstrated an understanding of statistical competencies and their connection to the content of Statistics and Probability, bringing theory closer to the teaching content. Some of them, when proposing a Statistics activity, mentioned the competencies that could be developed and where students might encounter difficulties. This construction of knowledge and the articulation of professional knowledge was built considering other involved knowledge, such as those coming from reading articles and educational purposes.

c) "Educational Context Knowledge" - It was observed that the prospective teachers are concerned with the teaching and learning of Statistics and Probability, so that it is not purely technical. They reported the mismatch with other undergraduate subjects, as they did not propose different strategies for learning. Here, we highlight the articulation and potential modification of all the discussed knowledge, as they began to consider what to teach, why to teach, and how to teach, establishing the best strategy, taking into account the students' reality, their experiences, and their backgrounds.

d) "Knowledge from Reading Articles" - It is understood that this knowledge was essential as it served as the foundation for the construction of all other knowledge by the prospective teachers, allowing them to bridge theory and teaching practice. Reading and discussing scientific articles enabled them to see how specific content can be taught and anticipate possible student difficulties.

e) "Knowledge from Other Disciplines" - The prospective teachers experienced interdisciplinarity and, in turn, incorporated this experience into the activities they developed for teaching Statistics, utilizing cross-cutting themes that are relevant to the students' lives. They realized that

students learn better when the content is meaningful to them and can be applied in their own context.

f) "Knowledge of Students and Educational Purposes" - In this unit of analysis, it was observed that the prospective teachers understood the educational purposes established by official documents governing teaching and learning. They comprehend that the teaching of Statistics and Probability doesn't have to follow a specific grade but should be adjusted to the students' age, and can be modified according to their educational level. Notably, the convergence of pedagogical knowledge of content, specific content knowledge, and educational purposes was evident in their reflections on the tasks and discussions. This allows them to integrate the various forms of knowledge developed in their professional training into their teaching practice.

For a systemic view of the quantity of excerpts, the relative frequencies found in each subcategory, and the knowledge developed and/or expressed within the Statistics Teaching Project, a synthesis is presented in Table 1.

TABLE 1: Summary of excerpts in State Education Plan

Subcategory/Knowlodge	**Number of excerpts**	**Relative FR**
Disciplinary knowlodge	26	36,11%
Curricular knowlodge	8	11,11%
Profissional training knowlodge	38	52,78%
Total	72	100%

