

# Report on SEA-DR IC 2019 accepted abstracts: What insight do we get from them?

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## In Brief

- There are more than 200 proposed abstracts were accepted for the 7<sup>th</sup> South East Asia Design Research International Conference (SEA-DR IC 2019).
- The common topics which appear in the accepted abstracts are mathematics, high school, problem-based learning, design research, PMRI, ethno-mathematics, and problem solving.
- There are nearly four hundred authors which affiliated with 76 institutions contributed to the accepted abstracts.
- The institution of the authors come from Indonesia, Philippines, Brunei Darussalam, Thailand, Sweden, Canada, and South Korea.
- The co-authorship and affiliation networks show the relatively high degree intra- and inter-institutional collaboration among the authors.
- The international collaboration degree among authors is small.

## Abstract

The paper gives overview with regard to the content and co-authorship of the accepted abstracts which has been submitted for the SEA-DR IC 2019. To this end, a content analysis was employed on the titles, abstracts, and keywords. The social network analysis (SNA) was also used to capture the co-authorship and affiliation networks derived from the accepted abstracts. The results of the present paper provide a list of common topics that appears in the abstracts, and the structure of co-authorship and affiliation networks of the contributed authors for the conference. The results are beneficial for all parties in welcoming the SEA-DR IC 2019.

## 1. Introduction

The SEA-DR IC 2019 will be organized on 25 – 27 July 2019 in Yogyakarta, Indonesia. At the time of writing, the accepted abstracts for the conference have been announced. There are 230 proposed abstracts have been submitted for the conference via the Open Conference System (OCS), 221 of them were accepted. Nine abstracts were declined since they do not merit to the conference scope and guidelines.

In order to get insight from the accepted abstracts, the present paper will give overview about the content and authorship of the abstracts. The present paper has been organized as follows: First, material and methods in collecting, organizing,

and analyzing the data are presented in [Section 2](#). The results of a content and co-authorship analysis on the accepted abstracts are described in [Section 3](#) and [4](#), respectively. [Section 5](#) contains the concluding remarks and the significance of the present paper for the various parties related to the upcoming conference.

## 2. Material and methods

The data construction involves several steps. In a first step, summary data of all accepted abstracts are extracted manually from the conference system. The data consists of several variables, i.e. ID, title, abstract, keywords, authors, and affiliation and recorded to the Microsoft Excel and Word documents. The keywords in the extracted data then were corrected so that they appropriate with the common terms in the education field. For example, the author’s inputted keyword “pedagogic content knowledge” were replaced by “pedagogical content knowledge.” In addition, the last keyword which is preceded by the word “and” were also corrected by deleting the word “and.” The correction process was also applied to affiliation data in ensuring that one affiliation only has one exact name. For example, many authors inputted their affiliation as “Universitas Sanata Dharma” and “Sanata Dharma University.” In this case, their affiliation was uniformed to “Universitas Sanata Dharma.”

In a second step, the title, abstract, and keywords were analyzed using a web-based text-mining software [\[1\]](#) in order to create frequency distributions of top words, bigrams, and trigrams. The keywords were also analyzed manually using Excel in order to find the most frequent keywords.

In a final step, authors and affiliation entries were analyzed by using descriptive statistics and social network analysis (SNA). The descriptive statistics were employed to find the average of the number of authors in an abstract as well as the top contributed authors and institutions for the conference. In SNA, co-authorship and affiliation network [\[2\]](#) were utilized in capturing the structure of authorship and research collaboration.

In defining co-authorship and affiliation networks, the definition proposed by Yoshikane, Nozawa, and Tsuji [\[3\]](#) was used. The definition regards co-authorship and affiliation networks as directed graphs in which the first author’s name and affiliation acts as a target of other authors’ name and affiliation in a network edge. The co-authorship and affiliation networks were analyzed by using Gephi Graph Visualization and Manipulation software [\[4\]](#).

## 3. What is highlighted from the abstracts?

The top words, bigrams, and trigrams of the title and abstracts are presented in [Table 1](#). The table reveals that *students* and *learning* are the most mentioned words in the submitted text. It also worth noting that *mathematics*, *high school*, and *problem-based learning* are also popular research topics for the upcoming SEA-DR international conference.

