

# Determinants of Soft Skills Vocational Students: Bibliometric Analysis

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# Determinants of Soft Skills Vocational Students: Bibliometric Analysis

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## Abstract

Soft skills play an important role in success in the world of work, especially for vocational high school graduates whose output produces a workforce. This research has the output to find out the determinants of the soft skills of vocational high school students, in order to overcome the problem of the gap between the soft skills of SMK graduates and the industrial world, causing the unemployment rate from SMK to be quite high, as evidenced by the largest number of open unemployment in Indonesia in 2021 are SMK graduates with a percentage of 11.13%. The database from Google Scholar was used to collect publications related to vocational student soft skills and visualized with VOSviewer, then analyzed pairs of journal bibliographies, pairs of publication bibliographies, and co-occurrence of keywords. A total of 100 publications were selected following research criteria in the last 6 (six) years (2017-2022). This study aims to determine trends and research focus on soft skills publication at the vocational high school level, which then obtains the distribution for 2017-2022. Data collection techniques are carried out by downloading files on the Google Scholar database to see publication trends that have the greatest number of documents, journals, document types and the use of shared keywords. The method used is bibliometric analysis. A total of 100 documents collected from the Google Scholar database were then put together in 1 file in the Ris format and entered into the VOSviewer application to get network visualization, overlay visualization, and density visualization. The results of the study show that the publication trend is related to vocational student soft skills. The selected document data shows the trend of journals with the highest number of documents, namely the European Journal of Contemporary Education is in the top rank with 2 documents and 412 citations, followed by the Journal of management inquiry in second place with 2 documents and 266 citations. The keywords that are often researched are soft skills, student, and success which are the keywords that have the highest density.

**Keywords:** Soft Skills; Vocational Student; Analysis Bibliometric.

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## 1. INTRODUCTION

Soft skills are competencies or social traits, attitudes, and self-regulation that enable us to communicate effectively, work well with others, and survive in the face of adversity (Hora *et al.*, 2018). In the world of work, soft skills have a positive influence on success in the world of work (Sabirin and Sulistiyarini, 2021). By having soft skills, a person's presence will be increasingly felt in society, because that person has communication skills, emotional skills, language skills, group skills, has ethics and morals, manners and spiritual skills (Wijaya and Hariani, 2015). Soft skills can be divided into two parts, namely inter-personal skills and intrapersonal skills. Inter-personal skills are the ability to understand and be sensitive to feelings, intentions, motivations, character, facial expressions, and so on, as well as the ability to establish relationships or communicate with various people.

The part of inter-personal skills are as follows: 1) Ability to communicate. 2) Build good relations or cooperate. 3) Ability to motivate. 4) Ability to show expertise. Intra-personal skill is the ability to know yourself, reflect, be balanced, control your feelings and emotions. As for the part of intra-personal skills as follows: 1) Forming character. 2) Forming trust or confidence in yourself. 3) Change management. 4) Stress management. 5) Time management. 6) The process of creative thinking (Wijaya and Hariani, 2015). The following indicators in soft skills consist of Honesty/integrity, Communication skills Analytical skills, ability to work in teams, Interpersonal skills, Motivation, Creative thinking (Zhang, 2012).

The concept of soft skills is not new in the world of education. Accreditation bodies have recommended them for more than half a century American Society for Engineering Education, in 1950. However, the practice of soft skills is still very weak in education programs in Indonesia, and this deficit is in line with the case of Vocational High School students as it hinders the career advancement of their graduates. at the moment. Vocational High School is a formal educational institution with the aim of producing output of students who have expertise or soft skills for preparation for the world of work, both the business world and industry (Permendikbud Number 34 of 2018). SMK graduates who are in accordance with the needs of the business or industrial world, need to be equipped with hard-skills according to their field of work and supported by soft skills.

But the results of the study show that the soft-skills of prospective workers, especially from vocational education graduates, are quite low and have not been able to meet the standards of the industrial world (Prihatiningsih, 2018). The gap between the soft skills of SMK graduates and the industrial world has caused the unemployment rate from SMK to be quite high (Prihatiningsih, 2018). This data is evidenced by the large number of open unemployed in Indonesia in 2021, most of whom are graduates of SMK with a percentage of 11.13% (Source: Badan Pusat Statistik, Survei Angkatan Kerja Nasional (Sakernas) 2022).

