

# Learning, Thinking and Language In The School Context: A Bibliometric Analysis

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**Abstract-** The theme is about the thought - language - learning relationship, highlighting the intersections in the school context. In order to enhance the thematic relations in order to promote reflections on methodologies and strategies of applicability in the school context. Therefore, the objective of this article is to map the relationships between learning, thinking and language in the school context. For this purpose, bibliometric analysis was performed, based on a systematic search in the Scopus database. As a result, it was identified that the research emerges in the field of intersecting multidisciplinary areas emerges in the field of Social Sciences, Humanities, Psychology and Multidisciplinary, lacking studies on innovative methodologies in the educational area.

**Keywords**— learning; thought; language; systematic search.

## I. INTRODUCTION

In the school context, the views of the teaching-learning process permeate the student and all the dimensions that are part of the construction of the learning subject. Looking at the student as a socio-historical-cultural means to be intersected with the cultural context of the process that involves students and teachers, where both are marked by individual history, which reflects in their behavior, and also by cultural history, which determines their attitudes.

Thus, within the socio-cultural context of the school, the relationships between language-thought, language-school, are imbued in the context of learning, where speech makes thought explicit by mediating the teaching-learning process. From this context, the objective of the study, in this article, is to map the relationships between learning, thinking and language in the school context. For this purpose, the article is structured in four sections, in addition to this introductory section, the research procedures are described in the following section. In the third section, the bibliometric result is presented in detail from the scenario of the scientific publications resulting from this area. In the fourth section have the final considerations, preceding the references that were used throughout the article.

## II. METHODOLOGICAL PROCEDURES

To meet the problem of this research, the study is classified as exploratory-descriptive in order to describe the theme and increase the researchers' familiarity with the fact as well as clarify the concepts inherent to the theme under study (Marconi; Lakatos, 2010).

As a literature search method, systematic search was used in an online database, followed by a bibliometric analysis of the results. Bibliometrics is a methodology from the information sciences that uses mathematical and statistical methods to map documents and publication patterns from bibliographic records stored in databases (Feather; Sturges, 2003; Santos; Kobaschi, 2009). For authors, bibliometrics allows relevant counts such as: production by region; temporality of publications; research by area of knowledge; count of literature related to the study citation; impact factor of a scientific publication. Mathematical and statistical data that contribute to the systematization of the result of a research and the minimization of the occurrence of bias when looking at a certain topic.

For bibliometric analysis, the study was organized in three distinct stages: planning, collection and result. These steps took place in a convergent way to answer the guiding question of the research: What are the relationships between learning, thinking and language?

The planning started in May 2020, when the research was carried out. In this phase, some criteria were defined as the

limitation of the electronic database search, not considering physical catalogs in bibliographies, given the large number of documents in the Web search bases. In the scope of the planning, they were stipulated as relevant to the research domain, the Scopus database (www.scopus.com) due to the relevance of this base in the academic environment and its interdisciplinary character. And also because it is one of the largest bases for abstracts and bibliographic references of peer-reviewed scientific literature and its topicality.

Considering the research problem, the search terms were delimited, still in the planning phase, namely: "thinking AND language AND learning". And, as a basic principle for the search, it was chosen when planning the search to use the terms in the "title, abstract and keyword" fields, without limiting time, language or any other restriction that may limit the result. From the planning of the research, the data collection recovered a total of 432, indexed works which pointed to a record from 1976, first publication, until 2020.

As a result of this collection, it was identified that these works were written by 151 authors, linked to 159 institutions from 64 different countries. 122 keywords were used to identify and index the publications that are distributed in 25 areas of knowledge and 9 types of publication. Table 1 shows the result of this data collection in a general bibliometric analysis, when mapping the instructional design theme, in the Scopus database.

Database	Scopus
Search Terms	"thinking AND language AND learning"
Search Fields	"title, abstract e key words"
Total Recovered Jobs	432
Authors	151
Institutions	159
Countries	64
Key Words	122
Knowledge Areas	25
Type Of Publication	9

Table 1 - General bibliometric data

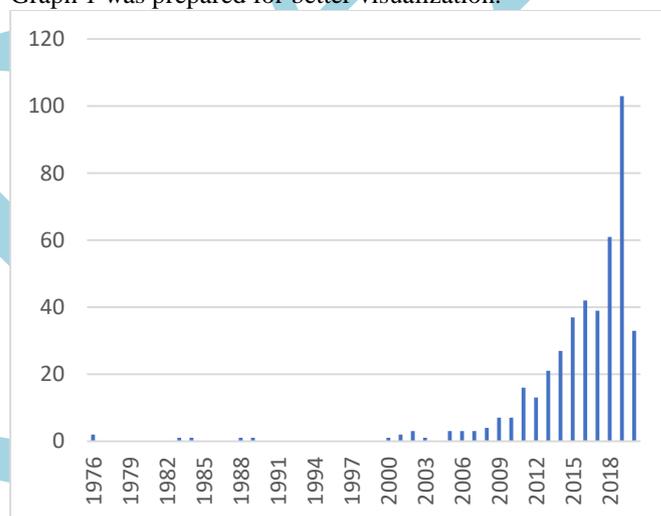
Source: Elaborated by the author (2020)

The universe of 432 scientific works makes up the sample for a general bibliometric analysis of publications in the area of learning, thinking and language, without specific limitations, from the consulted database.

