

# Teacher Professional Development: Field of Knowledge Rise

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**How to cite this paper:** De Farias, R. S., & De Araujo, A. M. P. (2018). Teacher Professional Development: Field of Knowledge Rise. *Creative Education*, 9, 658-674. <https://doi.org/10.4236/ce.2018.95048>

**Received:** February 23, 2018

**Accepted:** April 17, 2018

**Published:** April 20, 2018

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## Abstract

The research aims to analyze the international scientific production in the field of “teacher professional development”. We used the Web of Science database, in which 811 articles—published from 1987 to 2017, and 62.64% of them published in the last five years—were mapped. On this basis, it is confirmed that the field of knowledge at issue is recent, and it has been explored in the last years. The publications reviewed involved 1918 authors, from 67 countries and 295 different journals. Among the most expressive countries, the United States and Australia stood out, with 49% of the publications on this theme. The journal with the greatest number of publications was Teaching and Teacher Education, containing 66 articles published in the period. Analyzing the authorship, the one-timer’s category stood out, with 88% of the publications. The largest production was of 11 papers by author and the most mentioned one had 157 citations. It was concluded that the thematic has been getting attention from the researchers of several fields of knowledge, including business, and that the authors inserted in the theme are seeking the consolidation of the theoretical basis regarding the subject by using empirical work.

## Keywords

Teacher, Professional Development, Education

## 1. Introduction

The study of the teacher professional development aims the quality of teaching and the training of future professional, since the understanding of this process helps the improvement of teacher training and, the consequent improvement of their teaching practices.

In the report published by the Organisation for Economic Co-operation and

Development (OECD), it is stated that a substantial number of studies explains the quality of teacher training and the way they teach is the most important factor to explain how much the students learn. “There is now substantial research indicating that the quality of teachers and their teaching are the most important factors in student outcomes that are open to policy influence” (OECD, 2005: p. 9).

The teacher qualification is consolidated, from several learning experiences (Miccoli, 1997), and the set of these experiences and systematic analysis of their own practice leads to their professional development (Villegas Reimers, 2003).

Nevertheless, a process will have its results optimized from the understanding of itself. Thus, in order to make the teacher professional development easy, the process by which the teachers grow professionally and the conditions which support and promote such growth have to be understood (Clarke & Hollingsworth, 2002). A way to understand the teacher professional development is from his/her own learning experiences (Day, 1999; Villegas Reimers, 2003).

The studies developed focusing on the teacher professional development (Andersson & Palm, 2017; Clarke & Hollingsworth, 2002; Desimone, 2009; Marcelo, 2009) seek, by means of specific studies—theoretical and empirical, the effectiveness of teacher professional development and the consequent improvement in the students’ performance, approaching the teaching and learning process.

This study proposal is to understand the theme, by the analysis of the international scientific production, and the future trends on the theme. In order to do so, it proposes to answer the following research question: how has the scientific production on “teacher professional development” been framed lately?

To reach this purpose, a bibliographic research was carried out, based on the application of bibliometric procedures, aiming to promote an analysis of the field of knowledge on teacher professional development. The sample comprised 811 articles, published from 1987 to 2017. The data analysis was held in three stages, and it took place from the ranking of the articles in categories, from the HistCite software, an analytical tool which allows to identify the most significant work within a scientific field and track its evolution, besides identifying highly productive and highly mentioned authors in any research field chosen, as well as the most mentioned papers (Thulasi & Arunchalam, 2010).

The study provides the field researchers, whose study object is teachers and their qualification, an overview of what is researched in the field, and the course coordinators who worry about the quality of the faculty, as well as those who develop programs of teacher training programs aiming to develop, improve and qualify high education teachers to develop themselves professionally.

The discussion which permeated the definition of professional development, and more specifically, the teacher professional development, has been built and designed by some authors in the education field, such as Day (1999); Hargreaves & Fullan (1992); Kelchtermans (1995); Villegas Reimers (2003); Marcelo (2009).

In this study, it was chosen to use the approach referring to professional development, and not, teacher training, following the logic carried out by [Marcelo \(2009\)](#), who justifies the designation “professional development” as the most suitable one to the concept of teacher as teaching professional, since the concept “development” has the connotation of evolution and continuity that, for the author, overcomes the traditional juxtaposition between the teachers’ initial training and ongoing training.

Associated with this justification, the teaching complexity is added, which requires “teachers to commit themselves to a process of career-long professional development” ([Day, 2001: p. 16](#)), through the experiences of learning experienced by the teachers, which have as objective “to contribute to the improvement of the quality of education in classrooms” (p. 4).

Complacent to this view, [Rudduck \(1991: p. 129\)](#) refers to the teacher professional development as “the teacher’s ability to maintain the interest in his group; identify significant interests in the teaching and learning process; value and seek debate with senior colleagues as support in the analysis of situations”. Thus, the teacher professional development (TPD) can be understood as a constant and evolving attitude of thinking and action, through the result of his experience and the systematic analysis of his own practice ([Villegas Reimers, 2003](#)).

