

BIBLIOMETRIC ANALYSIS OF LEARNING MODELS RESEARCH USING VOSVIEWER

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Abstract

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To improve the quality of learning, there is a need for studies that write about learning models both in the form of learning models, experiments and classroom action research (CAR). This study aims to analyze and demonstrate step-by-step bibliometric data analysis using VOSViewer systematically. Step-by-step analysis is provided to make first-time users accessible easier to use VOSViewers. So that learning models can be combined with other areas to study. This study presents data analysis on learning models and their development over the course of ten years (2013–2022) using mapping tools in VOSViewer. The method used is qualitative descriptive to describe the performance of bibliometric analysis by generating a network visualization of the selected topic. From the search results, 999 relevant published journals were found, starting from 2013–2022, which were then grouped into 10 categories according to the year of issue. After grouping journal data, we found that the most published articles in 2015-2020. There are many opportunities to discover new things on this topic. This study is expected to serve as a direction for authors who conduct research and determination of research themes.

Keywords: VOSViewer, Learning Model.

1. INTRODUCTION

Education is an activity that is implemented in active learning process with purpose to develop self-potential in complex process. It also includes interaction among other people. Thus it is expected that man or people also has intention or willing to learn to be intact people [1], [2]. Education belongs to process that needs forming and developing character, intelligence, and emotional equally. Thus it can be stated that education is essential in life .

Based on constitution (UUD) national education system number 20 year 2003, education is conscious and planned effort to create learning environment and learning process in order the students actively develop their potential to be able to have spiritual ability, religion, self-control, character, intelligence, good attitude and ability that is needed in society, nation and country. From this definition, it can be concluded that a person need to able to develop his/her potential from every aspect.

There are several learning models to educate students based on the learning style to reach learning goal optimally. In practice, teachers have to remember that there is no any certain learning model that corresponds to all condition. Thus, teacher needs to choose appropriate learning model by considering students' condition, learning material, facility or provided media and teacher's condition. Learning is a system that consist of various components which is interrelated each other [3], [4]. Those components are goals, materials, method, and evaluation. Those four components need to be considered by teacher in choosing and determining the approach and learning models that will be used in learning process. The term “model” can be defined as a concept which is used as guidance in doing an activity [5].

Model concerning learning which is usually called learning model is defined as a concept which draws procedures in its organization of learning experience to reach certain learning goal. It

also function as guidance for people who design learning and teaching in planning and doing learning activity [6], [7]

Learning model is one of important component in learning. There are several reasons why learning model development is crucial, namely: a) Effective learning model assist learning process, thus learning goals are easily achieved, b) Learning model can give information for the students in their learning process, c) Various learning model can increase students' motivation, avoiding boredom and will impact on students' interest in following the learning process, d) Developing various learning models is crucial because the existence of different characteristic, personality, students learning style, e) Teacher's/lecture's ability in applying learning model are vary and they do not stuck only in one model, f) The demand for teachers and lecturers professional to have motivation and novation in doing their professionalism[8]. To increase learning quality, many researcher discussed about learning model either in learning model development, experiment, research and class action research.

Based on explanation above, a teacher is expected to widen the references to develop his/her professionalism. Many references are found from various sources through print media and digital media. Considering that thing, the writer studies it by doing comprehensive bibliometric analysis on literature about learning models. Google scholar articles are identified and classified based on distribution study and affiliation. This analysis can determine which research topic that mostly got published, topic about "learning models", which create probability for further study. Process to do this study is by using bibliometric analysis which covers implementation of tool based Google scholar and Publish or Perish (PoP).

2. LITERATURE REVIEW

We use descriptive qualitative method to describe data that are used in this study. We collect journal data which are based indexed published researches on Google Scholar. Detail information about library search to search the data are previously explained [9]. Journal data relates to learning model.

