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Bibliometric Analysis of Studies in The Field of Economics of Education in The Web of Science Database

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Abstract: *The objective of this study is to present a critical analysis of the bibliometric analysis of research in the field of economics of education in the Web of Science database between 1970 and 2024, employing the scientific mapping method. To this end, a total of 1,717 studies pertaining to the field of economics of education were retrieved from the Web of Science database. The data were analyzed using the Bibliometrix and VOSviewer software. The distribution of research on the economics of education was examined in terms of the number of articles, the average annual number of citations, the journals, institutions, and prominent authors publishing the most on the subject, the countries and collaboration status of the researchers, the word cloud and the most used keywords, and the current status of this research. Both performance analysis and scientific mapping analysis were employed to examine the data. The results demonstrate that the number of studies in the field of economics of education has increased since 2001. The majority of studies on this subject were conducted in the USA and by authors affiliated with the California State University system. The most prolific researcher in this field was D. Goldhaber, with the highest number of publications being in the journal Economics of Education Review. The author with the highest number of citations is P. Engzell, while the author with the highest number of co-citations and co-references is E. A. Hanushek. Moreover, the most frequently cited journal in this field was the American Economic Review, while the most prevalent keyword was "educational economics." It is anticipated that the research conducted in light of the findings will illuminate the direction of future studies in the field of educational economics and serve as a guiding force.*

Keywords: Economics of Education, Educational Economics, Bibliometric Analysis, Scientific Mapping

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1. Giriş

The term "education" has its etymological roots in the Latin word "educare," which signifies the act of "forming" and "molding" an individual. In light of this linguistic root, researchers have put forth disparate views on the nature of education. One such view posits that education is about the revelation or molding of an individual's inherent potential (Chazan, 2022). In the literature, the term "education" is used to describe the process of intentionally facilitating desired behavioral changes in individuals through experiences

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(Demirel, 2006). Furthermore, the state, society, and family play a significant role in influencing these desired behaviors. While societal and familial expectations are typically traditional and informal, the transformation of these expectations into a specific form is realized through the implementation of national education policies and practices. In the context of formal education, countries endeavor to ensure that their educational policies are functional for both the individual and society at large (Gupta & Rani, 2024; Levin, 1989).

The evolution of educational practice has been influenced by the field of psychology, which is based on empirical research, such as experimentation and observation, rather than on historical and philosophical perspectives. As a science, psychology has concentrated on behaviors that can be observed and quantified (Pillsbury, 1929). Consequently, educational emphasis has been placed on learning theories such as classical and operant conditioning. Learning theories and educational science, which were initially developed within a behaviorist framework, have subsequently expanded their scope to encompass cognitive and neurophysiological approaches (Olson & Hergenhahn, 2016).

Furthermore, the interaction and integration of different disciplines has also manifested itself in the field of economics and psychology. Moreover, these approaches have been demonstrated to be applicable in the field of economics (Kahneman & Twersky, 1979; Simon, 1991). In this context, the behavioral approach has demonstrated the interrelationship between economics and learning and education. The theoretical development of the relationship between education and economics is based on comprehensive studies conducted between 1970 and 1980 (Becker, 2009; McPherson, 1985; Spence, 1978).

Education and economics are disciplines that are directly and indirectly related to numerous disciplines within the social sciences. The decisions that are made, the policies that are implemented, and the practices that are carried out in both education and economics have the potential to result in significant changes within societies. Furthermore, the disciplines of education and economics are closely related and mutually influential (Carnoy & Tural, 1989; Hanif & Arshed, 2016; Naik, 2024).

Education is a fundamental necessity for the transmission of individual skills, abilities, dispositions, attitudes, interests, and values that are essential for the survival of society and for individuals to function effectively within it (Adosemovo & Sotonade, 2022). Education plays a pivotal role in the economic and social life cycle, namely in the process of enhancing the level of welfare and quality of life of society (Kashyap, 2022). From an economic perspective, education is a means of fostering growth and development within a society, enhancing competitiveness on the international stage, and increasing productivity. From a social standpoint, it addresses issues related to participation, income distribution, poverty alleviation, social integration, and environmental protection. This is in line with the views of Blaug (1985), Dearden et al. (2009), Fox (1989), Hanushek (2013), Hanushek and Woessmann (2016), Levin and Kelley (1994), and Psacharopoulos (1996).

In its most general sense, economics can be defined as the process of aligning individuals' unlimited needs with the limited opportunities available to them (Eğilmez, 2012). In contrast, Kurul (2012) characterizes economics as the prudent and judicious allocation of scarce resources. In another definition, economics is defined as the science of preference, whereby individuals or groups choose the optimum option among different possibilities for the use of scarce resources (Levin, 1989; Turhan & Erol, 2022). Upon examination of the definitions, two fundamental elements emerge: unlimited needs and limited resources. The fundamental challenge of economics is to identify the optimal means of producing goods and services in a manner that balances the interests of consumers and producers, while ensuring a sustainable equilibrium between these two fundamental elements (Tuzcu, 2021). Education, as one of the disciplines tasked with addressing this question, is responsible for training human resources in accordance with the quality and quantity required by society.

One of the key expectations of societies from education is to ensure that the labor force participating in production is adequately qualified, thereby increasing productivity and, in turn, production in the economy (Karakütük, 2023). This function ascribed to education establishes a connection between education and the economy, thereby giving rise to the field of educational economics. The economic function of education is to facilitate individuals' pursuit of a profession in a field in which they feel competent and fulfilled, and to

cultivate qualified personnel to meet societal needs. Balcı (2020) defines the field of economics of education as a branch of science that analyzes the preferences of individuals or societies regarding the distribution of the limited resources they allocate to education, to educational activities, to educational levels, to groups within society, and at which levels. The fundamental tenets of the economics of education encompass the quantification of the economic value of education, the deployment of resources in education, the formulation of educational policies, the mobilization of financial resources for education, the nexus between education and development, the allocation of resources to education, the cost-effectiveness of education, and the dynamics of the supply and demand of education (Ereş, 2019).

A review of the literature reveals a multitude of studies on the economics of education. These include works by Alpaydın & Erol (2017), Barro (2001), Benson et al. (1974), Blaug (1985), and Çalışkan (2007), among others. The following studies were also considered: Fox (2009), Gupta & Rani (2024), Goldhaber (1999, 2002), Hanushek (1986, 2013), Hoenack (1994), Jabbar (2011), Kashyap (2022), Krueger & Lindahl (2001), Levin (1989, Levin & Kelley, 1994), Mğan Ertuğral (2018), Oshio & Seno (2007), Psacharopoulos (1996), and Woessmann (2016). A review of studies conducted in the field of economics of education using bibliometric analysis methods revealed two notable studies. The first, conducted by Naik (2024), employed bibliometric analysis to examine studies in the field of economics of education published between 2000 and 2024. The second, conducted by Karantali & Panagiotidis (2024), utilized bibliometric analysis to investigate all articles published in the journal Economics of Education Review (EER) between 1981 and 2022. The present study employed bibliometric analysis to examine all articles published in the field of economics of education in journals indexed in the Web of Science database up to April 18, 2024. The present study differs from the aforementioned studies in this regard. Furthermore, this study in the field of economics of education provides a framework for guiding future research endeavors.

The objective of this study is to analyze the performance and scientific field map of educational economics articles obtained from the Web of Science database. The data obtained in the course of this research encompasses studies from the Web of Science database dating from 1970 to April 18, 2024. Given that no studies in the field of economics of education were identified in the relevant database prior to 1970, this date was selected as the starting point for the research. In this context, the following research questions were posed and investigated:

1. How does the distribution of articles in the field of economics of education vary by year?
2. What are the key themes emerging from studies in the field of economics of education?
3. To what other disciplines are studies in the field of economics of education related?
4. How are studies in the field of economics of education distributed among countries and institutions?
5. In which journals are studies in the field of economics of education most frequently published?
6. Which authors have published the most articles and received the most citations in the field of economics of education?
7. What are the most common authors, most common references, most common journals, and most common word analyses in studies within the field of economics of education?
8. What are the most frequently used keywords in articles on the economics of education?

The following format is used for the presentation of the research: The following section presents the theoretical rationale for the research and a literature review, outlining the connections to the research topic. The third section is the methodology section, which outlines the processes employed for data collection. The fourth section comprises the data analysis and the principal findings. The fifth section comprises a discussion, conclusion, and recommendations based on the findings.

2. Background

The relationship between the disciplines of education and economics originated with Adam Smith, regarded as the founder of modern economics. Smith identified the contribution of education to the development of human capital and, subsequently, financial success. Since then, this topic has been the

subject of research by both educators and economists (Benson et al., 1974; Dearden et al., 2009; Naik, 2024). Moreover, Gary Becker is widely regarded as the founder of the field of economics of education, as evidenced by his 1964 work, "Human Capital." In his work, Becker (2009) posited that individuals should invest in education and training in a manner analogous to that of physical capital, with the objective of attaining a financial return.

The theory of human capital (Hanushek, 2013; Naik, 2024), which posits that the knowledge, skills, and abilities imparted by education and training are associated with individual earnings, societal income distribution, and economic growth beyond school attainment, has emerged as the dominant paradigm in the field of economics of education over time (Dearden et al., 2009).