Furthermore, in order to the professional development to take place, [Heideman \(1990\)](#) warns that the teachers must be open to change. The professional development, according the author, will happen if the purpose is to modify the teaching-learning activities, change the teachers’ attitudes and improve the students’ school outcomes. The teacher needs to have interrelationship of the concerns which go way beyond the individual, professional and organizational needs around him/her.

[Day \(1999\)](#) broadened this view when encompassing in the professional development all the natural learning experiences, which reflected, can be incorporated to the improvement of the educational quality in the classroom. For the author, professional development is seen as a process by which,

It is the process by which, alone and with others, teachers review, renew and extend their commitment as change agents to the moral purposes of teaching; and by which they acquire and develop critically the knowledge, skills and emotional intelligence essential to good professional thinking, planning and practice with children, young people and colleagues through each phase of their teaching lives ([Day, 1999: p. 4](#)).

Another approach regarding teacher professional development is given by [Kelchtermans \(1995\)](#), from five perspectives centered in changes that occurred during the career path and through an autobiographical approach. The five perspectives are called narrative, constructivist, contextualized, interactionist and dynamics. The author conceptualize, from these perspectives, the professional development in the meaning and in the constructive process that the experiences and consequent accounts have for the teachers, as well as his speeches

about the context where they intervene, significant interactions with these contexts and the dynamics between thought and action in certain moments of professional development.

Thus, professional teacher development can be understood as a long-term process, which develops throughout the professional career of the teacher, and “integrates different types of opportunities and experiences, systematically planned, in order to promote growth and development professional teachers” (Villegas Reimers, 2003: p. 12).

Due to the complexity of the process of development and professional growth and to the difficulty in understanding the factors which affect such development, over the past decades, teacher professional development models were developed, and steadily improved in order to meet the demands identified in the improvement of the teaching practices, by authors, such as: Clarke & Hollingsworth (2002); Guskey & Sparks (2002); Marcelo (2009), who are the most mentioned ones in the literature consulted.

Researchers as Fullan (1982) recognized that many programs of teaching training do not consider the teacher professional change process. Such programs usually tried to change the teachers’ beliefs and attitudes, expecting that changes in these points would lead to changes in practices and behaviors in the classroom.

Nevertheless, Marcelo (2009) identified that this logic implicit in the programs of teacher training do not reflect the reality of the teacher professional development process, and it is its main criticism. According to the author, the implicit purpose of many programs of ongoing teacher training is the changes in teachers’ knowledge and beliefs, who, in turn provoke a change in teaching practices in the classroom and, consequently, a probable improvement in the students’ learning outcomes. The prerogative is that teacher training, causes changes in the knowledge and beliefs and these are conditioned in the behavior of the classes (students) topping up with the change in the students’ learning outcomes.

When discussing these programs, Guskey & Sparks (2002) pointed gaps in the change view of the implicit logic model and supplied an alternative model. The authors state that significant changes in beliefs and attitudes took place, but not as consequence of his participation in activities of professional development, but proving, in practice, the use and feasibility of these new practices which they want to develop and, its consequence on the students’ learning outcome.

Another model of teacher change process was developed by Clarke & Peter (1993), and later reviewed by an international research group interested in the teacher professional growth, such as the Interconnected Model of Teacher Professional Growth. This model was, in a second moment, outlined by Clarke & Hollingsworth (2002), and it comes up from the criticism to previous models, since they did not reflect the complexity of the teachers’ learning processes. Thus, the authors propose not a linear model, but an interrelated one.

The Inter relational Model of Professional Development, developed by [Clarke & Hollingsworth \(2002\)](#), suggests that the development of the changes occurs through two mediating processes of “thinking” and “application”, in four distinct domains: personal domain (his knowledge, beliefs and attitudes), the domain of teaching practice (work experience), domain of consequence in the students’ learning (prominent outcomes) and external domain (information, stimuli or support sources).

[Clarke & Hollingsworth \(2002\)](#) defend that the professional development is produced both by the teachers’ thinking, and the implementation of new procedures; these mediating processes are represented, in the model, as arrows linking the domains. This model recognizes the complexity of professional development by the identification of multiple development path between the domains.

Its non-linear nature and the fact of recognizing the professional development as an unavoidable and ongoing learning process, distinguishes this model from others identified in the research literature. This model also identifies the mediating processes of thinking and implementation as the mechanisms by which the change in a domain leads to change in another one. Any professional growth process represented in the model takes place within the limitations and possibilities of the overwhelming change environment ([Hollingsworth, 1999](#)).

The implementation mediating process is considered the mechanism in which a new idea or a new belief or a new recently discovered practice is put into action. The thinking mediating process occurs when the teacher tries new practices in the classroom and, then, thinks over and interprets the events occurred in terms of the results found and concludes on the consequent changes on these salient outcomes, in the students’ learning. The nature of the inferences taken fully depends on the teacher’s value system.

The field of knowledge on teacher professional development has been studied, improved and presented in the literature in many different ways. Nevertheless, the key aspect which rules such studies focuses on the understanding that professional development is a complex process, by which the teachers grow professionally through their learning experiences ([Clarke & Hollingsworth, 2002](#); [Day, 1999](#); [Villegas Reimers, 2003](#)), aiming to change their knowledge into practice for the benefit of their students’ growth.