Departing from the problems above, remembering that unemployment is a problem that has a very big impact on the economy, education, and crime in a country, and we also know that overcoming the problem of unemployment is not only from a few or many jobs. But we must care about the soft skills of the next generation so that they are able to become a productive workforce for the country and reduce the problems caused by unemployment.

Based on previous research (Fernandes *et al.*, 2021) explained several factors that influence the ability of soft skills, namely toughness, flexibility, empathy, collaborative work, self-

confidence, and effective communication. This is what makes researchers interested in analyzing research objectives on the determinants of soft skills of vocational high school students. Therefore the researcher gave the title of this journal, namely, related research 'DETERMINANT OF SOFTSKILLS VOCATIONAL STUDENTS'.

The originality of this research is that it is the first to review and map the determinants of soft skills in vocational high schools using data from 2017 to 2022 using bibliometric analysis. The bibliometric analysis method can be used in analyzing research results related to soft skills in vocational high schools (Phoong *et al.*, 2022; Zyoud *et al.*, 2017). Bibliometric analysis is a method that can be used in analyzing a number of previous research results. Bibliometric analysis is an analysis that is carried out both qualitatively and quantitatively on certain themes. In this case, the researcher attempted to carry out a bibliometric analysis in capturing the research landscape from previous studies related to the soft skills of vocational high school students. All articles published in journals have been reviewed in terms of methodology, groups of vocational high schools in Indonesia and topics or subtopics for further research.

## 2. LITERATURE REVIEW

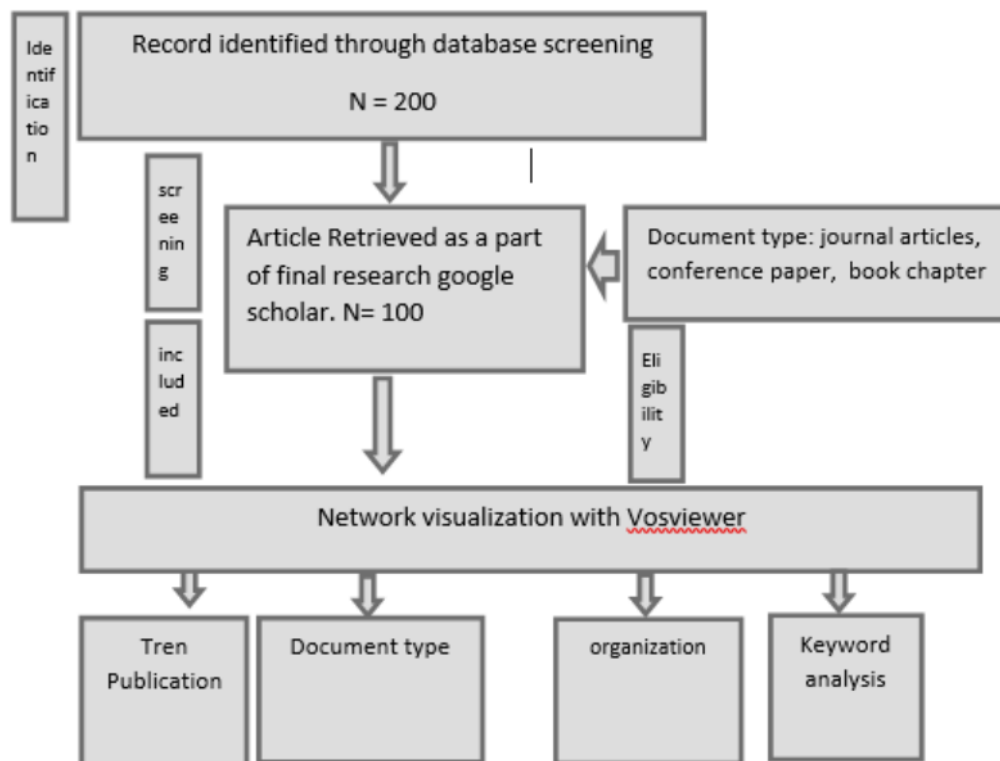
Soft skills are life skills and skills, both for yourself, in groups, or in society, as well as with the creator (Elfindri *et al.* (2011) Elfindri *et al.* (2011). Meanwhile according (Hora *et al.*, 2018) Soft skills are competencies or social traits, attitudes, and self-regulation that enable us to communicate effectively, work well with others, and survive in the face of adversity. Based on previous research (Fernandes *et al.*, 2021) explained several factors that influence the ability of soft skills, namely toughness, flexibility, empathy, collaborative work, self-confidence, and effective communication. Vocational High School is a formal educational institution with the aim of producing output of students who have expertise or soft skills for preparation in the world of work, both in business and industry (Permendikbud Nomor 34 tahun 2018).

