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Bibliometric analysis from local instruction theory research

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A B S T RAK

Bidang yang dikenal sebagai bibliometrik adalah bidang yang memungkinkan evaluasi publikasi ilmiah yang berbeda menggunakan berbagai indikator yang berbeda. Tujuan dari penelitian ini adalah untuk melakukan analisis bibliometrik dari jumlah pekerjaan yang telah dilakukan di bidang teori instruksi lokal antara tahun 2009 dan 2020. Semua artikel jurnal yang diambil dari database Scopus antara tahun 2009 dan 2020 digabungkan. Sebagai indikator bibliografi, kami menggunakan hal-hal seperti jumlah publikasi, institusi paling produktif, jenis kolaborasi, negara paling produktif, makalah yang paling banyak dikutip, dan penulis yang memiliki produksi akademik keseluruhan tertinggi. Kemudian dikirim ke alat SciVal untuk menjalani analisis. Penelitian tentang teori pengajaran lokal diambil dari total 29 publikasi yang diterbitkan, dengan 50 penulis berbeda berkontribusi pada koleksi 41 kutipan. Dokumen terbanyak dihasilkan di Indonesia yang merupakan negara terbesar di dunia. Lembaga yang memiliki pengaruh dan produksi ilmiah terbesar adalah Universitas Sriwijaya yang juga memiliki produksi ilmiah tertinggi. Ratu Ilma Indra Putri adalah penulis yang paling banyak menerbitkan naskah sepanjang karirnya. *Last but not least*, sebagian besar artikel melibatkan kolaborasi antar institusi. Penelitian teori pengajaran lokal masih baru dan belum berdampak global. Akademisi dapat mengirimkan kutipan artikel yang relevan, menempatkan mereka di garis depan penelitian terbaru.

A B S T R A C T

A field known as bibliometrics is one that allows for the evaluation of different scientific publications using a variety of different indicators. The purpose of this research is to carry out a bibliometric analysis of the amount of work that has been done in the field of local instruction theory between the years 2009 and 2020. All of the journal articles that were retrieved from the Scopus database between the years 2009 and 2020 were incorporated. As bibliographic indicators, we used things like the number of publications, the most productive institutions, the type of collaboration, the most productive countries, the most cited papers, and authors who had the highest overall academic production. It is then sent to the SciVal tools in order to undergo analysis. The research on local teaching theory was drawn from a total of 29 published publications, with 50 different writers contributing to the collection of 41 citations. The most documents have been produced in Indonesia, which is the world's largest country. The institution that has the biggest scientific influence and production is Sriwijaya University, which also has the highest scientific production. Ratu Ilma Indra Putri is the author who has had the most manuscripts published throughout the course of her career. Last but not least, the majority of articles involve collaboration between institutions. Local instruction theory research is still new and hasn't made a global impact. Academics can submit relevant article citations, putting them at the forefront of the latest research

1. INTRODUCTION

The purpose of a local instruction theory, or LIT, is to educate educators on the efficacy of novel pedagogical methods and give them the tools necessary to implement those strategies in their own classrooms. A local instruction theory focuses on a single subject, such as the addition of fractions, the multiplication of decimals, or the analysis of data, and is designed to teach only that subject.

There have been a number of studies carried out, some of which include: (Meika et al., 2019b) the purpose of this study is to develop a mix of local learning theory and Realistic Mathematical Education; and (RME). The LIT flow that was designed as part of this study aims to establish an easy learning path that will assist students in developing fundamental concepts in integrated content.

In addition, information coming from (Putri & Zulkardi, 2018) is being used to construct something called the Learning Trajectory for elementary school children. The research design consisted of three stages: the first was preparation for an experiment, the second was the actual teaching experiment, and the third was a retrospective analysis. This line of inquiry yields a Local Instructional Theory (LIT) on the topic of fraction by examining it in the context of various sports that will be part of the 2018 Asian Games.

A bibliometric analysis of the publications of specific institutions or journals can provide a more comprehensive picture of output and help us plan ahead for the future. Despite its prominence in the field of mathematics education research, no bibliometric studies have examined or included the journal's production to yet. As a result, the objective of this research is to undertake a bibliometric review of articles on Scopus that occurred between 2009 and 2020.

2. METODE

Scopus data from 2009 to 2020 was used to conduct a secondary bibliometric analysis. Research publications from the entire time period (n = 29) were included in the study. It was necessary to mine Elsevier's (the United States-based publisher) Scopus database to find all pertinent information. For the purposes of Scopus, the formula is as follows: "local instruction theory"

After carrying out the search method, the data are extracted from Scopus using the.csv file format, and then they are imported into a spreadsheet using Microsoft Excel. The date for the gathering of data and the analysis is the 13th of January in 2020. For the purpose of conducting a study of bibliographic indicators, an instrument known as the SciVal system (https://www.scival.com/) is utilized. SciVal is an evaluation tool for scientific production. With the help of this tool, bibliometric indicators such as the number of publications, the most productive institutions, the most productive countries, the type of collaboration (national, international, institutional, single author), the most cited articles, and authors with the highest scientific output were investigated. There is a summary table that contains information about each bibliometric indicator, broken down by frequency and percentage.