To collect the data, we applied references manager application system as the reference namely Publish or Perish. In this application, we can choose article or related journal data from Crossref Google Scholar, Google scholar Profile, PubMed, Microsoft Academic, Scopus, and Web of Science. Publish or Perish is used to do literature review on the chosen theme. Thus, similar research data base is gained.

This study uses Google Scholar. Journal that is related to chosen topic around recent 10years between 2013-2022, and 999 articles were found in that period of time. The criteria for the journal is that the journal that have been indexed by Google Scholar and suit with the theme that is needed by this study, namely learning model. The data then will be entered in VosViewer. After the data was entered, the data were processed in order corresponds with wanted key words. Then, VosViewer changed the entered data to be interrelated data map. After that, we studied the difference amount of publication every year and classifying ten articles with most citation rate from every publisher from 999 articles.

3. RESULTS AND DISCUSSION

Based on the data gained from Publish and Perish tool, 999 articles were found with the topic under the title "learning model" that were published on 2013 to 2022.

Table 1: Number of learning model articles each year

No	Year	Number of Articles
1	2013	70
2	2014	71
3	2015	87
4	2016	125
5	2017	164
6	2018	158



7	2019	120
8	2020	107
9	2021	75
10	2022	22

The articles under the title “learning models” that were published from 2013 to 2022. There are 10 articles that mostly cited namely :

Table 2. Most cited Learning Model Articles

No	Citation	Title	Year	Journal	Publisher
1	11144	Models of teaching and learning: Methodical and paradigmatic issues [10]	2013		senayan.iain-palangkaraya.ac.id
2	2692	Learning models [11]	2015	Jogyakarta: Ar-ruzz media	staffnew.uny.ac.id
3	2249	Designing innovative, progressive, and contextual learning models [12]	2017		books.google.com
4	1177	Development of social studies learning in elementary school [13]	2014		books.google.com
5	1095	The effectiveness of online learning models in Indonesian language lectures in tertiary institutions [14]	2017	Indonesian Language Education and Literature	syekhnurjati.ac.id
6	968	Learning models and methods [10]	2013	Semarang ...	cyber.unissula.ac.id
7	776	Develop 21st century skills in chemistry learning [15]	2019	Jurnal Inovasi Pendidikan Kimia	journal.unnes.ac.id
8	750	Development of learning strategies and models: innovative, creative, and achievement in understanding students [16]	2017		senayan.iain-palangkaraya.ac.id
9	723	The effectiveness of e-learning as a learning medium (study of evaluating e-learning learning models at Telkom Sandhy Putra Purwokerto Vocational School) [17]	2013	Jurnal pendidikan vokasi	journal.uny.ac.id
10	711	Learning effectiveness [18]	2015	Jurnal pendidikan usia dini	journal.unj.ac.id

Number of key words for the research topic is limited into two. After that, the article data were gathered to analyze the relation among those terms. Data that gained from learning model are divided into 13 cluster, namely:

Table 3: 13 Groups with learning model topics

Cluster	Item
Cluster 1	1. Creativity
	2. Critical Thinking
	3. Inkuiri
	4. Inkuiry
	5. Model Pembelajaran berbasis masalah
	6. Model Pembelajaran Inkuiri
	7. Pada Model Pembelajaran
	8. Model Pembelajaran berbasis masalah
	9. Pembelajaran Kooperatif
	10. Model Pembelajaran Inkuiri
	11. Model Pembelajaran Inkuiry
Cluster 2	1. Group Investigation
	2. Model pembelajaran Group Investigation
	3. Pair
	4. Pair share terhadap
	5. Penerapan model pembelajaran group investigation
	6. Think pair share
	7. Tipe Think pair share
	8. Tipe tps
	9. Tps
Cluster 3	1. Model Pembelajaran Kooperatif Tipe
	2. Pengaruh model Pembelajaran Kooperatif Tipe teams games tournament
	3. Pengaruh model Pembelajaran Kooperatif Tipe Think talk Write
	4. TGT
	5. Tipe team games tournament
	6. Tipe teams games tournament
	7. Tipe TGT
Cluster 4	1. Discovery
	2. Kemampuan berpikir kreatif matematis
	3. Mind mapping terhadap
	4. Model Pembelajaran discovery
	5. Model Pembelajaran discovery
	6. Pengaruh model pembelajaran
Cluster 5	1. nht
	2. numbered head
	3. penerapan model pembelajaran kooperatif tipe
	4. pengaruh model pembelajaran kooperatif tipe
	5. tipe nht
	6. tipe numbered head
Cluster 6	1. learning model
	2. role playing
	3. stad
	4. stad type
	5. tipe stad
	6. tipe stad dalam pembelajaran ipa
Cluster 7	1. cps
	2. creative problem
	3. creative problem solving
	4. smk
	5. terhadap kemampuan pemecahan masalah matematis