## 3. METHOD

This study uses a quantitative method with five scientific stages adopted from (Triansyah *et al.*, 2023). The five stages are as follows: Stage 1 is designing the research, creating research questions, keywords, and choosing a database. Stage 2, collecting data with shortlisting techniques. Stage 3, bibliometric analysis was carried out using VOSviewer, this is to help interpret the data (Jones and Gatrell, 2014). Stage 4, analyzing the results and interpreting them along with predictions for further research. Stage 5, identifying research gaps that can be used as recommendations for synthesizing existing studies. In more detail, these stages are shown in Figure 1.

Database, keywords and inclusion criteria.

Data was retrieved from the Google Scholar database in December 2022 to obtain relevant information for this study. Google scholar is most suitable for bibliometric analysis related to soft skills and includes publication Data analyzed in the 2017-2022 period, regarding the determinants of vocational student soft skills. To facilitate the search for the appropriate



**Figure 1:** The process of filtering data and visualization

search term "SOFT SKILLS VOCATIONAL STUDENT" was used to search for keywords, abstracts and titles so that an initial result of 100 documents was obtained. This research is limited to research related to the determinant of soft skills vocational student which produces 100 documents (TITLE-YEAR-KEYWORDS-CITES-PUBLISHER-AUTHOR-TITTLE), then articles that focus on the determinants of soft skills in vocational students selected for final analysis.

Bibliometric analysis Bibliometric statistics started the analysis in this study. There are two analyzes in this regard, namely first, a performance analysis that assesses various parameters (author, affiliation, country, etc.) through a bibliographic index built based on data citations and the authors associated with the data. Second, it includes an analysis of scientific mapping that retrieves data from mapping social structures and research cognitive networks. For this activity, a workflow is used as shown in Figure 1. Data analysis was carried out in two parts through inductive analysis (Seuring and Müller, 2008) where the first is bibliometric analysis and the second is network mapping. Package R is a statistical software that assimilates well between bibliometric analysis and graphical analysis through integrated data visualization tools using biblioshiny. This study uses a bibliometric approach. Bibliometrics is a suitable



method for looking into educational research studies, as it can reveal the evolution and measure the interrelationships of various items with broad intersections and a combination of statistics, philology, and information science as well as a statistical method of analyzing publications (He *et al.*, 2017; Phoong *et al.*, 2022; Wang *et al.*, 2021; Q. Zhang *et al.*, 2019; S. Zyoud *et al.*, 2017)(He *et al.*, 2017; Phoong *et al.*, 2022; Zyoud *et al.*, 2017). Bibliometrics is the cornerstone for determining the most popular and most significant publications in a particular field and has become a mature way of analyzing the evolution of a journal or subject (Shang *et al.*, 2015; Zyoud *et al.*, 2022). Bibliometrics is a research method that has very complete information by combining science, mathematics and statistics in analyzing knowledge quantitatively (Q. Zhang *et al.*, 2019). So that it can be interpreted that bibliometrics is a statistical method that contains information related to publications used to analyze publications in certain fields.

