



DEVELOPMENT MODEL IN PHYSICAL EDUCATION LEARNING IN INDONESIA: A BIBLIOMETRIC ANALYSIS

Aisah R. Pomatahu¹,

Mirdayani Pauweni¹,

Addriana Bulu Baan²,

Sulasikin Sahdi Kadir¹ⁱ

¹Physical Education Department,

Universitas Negeri Gorontalo,

Gorontalo, Indonesia

²Physical Education of Post Graduated,

Universitas Tadulako,

Sulawesi Tengah, Indonesia

Abstract:

Until now, in addition to teaching methods limited in facilities and infrastructure are also a common problem in physical education learning in Indonesian public school. However, these limitations actually make academics actively seek solutions through research. One of the efforts taken is using research and development (RND) methods. The aim of this study is to analyze systematic research on the development model in physical education learning in Indonesia. Using the Google Scholar database to collect publications from 2010 to 2023 (5 January 2023), a total of 500 articles are discovered and the remaining 308 articles after filterization. Publish or Perish (PoP) and VOSViewer applications are used to conduct analysis. According to data, the highest number of publications in 2020 was 43 articles. Two clusters of keywords were found, with the first cluster consists of 4 items, and cluster 2 consists of 1 item.

Keywords: development model, physical education, bibliometric, systematic analysis

1. Introduction

Until now, in addition to teaching methods (Aguss & Fahrizqi E.B, 2020; Buhari & Marda, 2019; Musiandi & Taroreh, 2020; A. Sari et al., 2020; Shaputra et al., 2020; Supriatna, 2020; Yoda, 2017), limited in facilities and infrastructure are also a common problem in physical education learning in Indonesian public school (Abdurrochim & Rachman, 2016; al Farisi et al., 2020; Atmaja & Anggorowati, 2019; Badruzzaman, 2014; Febriani et al., 2016;

ⁱ Correspondence: email aisahpomatahu@ung.ac.id

Lestariyanto, 2014; Prabowo, 2014; Pradipta, 2014a, 2014b; Rachman et al., 2013; Saputra, 2014; Sinaga, 2017; Sudarmono, 2016). However, these limitations actually make academics actively seek solutions through research. One of the efforts taken is using research and development (RND) methods.

RND in educational research by (Borg & Gall, 1983; Gall et al., 2007), is used by academics and teachers in developing physical education learning products in Indonesia (Ajayati, 2017; Latar & Hasbullah, 2020; Risma et al., 2020; Samsudin et al., 2021; Spyanawati et al., 2021). To assist teachers in achieving learning goals, including development basic (fundamental) movements (Kurniawan & Hanief, 2022; Latar & Hasbullah, 2020; Morgan et al., 2013; Verawati et al., 2021), and character building (Marini et al., 2021; Muhtar et al., 2019; Sundawan Suherman, 2018). This design began to be chosen intensively by researchers in Indonesia for a decade, so there are a lot of models developed in physical education learning. Based in these conditions, the aims of this study are (1) to systematically analyze the development models in physical education learning in Indonesia, (2) to understand the models of product development in physical education, (3) mapping keywords; (4) to help researchers consider the product model to be developed according to the needs of physical education learning.

2. Literature Review

2.1 Physical Education

Physical education utilizes systematic physical activity to achieve national education goals. Therefore, physical education becomes an integral part of the education system as a whole (Herlina & Suherman, 2020). Educational goals to be achieved through physical education, namely (Bangun, 2016): 1) development organs to improve health and fitness, 2) neuromuscular, 3) emotional-mental, 4) social, and 5) intellectual. Physical education develops as physical education, sport, and health (PJOK) in Indonesia. It is utilizing systematic physical activity to achieve educational goals, therefore physical education becomes an integral part of the overall education system (Herlina & Suherman, 2020). It has a wealth of health and provides opportunities in the future that lead to benefits of physical, psychological and social at school and can improve the quality of human resources through knowledge, fitness, movement skill, mental, emotional, intellectual and social, and not trapped in physical and mental dualism (Adi & Fathoni, 2019; Bailey, 2016; Fairclough, 2002; Suherman, 2000). The implementation of physical education learning in schools is supported by several factors, internal and external. The internal factors such as motivation, IQ, talent, and the external factors such as facilities and infrastructure, learning environment, teaching methods, curriculum, and family support (Friskawati & Sobarna, 2019; D. P. Sari, 2017).