3. RESULT AND DISCUSSION

The following is the total number of articles that were retrieved successfully from the Scopus database as a consequence of the search that was performed.

Table 1. List of Articles about Local Theory Instruction

Authors	DOI
(Gravemeijer & Van Eerde, 2009)	10.1086/596999
(L. M. Doorman & Gravemeijer, 2009)	10.1007/s11858-008-0130-z
(van Nes & Doorman, 2010)	10.1007/BF03217557
(Nickerson & Whitacre, 2010)	10.1080/10986061003689618
(Murdiyani et al., 2013)	10.22342/jme.4.1.567.95-112
(Bustang et al., 2013)	10.5539/ies.v6n8p58
(Astuti, 2014)	10.22342/jme.5.1.1447.35-46
(Prahmana & Suwasti, 2014)	-
(Crompton, 2015)	10.1564/tme_v22.1.02

Authors	DOI
(Ji & Kim, 2015)	10.1007/978-3-319-23470-0_13
(Kock et al., 2015)	10.1007/s10763-014-9535-z
(de Beer et al., 2015)	10.1007/s11858-015-0684-5
(Shanty, 2016)	10.22342/jme.7.2.3538.57-72
(Whitacre & Nickerson, 2016)	10.1007/s10857-014-9295-2
(Crompton, 2017)	-
(de Beer et al., 2017)	-
(Riyanto et al., 2018)	10.1088/1742-6596/943/1/012049
(Nuraida et al., 2018)	10.1088/1742-6596/983/1/012105
(Riyanto et al., 2019)\	10.1088/1742-6596/1097/1/012102
(Fachrudin et al., 2018)	10.1088/1742-6596/1108/1/012069
(Cárcamo et al., 2019)	10.29333/ejmste/108648
(Riyanto et al., 2019)	10.1088/1742-6596/1166/1/012033
(Meika et al., 2019a)	10.1088/1742-6596/1157/4/042082
(M. Doorman, 2019)	10.35763/aiem.v0i15.266
(Eriyenti Putri, 2019)	10.1088/1742-6596/1317/1/012130
(Nuraida et al., 2019)	10.1088/1742-6596/1280/4/042003
(Vazila et al., 2020)	10.1088/1742-6596/1460/1/012046
(Kurniadi et al., 2020)	10.1088/1742-6596/1480/1/012033
(Nursa et al., 2020)	10.1088/1742-6596/1480/1/012026

During the course of the research, a total of 29 papers that were published in the Scopus database were accessed, yielding a total of 41 citations for the articles (13.6 citations per manuscript). Ratu Ilma Indra The authors that have contributed the most manuscripts are Ilma Putri and Darmawijoyo (4 papers). Whereas author Helen Crompton had the most influence, with seven citations to each of her papers in just one publication each, Both Zulcardi and Bambang Riyanto are affiliated with three different periodicals each (Table 2).

Table 2. Top 10 authors with most publications in LIT Research.

Name	Scholarly Output	Most recent publication	Citations	Citations per Publication	Field-Weighted Citation Impact	h-index
Putri, R. I.I.	4	2019	25	6.3	3.31	13
Darmawijoyo	4	2020	21	5.3	2.76	10
Zulkardi, Z.	3	2019	21	7	3.68	14
Riyanto, Bambang	3	2019	21	7	3.68	3
Kusumah, Yaya Sukjaya	2	2019	1	0.5	0.28	9
Nuraida, Ida	2	2019	1	0.5	0.28	2

Name	Scholarly Output	Most recent publication	Citations	Citations per Publication	Field-Weighted Citation Impact	h-index
Kartasasmita, Bana G.	2	2019	1	0.5	0.28	5
de Beer, Huub	1	2017	3	3	0.63	2
Crompton, Helen	1	2017	7	7	0.74	15
Hartono, Yusuf	1	2020	0	0	0	9

Although Sriwijaya University (Indonesia) has the most scientific production of any institution (five articles), it only influences four citations per document. Only one publication from Old Dominion University in the United States has been published, and each of its papers on average contains seven citations. Four of the eight establishments come from the country of Indonesia (Table 3).