#### 4. RESULTS AND DISCUSSION

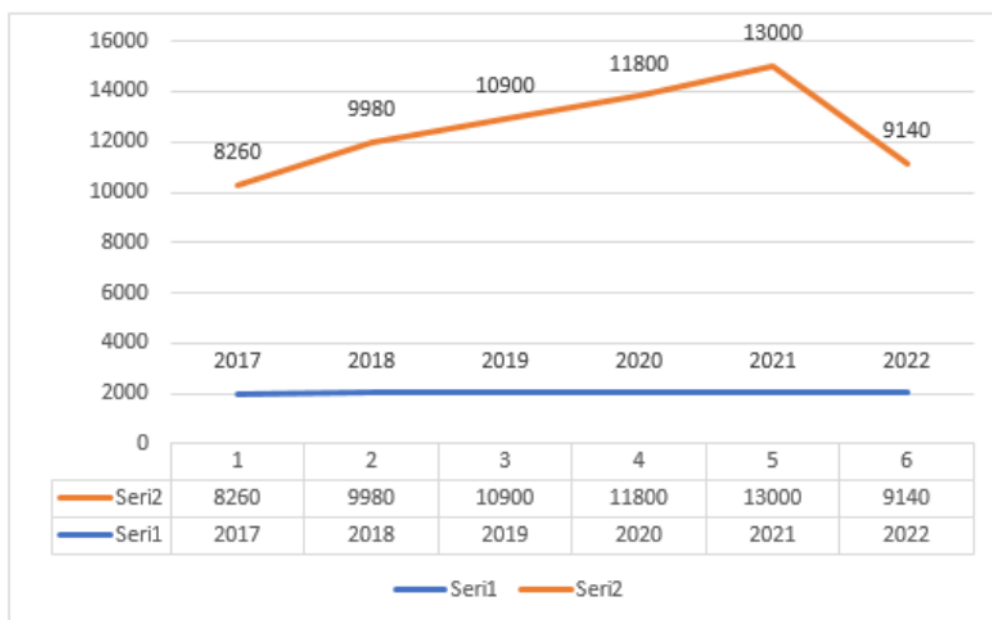
In presenting the results of the bibliometric analysis in this study, refer to (Donthu *et al.*, (2021) Donthu *et al.* (2021) dan Ellili *et al.* (2022) starting from the number of documents and citations from countries, institutions, journals, authors, and the appearance of keywords together. The description of the main bibliometric statistics in this study includes the authors, indications, information, and the country of study. Each category has been thoroughly analyzed using the following techniques: (1) Annual Publication Trends, (2) Type of document (3) Institution / journal of the author, (4) keywords and others. Further analysis is presented in the following sub-chapter.

##### Annual Publication Trends

Publications related to soft skills that have gone through the data collection process so that 100 publication data are obtained which will be interpreted from 2017 to 2022 which are in accordance with the criteria, then a descriptive bibliometric analysis is carried out.

The picture above explains the number of publications related to soft skills in the last six years on Google Scholar. Most In 2021 there were 13,000 publications or 20.61%, then in 2020 there were 11,800 publications or 18.71%. The third largest in 2019 was 10,900 publications or 17.28%, and the fourth most in 2022, namely 9,140 publications or 14.49% and finally in 2017, there were 8,260 publications or 13.1%. The screening and feasibility that has been processed produces 100 documents related to soft skills which will be mapped in the next figure.

When viewed from the 100 publications that have been selected, in the last six years so far there has been a fairly good increase but seems to be fluctuating. In 2017 there were 21 publications and in 2018 it increased by one publication to 22 publications. The decline occurred in 2019 to 17 publications, then increased. Again in 2020 to 25 publications experienced a significant decrease in the following two years, namely 2021 to 12 publications and 2022 to 3 publications. So it can be proven by the publication trend line which shows that there is fluctuation related to the trend of soft skills in the selected data.



**Figure 2:** Number of Soft Skills Publications in the Last 6 (six) Years

### Document type

The number of documents can be identified based on the type of documents originating from various written sources. Types of publications about soft skills vocational student learning in 2017-2022 are presented in the following table.

