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Bibliometric Analysis of Entrepreneurship Education Research from 2012 to 2022

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Abstract

There is a growing interest in entrepreneurship education within the education community, as can be seen by the increased number of educational activities and initiatives focused on it, such as conferences, workshops, projects, and research papers. One good reason for this being interesting is that entrepreneurship education is considered a teaching and training approach designed to develop and encourage entrepreneurial spirit and success. Despite the progress that has been made so far in integrating entrepreneurship education into the education system, there is still a need to develop and strengthen educational practises in this area. One way to evaluate the current situation of entrepreneurship education is to conduct the scientific research that can be traced through the abundance of published literature on the topic. The published literature shows there is still a lack of comprehensive and systematic research focusing on the evolution of this field. As a result, the purpose of this study is to highlight the research efforts that have been made in entrepreneurship education. The final 615 scholarly articles used in this review, which were published and available through Scopus databases and ranged in date from 2012 to 2021, show that there has been a gradual increase in research on entrepreneurship education from 2012 to 2021.

Keywords: Entrepreneurship Education, School, Bibliometric Analysis

Background of Entrepreneurship Education

It is believed that the term "entrepreneurship" first appeared in the sixteenth century in the French language, and since then many schools of entrepreneurship have been established. The first of them being classical or traditional, where this school is divided into two branches. The first branch is the Administrative Scientific School, which was started by Frederick Taylor. Taylor defined entrepreneurship as knowing what you want to get out of your goals and how to get them in the best way and for the best price. Among the supporters of this school are Henry Gantt, Frank (Frank), and Lillian Gilbert (Lillian Gilbreth). This school emphasizes achieving the highest productivity with maximum efficiency. In other words, it focuses on

results. The second branch of the classical school is the traditional administrative school, which arose out of a need to develop the course of managing large institutions. This school focuses more on developing the intellectual principles of work than the methods themselves. Henry Fayol, who wrote the classic book on management theory, and Max Weber are two of the most well-known people who led this school (Abroma, 2019).

On the other hand, some believe that the term "entrepreneurship" appeared during the industrial revolution in Western European countries, and others believe that this term was used at the beginning of the eighteenth century by Richard Cantlon to refer to commercial activities that involve a bit of adventure and risk (Mohd & Abdulkareem, 2019). At various eras and in different contexts, entrepreneurship has taken on a wide variety of meanings, a spectrum of ideologies, and a variety of focuses. Today's entrepreneurial behavior is characterized by being independent and self-centered and is expressed by starting, running, and owning a small business. Additionally, entrepreneurship depends on specific opportunities, the methods used to identify, assess, and take advantage of such chances, as well as the attitudes of those doing the aforementioned. At the same time, some people think that entrepreneurship must relate to those who take risks and launch new, innovative businesses that expand quickly, while others may confine the idea to starting new businesses. (Seikkula-Leino, 2011)

In the light of the previous paragraphs, entrepreneurship is concerned with the field of business, its management, and the requirements for engaging in it. Hence the idea of using it in the field of education to prepare young people for the labor market, and to solve unemployment as a global problem. In this context, one potential answer to the issue of unemployment, the growing shortage of job possibilities, and the numerous worldwide crises, such as the Covid 19 disaster, is entrepreneurship education. According to the International Labour Organization (ILO) estimate, by 2022 there will be 23 million more job openings than there are individuals to fill them, and there will be 205 million more unemployed people worldwide (International Labor Organization, 2021). At the same time, the World Bank's figures show that there are more people without jobs than there was the year before (5.40), and that number increased to 6.60 in 2020, the highest level in thirty years, indicating that there are more people without jobs than there was the year before.

In addition, the world economy is currently going through a worldwide stage of transition that is unrelated to the unemployment issue and is based on information and intellectual capital rather than natural resources. In this stage, creative ideas are valued more highly than monetary capital. More distantly, the United Nations Sustainable Development Goals, such as decent work, economic growth, improved infrastructure, innovation, and the abolition of prejudice, are also furthered through. Entrepreneurship education is defined as a learning process that prepares people to be responsible and enterprising individuals. It helps people develop the skills, knowledge, and attitudes necessary to achieve the goals they set out for themselves. Evidence also shows that people with entrepreneurial education are more employable.