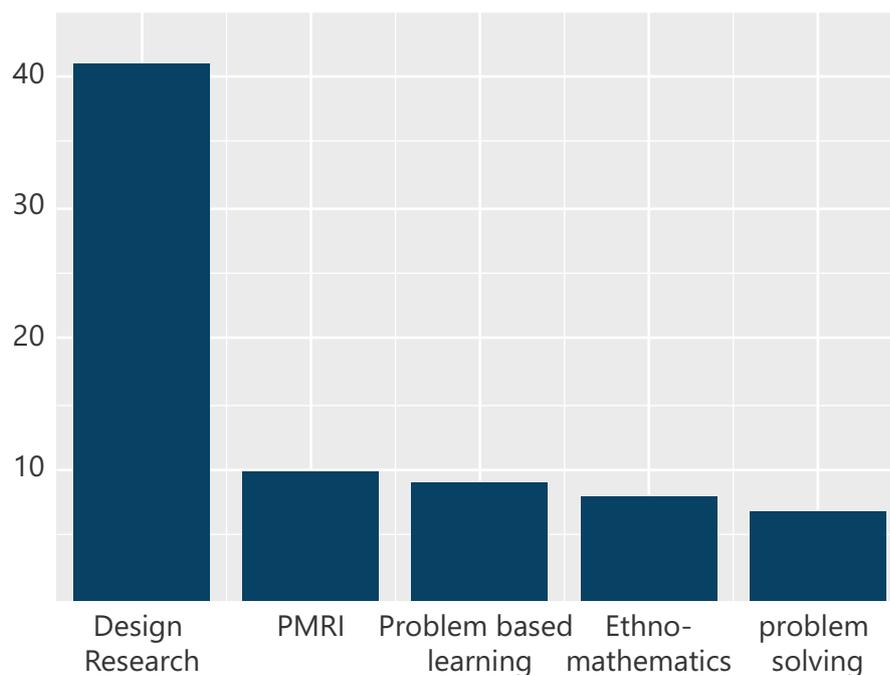
Table 1.

*Top words, bigrams, and trigrams of the title and abstracts*

Title		Abstract	
Word, bigram, and trigram	Frequency	Word, bigram, and trigram	Frequency
Top words		Top words	
Learning	115	students	791

Students	58	learning	710
School	55	research	485
Based	51	study	441
mathematics	45	mathematics	288
Top bigrams		Top bigrams	
high school	29	this study	310
development of	27	the results	176
based on	21	this research	153
students in	21	based on	142
based learning	15	results of	135
Top trigrams		Top trigrams	
junior high school	14	the results of	130
problem based learning	12	of this study	122
the development of	11	results of the	70
high school students	7	the learning process	62
in elementary school	6	in this study	61

Aside from looking at the title and the abstract, author keywords were also useful resources in investigating the direction of the conference discussions. [Figure 1](#) depicts the five most frequent keywords provided by the authors. Unsurprisingly, *design research* appears most often, followed by *PMRI*, *problem-based learning*, *ethnomathematics*, and *problem solving*. The appearance of problem-based learning in the list is an additional evidence of the popularity of this topic for the conference.



*Figure 1.* The most frequent keywords inputted by the author

#### 4. Contributing authors and institutions

There are 399 authors extracted from 221 accepted abstracts. The authors affiliated with 76 institutions. Those institutions come from Indonesia, Philippines, Brunei Darussalam, Thailand, Sweden, Canada, and South Korea, as shown in [Figure 2](#). From those countries, Indonesia contributes 95.2% of the authors which disperse from 19 provinces, as shown in [Figure 3](#). Special Region of Yogyakarta, where the conference takes place, is the province with the highest number of authors, followed by East Java, Bengkulu, Aceh, and West Java.