Table 3. Top 8 Productive Colleges in LIT research

Institution	Country/ Region	Scholarly Output	Citations	Authors	Citations per Publication	Field-Weighted Citation Impact
Sriwijaya University Indonesia	Indonesia	5	20	9	4	2.21
University of Education	Indonesia	3	1	6	0.3	0.18
Eindhoven University of Technology	Netherlands	1	3	3	3	0.63
Utrecht University	Netherlands	1	4	1	4	0.89
Old Dominion University	United States	1	7	1	7	0.74
Universidad Austral de Chile	Chile	1	1	2	1	0.17
Universitas Syiah Kuala	Indonesia	1	0	3	0	0
Universitas Negeri Surabaya	Indonesia	1	4	1	4	2.21

The various types of collaboration, along with their respective bibliometric markers, are presented in Table 4. The majority of the publications that were reviewed contained at least one

international cooperation (one paper, or 6.7%), followed by national partnerships (three papers, or 20%), and then institutional collaborations (one paper, or 6.7%). (8 papers; 53.3 percent). The biggest impact was shown with a single authorship, which averaged 3.7 citations per paper. The "single author" and "no collaboration" categories of research papers have the lowest average number of publications and citations per study, respectively (3 manuscripts, 20 percent).

Table 4. Production and impact according to type of collaboration in LIT Research.

Metric	Percentage (%)	Scholarly Output	Citations	Citations per Publication	Field-Weighted Citation Impact
International collaboration	6.7%	1	1	1	0.17
Only national collaboration	20.0%	3	4	1.3	0.74
Only institutional collaboration	53.3%	8	25	3.1	1.53
Single authorship (no collaboration)	20.0%	3	11	3.7	0.54

The nations that produce the most LIT are listed in Table 5, which can be seen here. The nation with the most documents is Indonesia, putting it at the top of the list (11 documents and 26 citations). As a consequence of this, Indonesia is also the nation that has the most impact, as evidenced by the fact that the field-weighted citation impact of its 11 articles is 1.25.

Table 5. Top productive countries in LIT Research.

Country/ Region	Scholarly Output	Views Count	Field-Weighted Citation Impact (excl. self-citations)	Citation Count (excl. self-citations)
	11	188	1.25	26
	2	34	0.76	7
	1	23	0.17	1

Country/Region	Scholarly Output	Views Count	Field-Weighted Citation Impact (excl. self-citations)	Citation Count (excl. self-citations)
	1	23	0.17	1
	1	31	0.74	7

In the recent past, the COVID-19 pandemic has resulted in a significant increase in the number of research opportunities and scientific publications in a variety of research sectors all over the world, and education is not an exception. In this light, the purpose of this research is to analyze the scientific output of journals that have a significant impact on LIT research from the time they first began publishing articles until the year 2020. According to the results of our research, there were 29 published papers and a total of 41 citations.

With an average of seven citations per piece of work, Helen Crompton is the LIT researcher who has had the greatest influence as an author. To put that into perspective, Ratu Ilma The authors Indra Ilma Putri and Darmawijoyo who have contributed the most manuscripts to this magazine are listed in the first two places, respectively.

In terms of the most productive institution, Sriwijaya University comes out on top, both in terms of the quantity of publications it has produced and the influence those articles have had. This is in line with the findings of a different bibliometric study that was conducted on coronavirus papers before the COVID-19 pandemic. In that study, the institution was ranked among the highest in terms of output.

In terms of the kind of research partnership, the majority of the publications and citations have international collaborations; this would indicate that LIT research has local outreach among institutions that are involved in all fields of education. This shows that LIT has the potential to serve as a vehicle for fostering increased local and international exchange in research, as well as enabling the creation of new research opportunities.

According to this research, Indonesia is the region that has the largest number of publications and citations. The Netherlands and Chile come in second and third, respectively. The fact that in recent years the majority of scientific publications all over the world have concentrated on COVID-19 and China is leading the study on the subject of the latter is one of the strangest aspects of the current scenario. This demonstrates that even though LIT has been successful in maintaining its publication standards in recent years despite the epidemic caused by COVID-19, its impact has not yet spread to Asia or Europe.

This study suffers from a number of shortcomings. To begin, the year 2020 is the only time period that is analyzed. Nevertheless, completing an examination of more recent years enables us to get a more up-to-date image of the output of LIT research. Second, we only use the data that is provided by Scopus, which may not be an accurate representation of the entirety of LIT publications. However, keep in mind that Scopus has extremely stringent quality standards for the drafting of indexed articles. Because of these several characteristics, the level of methodological rigor presented in the papers that were considered for this investigation was consistently high.

4. CONCLUSION

Research on local instruction theory is still in its infancy and has not yet made a significant mark on the globe. Because of this, academics are able to have a high level of relevance in the article citations that they provide, putting them at the forefront of the most recent research.

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