In this sense, [Marcelo \(2009: p. 10\)](#) discusses a new perspective regarding professional teacher development, which has the following characteristics:

- 1) it is based on constructivism, not on the transmissive models, understanding that the teacher is a subject who actively learns to be involved in concrete tasks of teaching, evaluation, observation and reflection; 2) it is understood as a long-term process, which recognizes that teachers learn over time. Thus, experiences are considered to be most effective if teachers are allowed to relate the new experiences to their previous knowledge. For this, it is necessary that an appropriate follow-up is, so that the change can take place; 3) it is assumed as a process that takes place in concrete contexts. The reverse of traditional

practices that don't relate training situations to classroom practices, the most effective experiences for teacher professional development are those that are school-based and relate to daily activities performed by teachers; 4) professional teacher development is directly related to the processes of school reform, insofar as it is understood as a process that tends to rebuild the school culture and in which teachers are implicated as professionals; 5) the teacher is seen as a reflexive practitioner, someone who has prior knowledge when entering the profession and who is acquiring more knowledge from a reflection about his experience. Thus, professional development activities consist of helping teachers build new theories and new pedagogical practices; 6) professional development is conceived as a collaborative process, although it is assumed that there may be space for isolated work and reflection; 7) professional development can take different forms in different contexts. For this reason, there is no one and only one model of professional development that is effective and applicable in all schools. Schools and teachers should evaluate their own cultural needs, beliefs and practices to decide which model of professional development is most beneficial to them.

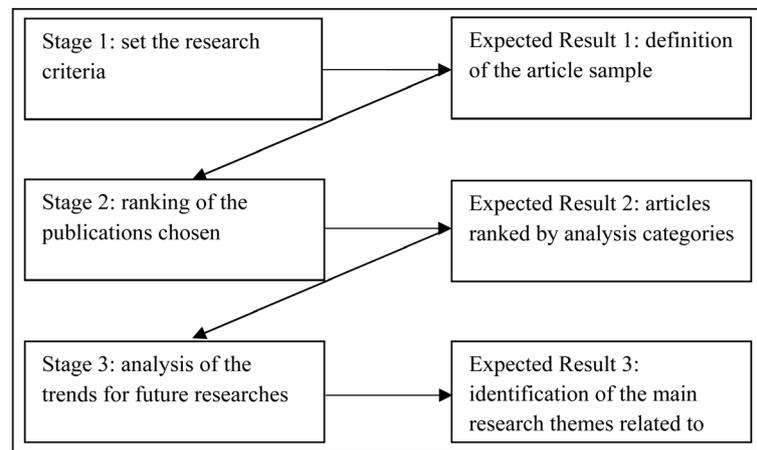
There is, therefore, a constant need of studying, trying, discussing and reflecting on teacher professional development about the links and influence of history and traditions of teacher groups, the educational needs of student populations, the teachers' working conditions and the learning opportunities which are open to them (Avalos, 2011).

In the last thirty years, since the first record of the term "teacher professional development", a large number of articles have been published and are aimed at teachers, their teaching trainers and educational managers, aimed at the professional development and its impact on the teaching quality and on the students' learning.

## 2. Methodology and Methods

The methodology adopted in this study is based on the bibliographic research and in the application of bibliometric procedures, aiming to promote an analysis of the field of knowledge on teacher professional development. As stated by Guedes & Borschiver (2005), the scientific productions regarding a field of knowledge, and generate different indicators of treatment and information and knowledge management, and of productivity, necessary for the planning, assessment and science management in a certain scientific community.

For the definition of the study sample, the *Web of Knowledge* tool, *Web of Science* database, for the publication period from 1987 to 2007, since the beginning of publications in this field of knowledge. For the bibliometric analysis, the *Hist Cite* software was used; it is an analytical tool which allows to identify the most significant work within a scientific area and track its evolution, besides identifying highly productive and highly mentioned authors, as well as the most cited papers in any research field chosen, (Thulasi & Arunachalam, 2010).



**Chart 1.** Representation of the research development stages. Source: adapted from Silva, Silva, & Ometto (2016).

For the development of the study, three stages were carried out (Silva, Silva & Ometto, 2016), as shown in **Chart 1**. In the first stage, the research criteria was set and the search for the key word in the *Web of Knowledge* took place. Thus, at first, the publications were chosen according the criteria: type of document—article and type of publication—*academic journal*. The term used as key word was the expression. “*teacher professional development*”, used in the title and topic search criteria. Altogether, 1138 articles were found and 811 of them were chosen for analysis.

In the second stage, the ranking of the publications chosen was performed and the analysis category were: publication date, country of origin, institutions involved and name of the journal. For the work authorship, the authors were classified according to the productivity in the field (number of articles published and number of citations received) and the productive framework (continuants, transients, newcomers, one-timers and terminators) (Walter & Bach, 2013). For the analysis of citation number, the bibliometric indicators of the *Hist Cite* software were used.

Finally, the third stage was developed from the analysis of the results, by which future trends for researches in the field of knowledge in teacher professional development were identified. In order to do so, the crossing of the themes of the main articles published together with the themes of the most recent articles published was made (**Chart 1**).