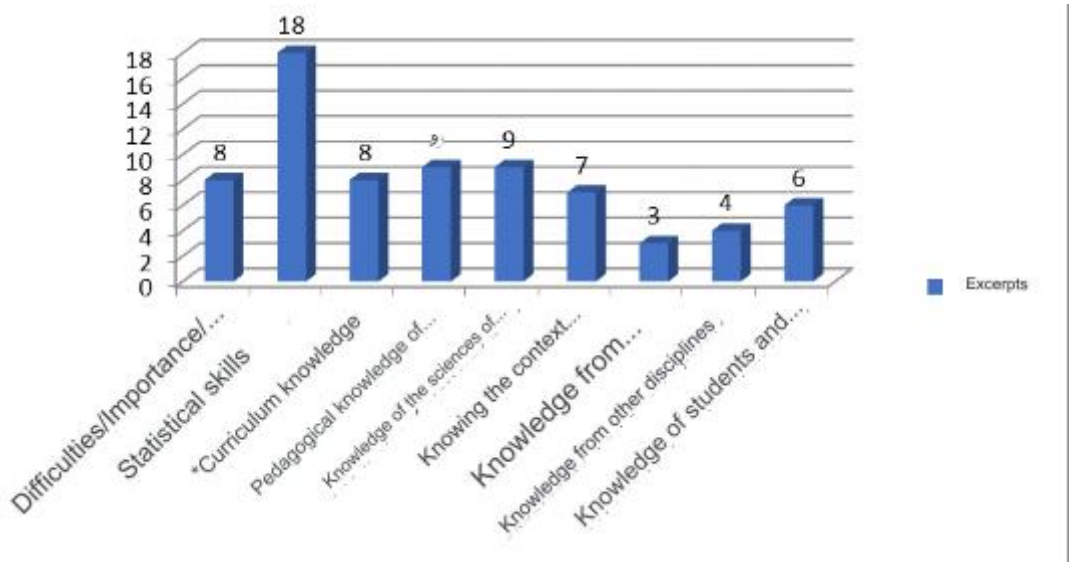
Source: Authors

Table 1 reveals that the Statistics Teaching Project (STP) effectively contributed to professional and disciplinary knowledge. This contribution is evident in these subcategories, as they involved reading articles, solving and

discussing tasks, participating in a statistical investigation, and proposing an activity for Basic Education. Curricular knowledge was discussed in terms of the content to be taught, without an articulation with the educational level to which it applies, in an attempt to avoid linearity. Thus, the prospective teachers were able to understand that content can be developed at various educational levels, delving deeper into each topic when necessary. Furthermore, there is an absence of experiential knowledge as the prospective teachers did not have the opportunity to work in the classroom.

Through Graph 1, it is possible to perceive the contribution of the STP to the various types of knowledge that were developed throughout the course. The average was 8 excerpts per unit with a standard deviation of 2.67, indicating a more effective contribution to the theoretical aspects defining statistical competencies (18 excerpts).

CHART 1: Number of excerpts per unit of analysis.

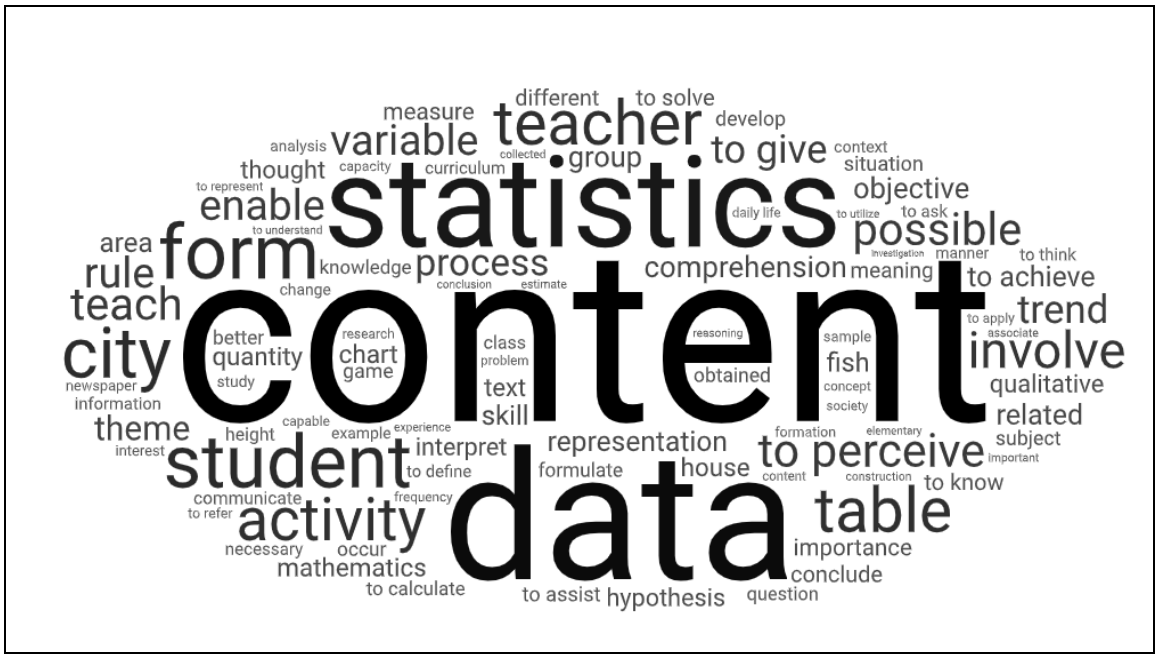


*The subcategory "Curricular Knowledge" was treated as a unit for the construction of the chart.
Source: Authors.