The analyzed papers are composed of 432 studies, from the scopus database. In order to assess the results in more depth for bibliometric analysis, this result was exported to a bibliographic management software called EndNoteWeb. These data provided the organization of relevant information in a bibliometric analysis, such as: temporal distribution; main authors, institutions and countries; type of publication in the area; main keywords and the most referenced works.

At first, the temporal distribution of the works was analyzed, identifying that the publications were very timid between 1976 with two works in the area. From 1977 to 1982 there was no publication. In 1983 and 1984 it had a publication in the area. In the years 1985 to 1987 there was no publication. In the year 1988 to 1989, there was a publication in the area.

From 1990 to 1999, there was no publication in the area. In 2000, there was a publication in the area. In 2001, there was a publication in the area. In 2002, three publications and in 2003, one publication. In 2004, there was no publication. In 2005 to 2007, there were three publications in each of those years. As of 2008, there were four publications. In 2008, there were four publications and in 2009 there were seven publications. In 2010, there were seven publications. In 2011, research in the area intensified, reaching a total of 16 researches in the area. Following in 2012 with 13 works and 2013 with 21 works in the area. In 2014 there was an increase in published works with 27 publications, followed by 2015 with 37 papers, 2016 with 42 publications and 2017 with 39. In 2018, there was an increase in publications with 61 publications. In 2019, there was a significant increase in publications with 103 published works. In the year 2020, with 33 studies, this lower representation is considered to be related to the research period, which was on May 1, 2020. Graph 1 was prepared for better visualization.



Graph 1 - time distribution of works

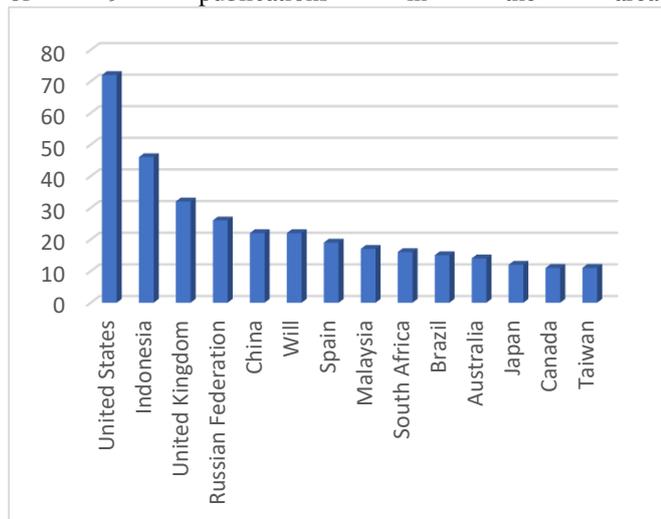
Source: Elaborated by the author (2020)

Two pioneering works were identified: A developmental study of the mediational processes in discrimination shift learning, by Hibata, K. and Leading a child to a computer culture, by Solomon, CJ, both published in 1976. No first article the author explains experiences about the processes of mediation of learning in children. In the second article, it explains about the environment, culture, as a learning tool with computers.

Of the 432 works, there is a varied list of authors, institutions and countries that stand out in the research regarding the innovation habitat.

When analyzing the country with the most publications in the area, it can be seen that the United States stands out with an average of 72% of the total publications, a total of 72 works. In second place, Indonesia stands out with 46% of the publications, that is, 46 works. Graph 2 shows the main countries involved, ranging from countries with a minimum

of 9 publications in the area.