### 3. Results and Discussion

#### 3.1. Evolving Analysis, Country of Origin, Institutions Involved

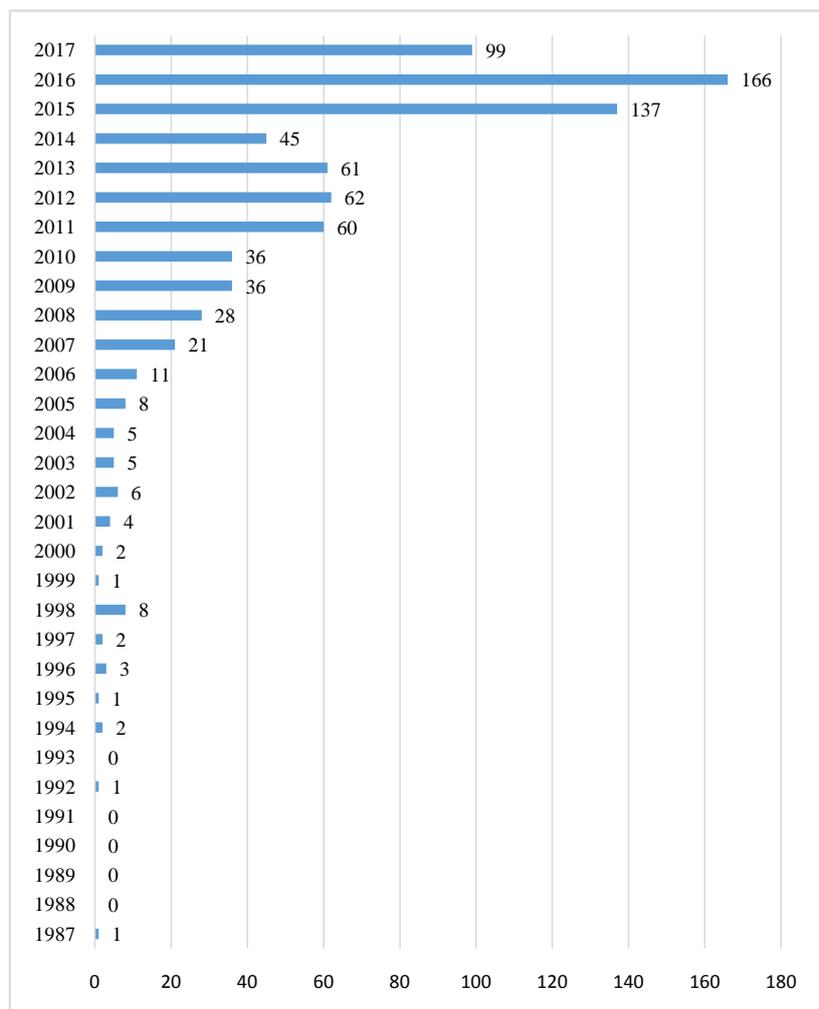
The search for articles published on “*teacher professional development*”, in October/2017, resulted in 1,138 results, of which 811 were used in this study according to the “article” refining criterion, from 1987 to 2017, totaling 30 years of publications in this field.

Since the beginning of the publications on the theme, in 1987, the period

which stands out is the last five years (2013-2017), which means 62.64% of the articles were published in this period, indicating the rise of the theme in recent years, with special focus on 2016, which had the largest number of publications, totaling 166 articles as shown in **Picture 1**.

Opfer & Pedder (2011) state that in the late 1980's and beginning of the 1990's, many authors discussed the teaching and learning as situational, contextual or ecological. Nevertheless, the boost in educational research for the scientification in the late 1990's and 2000 became more mechanistic and linear due to causal studies and the growth of the linear statistical modeling (Lather, 2005). As a result, the conceptual growth in the complex understanding carried out in the previous period came to a standstill, and more recently, it reappeared with the work of theorists regarding the subject.

Regarding the country of origin of the publications, 67 countries were identified, with focus on the United States and Australia with 403 articles published, concentrating 49.7% of the publications on the theme. **Chart 2** shows the characterization of the article sample according to the country of origin.



**Picture 1.** Number of publications per year. Source: research data.

**Chart 2.** Number of publications per country of origin.

Country	Number of publications	%
The United States	295	36%
Australia	108	13%
The United Kingdom	62	8%
The Republic of China	55	7%
The Netherlands	36	4%
Canada	34	4%
South Africa	31	4%
Singapore	28	3%
Spain	24	3%
New Zealand	23	3%
Taiwan	21	3%
Israel	14	2%
Germany	13	2%
Ireland	12	1%
Sweden	11	1%
Others	44	5%

Source: research data.

The publications center on the following countries: the United States, Australia, the United Kingdom, the Republic of China, the Netherlands, Canada, South Africa, Singapore, Spain, New Zealand, Taiwan, Israel, Germany, Ireland and Sweden. Other 44 articles are distributed in countries which published 1 to 10 articles each. Moreover, it is highlighted that Brazil contributed with 5 articles in this sample, characterizing its low representativity in the field, and opportunity for new researches.