Material and Methods

The current study aims to evaluate and identify the publishing trends and patterns in entrepreneurship education in schools from 2012 to 2021 by assessing the most productive countries, authors, publications, and primary research keywords in entrepreneurship education in schools.

The following research questions have been formulated to achieve the objectives of the research:

- What was the publishing trend based on interest in entrepreneurship education in schools over the last ten years, from 2012 to 2022?
- Which of the following countries has been most productive in entrepreneurship education in schools over the last ten years, from 2012 to 2022?
- Which of the authors and publications have been most productive in entrepreneurship education in schools over the last ten years, from 2012 to 2022?
- Which keywords have been frequently used in entrepreneurship education in schools over the last ten years, from 2012 to 2022?

The bibliometric analysis method was used to evaluate and identify the publishing trends and patterns in entrepreneurship education in school literature (Alshabibi et al., 2022; Yaarubi et al., 2022; AlShehhi et al., 2022a; AlShehhi et al., 2022b; Alsheeb et al., 2022; Mamman et al., 2022a; Mamman et al., 2022b). Bibliometrics is a quantitative and statistical method used to analyse the publishing trends of research articles, conference papers, books, book chapters, and other scholarly documents published in the English language during the period of the study (Abuhassna & Awae, 2021; Abuhassna & Yahya, 2018; Abuhassna et al., 2022a; Abuhassna et al., 2022b; Abuhassna et al., 2022c; Abuhassna et al., 2020). Bibliometric analysis was chosen for the purpose of this study as it can be used to assess the progress, publishing trends, and patterns of a discipline. The research looks at both the quantitative and qualitative aspects of entrepreneurship education in schools. It does this by looking at the number of publications, the data on citations, and the analysis of multiple factors like authors, countries, and keywords.

There are several renowned indexing and abstracting databases. Some are multidisciplinary (Scopus, WOS), while others are subject-specific databases (MEDLINE, PubMed, AGRICOLA, ERIC). Out of these databases, Scopus and WOS are both highly regarded all over the world. Scopus was chosen for the purpose of this study as it is the most trusted, powerful, and reliable database in the world. The academic literature collected from Scopus databases dates from 2012 to 2021. The bibliometric analysis was used to identify group topics based on interest in entrepreneurship education in schools over the last ten years, from 2012 to 2022, as well as authors, publications, and the primary research keywords for the last decade of entrepreneurship education in schools. It is expected that this study will bridge the knowledge-research gap by analysing the reality of entrepreneurship education in schools. It is also hoped that it will show the efforts of countries and universities in this aspect, as it may be useful for researchers to study another aspect of entrepreneurship education in schools at the same time from a worldwide perspective. Finally, the findings of this bibliometric analysis can improve knowledge of the development of research in entrepreneurship education in schools (Rashed, 2019). A component of scient metrics, which employs mathematical and statistical techniques to assess scientific activity in a study field, is bibliometric analysis.

Bibliometrics offers a broad overview of a field of study that can be categorised by papers, authors, and journals. A performance analysis and a graphic mapping of science, known as bibliometric mapping, are the two basic approaches used in bibliometric methods. On the one hand, performance analysis assesses the influence of scientific production citations made by various players who collaborate in a research field. These actors can include nations, colleges, administrative divisions, and, of course, researchers. The measures that consider the quantity of publications and citations are the most widely used (Aparicio et al., 2019).