2.2 Development Model in Physical Education

The development model in physical education is generally pursued through a research method called RND, introduced by (Borg & Gall, 1983). This research applied to develop education around the world. Adopted from Borg and Gall, here are ten steps of research and development produce a learning product in Indonesia, namely (Sugiyono, 2019): “1) potential and problems, 2) data collection, 3) product design, 4) design validation, 5) design revision 6) product trial, 7) product revision, 8) usage trial, 9) usage revision, 10) mass production”.

3. Material & Methods

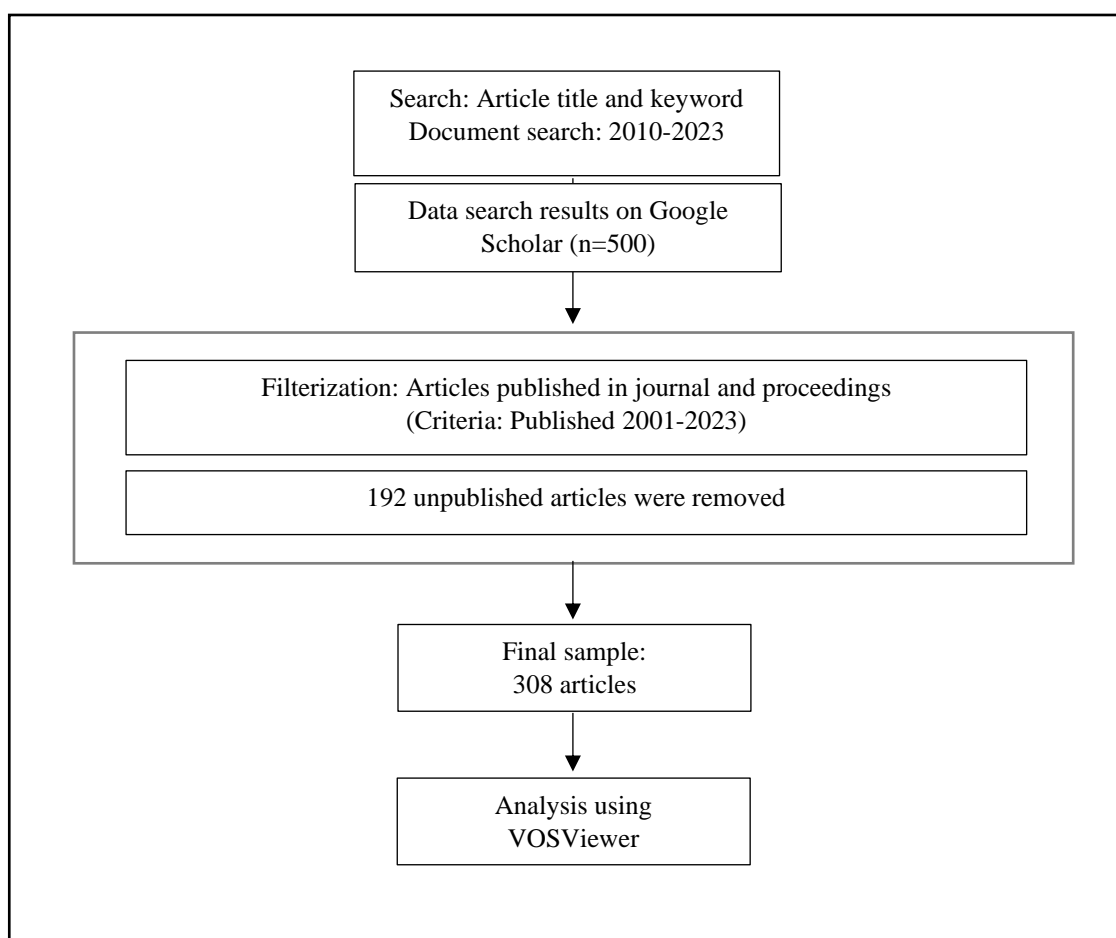


Figure 1: Design of article metadata search

This research used Google Scholar database as a source of data. A bibliometric analysis approach was used in this study through the VOSViewer application, for systematic and accurate findings (Batanero et al., 2019; Hanief et al., 2021; Mulyana et al., 2022). Metadata of articles searched between 2010-2023 (until 5 January 2023) on Google Scholar with Publish or Perish application using the keywords “development model” or “learning model” or “physical education”. From the Publish or Perish search, 500 articles were found on the development model in physical education learning. Furthermore,

articles are selected based on the data criteria to be processed. After filterization, there are 192 unpublished articles that must be removed. The final sample of the study was 308 articles (Figure 1).