Regarding the institutional affiliation of the publications analyzed, 685 institutions were identified, 507 of them were universities, which corresponds to 74% of the sample analyzed. Other institutions found are related, for the most part, to research institutions and non-profit organizations.

Among the universities, the ones which stood out were: Nanyang Technological University (Singapore), Hong Kong Institute of Education (Hong Kong) and the University of Queensland (Australia), characterized by the institutions involved in the publications of the articles which were the object of this analysis (**Chart 3**).

The Brazilian institutions involved in articles published on teacher professional development were: Federal University of Rio de Janeiro, State University of Bahia, Federal University of Mato Grosso do Sul, State University of Rio de Janeiro and Federal University of Paraná. Thus, the “*teacher professional development*” theme has arisen, at a global level, more interest in Universities in the

**Chart 3.** Number of publications per country of origin.

University	Country	Number of publications	%
Nanyang Technological University	Singapore	27	3.3%
Hong Kong Institute of Education	Hong Kong	20	2.5%
University of Queensland	Australia	16	2.0%
University of Cambridge	England	15	1.8%
Purdue University	United States	14	1.7%
University of Hong Kong	Hong Kong	14	1.7%
Michigan State University	United States	12	1.5%
New York University	United States	12	1.5%
University of Virginia	United States	12	1.5%
Newcastle University	United Kingdom	11	1.4%
Harvard University	United States	10	1.2%
Open University	United Kingdom	10	1.2%
Penn State University	United States	10	1.2%
University of KwaZulu-Natal	South Africa	10	1.2%

Source: research data.

United States, the United Kingdom and Hong Kong.

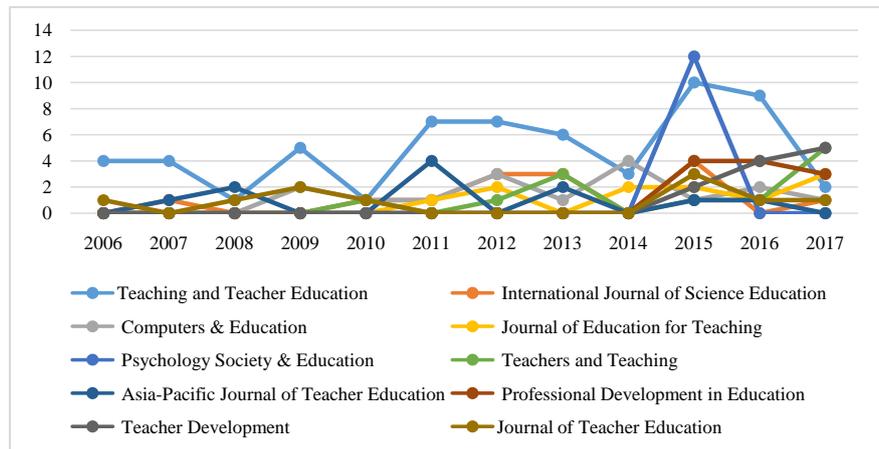
### 3.2. Analysis of the Publications in Journals Involved

Regarding the journals which published on the field of knowledge related to the teacher professional development, the ones in **Chart 3** seem to be the most influenced ones in the area. Altogether, 295 journals were identified, and the one which stands out, having the largest number of publications, is the *Teaching and Teacher Education* journal, in which 66 articles were published during the period analyzed. The most influential ones accounted for 60.67% of the total of the publications, and each one of them had from 10 to 66 articles published, according to the information shown on **Chart 4**.

The *Teaching and Teacher Education* Journal presents an impact factor of 2.183 in the last year and 2.995 in the 5-year accumulated. The *International Journal of Science Education* also presents an impact factor above 1.

**Picture 2** presents the publication rolling on teacher professional development for the main journals identified from 2006 to 2017. The choice for this period is justified by the fact that the publication of the journals chosen started in 1992, and until 2005, the frequency of publications on this field was low, between 0 and 1 articles, except in 1998, when 4 articles were published.

Thus, it is observed that most of the journals do not have linearity when publishing on theme. Such a fact may be due to the multidisciplinary nature of the journal. The *Teaching and Teacher Education* journal, for instance, is aimed at not being committed to any approach, subject, methodology or single paradigm, that



Picture 2. Journal trend. Source: research data.

Chart 4. Number of publications per journal.

Name	Number of publications	%
Teaching and Teacher Education	66	22%
International Journal of Science Education	18	6%
Computers & Education	16	5%
Journal of Education for Teaching	12	4%
Psychology Society & Education	12	4%
Teachers and Teaching	12	4%
Asia-Pacific Journal of Teacher Education	11	4%
Professional Development in Education	11	4%
Teacher Development	11	4%
Journal of Teacher Education	10	3%
Others	116	39%

Source: research data.

is, it is open to articles which are related to teaching and teacher training in general.