The field of economics of education originated in the early 1960s with the estimation of the returns to investment in education. In the 1970s, studies concentrated on the social returns to education, whereas in the 1980s, the impact of education on economic development was the focus of rigorous investigation (Psacharopoulos, 1996). In recent years, the field of economics of education has undergone significant growth and has retained its status as a vital contributor to the development of educational policies.

Education exerts a considerable influence on macroeconomic and microeconomic processes, resulting in increased income at both the individual and societal levels. Furthermore, the demand for and supply of education are subject to fluctuations in accordance with economic conditions. In particular, increases in productivity are associated with educational attainment, and education can be considered a commodity in the economic context (Naik, 2024).

The field of economics of education employs economic tools to analyze educational and learning processes, while also examining the role of the characteristics acquired through education in the market. It endeavors to elucidate the behavior of the state, institutions, and individuals involved in the provision of educational services to society and the utilization of these services. Additionally, it investigates the relationship between these behaviors and the social system (Dearden et al., 2009; Ünal, 2006). The economic approach is still being applied to a number of studies, including those examining the benefits of education for individuals and societies, the cost of education in relation to government expenditure, the correlation between a country's level of education and its level of economic and social development, the evaluation of the quality of education systems, the study of the literacy levels of a population from graduates to adults in education, the availability of schooling, and the analysis of youth unemployment. Such studies permit scholars to ascertain the quality of a country's education system, to acknowledge the significance of assessing schools and further education, and to discern causal relationships between a country's education and its development (Refrigeri & Aleandri, 2014).

The field of economics of education, whether regarded as a discrete branch of economics or a distinct field of educational inquiry, originated circa 1960. The field reached its apogee in the 1960s and subsequently experienced a period of considerable growth in the 1970s. This was a period during which Denison's growth resource accounting was widely accepted as a means of accurately measuring the contribution of education to economic growth. Similarly, Becker's work on human capital was highly influential. The publication of Becker's Human Capital in 1964 was widely regarded as a significant contribution to labor economics, marking a shift in focus from the merits of the "social demand approach," the "manpower requirements approach," and "rate of return analysis" to a more nuanced understanding of the role of human capital in economic growth (Blaug, 1972).

It is imperative to gain a more profound comprehension of the decision-making processes that influence equity in the field of economics of education. This understanding should encompass not only the quantity and quality of education services provided to displaced populations in developing countries, but also the specific challenges faced by those who remain in rural areas or migrate to cities and often lack the requisite skills to succeed in urban labor markets. It is imperative that the field of economics play a more prominent role in the evaluation of education policies aimed at improving learning efficiency. This necessitates a more centralised involvement in testing and other forms of assessment, which can serve as crucial elements in such policies. Furthermore, it is crucial to underscore the significance of educational

initiatives that offer incentives for assessment, including the periodic evaluation and dissemination of findings that are vital for identifying the particular learning requirements of students (Hoenack, 1996).

The field of education economics, a complex area of study, illuminates the intricate dynamics of educational investment, human capital accumulation, and the far-reaching economic consequences of these factors. Education is regarded as both a public good, which enhances the collective well-being of society, and as a private good, which benefits individuals. This perspective facilitates the management of the overlap between these two perspectives on the financial implications of education, with the objective of clarifying its intrinsic complexity and far-reaching effects. The field of economics recognizes that education is not merely an individual pursuit; rather, it is a benefit to society with far-reaching effects. From the perspective of the individual, education is a private benefit, as it enhances employability by improving knowledge, skills, and abilities. This is a long-term investment that yields benefits in terms of higher earnings, enhanced job opportunities, and an improved quality of life. The educational journey of an individual, from the initial stages of kindergarten to the culmination of university studies and beyond, is shaped by the perceived advantages and disadvantages associated with each stage (Gupta & Rani, 2024).

While human capital is the prevailing perspective in the economics of education literature, other areas of economics have also made significant contributions to the field. One of the most significant challenges confronting educational institutions is the need to ensure an adequate supply of adequately trained educators. The market is a fundamental aspect of the Western economy, and labor markets represent a significant area of expertise within the field of economics. The application of labor market analysis to teacher markets has yielded valuable insights into the relationship between teacher salaries and teacher supply (Murnane & Olsen, 1988; Rumberger, 1987), the impact of teachers' collective bargaining (Chambers, 1979), and labor markets for academics (Breneman & Youn, 1988). The results of this research have enabled it to be linked to new topics in economic and educational disciplines.

3. Method

The research was designed as a quantitative study and carried out using the bibliometric analysis method. The concept of bibliometrics was first introduced in the literature by Hulme in 1922. This method was described by Hulme as the elucidation of scientific and technological processes through the counting of documents (cited in Pritchard, 1969). Pritchard, the pioneering figure in the field of bibliometrics, posited that it is the application of mathematical and statistical methods to books and other forms of communication (Sengupta, 1992). Aria and Cuccurollo (2017) defined bibliometric analysis as a tool that allows for the examination of the relationships and interactions between authors, keywords, journals, institutions, countries, and other relevant entities related to research in a specific field. This approach enables the development of an understanding of the intellectual, social, and conceptual structure of the field over time. The principal objective of bibliometric analysis is to identify, evaluate, and comprehend the entirety or a portion of the literature within the specified field (Öztürk & Gürler, 2022).

In the field of bibliometric research, two principal analytical techniques have emerged: performance analysis, which provides an overview of the field, and science mapping, which reveals the networks of relationships between authors, concepts, and citations (Cobo et al., 2011). Performance analysis is concerned with evaluating the impact of scientific output, whereas science mapping is concerned with elucidating the conceptual, social, or intellectual structure of scientific research, as well as its evolution and dynamic aspects. Performance bibliometric analysis is concerned with the measurement of scientific output through the use of quality and quantity indicators. A plethora of bibliometric indicators exists in the literature for measuring the scientific output of researchers. In the context of science mapping analysis, the understanding of scientific knowledge can be conceptualized as a complex system. A network structure is frequently employed to model the interaction between scientific actors, including authors, journals, keywords, and references. Depending on the type of elements to be represented, three types of bibliographic or bibliometric networks can be defined: collaborative networks, conceptual networks, and publication citation networks (Gutiérrez-Salcedo et al., 2018). The practice of scientific mapping is employed to examine the interconnections between the constituent elements of research and the intellectual framework that characterizes a given field of study

(Baker et al., 2021). This analysis is directly related to the interactions and structural connections between the components of the research project. The techniques of scientific mapping include analyses such as citation analysis, co-citation analysis, bibliographic merging, common word analysis, and co-authorship analysis (Tunger & Eulerich, 2018). In the present study, both a performance analysis method and a scientific domain mapping method were employed.

The data utilized in the present study were procured from the Web of Science Core Collection (WOS) database on April 18, 2024, through a search employing the keyword "educational economics" within the title "topic" field. Subsequently, the search was expanded to include the following keywords: "education finance," "education economics," "education budget," "education funding," "education finance," "school budget," "school finance," and "school funding." The keyword "economic education" was not included in the search parameters. The database was filtered to include only articles. The search returned 1,717 articles published between 1970 and April 2024. The methodology employed for the search of the database is delineated in Table 1.

Table 1. Procedures for Searching the WOS Core Collection Database

Keyword/Index	Process	Number of publications reached
"educational economics"	Arama	339
"educational finance"	should include	531
“educational funding”	should include	642
“economics education”	don't include	642
"school funding"	should include	1630
“economics of education”	should include	2121
"finance of education"	should include	2130
"school budget"	should include	2182
"educational budget"	should include	2218
Document Type: Article and early access	Filter	1824
(İndex)BKSI-C,CPCI-SSH, BKCI-SSH	Not refine	1719
Proceedings Paper or Retracted Publication	Not Refine	1717

The database files utilized for the bibliographic analyses of the articles were constructed employing the "plain text file" format and the "full record and cited references" option. In the Web of Science database, the "full record and cited references" option generates a file comprising a maximum of 500 studies at a time. Accordingly, four files were initially generated and subsequently merged into a unified plain text file. Once the research data had been created, an expert in the field of educational economics was consulted to ascertain whether the keywords used in the research reflected the content of the field. As the keywords were deemed sufficient, no alterations were made to them.

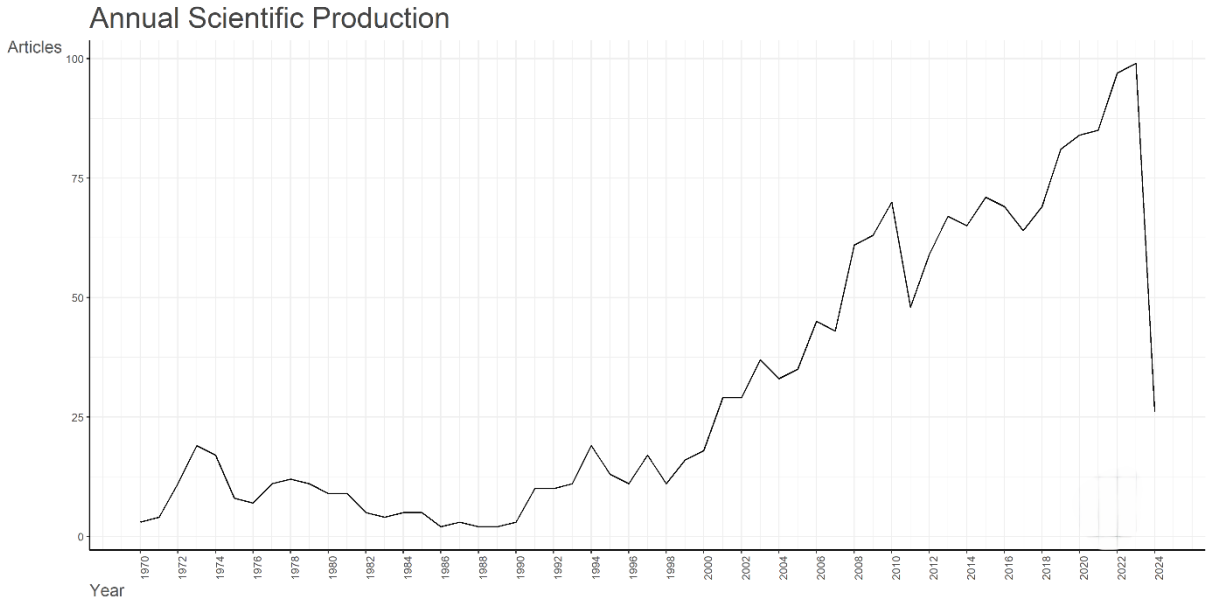
One of the limitations of this study is that the bibliometric analysis was conducted exclusively on articles from the Web of Science database. This decision has resulted in the exclusion of publications and related literature in other significant databases, which may limit the generalizability and scope of the results obtained.