4. Result and Discussion

4.1 Publication of Development Model in Physical Education Learning

The first result presents a number of articles published in 2010-2023. In 2010, there was only 1 article published. Then this publication increased significantly. In 2011 (1), 2012 (11), 2013 (16), 2014 (23), 2015 (25), 2016 (23), 2017 (35), 2018 (37), 2019 (30), 2020 (43), 2021 (38), 2022 (25) (Figure 2).

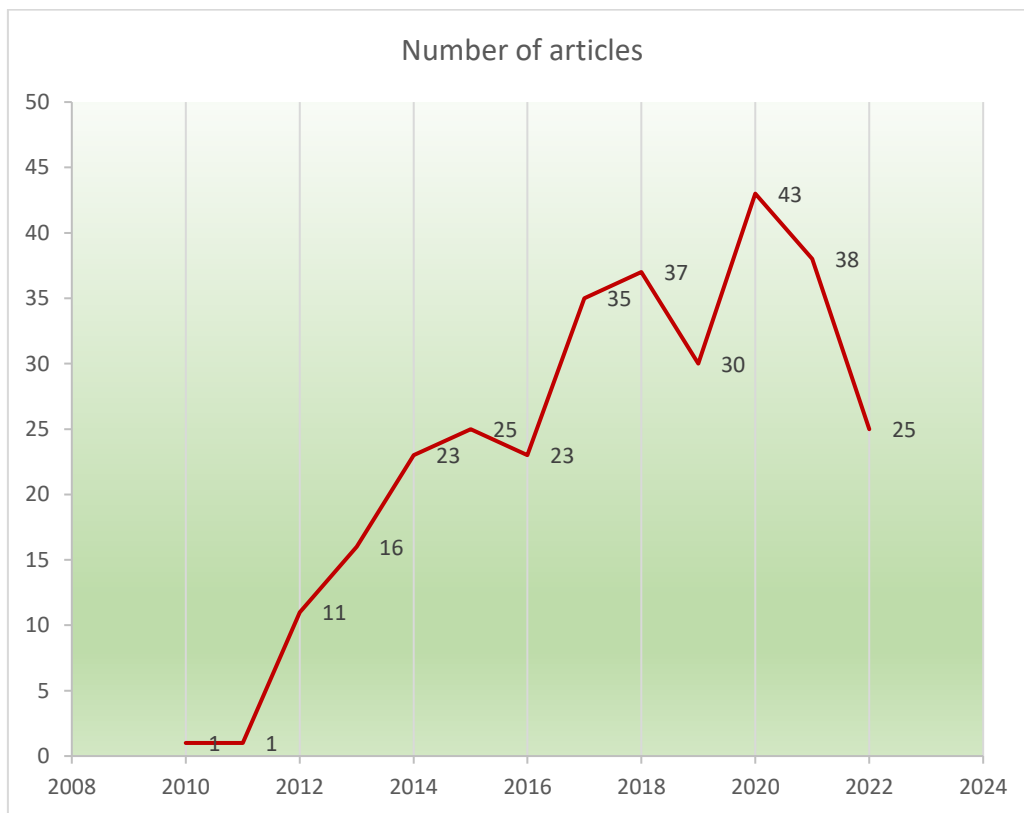


Figure 2: Publication of development model in physical education learning

4.2 Most Influential Journal, Authors and Articles

There are 173 journals and proceedings that publish articles on the topic of development model in physical education learning. Each journal and proceeding has a different number of citations, authors, and article titles. Table 1 depicts the top ten journals. ACTIVE: Journal of Physical Education, Sport, Health and Recreation published by Universitas Negeri Semarang, is the top journal with published 35 articles (11,36%) (Table 1).

Table 1: The top ten most influential journals

Journal	Article	%
ACTIVE: Journal of Physical Education, Sport, Health and Recreation	35	11.36
Jurnal Keolahragaan	15	4.87
Jurnal Pendidikan Olahraga	8	2.60
JUPE: Jurnal Pendidikan Jasmani	6	1.95
Jurnal Pendidikan Jasmani	5	1.62
BRAVO'S	4	1.30
Jurnal KEJAORA	4	1.30
Jurnal Edukasi Citra Olahraga	4	1.30
Gelanggang Pendidikan Jasmani	3	.97
Indonesia Journal for Physical Education and Sport	3	.97

A total of 457 authors contributed to writing articles on the topic development model in physical education learning. Based on data analysis, Ardiyanto A from SD Negeri Pokoh 2 Sleman is the most influential author, publishing 7 articles (Table 2).