Chart 1 illustrates a word cloud4 that visually grouped and organized words based on their frequency, representing a quantitative lexical analysis,

which allows for a rapid understanding of the analyzed corpus. The word "Statistics" was the most frequently used by the students (41 times), followed by "data" (36 times), and "student" (27 times).

FIGURE 1: Word cloud of excerpts from the undergraduate students



Source: Authors.

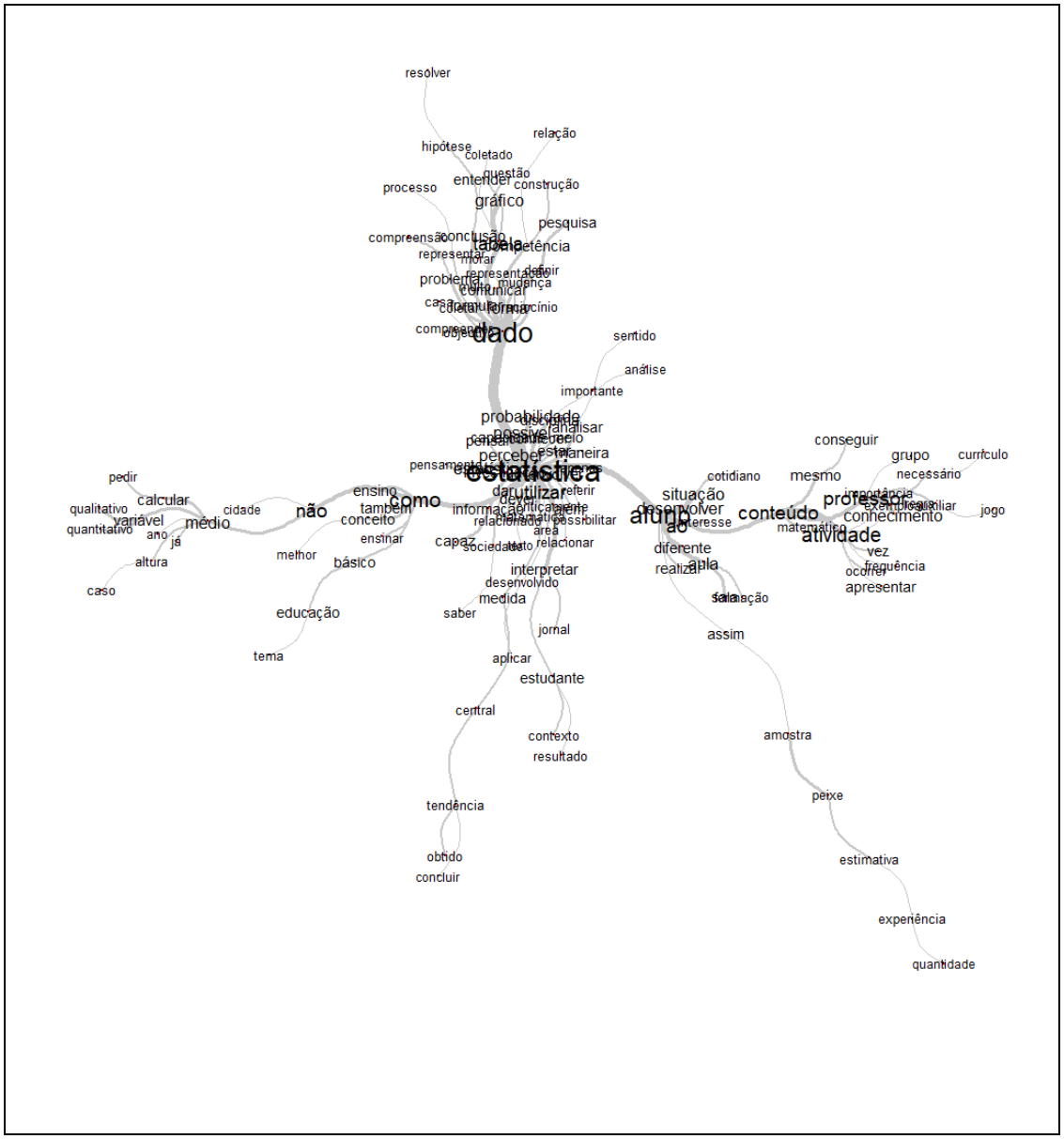
The word cloud provides insights into the expressions in the students' discourse. The centrality of the word "Statistics" emerges as one of the most significant elements in the research, linked with the meaning attributed to "data" and how to engage with "students."

