The research trends in elementary education: a bibliometric and content analysis from Indonesia accredited journals

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Abstract. Understanding the research trend in the elementary education level is essential for future research directions that could strongly contribute to the educational field. The purpose of this research was to analyze the research trend in elementary education level in Indonesia. Bibliometric and content analysis was applied to answer the research questions. The data source of this study was articles published by Indonesian Journal that accredited by the science and technology index (SINTA). In order to maintain the credibility of the data, we were selected the journal article only for those published in Journal with SINTA level 2 during the period of 2017 to 2019. The bibliometric analysis was conducted using the VOSviewer program. Moreover, the content analysis was conducted using unitizing-sampling-recording-reducing-inferring-and narrating. The finding of our study describes the research trend in Indonesia based on aspects: 1) researcher network; 2) topic; 3) method; 4) subject; 5) research location; 6) data collection; and 7) analyses. Therefore, as our recommendation, there is a need for elementary education researcher to conduct their study that drives to the research trend as we reported.

1. Introduction
Education in the 21st century has a huge framework to overcome the challenge as a result of massive changes in our life. This framework has developed by the Partnership for 21st Century Learning (Battelle for Kids, 2019). With the demand to adapt to an evolving society in the 21st century, educators and researchers have to develop primary education theoretically and practically. Therefore, there needs a connected idea in order to conduct research. Previous research in the last decades shows that research interest that focuses on future education is often conducted subjectively and most of them decided by the researcher to highlighted this topic (Ratten & Usmanij, 2020). For instance, Har (2018) found that most university students have conducted their research in experimental design, following by survey, and research and development. Therefore, most university students more familiar with experimental research than other research designs.

The content analysis method could be implemented in order to investigate the research trend from certain databases. According to Zuchdi & Afifah (2019), the content analysis method is suitable when the researcher collects unstructured data. For instance, Kang et al., (2014) Conducted their research using the content analysis method. They have compared pedagogical research literature to make a descriptive analysis and generalized the research trend in the last ten years. Along with the implementation of content analysis, bibliometric analysis is also has used by the researchers to investigate the research trend. For instance, research conducted by Arici et al., (2019) shows that
some words like knowledge, science education, experiment, and effectivity have a percentage that appears more frequently. This represents that most of the newest articles have focused their study on knowledge and students’ achievement. In the last six years, quantitative research has more appear than qualitative.

Many researchers investigated their study through content analysis in the last decades (i.e. Arici et al., 2019; Kang et al., 2014; Murtiyasa, 2016; Rebele & St. Pierre, 2015; Wu et al., 2012; Zubaidah, 2018). In this research, we have analyzed and synthesized the similarity of the view that could be used in this research. We reported that the research trend consists of researchers' network, topic, method, subject, research location, and data collection and analysis.

The research trend in Indonesia could be conducted through the research database managed by the government. The Science and Technology Index (SINTA) is the biggest web-based data center of the index, citations, and scientist in Indonesia that offers quick, easy, and comprehensive access to measure researchers and institution performance based on the publications that they have made and journal performance based on the amount of article and citations. This has the possibility to look at the variations of the research. SINTA provide benchmark and analysis, identification of research focus for each institution, web connection of the researchers, research trend analysis, and expert directory (Lukman, Ahmadi, Manalu, & Hidayat, 2016).

Research trend analysis could be used to drive future research directions. Moreover, research trend analysis could be used to find problems of research in the educational field. For instance, there some research has proved that stagnation in educational research (Rebele & St. Pierre, 2015; Wu et al., 2012). Based on the problems mentioned earlier, we have strongly interested to investigate the research trend at the elementary education level. The practical implication of the present study is to be a reference for researcher, helping them to explore not only the available bibliography but showing them the best way to cover their performance.