The research employed the VOSviewer 1.6.20 software and the R-based Bibliometrix software for the purpose of data analysis. Furthermore, the "Analyse Results" screen on the Web of Science Core Collection database search screen was utilised. The responses to the initial research questions were identified through the utilisation of Bibliometrix software. This was also employed to ascertain the answers to the subsequent questions, namely the second, fourth, fifth, sixth, and eighth. The analysis for the third research question was obtained by clicking the "Analyse Results" button, which was used to search the WOS Core Collection database. The seventh research question was addressed through the use of the VOSviewer 1.6.20 software.

4. Findings

This section presents the findings of the analyses conducted as part of the research project. Figure 1 illustrates the distribution of studies in the field of economics of education by year. As illustrated in Figure 1, the inaugural studies in the field of economics of education in journals included in the Web of Science database were published in 1970. On average, 9.3 studies were published annually between 1970 and 2000. In 2001, there was an increase in the number of studies initiated, with an average of 44.8 studies conducted annually until 2011. From 2012 to April 18, 2024, when the research data were created, a new increase occurred, with an average of 72 studies conducted annually.

Figure 1. Distribution of Studies in Economics of Education by Year



The evolution of the topics of study in this field over the years was analyzed in three periods (1970-2000, 2001-2011, and 2012-2024), with consideration given to the periods of increase in the number of studies. The results are presented in Figure 2. It is evident that between the years 1970 and 2000, studies were conducted on a range of topics, including United States attainment, education, public education, and the third wave. In the period between 2001 and 2011, the following topics were studied: education, reform, teaching, technology, students, bias, data envelopment analysis, financial reform, childhood, higher education, sports, ability, economy, United States, school accountability, gender, and community colleges. From 2012 to the present, studies have been conducted on a range of topics, including students, higher education, education, finance, children, policy, schools, health, regression discontinuity designs, political economy, aid, and politics.

Figure 2. Development of Economics of Education Studies by Year

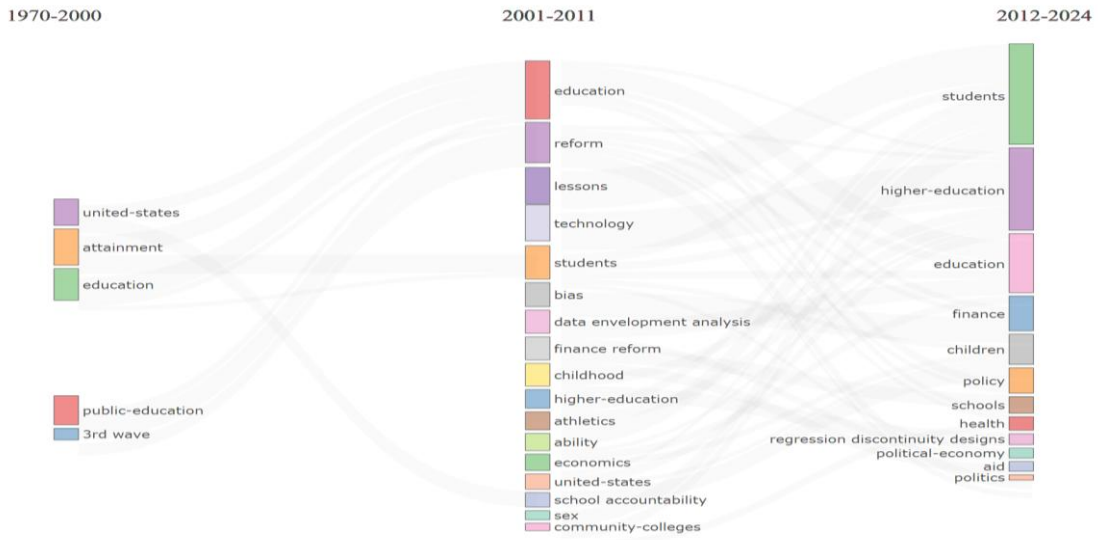
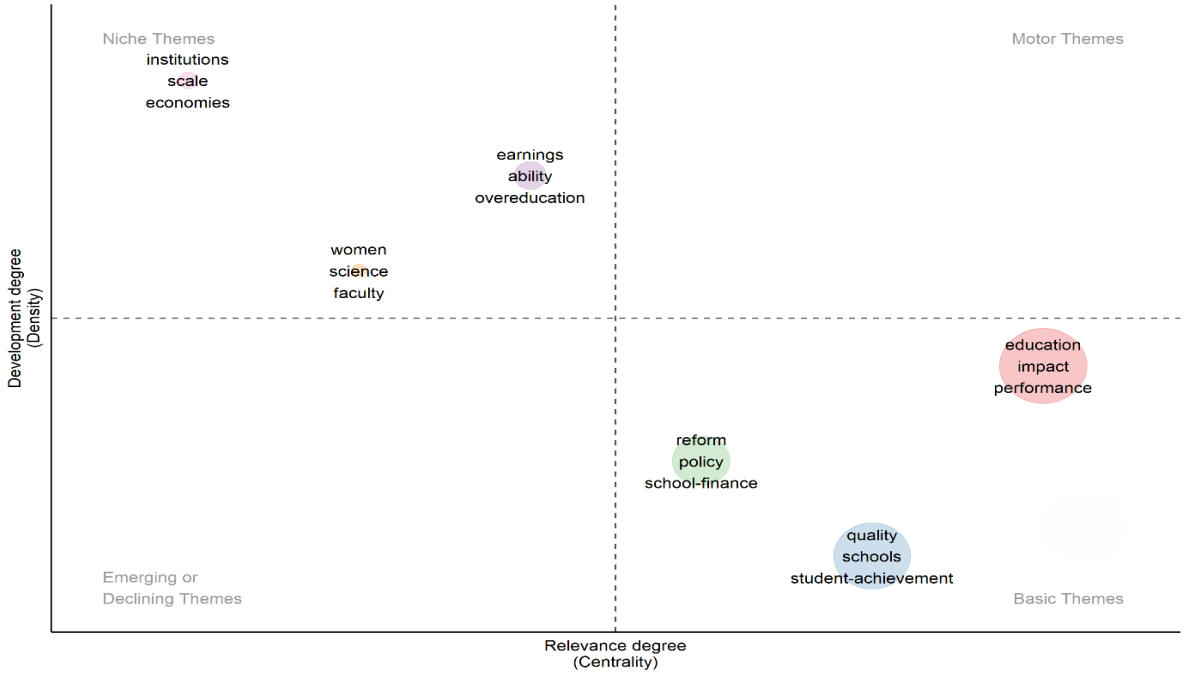


Figure 3, which depicts the relative frequency of study of various topics within the field of economics of education, reveals the existence of two distinct categories of topics: niche topics, which are less frequently studied but possess a high degree of relevance to other studies, and basic topics, which are more frequently studied but exhibit a lower level of relevance to other studies. The most studied topics among the main themes are education (f=176), impact (f=87), performance (f=86), achievement (f=81), outcomes (f=50), choice (f=49), while the least studied are students (f=47), school (f=36), higher education (f=31), college (f=28), policy (policy, f=43), The following terms were identified as being of particular relevance within the context of school finance: equity, public education, school finance reform, finance, litigation, political economy, quality, matter, resources, returns, race, public schools, competition, and inequality. Within the niche issues, the following areas were identified as requiring further investigation: institutions (f=13), scale (f=11), economics (f=9), universities (f=9), women (f=14), science (f=11), faculty (f=8), earnings (f=42), ability (f=11), overeducation (f=9), wages (f=9), and the labor market (f=8).

Figure 3. Most Researched Topics and Sub-Topics in The Field of Economics of Education



As illustrated in Figure 4, studies in the field of economics of education are related to a total of twenty-five disciplines, including educational sciences, economics, law, urban studies, interdisciplinary social sciences, business finance, politics, sociology, public administration, and management, as well as environmental sciences.

Figure 4. Disciplines Related to Studies in The Field of Economics of Education

Figure 5 illustrates the distribution of studies in the field of economics of education by country. A review of Figure 5 reveals that in the field of economics of education, the USA has the highest number of articles, with 955 publications (919 single-country and 36 multi-country). Among the authors responsible for these publications, those affiliated with US institutions stand out the most. The countries in which the authors responsible for the publications in the field of economics of education are based are the USA (955), Australia (60), the United Kingdom (60), Spain (44), Canada (43), Germany (39), China (38), South Africa (31), and Brazil (26).