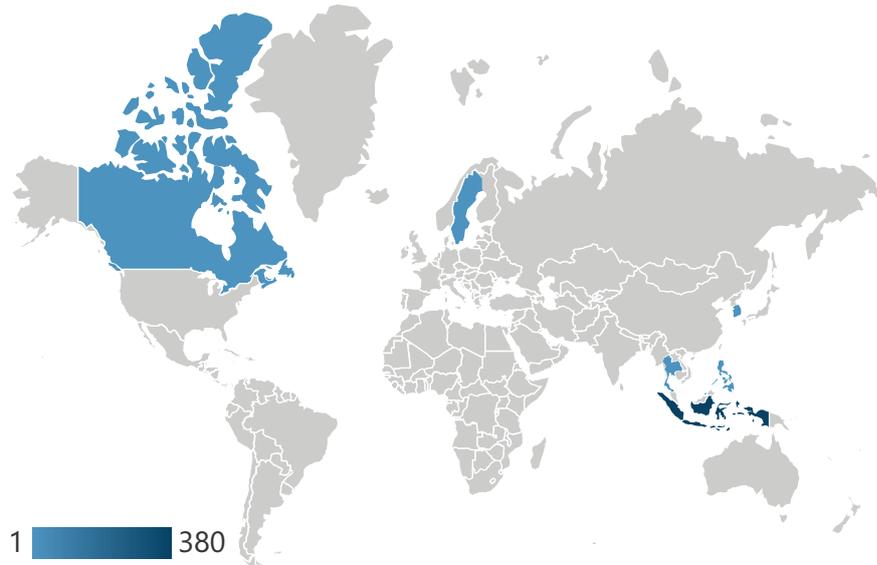


Figure 2. Geo map of authors' country

The authorship observation of the accepted abstracts shows that most of the abstracts were result of intra- or inter-institutional collaboration. One hundred and forty-three out of 221 abstracts (64.7%) were authored by more than one author, 35 and 2 of them are inter-institutional and multi-national collaboration, respectively. The multi-national collaboration in the 2 abstracts involves Universitas Sana Dharma, SEAMEO QITEP in Mathematics, Khon Kaen University, and Sogang University.



Figure 3. Geo map of Indonesia-affiliated authors' residence

[Figure 4](#) shows co-authorship networks of accepted abstracts. The colors and the size of the nodes represent the communities and the degree of the authors, respectively. The largest community includes Wahyu Widada, Dewi Herawati, and 29 other authors, all of which affiliated with the same institution, i.e. Universitas Bengkulu.