Cluster 8	1. dan inquiry
	2. direct instruction
	3. model pembelajaran problem
	4. penggunaan model pembelajaran problem
	5. tipe group investigation
Cluster 9	1. inquiry dan
	2. pengaruh model pembelajaran pbl
	3. pengaruh model pembelajaran problem
	4. problem solving
	5. tapps
Cluster 10	1. berbasis masalah
	2. dan inkuiri
	3. model pembelajaran berbasis
	4. model pembelajaran berbasis masalah
	5. pengaruh model pembelajaran berbasis masalah
Cluster 11	1. berbasis stem
	2. model pembelajaran project
	3. pair share
	4. penerapan model pembelajaran project
	5. pjbl
Cluster 12	1. kooperatif tipe jigsaw dan
	2. model pembelajaran kooperatif
	3. tipe jigsaw terhadap
	4. tipe team assisted individualization
Cluster 13	1. contextual teaching
	2. ctl
	3. model pembelajaran ctl
	4. pengaruh model pembelajaran contextual teaching

The relation among the terms in picture 1. In network visualization, relation is presented with network or line that link a term with other terms. Cluster or groups in each issue which is investigated was described in picture 1. Other terms which has closest relation with the key words [19].

First group consist of 11 items which consist of key words of the study. There were 78 links in key word study. The relation among terms are visualized and are layered with renewal date study [9].

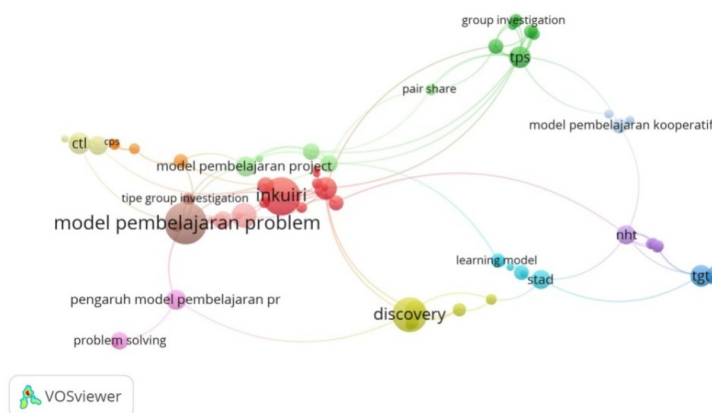


Figure 1. Visualization of the learning model network.

Figure 2 described the tern of study about learning model from year to year. Study about learning model from Figure 2 as done between 2013 to 2022.