The S.L.R. article selection and rejection process is described in the PRISMA statement template. The published literature about entrepreneurship education is the only source used for this S.L.R.-based study. For extracting the literature, Scopus was used. The database's total results are returned after using keywords in the search bar for entrepreneurship education in schools. This study was carried out on March 3, 2022, using the Scopus database. The initial search yielded 1236 articles in the areas of entrepreneurship, education, and the school's research. The keywords that were used were "entrepreneurship AND education AND schools." This research covered the last 10 years, from 2012 to 2021. LIMIT-TO (SUBJAREA, "COMP") OR LIMIT-TO (SUBJAREA, "ARTS").TS"). Furthermore, the research language only included articles published in English, with no other languages included. Finally, the final articles used in this review (615) were in entrepreneurship, education, and schools shows depicts a three-phase flow of data extraction and filtration.

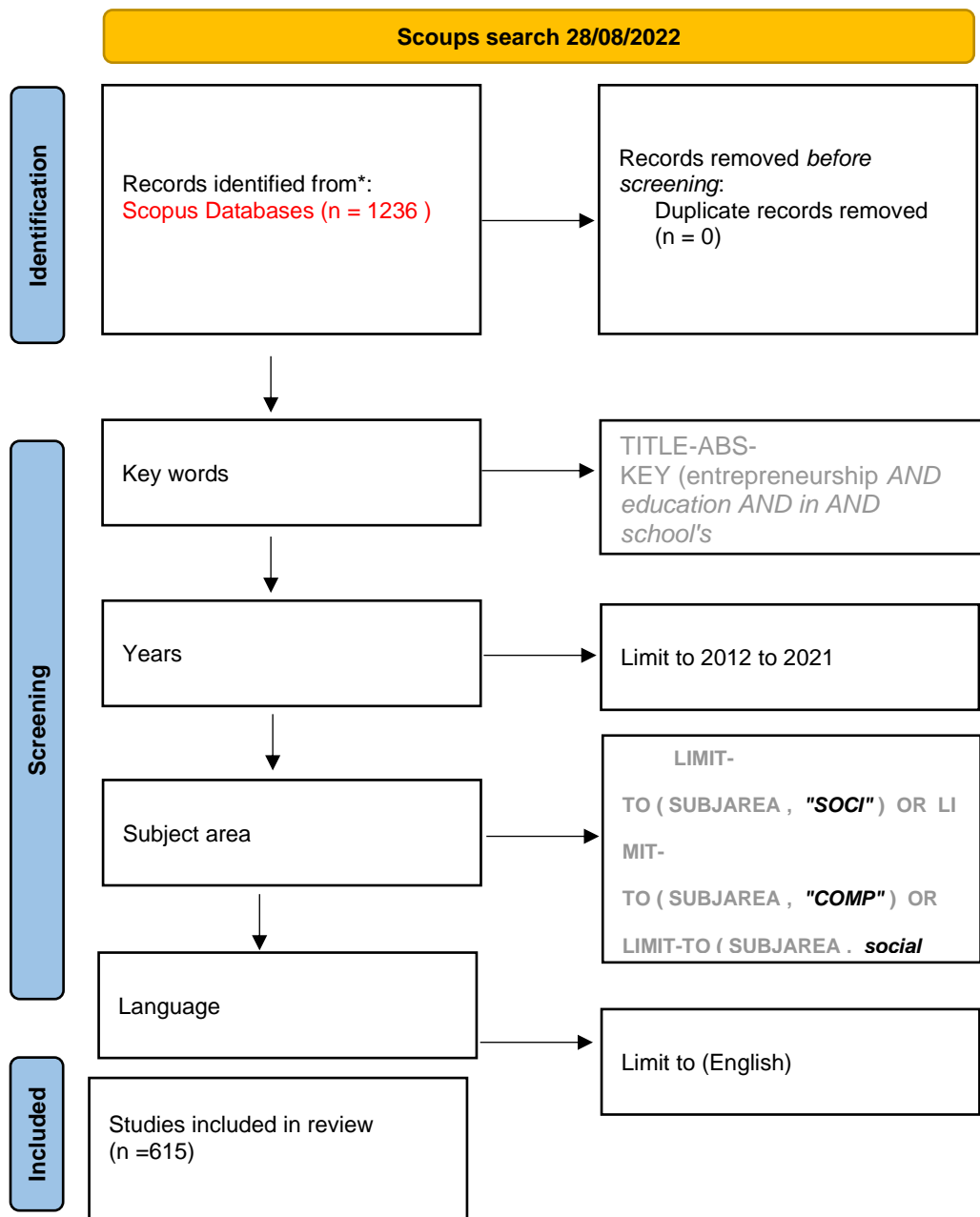


Fig. 1. Three-phase flow chart of data extraction and filtration process, PRISMA statement 2012-2021