Figure 5. Distribution of Economics of Education Studies by Country

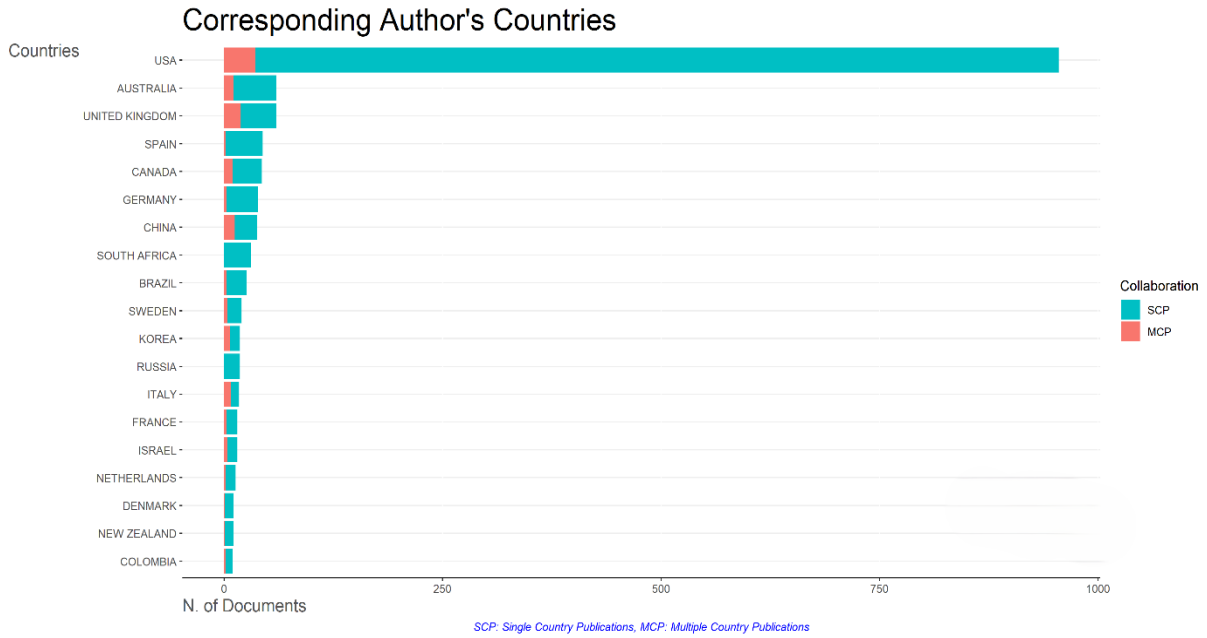
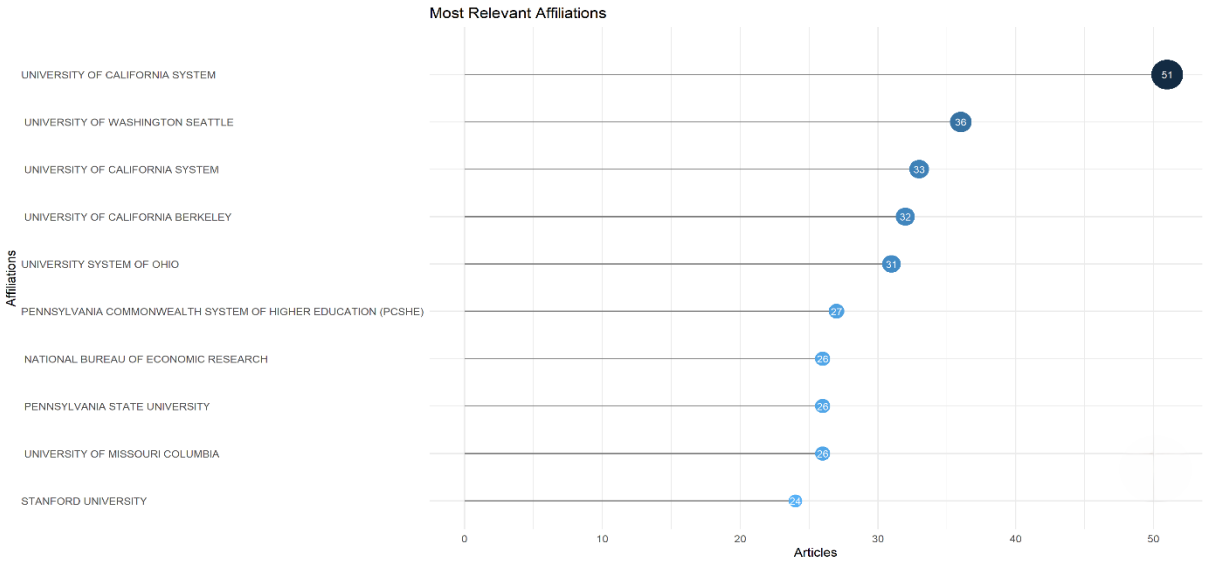


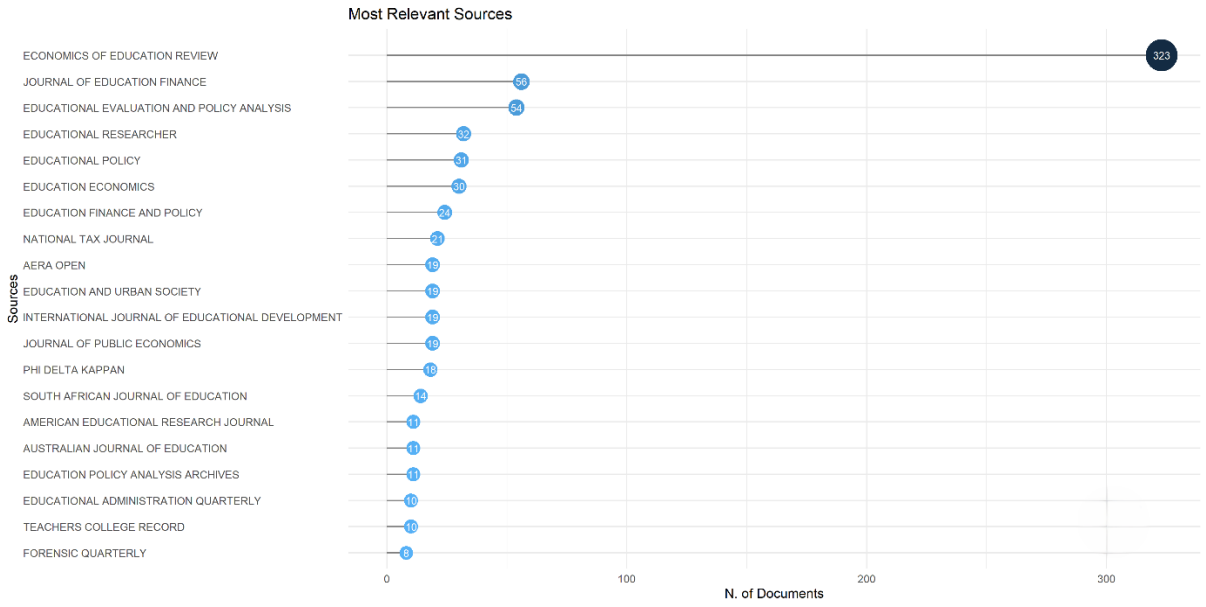
Figure 6 illustrates the results for the institutions to which the authors of the economics of education studies are affiliated. It can be observed that the majority of studies were conducted by authors affiliated with the University of California system, followed by the University of Washington Seattle, the University of California Berkeley, the University System of Ohio, and the University System of Ohio.

Figure 6. Institutions Affiliated with Authors of Studies on The Economics of Education



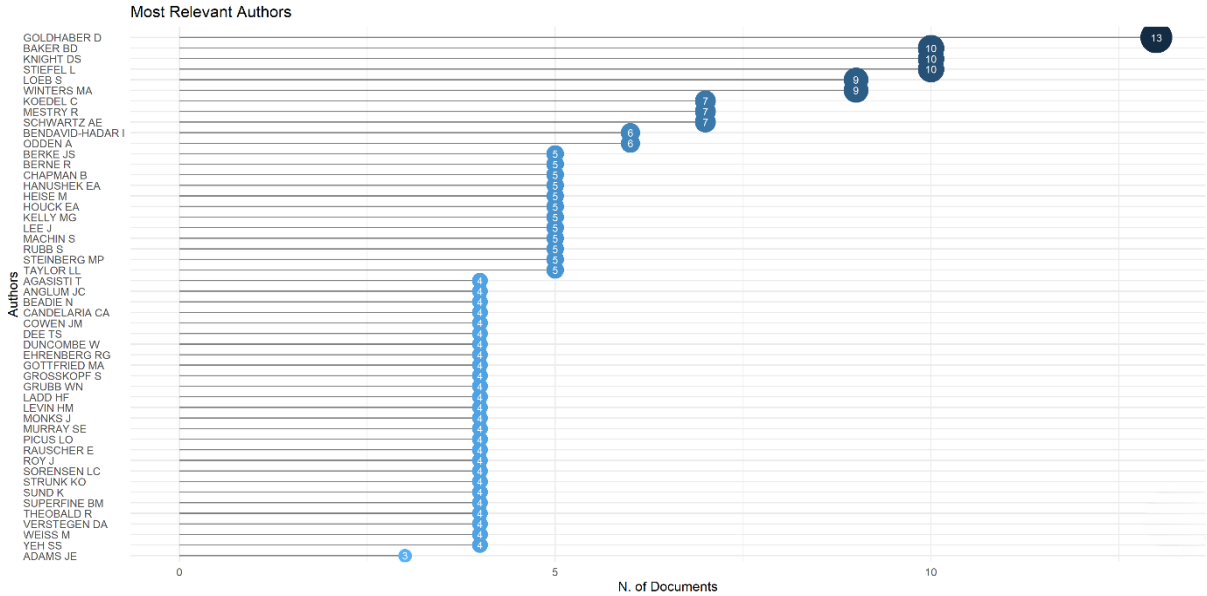
As illustrated in Figure 7, the journal "Economics of Education Review" is the most prolific publisher of studies pertaining to the economics of education. The next most prolific journals in this field are the Journal of Education Finance, Educational Evaluation and Policy Analysis, Educational Researcher, and Educational Policy.