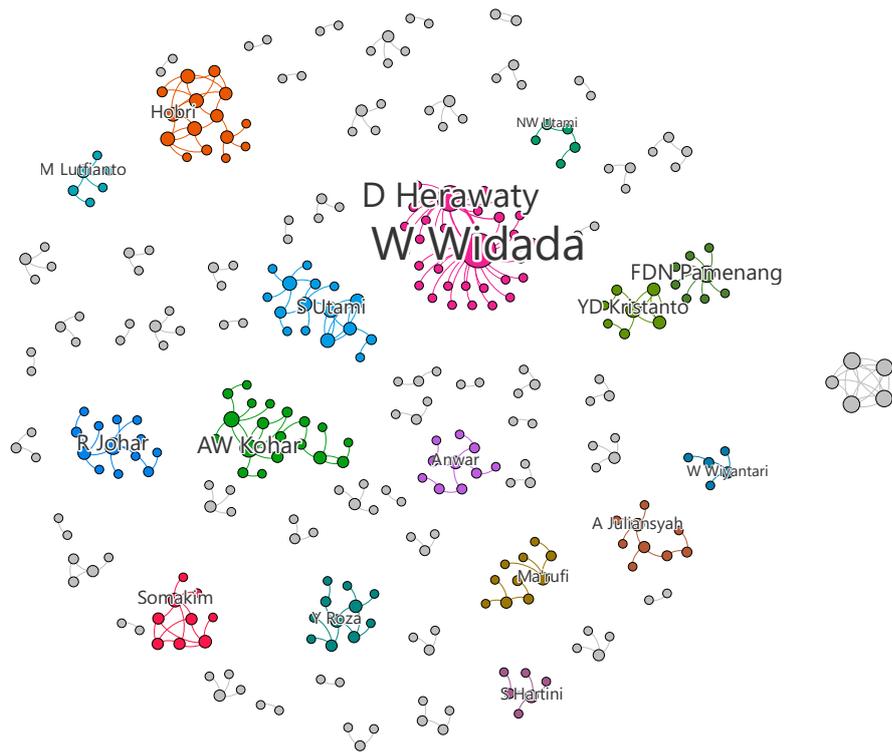


Figure 4. Co-authorship networks on accepted abstracts

Figure 5 shows the affiliation networks that extracted from the accepted abstracts. There are 7 communities in these networks. The largest community involves Universitas Pendidikan Indonesia and 10 other institutions. All of institutions in this community come from Indonesia. The second largest community involves Universitas Sanata Dharma and 8 other institutions which come from Indonesia, South Korea, and Thailand. This is the only community consisting of multi-institutional collaboration.

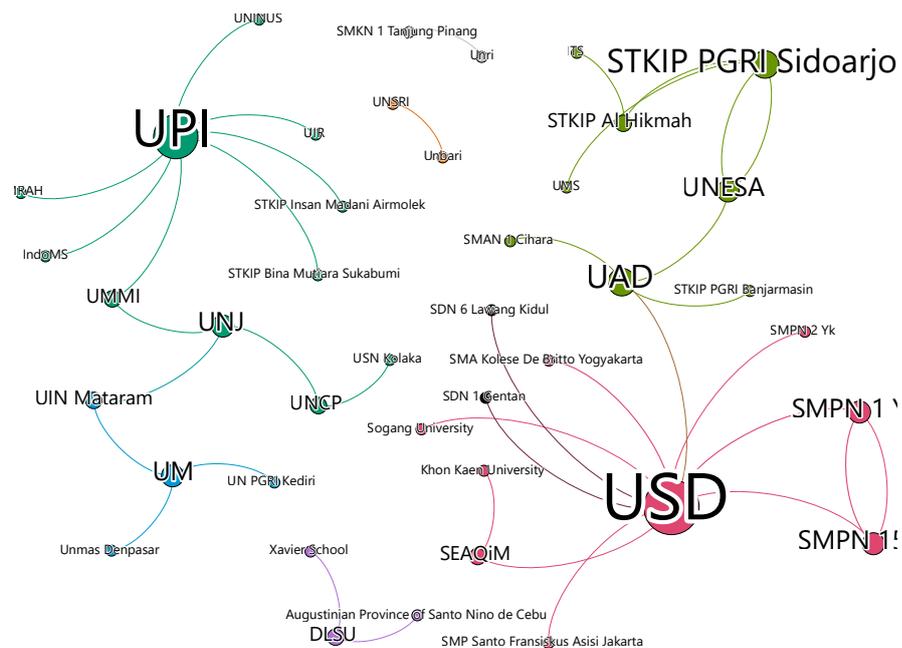


Figure 5. Affiliation networks on accepted abstracts

## 5. Final Remarks

This paper examines some important features obtained from the accepted abstracts of the conference. A content analysis of the title, abstract, and keywords found that design research, mathematics, problem-based learning, PMRI, ethnomathematics, and problem solving are the common topics for the conference. The authorship analysis suggested that most of accepted abstracts are multi-authored. This result agrees with Koseoglu [5] that multi-authored articles dominated solo work. The domination of multi-authored abstracts shows high level of collaboration among scholars for the conference. This collaboration has potential in increasing the conference impact for the academic's society, especially for educational design research community, since Gazni and Didegah [6] found that the research collaboration positively affects the number of citations. However, the high level of collaboration in the accepted abstracts only happens in intra- and inter-institutions. The international collaborations found in the accepted abstracts are small.

The results give benefits for the conference participants, committee, and SEA-DR consortium. For participants, the results can be used as insight in preparing everything to attend the conference. For committee, the results are useful in organizing the conference smoothly. The result of co-authorship network analysis can be used to choose appropriate reviewers for a specific paper in the review process [7]. For SEA-DR consortium, the results can be used as entry point in discussing the future of SEA-DR research community, specifically related to international collaboration.

The results of this paper have limitations since the source of data is the accepted abstracts of the conference. The abstracts still have the possibility to change because they can be revised by the authors.

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