Descriptive Results Analysis

Question One

This study's main goal was to find out how much and how well people were interested in doing research on entrepreneurship education, as shown by the first question: What was the trend in publishing based on interest in entrepreneurship education in schools over the last ten years, from 2012 to 2022?

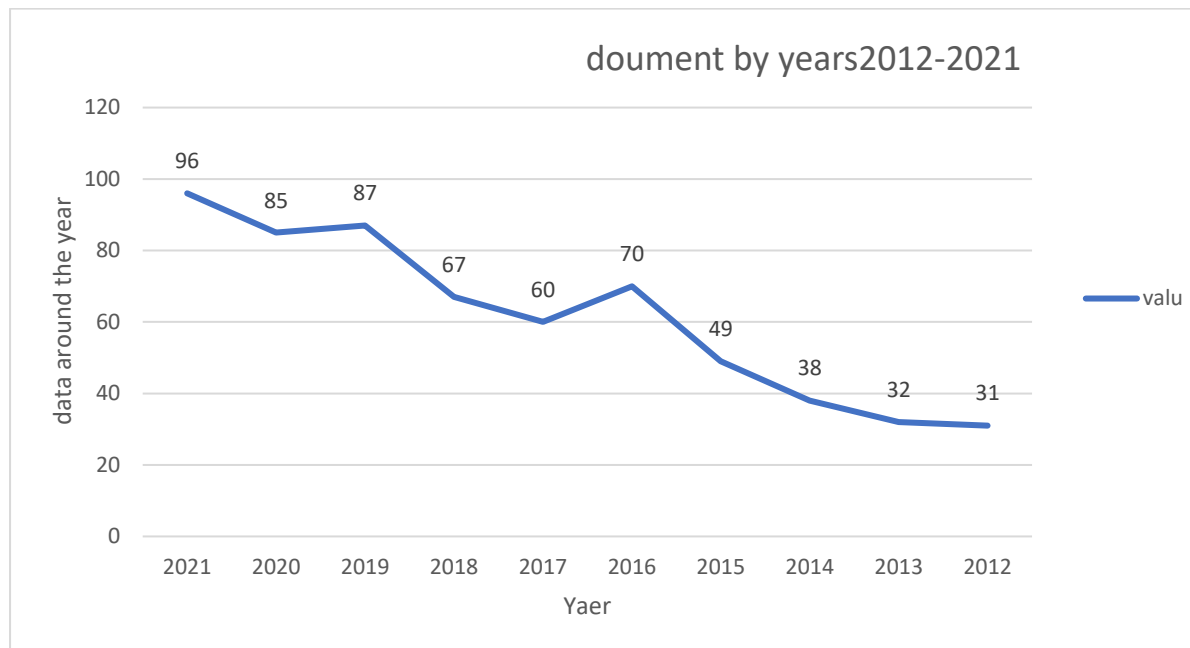


Fig. 2. Published articles in entrepreneurship education in schools by years 2012-2021

The above bar chart shown in figure 1 illustrates the number of articles in entrepreneurship education in schools published from 2012 to 2022, that were reviewed in this study. The number of articles grew steadily from 31 in 2012 to 96 in 2021. Two peak periods can be seen in the increase in the number of published articles. The first peak occurred in 2016 (70), while the second occurred in 2019 (87). However, this steady growth witnessed a decline in 2017 (60), to gradually rise again until 2021.

Question Two

The second aim of this study was to identify which countries were most interested in conducting research and publishing articles related to entrepreneurship education in schools, as shown in question two: which countries have been most productive in entrepreneurship education in schools over the last ten years, from 2012 to 2022?