Figure 7. Journals Publishing Studies on Economics of Education



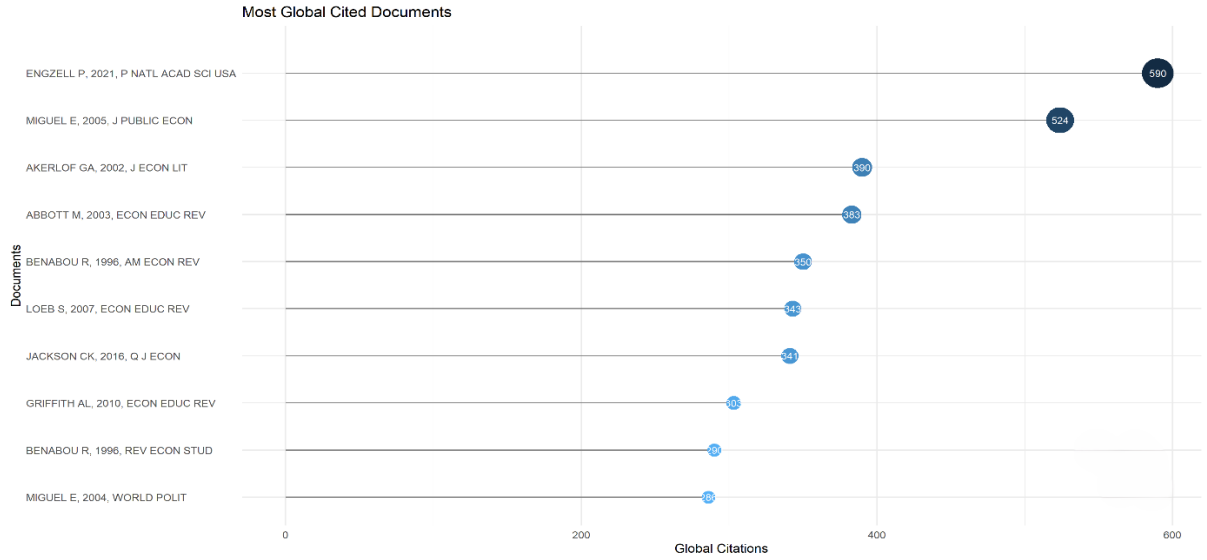
The results regarding the most prolific authors in the field of economics of education are presented in Figure 8. As can be observed, the author who has published the most in the field of economics of education is D. Goldhaber is the author of 13 studies, followed by Baker, Knight, and L. Stiefel and S. Loeb, M. A. Winters, and C. Koedel is in a similar position, having published ten studies each.

Figure 8. Prominent Authors by Number of Articles in The Field of Economics of Education



The results of the most prominent studies in the field of economics of education, as reflected in the number of citations, are presented in Figure 9. As illustrated in Figure 9, the authors "P. Engzell" and "E. Miguel" have received a significantly higher number of citations than other authors. It is noteworthy that the study by "P. Engzell" is the most cited study, despite being the most recent study in the top ten. This is a study by Engzell, Frey, and Verhagen (2021) on learning loss during the Coronavirus Disease 2019 (Covid-19) pandemic.

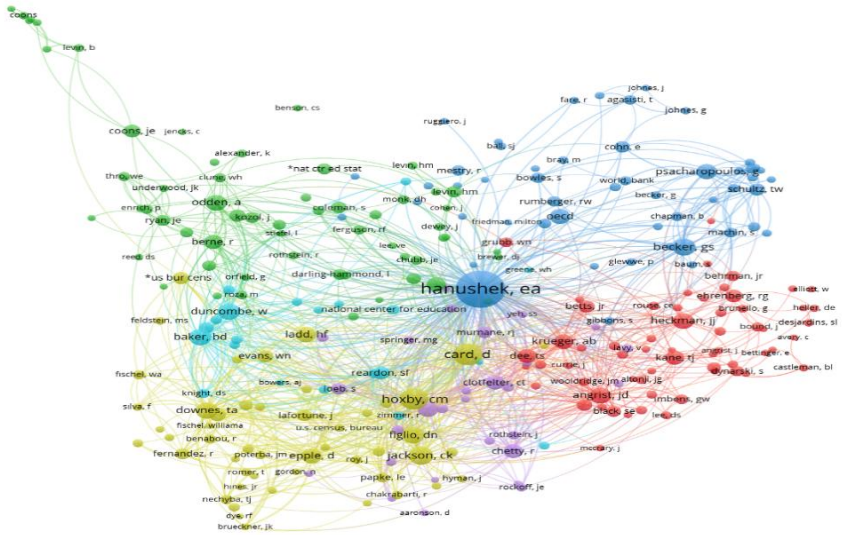
Figure 9. Most Cited Studies in Economics of Education



A minimum of 20 citations was required for the co-author analysis of articles in the field of economics of education. The analysis yielded a total of 270 authors and six clusters. As illustrated in Figure 10, the most central cluster is that which is delineated in blue. It was determined that E. A. Hanushek, a prominent figure in this field and illustrated with a blue pattern, was among the studies that were collectively referenced in a total of 257 articles. It was determined that D. Card, situated in the second region and represented by a light green color pattern, is among the studies that were cited collectively in a total of 244 articles. It was determined that A. B. Kruger, situated in the third region and illustrated in the red color pattern, is among the studies cited collectively in a total of 213 articles. It can be observed that C. T. Clotfelther, situated in the

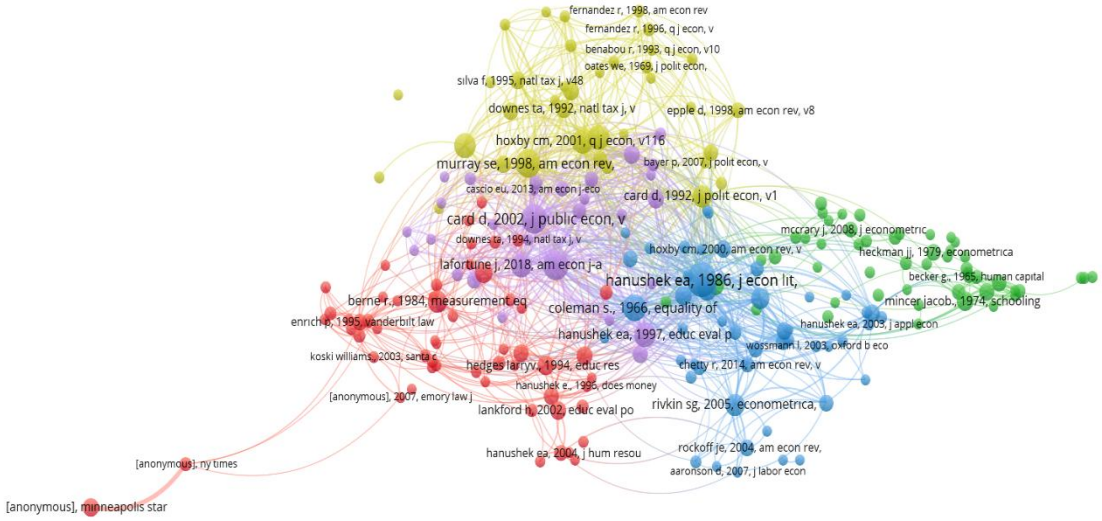
fourth region and represented by a purple color pattern, is among the works cited collectively in a total of 195 articles. Similarly, W. Duncombe, located in the fifth region and depicted by a turquoise color pattern, is among the works cited collectively in a total of 184 articles. A. Odden, situated in the sixth region and illustrated in the green color pattern, is among the studies cited collectively in a total of 143 articles.