Words like "formulate," "interpret," and "representation" indicate that the students understand the educational objectives of teaching Statistics and Probability. These words reflect knowledge derived from their professional training. They also demonstrate a concern for "concepts" that can be taught through "games" and "investigation," which implies the use of pedagogical knowledge.

To observe the connection between active words in the excerpts of the students, a similarity analysis was performed (Figure 2), allowing

for the identification of occurrences, which is the syntactic or semantic combination of words.

FIGURE 2: Similarity tree of excerpts from the undergraduate students



Source: Authors.

One can observe a line of interconnection between the main word, "statistics," with "how" followed by "teach" on the left side, indicating the students' concern with teaching Statistics and its "concepts." When analyzing the right side of the tree, following the word "student," words

like "solve," "situation," and "everyday" appear. Therefore, confirming the qualitative data discussion presented earlier, it is evident that the students emphasize the importance of working with real data that makes sense for the student and their context.

In Figure 2, words like "process," "competence," "research," "construction," "communicate," "reasoning," and "hypothesis" appear, characterizing the knowledge expressed, especially statistical competencies, understood as disciplinary knowledge. Furthermore, in the lower part, it is possible to establish a connection between "interpret," "measure," "trend," and "central," indicating the contribution of the STP to the understanding of the content of measures of central tendency.

The possibilities discovered while developing the STP can be extended to a course that addresses the teaching of Statistics and Probability for Basic Education. This is evidenced in the similarity tree, showing the integration of various knowledge required for teaching. Just as in the STP, the inclusion of a course can contribute to the training of student teachers by enabling them to think about teaching situations, considering the students' learning, which has a significant impact on Basic Education.

In this perspective, teaching should enable students to build statistical literacy, thinking, and reasoning with clear and objective situations while maintaining the sense of the content, as evidenced by the semantic combination of the words "construction" and "competence" in the similarity tree. Considering which Statistics and Probability content should be taught in Basic Education and how it should be approached, this STP proposal as a possible course is advocated. It allowed student teachers to express statistical content through words like "measures," "sample," and "estimate."

Conclusion

The offering of the Statistics Teaching Project for the initial education of mathematics teachers aimed at improving the quality of education in Basic Education. This provided student teachers with the opportunity to enhance: a) their disciplinary knowledge, including statistical competencies through participation and discussion of tasks; b) their curriculum knowledge by reflecting on the contents proposed by the guidelines; c) their pedagogical knowledge through the development of activities for Basic Education; d) the relationship between the development of statistical competencies and the contents of Statistics and Probability; e) their knowledge of statistical investigation; and f) their theoretical knowledge about Statistical Education through the reading of scientific texts.

These are the aspects that differentiate the proposed project from the routine Statistics course, which often approaches Statistics content in a mechanistic way. Thus, the research aligns with the perspective that teacher education programs have been encouraged to undergo a restructuring to break down the dichotomy between theory and practice, with the aim of prioritizing the construction of professional teaching knowledge, towards a more effective education that aligns with the demands of society.

The table, the graph, the word cloud, and the similarity tree are indicators that allow for a quantitative representation of the excerpts and a qualitative interpretation of the numbers found. Therefore, interpreting the quantity of excerpts qualitatively, it is understood that the Project of Statistics Teaching: a) enabled the student teachers to express and develop teaching knowledge; b) fostered the development of autonomy as they completed tasks, read texts, and created an activity for teaching Statistics; c) motivated the student teachers to teach Statistics and Probability, as well as to use strategies relevant to the students' context.

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