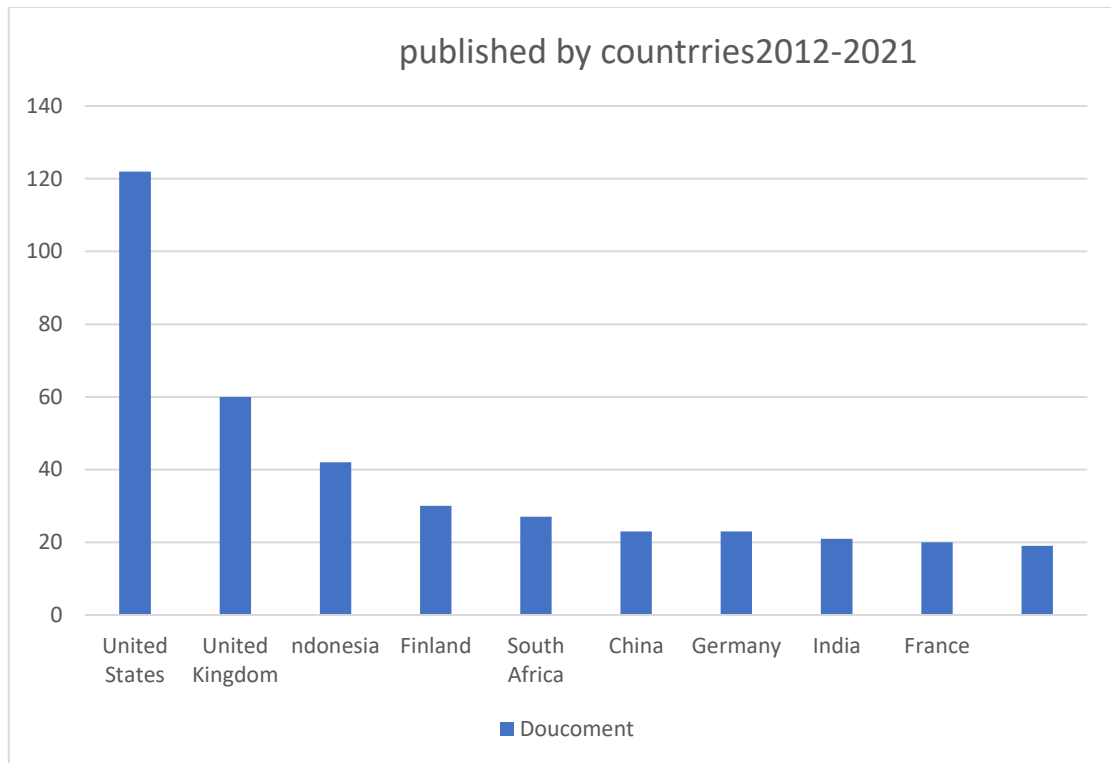


Fig. 3. Published articles in entrepreneurship education in schools by countries 2012-2021

The bar chart in Fig. 3 shows the nine countries most interested in publishing the topic of entrepreneurship education in schools during the period of 2012–2021. The three most interested countries are the United States of America, the United Kingdom, and Indonesia. At the same time, the bar chart shows the countries least interested in publishing on this topic, where France is considered the least, slightly ahead of India and Germany, and between the highest and lowest lie the medium-publication countries, which are Finland, South Africa, China, and Germany. It can also be noted that the United States of America is clearly superior to the rest of the countries, as the number of articles it has published on this topic is twice that of the next closest country in the ranking, which is the United Kingdom.

Question Three

Whom of the authors and Publications have been most productive in entrepreneurship education in schools over the last ten years from 2012 to 2022?