Figure 10. Co-Author Analysis



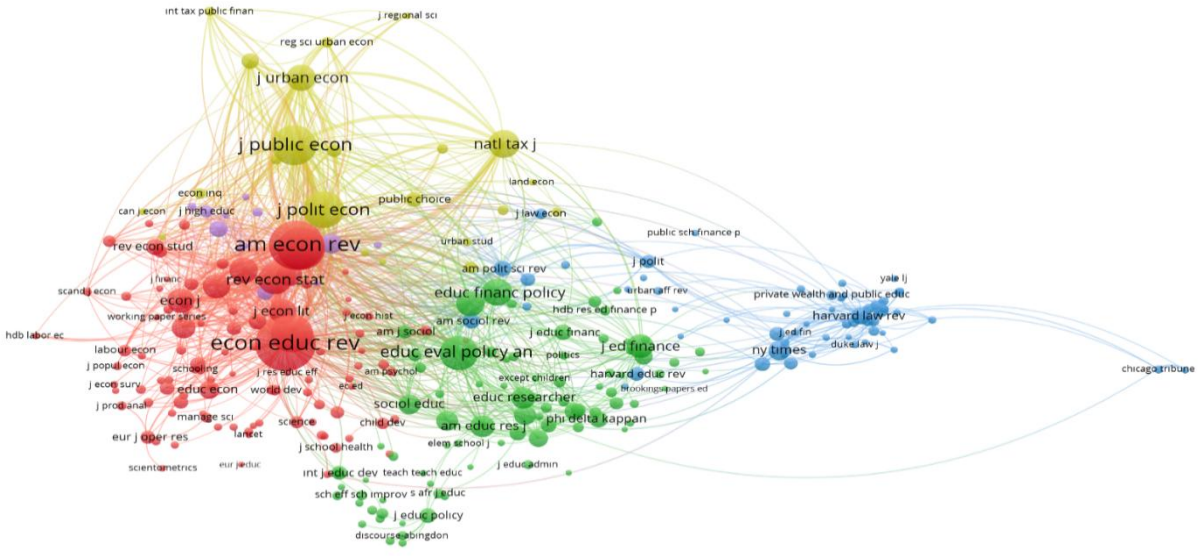
The minimum number of citations to be included in a cluster was set at 10, while the minimum number of publications to be included in a cluster was set at 3. The analysis yielded 222 studies and 5 clusters. The study with the highest concentration of studies showing similarity in common references is that published in the Journal of Economic Literature by E. A. Hanushek in 1986, which has 167 common references. This is represented by the blue pattern in Figure 11. The second study with the highest concentration of studies showing similarity in common references is that conducted by Jackson, J.K. (2016) and published in QJ Economy V1, which yielded 154 common references. The third study exhibiting similarity in common references is that conducted by S. E. Murray in 1998 and published in the American Economic Review, with 143 references in the light green pattern. The fourth study exhibiting similarity in common references is that conducted by L. Hedges in 1994 and published in the journal Education Research, which features 95 references in the red pattern. The fifth study with a high concentration of common references is that conducted by J. Mincer in 1974 and published in the journal Schooling, with 57 references in the green pattern.

Figure 11. Analysis of Common References



In order to facilitate the identification of common journal analysis among articles in the field of economics of education, the minimum number of citations was set at 20. The analysis yielded a total of 280 journals, which could be grouped into five clusters. As illustrated in Figure 12, the American Economic Review, represented by the red pattern, has been cited in a total of 272 studies. The second most frequently cited journal is Education Evaluation Policy, which is represented by the green pattern and has been cited in a total of 271 studies. The third most frequently cited journal is the Journal of Public Economy, which is represented by the light green pattern and has been cited in a total of 264 studies. In fourth place is Resource High Education, which exhibits a purple pattern and was cited in a total of 163 studies. In fifth place, the Harvard Law Review, which exhibits a blue pattern, was referenced in a total of 163 studies.

Figure 12. Common Journal Analysis



In order to demonstrate the prevalence of key terms within the corpus of articles pertaining to the field of educational economics, the option to view the keywords occurring a minimum of ten times was selected for analysis. The analysis yielded a total of 53 keywords, which were grouped into five clusters. Upon analysis of Figure 13, it was determined that the keyword "educational economics" in the green pattern was utilized in conjunction with 308 distinct keywords, the keyword "economics of education" in the blue pattern with 212 different keywords, and the keyword "school finance" in the red pattern with 83 different keywords. In fourth place, the keyword "higher education" in the light green pattern was used with 53 different

keywords, and in fifth place, the keyword "peer effects" in the purple pattern was used with 12 different keywords.

Figure 13. Analysis of Common Words

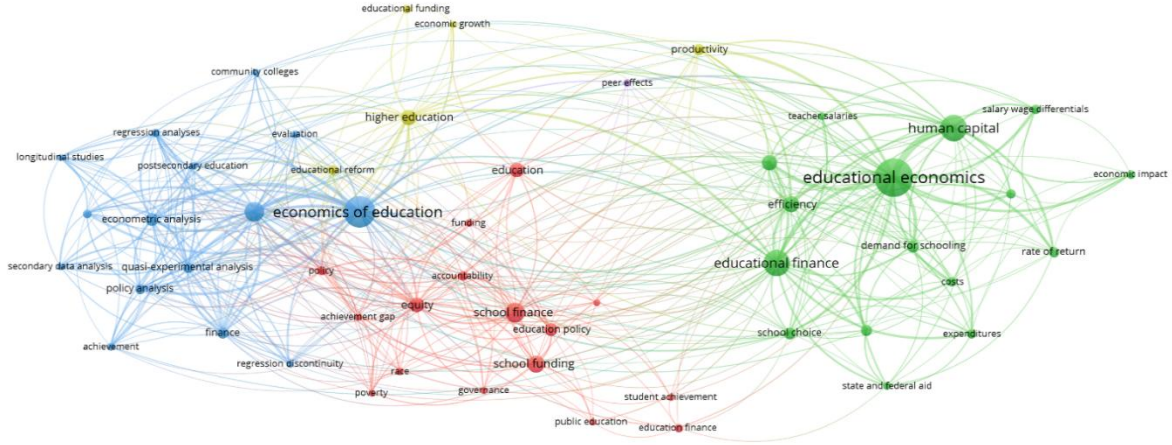


Figure 14 illustrates the most frequently utilized keywords in the corpus of articles pertaining to educational economics. The results demonstrate that the most frequently utilized keywords in articles pertaining to the economics of education are "economics of education," "education finance," "human capital," "education policy," "school funding," "school finance," and "resource allocation."

Figure 14. Most Common Keywords in Articles on Economics of Education

Figure 15 illustrates the word cloud of the most frequently used words in the titles of articles in the field of economics of education. Figure 15 reveals that the most frequently occurring words in the titles of EE articles are "education," "school," "funding," "finance," "public," "student," "education," "evidence," "achievement," "teacher," "reforms," and "academic."

Figure 15. The Most Common Words in The Titles of Education Economics Articles

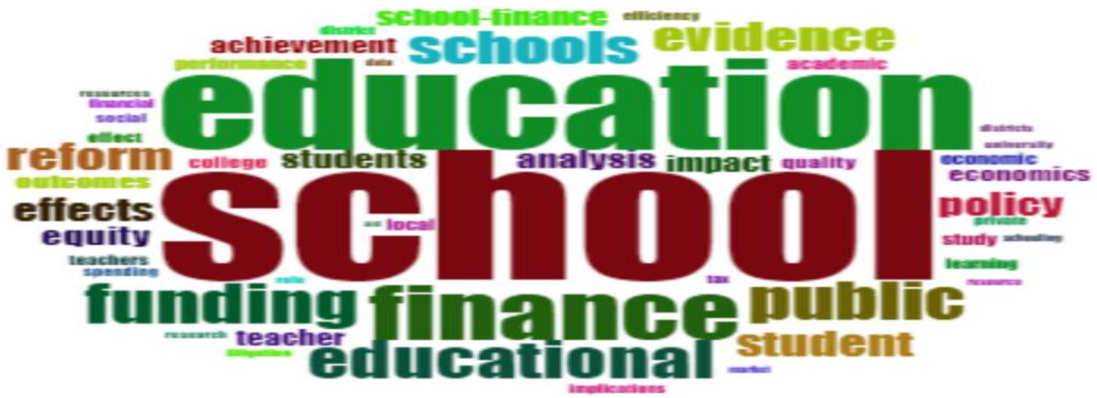


Figure 16 illustrates the word cloud of the most frequently used words in the abstracts of articles within the field of economics of education. The most frequently occurring words in the abstracts of articles pertaining to the economics of education are "school," "education," "students," "schools," "funding," "education," "public," "data," "study," "districts," "pupils," "policy," and "results."

Figure 16. Most Frequently Used Words in the Abstracts of Economics of Education Articles

5. Conclusion, Discussion, and Suggestions

This study has analyzed the articles indexed in the Web of Science database in the field of economics of education in terms of publication years, topics, related disciplines, countries, institutions, journals, authors, citations, words, and bibliographic matches. The results of this analysis have been used to produce a basic reading list related to literature. The results of the initial research question indicate that the inaugural studies on the economics of education within the Web of Science database were conducted in 1970. Nevertheless, the field of economics of education has its origins in the 1960s. In 1964, Becker's "Human Capital Theory" constituted a pivotal turning point in the emergence of the discipline of economics of education (Dearden et al., 2009). The number of studies in the field of economics of education increased significantly between 2001 and 2011, accompanied by a notable surge in the field's popularity. From 2011 onward, it can be stated with a reasonable degree of confidence that the number of studies has increased significantly and that this upward trajectory will likely persist. A review of the most frequently studied topics between 1970 and 2000, 2001 and 2011, and 2012 and April 2024 reveals that the common theme across all three periods is "education."