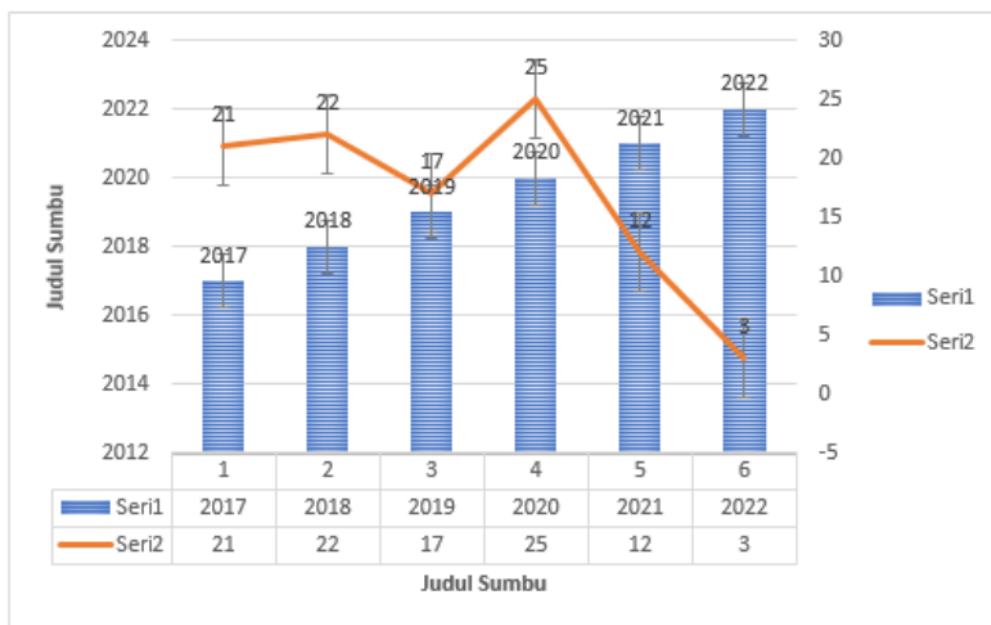
**Table 1:** Number and percentage of soft skills vocational student publications in 2017 - 2022 by type of document

No	Document type	Number of Publications	Percentage
1	Article	94	94%
2	Book Chapter	3	3%
3	Proceeding	3	3%
	Total	100	100%

### Journal Bibliography Pair

Google scholar indexed documents related to vocational student soft skills in economics learning are published from several journals. Journals with the highest number of publications and citations followed by the number of citations are shown in the table below with the 10 (ten) most institutions.

The data above shows the trend of journals with the highest number of documents. The European Journal of Contemporary Education is at the top with 2 documents and 412 citations, followed by the Journal of management inquiry in second place with 2 documents and 266 citations. In the top 10 indexed Scopus Quartile 1 and Quartile 2, Google Scholar,



**Figure 3:** Number of Selected Publications related to Soft Skills Vocational Student for the Last 6 (six) Years

**Table 2:** Number and percentage of soft skills vocational student publications in 2017 - 2022 based on publication

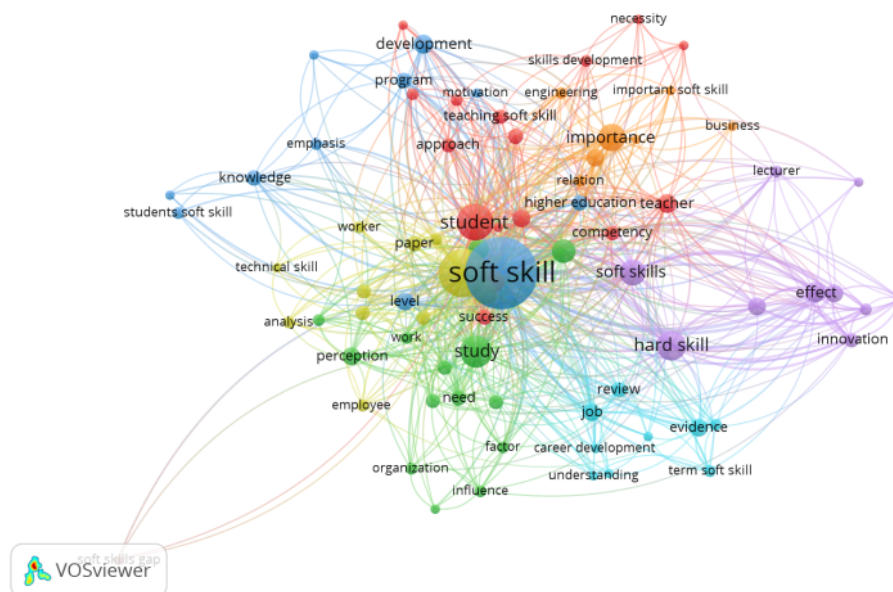
No	Publisher	Number of Publications	Number of Citations
1	European Journal of Contemporary Education	2	412
2	Journal of management inquiry	2	266
3	EduPsyCouns Journal	2	154
4	The International Journal Of Human Resource Management	2	44
5	Universal journal of educatioanal research	2	49
6	Studies in higher education	1	378
7	MATEC Web of Conference	1	125
8	Instructional Science	1	180
9	International Journal of Control and Automation	1	169
10	Engineering, Construction and Architectural Management	1	142