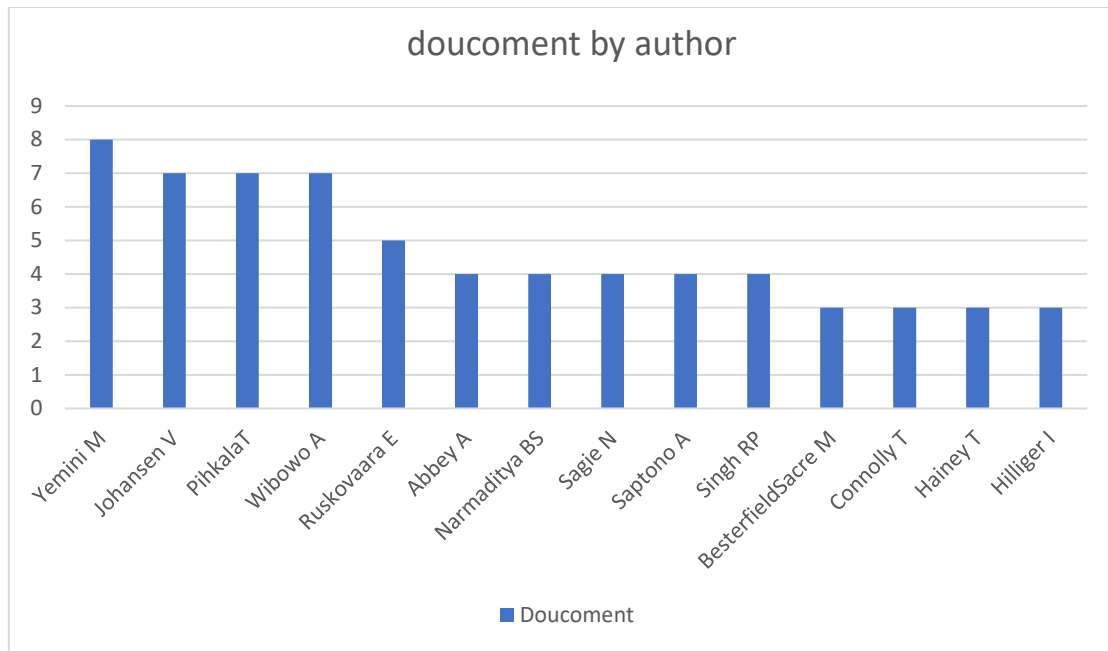


Fig. 4 documents by author

With 66 publications between them, the fourteen most prolific authors in the entrepreneurship education literature are highlighted in the bar chart in Fig. 4. The study results showed that the publication range of authors varied from three to eight. Yemini Man emerged as the most productive author with eight publications, followed by Johansen V, Pihkala T, and Wibowo A, with seven publications for each. Most of the authors on the list (9) have published four to three articles.

Table 1

The most important publications on the topic of entrepreneurship education in the years 2012-2021.

Type	TP	TC	Cite score	The most cited article	Times cited	Publisher
Articles	445	0	0.2	The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries	173	Routledge
conference papers	96	0		Unpacking the impact of engineering entrepreneurship education that	11	Institute of Electrical and Electronics Engineers Inc

				leverages the Lean LaunchPad Curriculum		
book chapter	42	0		Measuring intrapreneurship competence as a manifestation of work agency in different educational settings	8	Springer Nature
Review	13		0.63	Reflections and insights on teaching social entrepreneurship: An interview with Greg Dees	30	
Book	10			Economization of education: Human capital, global corporations, skills-based schooling	86	Taylor and Francis Inc
Conference Review	7			Reinventing education for an entrepreneurial culture	0	SAGE Publications Ltd
Editorial	2			Reinventing education for an entrepreneurial culture	0	SAGE Publications Ltd
Note	1			Addressing the void of entrepreneurship development amongst medical students in the UK	0	Dove Medical Press Ltd