Table 2: The most active authors (>3 documents)

Author	Document	Total Link Strength	Affiliation
A Ardiyanto	7	7.00	SD Negeri Pokoh 2 Sleman
S Suharjana	6	6.00	Universitas Negeri Yogyakarta
C Yuwono	5	5.00	Universitas Negeri Semarang
P Sukoco	4	4.00	Universitas Negeri Yogyakarta
YBO Tapo	4	3.00	STKIP Citra Bakti

The most cited article with 137 citations is "Development model of motor skills training through traditional sport for elementary school student". The second cited article with 111 citations, "Development model of jump shoot in basketball training" dan "Development model of *batok* shoe game in physical education, sport and health for elementary school student" (Table 3 and Figure 3).

Table 3: The ten most cited articles on the topic of the development model in physical education learning

Citation	Per Year	Year	Title	Author	Journal
137	45.67	2020	Development model of motor skills training through traditional sport for elementary school student	I Mahfud EB Fahrizqi	Sport Science and Education Journal
111	37.00	2020	Development model of <i>batok</i> shoe game in physical education sport and health for elementary school student	RM Aguss EB Fahrizqi	SPORT-Mu: Jurnal Pendidikan Olahraga
111	27.75	2019	Development model of jump shoot in basketball training	R Yuliandra EB Fahrizqi	Journal of SPORT
65	10.83	2017	Development model of traditional game to character building in high-class elementary school student	P Widodo, R Lumintuarso	Jurnal Keolahragaan

Citation	Per Year	Year	Title	Author	Journal
39	9.75	2019	Development model of physical education thematic learning in elementary school	MF Gandasari	Jurnal Pendidikan Jasmani
33	3.67	2014	Model of learning movement activity as physical education subject matter	Qomarullah, R Hidayatullah, MF Kritiyanto	Indonesian Journal of Sport Science
30	3.33	2014	Development model of learning based on traditional games to increase the gross motoric ability of children with mental retardation	Ardiyanto, A Sukoco, P	Jurnal Keolahragaan
27	5.40	2019	Development model of jump learning by mirror jump in elementary school student	Suharnoko, F Firmansyah G	Jurnal SPORTIF
23	2.88	2015	Development game model of throw basic movement	Hasan, S Winarno, ME	Jurnal Pendidikan Olahraga
18	1.64	2012	Development model <i>taki</i> basket as physical education learning media of high-class student in elementary school	Pauweni, M	Journal of Physical Education and Sport

5. The Most Appearing Keywords in The Topic Development Model in Physical Education

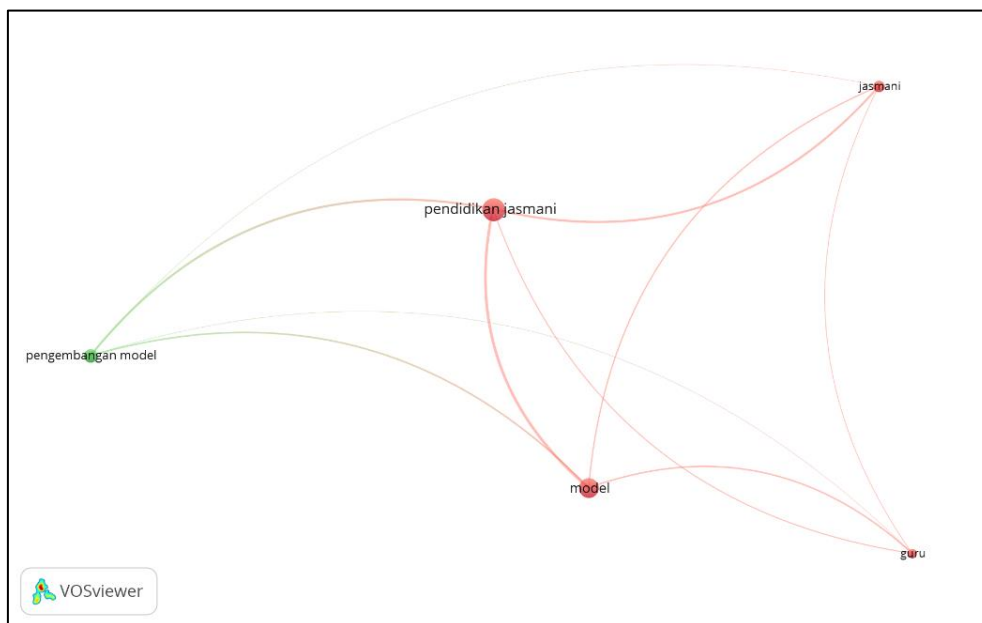


Figure 4: Keywords that often appear in the topic development model in physical education learning

Based on visualization analysis with VOSviewer, shows that the most appearing keywords were physical education with 168 occurrences. The depiction of network

visualization can be seen in Figure 4. From 1133 keywords, 8 meet the threshold and 10 minimum number of occurrences of a term. Obtain 2 keyword clusters. The first cluster consists of 4 items (teacher, physical, models, physical education), and cluster 2 consists of 1 item (development model).