Crossref and others. This indicates that the results of soft skills research are in accordance with the focus and scope of the journals above, so that they are useful for researchers who wish to publish research documents related to soft skills for further research.

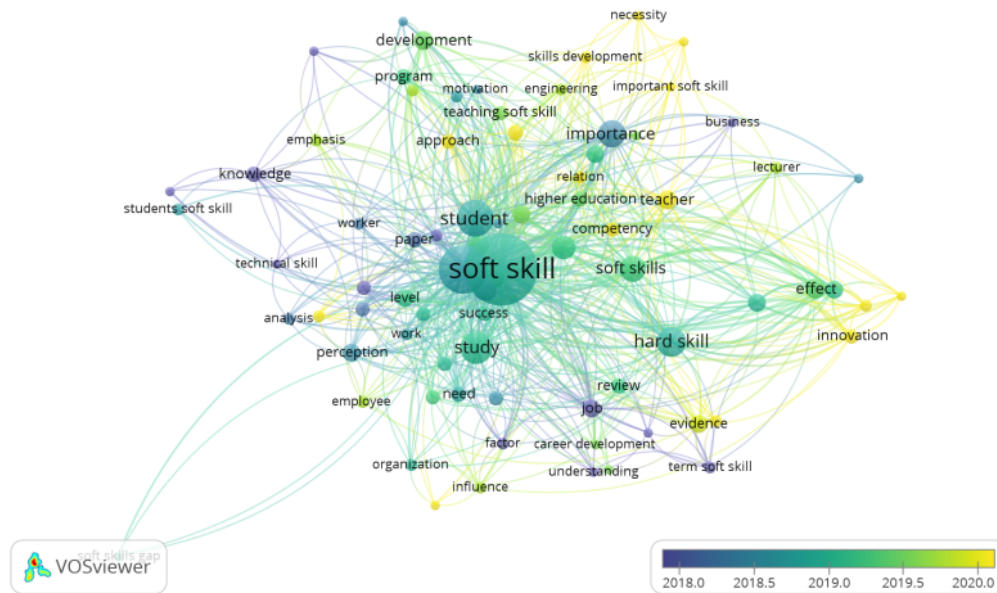
### Soft Skills Research Trends

The data that has been obtained from Google Scholar is then downloaded in RIS format, then the file is entered into the VOSviewer software to obtain bibliometric analysis results. The researcher uses a threshold in determining the use of shared keywords, namely at least 2 shared keywords, meaning that 1 keyword is used in at least 2 different documents that appear in the visualization on VOSviewer. Qualification of documents based on the specified threshold will display several keywords that simultaneously appear that are used by at least 2 documents in the co-occurrence. Researchers select keywords that appear and adapt them to research phenomena related to soft skills. The keywords that appear reflect the popularity of the keywords most used in soft skills research.



**Figure 4:** Network visualization of the emergence of shared keywords

The image above shows a network visualization of the use of shared keywords (minimum 2). The keyword "Soft skills" is the most frequently found, namely 98 times used together in keywords. Furthermore, there are 43 shared usage keywords about skills, and the third, namely 25 shared student keywords. Shared use, this can be seen by the size of the circle in the keywords, the bigger the circle, the keyword has been widely used by researchers regarding this variable. For more details regarding the use of shared keywords can be seen in the following table.