TP= Total publications, TC= total citations

The fifth fig shows the most important sources that talked about entrepreneurship education, where the articles topped the list, article (The impact of entrepreneurship education, entrepreneurial self-efficacy and gender on entrepreneurial intentions of university students in the Visegrad countries) came in first place, and it was published by (Routledge) and the number of times it was cited was (173), in the second place came the working paper entitled (Unpacking the impact of engineering entrepreneurship education that leverages the Lean Launch Pad Curriculum) presented at a conference, as it was cited as a number of times (11) and it was published by (Institute of Electrical and Electronics Engineers Inc), at the same

time, the book chapter entitled (Measuring intrapreneurship competence as a manifestation of work agency in different educational settings) came in third place, and the number of times it was cited was (8) and it was published by (Springer Nature), the article (Reflections and insights on teaching social entrepreneurship: An interview with Greg Dees) got the highest number of reviews (30), The book (Economization of education: human capital, global corporations, skills-based schooling) was the most widely quoted and quoted, as the number of quotes from it reached (86), and it was published by (Taylor and Francis Inc.).

Question 4

4. Which keywords have been frequently used in entrepreneurship education in schools over the last ten years from 2012 to 2022?

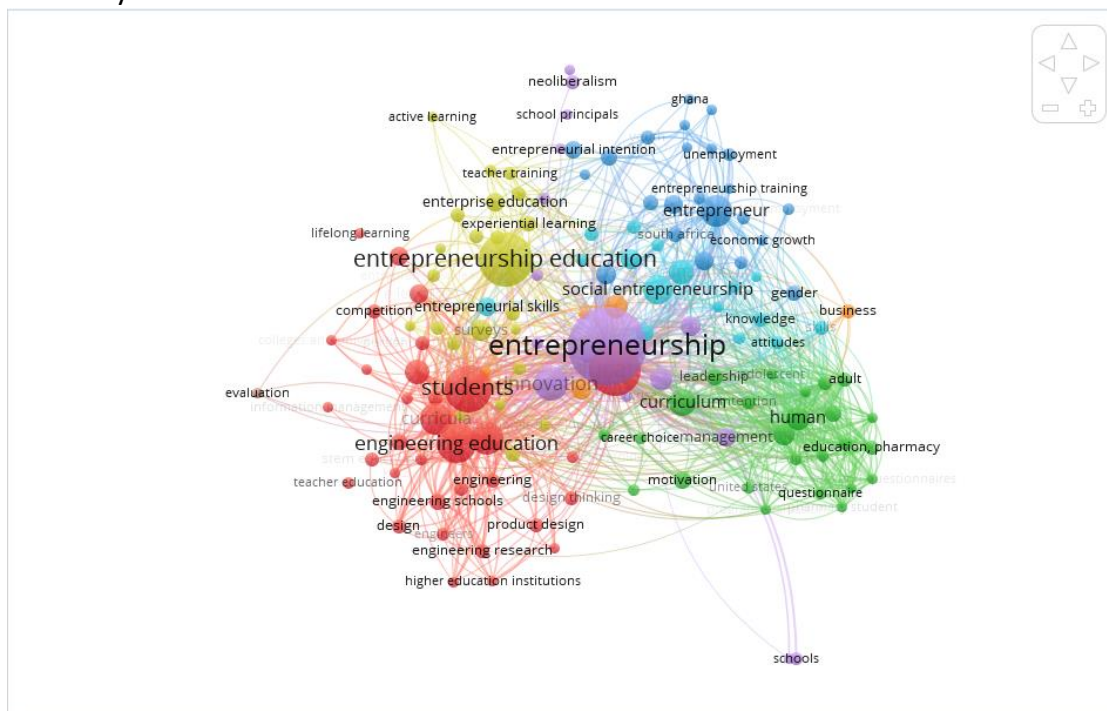


Fig. 6 Analysis of the results of posts with keywords in VOSviewer

Selected	Keyword	Occurrences	Total link strength
<input checked="" type="checkbox"/>	entrepreneurship	250	735
<input checked="" type="checkbox"/>	education	106	516
<input checked="" type="checkbox"/>	students	89	431
<input checked="" type="checkbox"/>	engineering education	65	352
<input checked="" type="checkbox"/>	teaching	44	248
<input checked="" type="checkbox"/>	human	22	242
<input checked="" type="checkbox"/>	humans	19	227
<input checked="" type="checkbox"/>	curricula	42	223
<input checked="" type="checkbox"/>	entrepreneurship education	118	221
<input checked="" type="checkbox"/>	entrepreneur	41	196
<input checked="" type="checkbox"/>	curriculum	31	191
<input checked="" type="checkbox"/>	innovation	47	186
<input checked="" type="checkbox"/>	female	13	161
<input checked="" type="checkbox"/>	male	11	145
<input checked="" type="checkbox"/>	education computing	25	132
<input checked="" type="checkbox"/>	education, pharmacy	8	119
<input checked="" type="checkbox"/>	article	9	115
<input checked="" type="checkbox"/>	student	15	115
<input checked="" type="checkbox"/>	adult	9	114
<input checked="" type="checkbox"/>	human experiment	7	101

Fig. 7 Keyword post-analysis results

Over the past ten years, what words have been associated with entrepreneurial education? The application of terminology analysis to the titles and excerpts from the publication under study has been established for the bibliometric analysis of the most frequently used keywords, allowing us to precisely analyze the terms with the primary topics and research trends in the field of entrepreneurship education as shown in the Figures 6&7.

Discussion