Given the focus of economic analysis on the impact of the economy on education, it is to be expected that the topic of education will be a common one. The remaining topics have undergone a notable shift in focus from the past to the present. The topic of the United States was a common focus in both the 1970-2000 and 2001-2011 periods. Nevertheless, it is not among the most frequently studied topics between the years 2012 and 2024. This may be attributed to the fact that the advancement and acceleration of studies on the economics of education were initially spearheaded by authors based in the United States. Additionally, the data and sampling employed by US authors in their studies are inherently related to the USA. In general, between 1970 and 2000, the fundamental concepts of the field, including those related to attainment, education, public education, and the third wave, were the focus of study. Furthermore, it is noteworthy that the Third Wave experiment, conducted in 1967 by Jones, a high school history teacher in California, which aimed to demonstrate the proclivity towards fascism even in democratic societies, was also included as a topic in the studies on the economics of education. During the period between 2001 and 2011, studies were conducted at the micro level, encompassing a range of topics including reform, teaching, technology, students, bias, financial reform, childhood, higher education, sport, ability, economics, school accountability, gender, and community colleges. These micro-level themes are specific topics that may aim to provide sufficient data saturation to fill the gaps in the field of economics of education. In the period between 2012 and the present, micro-level topics have remained a focus of study. During this period, it is evident that the concepts pertaining to policy, including political economy and policy, have also begun to be explored. While studies conducted between 1970 and 2000 and those carried out between 2001 and 2011 predominantly addressed specific policy issues at the micro level, it can be stated that the policy issue has been addressed from a more comprehensive perspective in the period between 2012 and the present. In their bibliographic analysis of articles published in the Economics of Education Review, Karantali and Panagiotidis (2024) identified the following key terms: "human capital," "economics of education," "higher education," "education," "training," "education finance," "productivity," "rate of return," "demand for schooling," and "resource allocation." These terms were used between 1998 and 2022. While the results of the current study and those of Karantali and Panagiotidis (2024) are similar, they do not completely overlap. This discrepancy may be attributed to the fact that the bibliographic analysis in the present study was conducted on articles in a single journal.

In the field of economics of education, the most studied themes include the main topics of education, impact, performance, achievement, reform, policy, school finance, equity, public education, quality, resources, public schools, and inequality. The specific subtopics of institutions, scale, economy, universities, women, science, teachers, earnings, ability, overeducation, overtraining, wages, and labor market have been less extensively studied. Among the niche topics, the concept of "institutions" is particularly pertinent to the study of schools. Given that schools are typically under the purview of the state, and that research on government spending is conducted by economists at the macro level, it is deemed appropriate that "institutions" is among the niche topics in the economics of education. The reason for the marginalization of the scale concept may be attributed to the prevalent use of mathematical models, formulations, and graphical representations in economic research, which tend to relegate scale to a secondary position. The term "economics" is used to refer to the general theories of economics among the niche topics. The field of economics of education may be considered a sub-discipline of economics; however, it is also possible that the general theories of economics are under-researched in this field. Additionally, the category of niche topics encompasses "university," "science," and "faculty." This may be attributed to the fact that the governance of universities has been assumed by national governments, capital companies, and other institutions and organizations that provide them with funding. Consequently, it is to be expected that they will be reluctant to participate in educational economics research. One noteworthy outcome is the dearth of overarching themes in the field of economics of education, which could be regarded as the primary drivers of knowledge production and advancement. Furthermore, there is a paucity of emerging and declining themes. A focus on niche themes in the field of economics of education can provide a foundation for large-scale studies and applications.

Furthermore, the study examined the various academic disciplines that are pertinent to the field of economics of education research. The study concluded that the field of economics of education is related to

a total of twenty-five disciplines, including educational sciences, economics, law, urban studies, interdisciplinary social sciences, business finance, politics, sociology, public administration, and management, as well as environmental sciences. In light of the interrelated nature of education and economics and their connections to numerous other disciplines (Carnoy & Tural, 1989; Hanif & Arshed, 2016), it is crucial to prioritize interdisciplinary studies that integrate and collaborate across traditional disciplinary boundaries.

The analysis revealed that the majority of articles in the field of economics of education were authored by scholars based in the United States. Furthermore, an examination of the institutions within this field reveals that those based in the USA are at the vanguard. In both the number of authors and the number of institutions, the United States is far ahead of other countries. In their 2024 study, Karantali and Panagiotidis found that the majority of authors in the field of economics of education are affiliated with institutions in the USA. This study lends further support to the findings of our previous study in this regard. However, the bibliometric analysis conducted by Naik (2024) revealed that Indonesia is the country with the highest global focus on education and economics. The findings of the present study are inconsistent with those of the study conducted by Naik (2024) in this regard. A variety of factors may contribute to this outcome, including research funding, the resources available to researchers, the infrastructure of academic institutions, the quality and availability of scientific journals, and the prevailing academic culture. It is thus recommended that other countries be encouraged to conduct research in the field of economics of education and provide data to inform their policies.

The journal Economics of Education Review has the highest number of articles in the field of economics of education. Consequently, the analysis of the articles in this journal will serve as a guide for scholars engaged in studies in this field. Economics of Education Review is the journal with the highest number of articles in the field of economics of education. It was founded in 1981 and is published by Elsevier**.** As indicated by the Journal Citation Reports, the impact factor of the journal in question is 1.8 for the year 2024. In light of this, it can be posited that an analysis of the articles published in the aforementioned journal will serve as a valuable reference for scientists engaged in research within this field.

In examining the most prominent authors in the field of economics of education in terms of the number of publications, it was found that the author with the highest number of articles was D. Goldhaber, with 13 studies. The studies of this author focused on the teacher labor market, teacher quality and effectiveness, and student achievement. The next most prolific authors are B. D. Baker, D. S. Knight, L. Stiefel, S. Loeb, M. A. Winters, and C. Koedel, who have each published ten studies. A further analysis of the number of citations received by the authors reveals that the articles by the authors named "P. Engzell" and "E. It is evident that the articles authored by Miguel have received a greater number of citations than the other articles. It is noteworthy that the studies by P. Engzell, which address in-school achievement rankings, income mobility, and social mobility issues, are the most frequently cited studies despite being the most recent in the top ten. The study by Engzell et al. (2021), which ranks first in terms of the number of citations, addresses the phenomenon of learning loss during the pandemic. At the time of its publication, the issue of learning loss during the pandemic period was a topic of significant global research interest.

In the present study, co-author, co-reference, co-journal, and co-word analyses were also conducted within the scope of bibliographic matching. The results of the co-author analysis indicate that E. A. Hanushek is the author who has been cited together in the greatest number of articles. The most common topics studied by this author are school finance, public sector performance, education and training, economics of education, human capital, and employer learning. The next most frequently cited authors were D. Card, A. B. Kruger, C. T. Clotfelther, W. Duncombe, and A. Odden. The results of the co-reference analysis indicate that the article published in the Journal of Economic Literature by E. A. Hanushek in 1986 exhibits the highest concentration of studies with similarities in common references. The article is followed by the study conducted by J. K. Jackson in 2016 and published in QJ Economy V1, the study conducted by S. E. Murray in 1998 and published in American Economic Review, the study conducted by L. V. Hedges in 1994 and published in Education Research, and the study conducted by J. Mincer in 1974 and published in Schooling. The results of the joint journal analysis indicate that the American Economic Review, Education Evaluation

Policy, Journal of Public Economics, Resource Higher Education, and Harvard Law Review stand out as the most prominent journals in this field.

The results of the common word analysis revealed that the keyword "educational economics" was used in conjunction with 308 different keywords, "economics of education" with 212 different keywords, "school finance" with 83 different keywords, "higher education" with 53 different keywords, and "peer effects" with 12 different keywords. Furthermore, word clouds were constructed to identify the most frequently utilized words in articles pertaining to the field of economics of education. The results of the analysis indicate that the most frequently used keywords are "educational economics," "economomics of education," "educational finance," "human capital," "educational policy," "school funding," "school finance," and "resource allocation." The most frequently used words in the titles of articles in the field of economics of education are "education," "school," "funding," "finance," "public," "student," "educational," "evidence," "achievement," "teacher," "reforms," and "academic." A word analysis of the abstracts of the articles revealed that the most frequently occurring words were "school," "education," "students," "schools," "funding," "educational," "public," "data," "study," "districts," "student," "policy," and "results." These findings are consistent with the results of the keyword analysis, which also demonstrated the prevalence of specific terms and concepts in the field of educational economics.

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References

Adosemowo, P. O., & Sotonade, O. A. T. (2022). The meaning and scope of education. In P. O. Adesemewo (Ed.), *Basic of education* (pp. 1-10). Olabisi Onabanjo University.

Alpaydın, Y., & Erol, İ. (2017). Türkiye'de eğitim ekonomisi alanında yapılan lisansüstü tezlerin incelenmesi. *Eğitim Bilimleri Dergisi, 45*(45), 23-41. https://doi.org/10.15285/maruaebd.292105

Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics, 11*(4), 959-975. https://doi.org/10.1016/J.JOI.2017.08.007

Balcı, A. (2020). *Açıklamalı eğitim yönetimi terimleri sözlüğü* (5th Ed.). Pegem Akademi.

Baker, H. K., Kumar, S., & Pandey, N. (2021). Forty years of the Journal of Futures Markets: A bibliometric overview. *Journal of Futures Markets, 41*, 1027-1054. https://doi.org/10.1002/fut.22211

Barro, R. J. (2001). Education and economic growth. In J. F. Helliwell (Ed.), *The contribution of human and social capital to sustained economic growth and well-being*. OECD.