2. Methodology
In order to answer the research question, the content analysis method was implemented in this study (Krippendorff, 2004). In the particular case of this research, we have expected the conclusion of this study could contribute as an information and scientific discourse about research trend in Indonesian elementary education level. This is important because researcher could reference the researchers that have similar focus to conduct studies that relevant with education in the 21st century. We have selected a journals database that have accredited by the science technology index (SINTA) managed by the Indonesia Ministry of Research and Technology (https://sinta.ristekbrin.go.id/journals).

In order to maintain the quality and credibility of the articles involved in our study, we have only selected articles that published in the journal with SINTA level 2 that published during the period of 2017 to 2019. In particular, the journals that involved in this study included: Jurnal Prima Edukasi, Al Ibtida: Jurnal Pendidikan Guru MI, dan Al Bidayah: Jurnal Pendidikan Dasar Islam. The purpose of this research was to analyse the research trend from previous research. we have drawn a constructive analysis of the research trend based on aspects such as researchers' network, research topic, methodology, research location, subject, data collection and data analysis technique.

The data was collected by downloading articles published in Sinta Level 2 during the period of 2017 to 2019. Then, the articles were analyzed through bibliometric and content analysis. The bibliometric analysis was conducted to analyzing the metadata. Metadata was retrieved from Mendeley Desktop. The researchers' network was analyzed from keyword using VOSviewer. The content analysis was conducted to analyze quantitatively related to the aspects methodology, research location, subject, data collection, and data analysis technique through descriptive statistics using Microsoft Excel. Hereafter, inferring was conducted to give the meaning by answering what, why and how the finding of our study. Finally, we discussed our finding by supporting and comparing with previous research that relevant to our finding.
3. Result and Discussion
3.1. Bibliometric Analysis

3.1.1. Co-authorship
Initially, we used the minimum requirement for a network to be formed which was twice the findings of the 253 authors found by VOSviewer and there were only 21 authors who met these criteria. However, visualization can only be done on 7 writers who are networked in this field. Based on these findings, it is found that only a few authors collaborated in conducting research. As mentioned earlier, this literature review will be limited to journals published in 2010 through 2018. The time span is to see if research on the feature independence assumption on the Naïve Bayes method is still relevant.

3.1.2. Co-occurrence
The number of keywords found by VOSviewer is 428. When we use the minimum requirement for the network to be formed which is twice the findings, then 48 keywords are found. However, only 22 keywords are networked which can then be visualized in Figure 2. These findings indicate that it turns out that the keyword “primary school” is not the center of the network. However, forming a chain network with other keywords thus represents ample opportunity for creating future research topics. The 2013 curriculum is still a major concern here. While the direction of research is starting to show 21st century skills.

3.2. Content Analysis
3.2.1. Research Methods
The frequency of use of research methods over the span of three years varies. R & D Experiment is the most frequently used research method with 35 findings. The next position is the Qualitative Descriptive research method with 24 findings, Action Research with 13 findings, Literature Review and Case Study both of which have 9 findings, Correlational and Field Research both have 7 findings, and others. These findings indicate that Experiment and R & D are trends in research methods in the three journals analyzed.
3.2.2. Research Sites
The location of research in the articles shows that the majority is carried out in various regions of Java Island. The city of Bandung is in the first position with 23 findings. The next position is the city of Yogyakarta with 22 findings, No Sites with 20 findings, Cirebon City with 17 findings, Semarang City with 6 findings, Bantul Regency, Malang City, and Jakarta City with 5 findings, and others. The findings of articles in the form of Literature Reviews may lead to quite a number of findings that have no place of research.

3.2.3. Research Subject
However, the research subject is dominated by students with 80 findings. The next position has a fairly wide range, namely teachers and learning media, both of which have 19 findings, students have 9 findings, and others. This shows that problems with students are always a major concern. On the other hand, the large number of R&D might make the subject in the form of objects, namely learning media is quite high.

3.2.4. Data Collection Technique
The most data collection technique used by researcher was interview. Following those finding, observation was the second most data collections technique that used by researchers with 77 (%). Furthermore, the data collected by documents was 72 (5), questionnaire was used by 71 (%), the data collected by test technique was 60 (%), and the rest were collected the data through other techniques. We have found that multiple technique was implemented in some research.