Table 4: Group of keywords related to topic development model in physical education learning

Cluster	Number of keyword	Keyword occurrences
Group 1/ red/ physical education	teacher (25), physical (37), model 116), physical education (168)	346
Group 2/ green/ development model	development model (56)	56

The VOSviewer application shows a growth visualization every year since 2010. Figure 4 shows the red and green colors.

6. Discussion

National Education Policy of Indonesia sets goals for the implementation of physical education (Sudibyo, 2006), (1) develop self-management skills in an effort to develop and maintain physical fitness and a healthy lifestyle through various selected physical activity and sport, (2) improve physical growth and development better psychological, (3) improve abilities and basic movement skills, (4) laying the foundation of a strong character moral through the internalization of the values embodied in physical education, sport and health, (5) develop sportsmanship, honesty, discipline, responsibility, cooperation, confidence and democracy, (6) develop skills to maintain self-safety, other and the environment, (7) understand the concept of physical activity and sport in a clean environment as information to achieving perfect physical growth, healthy lifestyle and fitness, skills, and positive attitude. To achieve these goals, the scope of physical education is determined to consist of: (1) game and sport, (2) developmental activities, (3) gymnastic activities, (4) rhythmic activities, (5) water activities, (6) outdoor education, (7) health.

On the other hand, the achievement of learning goals as part of the educational goal is always faced with the empirical reality that are different from expectations. Based on these, researchers from teacher, lecturer and student have helped produce educational products in the form of game model and learning according to goal and scope of physical education. In the ten most cited articles, the resulting model consist of: (1) motor skills training through traditional sport (Mahfud & Fahrizqi, 2020), (2) *batok* (coconut shell) shoe game in football learning (Aguss R. M. & Fahrizqi, 2020), (3) model of jump shoot in basketball (Yuliandra & Fahrizqi, 2019), (4) traditional game to character building (Alpen et al., 2022), (5) model of physical education thematic learning (Gandasari, 15

C.E.), (6) model of learning movement activity (Qomarullah et al., 2014), (7) learning based on the traditional game to increase gross motoric ability (Ardiyanto & Sukoco, 2014), (8) jump learning by mirror jump (Suharnoko & Firmansyah, 2018), (9) game of throw basic movement (Hasan et al., 2015), (10) *taki* basket as learning media of physical education (Pauweni, 2012). These games and learning models are very helpful for teachers in Indonesia. The model that has been finalized into educational products can be used in other schools and re-test so these models are in line with learning needs.

The finding that must be considered is the activeness of the author to publish the result of their research. In the filterization process, we had to remove 192 unpublished documents in the journal or proceedings. Furthermore, there are only five active authors who have published above 3 documents in 2010-2023 period. Consists of 1 elementary school teacher and 4 lecturers and students. It is hoped that these findings will become a concern for researchers in the field of physical education in Indonesia, especially those applying research and development methods.

7. Conclusion

Based on bibliometric analysis data, we found that there was a significant increase in research on topic development model in physical education learning. Even though it decreased by several numbers in 2020 and 2021. This research is expected to provide benefits for the researcher, lecturer, teacher, school, university, and the community. Not only in Indonesia, but in other developing countries that have similar problems in physical education learning. The findings of this study can also be used as a reference for further research. Limitations in this study, namely the neglect articles of thesis published on the web pages of the university because it complies with the provisions of article filterization.

Conflict of Interest Statement

The authors declare no conflicts of interest.

About the Authors

Aisah R. Pomatahu (Professor), Universitas Negeri Gorontalo, Faculty of Sport and Health, Department of Physical Education, Indonesia. <https://orcid.org/0000-0003-0502-0783>.

Mirdayani Pauweni (Professor Asisstant), Universitas Negeri Gorontalo, Faculty of Sport and Health, Department of Physical Education, Indonesia <https://orcid.org/0000-0001-8084-3611>

Addriana Bulu Baan (PhD), Universitas Tadulako, Fakultas of Education, Department Physical Education, Indonesia.

Sulasikin Sahdi Kadir (Professor Asisstant), Universitas Negeri Gorontalo, Faculty of Sport and Health, Department of Physical Education, Indonesia.

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