Becker, G. S. (2009). *Human capital: A theoretical and empirical analysis, with special reference to education.* University of Chicago Press.

Benson, C. S., Ritzen, J. M., & Blumenthal, I. (1974). Recent perspectives in economics of education. *Quarterly, 55*(2), 244-261.

Blaug, M. (1972). *Introduction to the economics of education*. Penguin Books.

Blaug, M. (1985). Where are we now in the economics of education*? Economics of Education, 4*(1), 17-28.

Breneman, D. W., & Youn, T. I. K. (Eds.) (1988). *Academic labor markets and careers*. The Falmer Press.

Carnoy, M., & Tural, N. (1989). Eğitim ve ekonomi ilişkisi. *Ankara University Journal of Faculty of Educational Sciences (JFES), 22*(1), 485-504.

Chambers, J. C. (1979). School district behavior, markets for educational resources, and the implications for public policy: A survey. In D. M. Windham (Ed.), *Economic dimensions of education* (pp. 71-116).

Chazan, B. (2022). *Principles and pedagogies in jewish education*. Palgrave-Macmillan.

Cobo, M. J., López-Herrera, A. G., Herrera-Viedma, E., & Herrera, F. (2011). Science mapping software tools: Review, analysis, and cooperative study among tools. *Journal of the American Society for Information Science and Technology, 62*(7), 1382-1402. https://doi.org/10.1002/ASI.21525

Çalışkan, Ş. (2007). Eğitim-işsizlik ve yoksulluk ilişkisi. *SÜ İİBF Sosyal ve Ekonomik Araştırmalar Dergisi, 7*(13), 284-308.

Dearden, L., Machin, S., & Vignoles, A. (2009). Economics of education research: A review and future prospects. *Oxford Review of Education, 35*(5), 617-632. https://doi.org/10.1080/03054980903216333

Demirel, Ö. (2006). *Öğretme sanatı* (10th Ed.). Pegem Akademi.

Eğilmez, M. (2012). *Kolay ekonomi* (1st Ed.). Remzi Kitabevi.

Engzell, P., Frey, A., & Verhagen, M. D. (2021). Learning loss due to school closures during the COVID-19 pandemic. *PNAS Proceedings of the National Academy of Sciences of the United States of America, 118*(17), 1-7. https://doi.org/10.1073/pnas.2022376118

Ereş, F. (2019). *Eğitimde politika planlama ekonomi*. Pegem Akademi.

Fox, J. N. (1989). School finance and the economics of education: An essay review of major works. *Educational Evaluation and Policy Analysis Spring, 11*(1), 69-83.

Goldhaber, D. D. (1999). School choice: An examination of the empirical evidence on achievement, parental decision making, and equity. *Educational Researcher, 28*(9), 16-25.

Goldhaber, D. D., & Eide, E. R. (2002). What do we know (and need to know) about the impact of school choice reforms on disadvantaged students? *Harvard Educational Review, 72*(2), 157-177.

Gupta, D., & Rani, A. (2024). The economics of education: Investment in human capital and economic growth. *International Journal for Research Publication and Seminar, 15*(2), 45-49. https://doi.org/10.36676/jrps.v15.i2.07

Gutiérrez-Salcedo, M., Martínez, M. Á., Moral-Munoz, J. A., Herrera-Viedma, E., & Cobo, M. J. (2018). Some bibliometric procedures for analyzing and evaluating research fields. *Applied intelligence, 48*, 1275-1287. https://doi.org/10.1007/s10489-017-1105-y.

Hanif, N., & Arshed, N. (2016). Relationship between school aducation and economic growth: SAARC countries. *International Journal of Economics and Financial Issues, 6*(1), 294-300.

Hanushek, E. A. (1986). The economics of schooling: Production and efficiency in public schools. *Journal of Economic Literature, 24*(3), 1141-1177.

Hanushek, E. A. (2013). Economic growth in developing countries: The role of human capital. *Economics of Education Review, 37*, 204-212. https://doi.org/10.1016/j.econedurev.2013.04.005

Hanushek, E. A., & Woessmann, L. (2006). Does educational tracking affect performance and inequality? Differences-in-differences evidence across countries. *Economic Journal, 116*(510), 63-76. https://doi.org/10.1111/j.1468-0297.2006.01076.x

Hoenack, S. A. (1994). Economics, organizations, and learning: research directions for the economics of education. *Economics of Education Review, 13*(2), 147-162.

Hoenack, S. A. (1996). The economics of education in developing countries: An assessment of the state of the art. *Economics of Education Review, 15*(4), 327-338.

Jabbar, H. (2011). The behavioral economics of education: New directions for research. *Educational Researcher, 40*(9), 446-453. https://doi.org/10.3102/0013189X11426351

Kahneman, D., & Tversky, A. (1979). Prospect theory: An analysis of decision under risk. *Econometrica, 47*(2), 263-291.

Karakütük, K. (2023). *Eğitim planlaması*. Pegem Akademi.

Karantali, M., & Panagiotidis, T. (2024). A bibliometric analysis of a top field journal in the economics of education. *Education for Information, 40*(1), 89-111. https://doi.org/10.3233/EFI-230059

Kashyap, V. (2022). Economics of education: A review of policies and outcomes. *Res Militaris, 12*(6), 2265-6294.

Krueger, A. B., & Lindahl, M. (2001). Education for growth: Why and for whom? *Journal of Eceonomic Literature, 39*(4), 1101-1136.

Kurul, N. (2012). *Eğitim finansmanı* (2nd Ed.). Siyasal Kitabevi.

Levin, H. M. (1989). Mapping the economics of education: An introductory essay. *Educational Researcher, 18(*4), 13-17. https://doi.org/10.3102/0013189X018004013

Levin, H. M., & Kelley, C. (1994). Can education do it alone? *Economics of Education Review, 13*(2), 97-108.

McPherson, M. S. (1985). Education and economic productivity. *Journal of Policy Analysis and Management, 4*(2), 281-305.

Muğan Ertuğral, S. (2018). Beşeri sermaye oluşumunda mesleki eğitimin önemi. *International Journal Entrepreneurship and Management Inquiries, 2*(3), 2602-3970.

Murnane, R. J., & Olsen, R. J. (1988, December). Will there be enough teachers? *Paper presented at the annual meetings of the American Economic Association*, New York.

Naik, A. (2024). Tracing trends: A bibliometric study of education economics. *International Journal of Research Publication and Reviews, 5*(4), 3948-3952. https://doi.org/10.55248/gengpi.5.0424.1040

Olson, M. H., & Hergenhahn, B. R. (2016). *Öğrenmenin kuramları*. Nobel Akademik.

Oshio, T., & Seno, W. (2007). The economics of education in Japan: A survey of empirical studies and unresolved issues. *Japanese Political Economy, 34*(1), 46-81. https://doi.org/10.2753/JES1097-203X340102

Öztürk, O., & Gürler, G. (2022). *Bir literatür incelemesi aracı olarak bibliyometrik analiz*. Nobel Bilimsel.

Pillsburry, W. B. (1929). *The history of psycology*. Norton.

Pritchard, A. (1969). Statistical bibliography or bibliometrics. *Journal of Documentation, 25*(4), 348-349.

Psacharopoulos, G. (1996). Economics of education: A research agenda. *Economics of Education Review, 15*(4), 339-344.

Refrigeri, L., & Aleandri, G. (2014). The economics of education as educational science. *Procedia - Social and Behavioral Sciences, 116*, 2059-2063. https://doi.org/10.1016/j.sbspro.2014.01.519

Rumberger, R. W. (1987). The impact of salary differentials on teacher shortages and turnover: The case of mathematics and science teachers. *Economics of Education Review, 6*(4), 389-400.

Saygılı, Ş., Cihan, C., & Yavan, Z. A. (2005, Haziran). Eğitim ve büyüme, Türkiye için sürdürülebilir büyüme konferansı tartışma tebliğleri. *TÜSİAD-Koç Üniversitesi Ekonomik Araştırma Forumu*.

Sengupta, I. N. (1992). Bibliometrics, informetrics, scientometrics and librametrics: An overview. *Libri, 42*(2), 75-98.

Simon, H. A. (1991). Bounded rationality and organizational learning. *Organization Science, 2*(1), 125-134.

Spence, M. (1978). Job market signaling. In *Uncertainty in economics* (pp. 281-306). Academic Press.

Tunger, D., & Eulerich, M. (2018). Bibliometric analysis of corporate governance research in German-speaking countries: Applying bibliometrics to business research using a custom-made database. *Scientometrics 117*, 2041-2059. https://doi.org/10.1007/s11192-018-2919-z

Turhan, M., & Erol, Y. C. (2022). Eğitim ekonomisine ilişkin temel kavramlar. In M. Sağır & R. Yirci (Eds.), *Eğitim ekonomisi ve planlaması* (pp. 1-23). Pegem Akademi.

Tuzcu, G. (2021). *Eğitim ekonomisi*. Pegem Akademi.

Ünal, L. I. (2006). Eğitim iktisadının Türkiye'deki serüveni: Özgün bir varoluş öyküsü. M. Hesapçıoğlu & A. Durmuş, (Eds.), *Türkiye'de eğitim bilimleri: Bir bilanço denemesi*. Nobel Yayın ve Dağıtım.

Woessmann, L. (2016). The economic case for education. *Education Economics, 24*(1), 3-32. https://doi.org/10.1080/09645292.2015.1059801