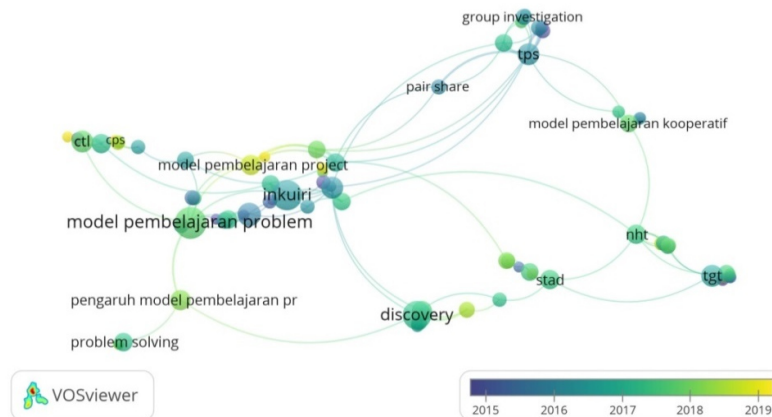


Figure 2. Visualization of the learning model overlay.

Density visualization in Figure 3 showed that the darker yellow color and the bigger circle wide thus the more solid the key word. This indicated that a study about this topic is common. The number of studies are decreased if the color is faded and mixed with green background. Every group or cluster contains relation between two terms. Forest becomes the most popular term that is used in cluster 1 as the topic of study for learning model.

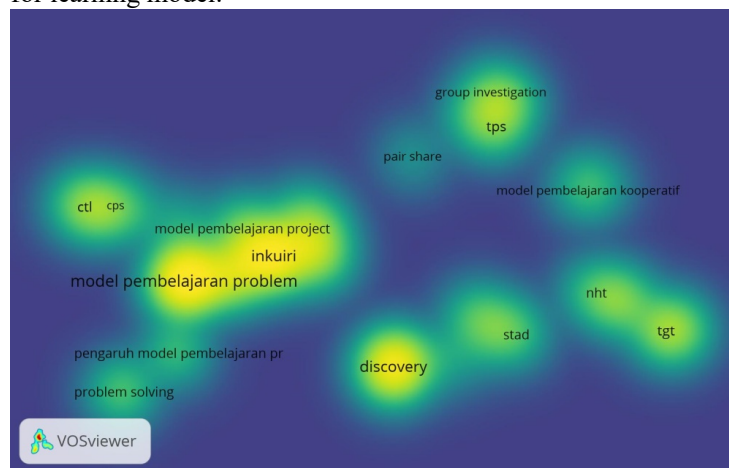


Figure 3. Learning Model Visualization.

Groups explain network connection among key words. This is important to understand how result has connection for every practitioner to do further study. This can be used as further development.

By bibliometric analysis, we can map the studies in learning models field which can contribute in the increase of education quality [20]. even, we can develop novelty in the study based on the relevan relation among subfields that can be analyzed by using bibliomeric.

To support this research, we present several similar studies:

1. Bibliometric Analysis of Google Classroom Learning Media Research Trends Using the VOSViewer Application. The purpose of this article is to provide a broad overview of bibliometric analysis of Google Classroom learning media by screening 93 articles that have been searched using the Publish or Perish application and analyzing them with the VOSViewer application and drawing conclusions on a broad description of the purpose of the article [21].
2. Bibliometric Analysis of Teacher Professionalism: Using Research Vosviewer app. This study aims to systematically analyze and demonstrate bibliometric data analysis using VOSViewer.

This study uses a qualitative descriptive method to describe the data on teacher professionalism [22]

3. Bibliometric Analysis of Information Technology Learning Media Research with Vosviewer. The purpose of this research is to analyze systematically and demonstrate a step-by-step bibliometric analysis of data with VOSViewer [23]

4. CONCLUSION

The aim of this research is to study bibliometric literature on learning model. In quest process, the key word “learning model” was used. It is based on the topic with title, key word, and abstract. After searching, 999 articles were found. Then, mapping procedure was done by Vos viewer. The search results 10 papers with the most citation. Based on the analysis and mapping by vos viewer, study about learning model were mostly found in 2015 -2020.

In this study, we can see the most learning models that were studied but we can also find some study on learning model that need to have further study such as learning model with “picture to picture. Project based, role play, and many others learning models.

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