Piaget's theory asserts that knowledge is an innovative, constructive process and a mixture of innate and sensory formation for the child, and that each person builds his world and his reality in an innovative way that is different from others, and that the sources of knowledge are diverse, namely, the senses, i.e., experiences, the mind, and the environment in which the individual lives (Shahid, 2016), meaning that knowledge needs a social environment in order to be formed. This was confirmed by scientific studies, where it was found Kusmintarti et al (2016) concluded in their study that entrepreneurship education has a positive impact on students' acquisition of entrepreneurial intentions, project management skills, and the characteristics of entrepreneurs such as risk appetite, commitment, a tendency to achieve, and the ability to make a decision after considering the advantages and disadvantages. The study used a questionnaire as a data collection tool and included all students of the State Polytechnic of (Malang et al., 2016). They conducted a study on the impact of entrepreneurship teaching on students' intentions, self-awareness, and inspiration to turn to entrepreneurship. The study showed increased self-awareness and entrepreneurial intentions and decreased inspiration, with statistically significant differences in favour of females. The quantitative aspect of the study contained an electronic survey designed to capture the concepts of self-awareness, inspiration, and entrepreneurial intentions and was applied to male and female students who had joined the entrepreneurship and innovation course. The qualitative aspect of the study came through interviews as a case study applied to the teachers of the course. Yuhana (2020) aimed to explain the factors that affect entrepreneurship.

education in government and private vocational schools in three different locations east of Jakarta, with a total of 12 schools. Interviews were conducted to collect data from the study sample of principals and teachers in the targeted schools, and the results of the study confirmed that entrepreneurship education contributed to providing students with cooperative learning skills and raising students' efficiency in entrepreneurship in general, and the results also confirmed that entrepreneurship education is affected by the efficiency of school principals in entrepreneurship and the contribution of actors in the business and industry sector. Anisata and Umesh's (2021) study examined the impact of environments experienced by secondary school students during their developmental periods and their impact on their orientation to entrepreneurship as a career choice. and global awareness, and the study reached several results, the most important of which is that self-efficacy has the greatest impact on intentions, and family support and global awareness have a major joint role on self-efficacy, which translates into a significant impact on the intentions of secondary school students. The school environment has an impact on global awareness, which in turn has a negative impact on students' desire to study entrepreneurship. Thus, in this study, we emphasise the importance of entrepreneurship education, its inclusion in curricula and

extracurricular activities, and the need for teachers and school principals to be well prepared, based on what past research has indicated.

Conclusion

The number of entrepreneurship education programmes has increased dramatically. Over the past years, as it is considered a solution to many problems, as it leads to the sustainability of the economy, and as it leads to social stability, it is important to plan the process of its education. As the students are different in their preparations and tendencies, the current study focused on the bibliometric analysis of the most important publications that focused on education and entrepreneurship. The countries most interested in publishing on this topic are the most important authors.

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