### 3.3. Analysis of Publication Authorship

Regarding the productive framework, **Chart 5** presents the number of authors identified per authorship category. This analysis resulted in classifying the authors in the categories adapted from **Guarido Filho, Silva, & Gonçalves (2009)**: 1) newcomers: new researchers in the field (who published from 1 to 2 articles just in the last three years); 2) transients: researchers who are relatively permanent in the field (who published, at least, two articles in up to 4 different years, either in the last 3 years or before that); 3) continuants: researchers consolidated in the field (who published, at least two articles in five or more different years, including the last 3 years); 4) one-timers: sporadic researchers (who published

**Chart 5.** Productive framework of the authors in the field.

Categories	Number of authors	%
Newcomer authors	142	7.4%
Continuant authors	6	0.3%
Transient authors	0	0%
One-timer Authors	1,689	88.0%
Terminator Authors	81	4.3%
Total	1,918	100%

Source: Research data.

just one article in the whole period); and terminators: researchers who are leaving the field (who published, at least 2 articles, but none in the last 3 years).

In all, 1918 different authors were identified, as seen in **Chart 5**. The newcomers, continuants, transients and terminators present little or none expressiveness in the publications mapped, different from the one-timer category, which stood out the most, representing 88% of the publications. Such findings include the fact that the “teacher professional development” theme was recently added to the scientific production of the international academy.

Regarding the productivity of the authors in the field, in **Chart 6**, the ranking of the main authors according to the number of articles published is presented.

It is observed that two of the main authors, 7 out of the 1918 authors mapped, are from the United States and two from Australia, the two countries which stand out the most in publications in the field. The maximum number of articles published per author varied from 5 to 11. Therefore, it is observed that most of the publications (99.6%) is broken up among the 1911 authors, who published 1 to 4 articles each, a fact which can be attributed to the large number of institutions involved in researches on the theme.

Corroborating the above information, there is also the fact that the most part of the authors mapped had been classified as one-timer researchers, sporadic and unconsolidated researchers in the field. Regarding the 7 main authors in **Chart 6**, two are classified as newcomers, two as transients, two as continuants and one as terminator.

Considering that an author’s productivity must also take into account the number of citations his publications had, **Chart 7** ranks the authors mapped according to the number of Global Citation Score (GCS) citation type.

Out of the 28,859 GCS citations, in **Chart 7**, it is observed that 12 authors are the main ones, whose citation numbers vary from 35 to 157. Nine (9) out of the total are from the United States, one is from Russia, 1 is from Chile and 1 of them does not have any affiliation, at the moment; altogether they represent 3% of the citations. Thus, it is observed that most part of the citations is broken up (97% of the 1,918 authors mapped).

When analysing the productivity of the main TPD authors, different findings

**Chart 6.** Main authors in the field.

Author	Country	Number of articles published	%
Ian Hardy	Australia	11	0.57%
Okhee Lee	the United States	7	0.36%
Alfredo Bautista	Singapore	5	0.26%
Ching Sing Chai	Singapore	5	0.26%
David Lubans	Australia	5	0.26%
Luanna Meyer	New Zealand	5	0.26%
Robert Pianta	the United States	5	0.26%
Outros	Several	1911	99.6%

Source: research data.

**Chart 7.** Number of citations of the main authors in the field.

Author	Country	Number of GCS citations received	%
Hilda Borko	the USA	157	0.54
Lee Shulman	the USA	121	0.41
Michael S. Garet	the USA	115	0.40
Laura M. Desimone	the USA	112	0.39
Thomas R. Guskey	the USA	77	0.27
Donald Schon	the USA	48	0.17
Étienne Wenger	no affiliation	45	0.16
Lev Vygotsky	Russia	43	0.15
Jean Lave	the USA	42	0.14
Beatrice Avalos	Chile	38	0.13
David Clarke	the USA	35	0.12
Suzanne M. Wilson	the USA	35	0.12
Others		27,991	97

Source: research data

are observed, according to the comparison criteria. From the **Chart 6** and **Chart 7**, it is observed that the authors with the largest number of publications are not the ones who had the largest number of citations. In **Chart 5**, more than 90% of the authors were classified as one-timers or terminators, and the majority of their articles date from 1997-2005; moreover, 6 authors were classified as continuants. Differently, in **Chart 6**, two of the outstanding authors were classified as continuants, and the other five were considered transients, that is researchers who are relatively constant in the field.

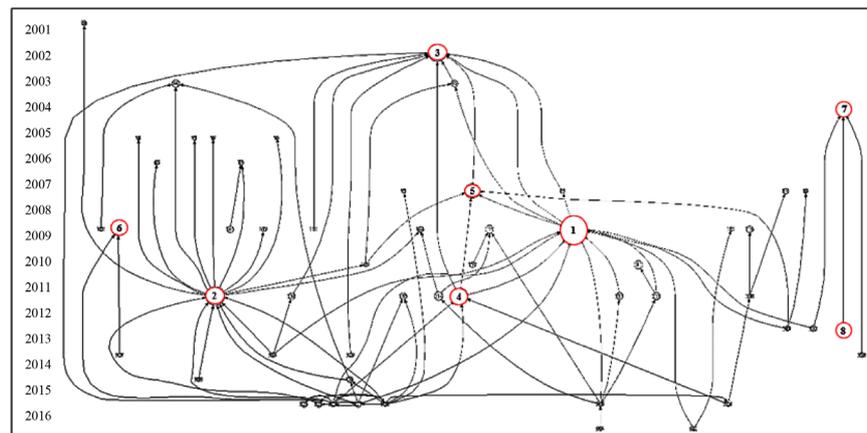
Thus, it can be inferred that the authors in **Chart 6** are the main researchers in the field nowadays. On the other hand, the authors in **Chart 7** are, mostly, leaving the field (terminators) or are not great “actors” (one-timers); neverthe-

less, their works, although retrospective, serve as basis for the continuity and development of more TPD publications.