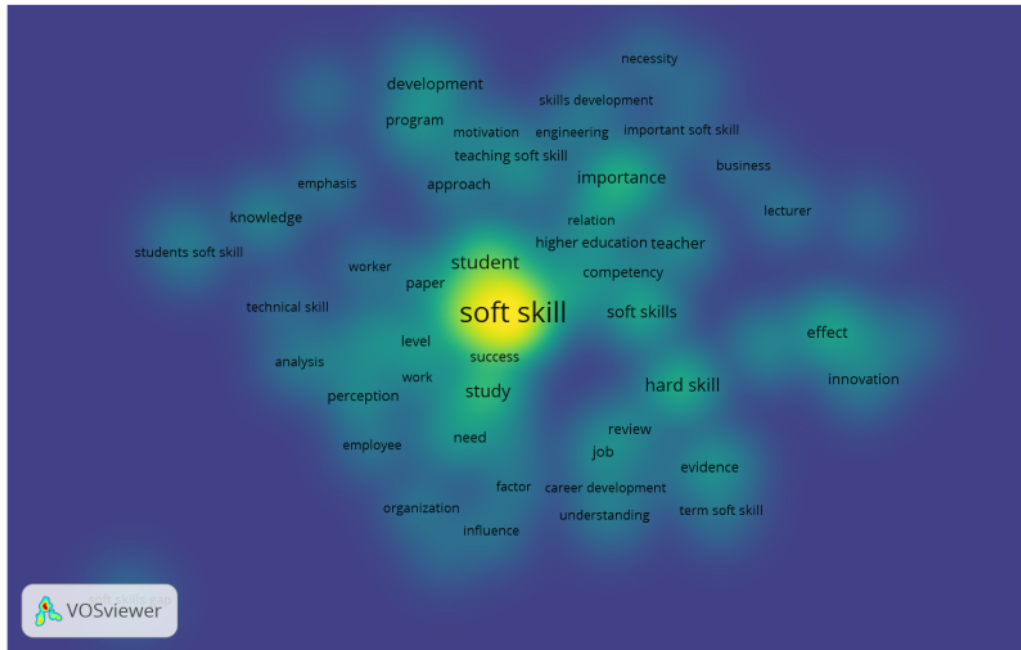
**Figure 5:** Overlay Visualization of the emergence of shared keywords based on the year of publication

From the picture above, there are three different colors, the yellow color indicates these keywords are used together around 2020, the green color shows the use of keywords together around early to mid 2019, and the blue color around 2018. This indicates a change in terms within the certain time. The keywords that are the new theme are innovation, evidence, necessity and several other variables that are colored yellow. While the keywords that have become the old theme are knowledge, technical skills, jobs, and analysis as well as several variables that are colored blue. This can be interpreted that there will always be changes in soft skills research..

The journal bibliography pair shown in Figure 6 is displayed with Density Visualization. The yellow color density shows the density of a keyword. This means that these keywords are often researched. The soft skills, student, and success variables are the keywords that have the highest density.

## 5. CONCLUSION

The trend of publications in Google Scholar indexed journals is evidenced by the publication trend lines which indicate fluctuations in soft skills publications in the selected data. The document data shows the journal with the highest number of documents, namely the European Journal of Contemporary Education is in the top rank with 2 documents and 412 citations, followed by the Journal of management inquiry in second place with 2 documents



**Figure 6:** Density Visualization

and 266 citations. The keyword “Soft skills” is the most frequently found, namely 98 times used together in keywords. Furthermore, there are 43 shared use keywords about skills, and the third, 25 shared use student keywords. In this latest theme, it shows that there has been a change in terms over a certain period of time. The keywords that are the new theme are innovation, evidence, necessity and several other variables that are colored yellow. While the keywords that have become the old theme are knowledge, technical skills, jobs, and analysis as well as several variables that are colored blue. This can be interpreted that there will always be changes in soft skills research. Then for further research to expand the keywords that will be used on research topics, and in finding or collecting data you can use databases other than Google Scholar such as Scopus, Web of Science (WoS), and Dimensions.

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