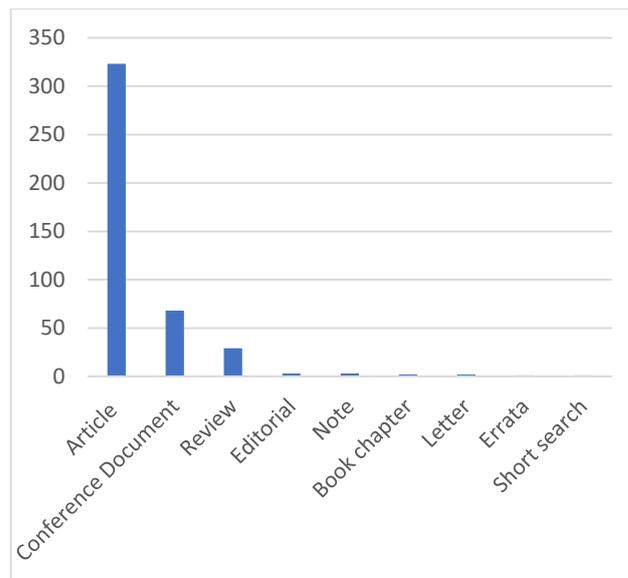
Graph 2 - distribution by country of work  
Source: Elaborated by the author (2020)

Brazil showed itself with only 15 publications in the area, considering the indexation of the consulted database, which implies in representativeness equal to 15% of the total publications, which implies that the discussion is innovative in the country.

Another analysis carried out is related to the identification of prominent authors in the area where it was observed that an author can be called a reference in the theme learning, language and thinking, he published three papers on this theme. The author belongs to the Islamic University of Azad, Tuyserkan Branch, Tuyserkan, Iran.

Based on the origin of the author highlighted in this theme, in relation to Graph 2, it can be seen that the countries of outstanding publication are not necessarily where the author with the greatest number of publications is found. For example, the United States that stands out as a country with more publications in the area does not appear when analyzing countries, considering the prominent author. Thus, it is clear that considering that the prominent author is in Iran. However, in Graph 2, this country appears as the sixth most prominent country, respectively. This allows us to infer that where there is a greater concentration of publications, they cannot be considered as reference authors in the area. The publication focuses on a large number from a variety of authors.

From the general survey, it was also possible to analyze the type of document research in the area of learning, thinking and language. It is noticed that publications are concentrated in articles in a journal with 75% of the total conference document number with 16% of publications. In total there are 9 categories of marked indexes and a group called undefined aggregates the other and possible indexes, as shown in graph 3.



Graph 3 - distribution of publications by type of journal  
Source: Elaborated by the author (2020)

Among the 9 types of documents, there are 323 publications in a journal article, 68 are conference papers, 29 works are comments in the area, 3 are editorial, 3 are notes, 2 are book chapters and 2 are letters. Furthermore, the publication can be considered of low relevance, as is the case with errata and short research.

From the bibliometric analysis, based on the recovered work group, in the Scopus database, it was possible to identify a total of 122 different keywords. Of these, the highlight is the word "human" with 77 occurrences. In the sequence, the highlight was to learn a total of 64 occurrences. In third position, the word human stands out with 59 occurrences. There is also a tongue with 57 occurrences, standing out in fourth place. To analyze these 122 various words used in the 432 articles, the tag cloud, shown in Figure 1, was elaborated from the recovered works, showing the key words for this study translated into Portuguese.

Thus, it appears that the answer to the question in this article: What are the relationships between learning, thinking and language? The relationship of the three themes emerges from the discussion of a process resulting from the construction of knowledge, which involves today, the development of active teaching and learning strategies and that in the school context, language makes thought explicit, generating learning. The development of thought is determined by language, that is, by the linguistic instruments of thought and by the child's socio-cultural experience. (VYGOTSKY, 1991, p. 44).

The relationship between the discussion of learning, thinking and language is perceived converges with teaching in a broad proposal for a process resulting from the construction of knowledge, which involves development, learning, technology, teaching-learning process and the concept of methodologies today innovative learning methods in the school context. The discussion also involves the concern of evaluations in the educational scenario, bringing areas such as social sciences and humanities. The discussion also covers national and regional systems of education, planning,

development and educational public policies within the knowledge society.

### III. FINAL CONSIDERATIONS

Talking about learning involves language-related aspects, so thinking is related to the teaching-learning process. This action has a knowledge-intensive task whose main objective must be to promote methodological solutions for the educational scenario.

The scientific mapping of the production related to the theme learning, thinking and language from the Scopus database for the preparation of this article allowed a bibliometric analysis of the theme, describing in sequence the main related discussions in contemporary times and the intersection existing in the last five years. As a result, it was identified that the research emerges in the field of Social Sciences, Arts and Humanities, Psychology, Computer Science, Physics and Astronomy, Medicines, Engineering, Biochemistry, Genetics and Molecular Biology, Biological and Agricultural Sciences, Neuroscience, Multidisciplinary, Mathematics, Economics, Econometrics and Finance, Environmental Science, Business, Management and Accounting, Health Professions, Materials Science, Chemical Engineer, Nursing, Chemistry, Earth and Planet Sciences, Pharmacology, Toxicology and Pharmaceuticals, Decision Sciences, Energy and Immunology and Microbiology.

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