### 3.4. Analysis of Future trends

In this section, the future trends for researches on Teacher Professional Development are identified. First, the main themes studied in the field were mapped choosing the articles with the highest LCS (Local Citations Scale) values, as shown in **Picture 3** and in **Chart 8**.

Out of the main authors (**Chart 7**), two of them stand out in **Chart 8**, Laura Desimone and Beatrice Avalos. All the works date from 2002-2011 and, most of them, involve authors classified as terminators.



**Picture 3.** Map of the relationship between the publications analyzed. Source: Research data.

**Chart 8.** Main publications mapped.

	Authorship	Year	Theme Studied	Study Type	LCS
(1)	Desimone, L.M.	2009	Improving impact studies of teachers' professional development: toward better conceptualizations and measures	Theoretical	78
(2)	Avalos, B.	2011	Teacher professional development in teaching and teacher education over ten years	Theoretical	38
(3)	Desimone, L.M., et al.	2002	Effects of professional development on teachers' instruction: results from a three-year longitudinal study	Empirical	34
(4)	Opfer, V.D., Pedder, D.	2011	Conceptualizing teacher professional learning	Theoretical	28
(5)	Wayne, A.J., et al.	2008	Experimenting with teacher professional development: motives and methods	Theoretical	24
(6)	Dede, C., et al.	2009	A research agenda for online teacher professional development	Theoretical	19
(7)	Ertmer, P. A.	2005	Teacher pedagogical beliefs: the final frontier in our quest for technology integration?	Theoretical	15
(8)	Ertmer, P.A., et al.	2012	Teacher beliefs and technology integration practices: a critical relationship	Empirical	12

Source: research data.

From the analysis of the main publications mapped, most cited articles regarding teacher professional development, it is observed that the majority are theoretical articles, which corroborates with the rise of the field in the last five years, and the recent recovery (since 2006) of the researches regarding the subject in question, and by means of some empirical works which consolidate them.

#### 4. Conclusion

The study aimed to carry out an analysis of the international scientific production in the teacher professional development research field. In order to do so, the Web of Science database was used, by which 811 articles, published from 1987 to 2017, were mapped, totaling 30 years of publications in the field, including 1918 authors, from 67 countries and 295 different journals.

The articles of the sample were analyzed based on analysis categories: publication date, country of origin, institutions involved and journal name. For the work authorship, the authors were classified according to the productivity in the field (number of articles published and the number of citations they had) and according to the productive framework: continuants, transients, newcomers, one-timers and terminators. Finally, from the analysis of the results, the trends for future researches in the field of knowledge in teacher professional development were identified.

From the trend analysis, it was observed that more than 60% of the articles were published in the last 5 years, which shows the rise of the theme. Regarding the country of origins of the publications, 49% concentrated between the United States and Australia. Regarding the institutions involved, the universities represented a large part of the publications. The main institutions were Nanyang Technological University (Singapore), Hong Kong Institute of Education (Hong Kong), University of Queensland (Australia), University of Cambridge (England) and Purdue University (the United States), which contributed with 14 to 27 publications each.

On the analysis of the most prolific journals, the highlights were Teaching and Teacher Education and International Journal of Science Education, containing 66 and 18 articles published respectively.

Regarding the analysis of the authorship of publications, 7.4% of the articles were written by newcomers, 0.3% by continuants, 4.3% by terminators and 88% by one-timers, which shows that only recently has the theme been included in the international academy scientific production.

The most productive author in terms of number of publications was Ian Hardy (11 articles), followed by Okhee Lee (7 articles), and they were classified as continuant and transient, respectively. Regarding the number of GCS citations, the most productive authors were Hilda Borko (157 citations), Lee Shulman (121 citations), Michael Garet (115 citations) and Laura Desimone (112 citations). Nevertheless, the most cited authors were, mostly, classified as terminators and, also, the majority of the publications took place from 1987 to 2004, not being

classified as recent. From that information, it was inferred that the authors with the largest number of publications represent the main researchers in the field nowadays and that the most cited ones are researchers who, in most part, are either leaving the field or are not very active.

The largest production was of 11 papers by author and the most mentioned one had 157 citations. It was concluded that the thematic has been getting attention from the researchers of several fields of knowledge, including business, and that the authors inserted in the theme are seeking the consolidation of the theoretical basis regarding the subject by using empirical work.

Concerning the main publications mapped, it is observed that most of the articles are theoretical, which corroborates with the rise of the field in the last five years, and the recent recovery (since 2006) of the researches regarding the subject in questions. Thus, it is inferred that the authors engaged in this theme are seeking consolidation of theoretical basis concerning the subject, and through some empirical work, consolidating them. Therefore, this is the elaboration of the research theme approached.