3.2.5. Data Analysis Technique
Descriptive Qualitative Analysis is the most frequently used technique with 51 findings. Next, No Statements has 24 findings, T-tests have 23 findings, Descriptive Quantitative / Statistics Analysis has 21 findings, Regression has 16 findings, and others. No Statements are found in research articles but do not describe their specific types and techniques.

Based on the research results, the publications in several basic education research journals analyzed had a trend. Some of these trends include: (a) New research collaborations are being undertaken by several researchers; (b) Research topics lead to the implementation of the 2013 Curriculum and the development of 21st Century Skills; (c) The research methods that are often used are R&D and Experiment; (d) Research centered on the island of Java; (e) Students become the most trending research object; (f) The majority used qualitative data collection techniques; and (g) frequently using Descriptive Qualitative Analysis data analysis techniques. These results indicate a pattern in the analyzed research journals. Namely, aspiring writers who are interested in submitting their articles to these journals can notice this trend. However, it would be better if the authors pay attention to parts that are rarely done. This is intended to improve novelty in research and fill in parts that have not been researched to develop science.

Since the implementation of the 2013 Curriculum, the field of Basic Education has received better attention by academics and practitioners. The 2013 curriculum has been developed with characteristics in the form of integrative thematic learning, scientific approach, and authentic assessment (Adi, 2017; Ferryka, 2017). Initially, this curriculum change was expected to bring Indonesian education to be able to compete globally. As stated by (Rusman, 2018) that the implementation of the 2013 Curriculum is oriented towards the development of 21st Century Skills and Character Education to prepare people who are able to compete in the Industrial Revolution 4.0. Meanwhile, the challenges in the 21st century are mentioned (Kamala, 2019) with the abundance of information technology. Therefore, research should lead to the development of learning technology, for example (Batubara, 2017a). So, learning processes can be carried out using the help of learning technology, for example (Fauzan & Arifin, 2019). In addition, assessments can also be carried out online, for example (Batubara, 2017b). However, synergies must be carried out by the government, schools, and teachers in the analysis of the
needs for the use of this learning media. When learning can be carried out effectively, it will have an impact on the effective management of primary school education (Kadir, 2020).

Research still needs to be done to analyze and develop the ongoing curriculum. For example, in (Acesta, 2020) it was found that the evaluation questions used in several schools still used Low Order Thinking Skills (LOTS). The results of research like this will be very useful for evaluating the curriculum. Therefore, planning-implementing-assessment of the curriculum is part of the curriculum itself which has not received more attention. By looking at the weaknesses in the curriculum, researchers have a duty to produce the best model. One of the studies (Hasanah, 2019) finally developed the 2013 Curriculum by integrating it with other curricula so that it can develop several skills at once.

Based on the above discussion, researchers and / or writers both as academics and practitioners must be able to find the direction of Basic Education research based on its trends. Meanwhile, there are many strategies in determining the direction of research. Institutional research road map, literature review, search before research, research trends in the world, national topics of research, interpretation of regulations, court decisions, pros and cons of actual cases or topics, discussion and research sharing method, exposure of controlled data, and looking for possible space for existing papers are some examples of strategies found (Fadhly, Emzir, & Lustyantie, 2018). The use of the VOSviewer application such as in this study can also help find research directions.

4. Conclusion
The difficulty of the researchers to find the research trend that has focused on elementary education research has made such a gap in the existing literature. Therefore, it is fundamental to understand the research trend, especially in elementary education research. Therefore, our conclusion of this study suggests that before conducting research, the researcher that has focus in elementary education research needs to pay attention to the research trend in this area. They also need to consider the conduct research in the area that still has a little amount of research-based evidence. This is fundamental to improve the quality of the research and the novelty. Therefore, the finding could be to fill the gap in the existing literature.

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