Teacher professional development takes place through a non-linear process, therefore, the lack of consensus regarding how this process can be approached in programs of teacher training, as trends for future researches, the survey of experiences lived by teachers during their training is highlighted. Such experiences can point the difficulties faced by trial and error, and learnings which helped in their development and improvement of their practices in the classroom.

## References

- Andersson, C., & Palm, T. (2017). The Impact of Formative Assessment on Student Achievement: A Study of the Effects of Changes to Classroom Practice after a Comprehensive Professional Development Programme. *Learning and Instruction, 49*, 92-102.
- Avalos, B. (2011). Teacher Professional Development in Teaching and Teacher Education over Ten Years. *Teaching and Teacher Education, 27*, 10-20.
- Clarke, D., & Hollingsworth, H. (2002). Elaborating a Model of Teacher Professional Growth. *Teaching and Teacher Education, 18*, 947-967.
- Clarke, D., & Peter, A. (1993). Modelling Teacher Change. *Proceedings of the Sixteenth Annual Conference of the Mathematics Education Research Group of Australasia* (pp. 167-175). Brisbane: MERGA.
- Day, C. (1999). *Developing Teachers: The Challenges of Lifelong Learning*. London: Falmer Press.
- Day, C. (2001). *Desenvolvimento Profissional de Professores: Os desafios da aprendizagem permanente*. Portugal: Porto.
- Desimone, L. M. (2009). Improving Impact Studies of Teachers' Professional Development: Toward Better Conceptualizations and Measures. *Educational Researcher, 38*, 181-199.
- Fullan, M. (1982). *The Meaning of Educational Change*. New York: Teacher College Press.
- Guarido Filho, E. R., Machado-Da-Silva, C. L., & Gonçalves, S. A. (2009). Institucio-

- nalização da teoria institucional no contexto dos estudos organizacionais no Brasil. *Proceedings of the XXXIII Encontro Nacional da ANPAD* (pp. 1-16). São Paulo: Hotel Transamérica.
- Guedes, V. L. S., & Borschiver, S. (2005). Bibliometria: Uma ferramenta estatística para a gestão da informação e do conhecimento, em sistemas de informação, de comunicação e de avaliação científica e tecnológica. *Proceedings of the CINFORM-Encontro Nacional de Ciência da Informação* (pp. 1-18). Salvador.
- Guskey, T., & Sparks, D. (2002). Linking Professional Development to Improvements in Student Learning. In *Proceedings of the Annual Meeting of the American Educational Research Association* (pp. 1-7).
- Hargreaves, A., & Fullan, M. (1992). *Understanding Teacher Development*. New York, NY: Teachers College Press.
- Heideman, C. (1990). *Programming for Staff Development*. New York, NY: Falmer Press.
- Hollingsworth, H. (1999). *Teacher Professional Growth: A Study of Primary Teachers Involved in Mathematics Professional Development*. Theses. [http://works.bepress.com/hilary\\_hollingsworth/15/](http://works.bepress.com/hilary_hollingsworth/15/)
- Kelchtermans, G. A. (1995). Utilização de biografias na formação de professores. *Aprender*, 18, 5-20.
- Lather, P. (2005). Scientism and Scientificity in the Rage for Accountability: A Feminist Deconstruction. In *Proceedings of the First International Congress of Qualitative Inquiry* (pp. 1-19).
- Marcelo, C. (2009). Desenvolvimento profissional docente: Passado e futuro. *Sísifo: Revista de ciências da educação*, 8, 7-22.
- Miccoli, L. S. (1997). *Learning English as a Foreign Language in Brazil: A Joint Investigation of Learners' Experiences in a University Classroom or Going to the Depth of Learners' Classroom Experiences*. Doctoral Dissertation, Record No. NQ28294.
- OECD Organisation for Economic Co-operation and Development (2005). *Teachers Matter: Attracting, Developing and Retaining Effective Teachers*. <https://www.oecd.org/edu/school/34990905.pdf>
- Opfer, V. D., & Pedder, D. (2011). Conceptualizing Teacher Professional Learning. *Review of Education Research*, 81, 376-407. <https://doi.org/10.3102/0034654311413609>
- Rudduck, J. (1991). *Innovation and Change. Modern Educational: Thought Series*. Toronto: OISE Press.
- Silva, D. A. L., Silva, E. J., & Ometto, A. R. (2016). Green Manufacturing: Uma análise da produção científica e de tendências para o futuro. *Production*, 26, 642-655.
- Thulasi, K., & Arunachalam, S. (2010). Mapping of Cholera Research in India using HistCite. *Annals of Library and Information Studies*, 57, 310-326.
- Villegas Reimers, E. (2003). *Teacher Professional Development: An International Review of Literature*. Paris: International Institute for Educational Planning.
- Walter, S. A., & Bach, T. M. (2013). Inserção de Pesquisadores Entrantes na Área de Estratégia: Análise das Relações de Autoria e Temas Estudados no Período de 1997-2010. *REAd*, 19, 165-191. <https://doi.org/10.1590/S1413-23112013000100007>