



Instructional Design for Competency-Based Character Education in Elementary Schools: A Bibliometric Analysis

Fidelis Dua¹, Riche Cynthia Johan¹, Aloysia Berlindis Lasar²

¹Universitas Pendidikan Indonesia, Indonesia

²Monash University, Australia

*Correspondence to: rdfideldua2307602@upi.edu

Abstract: This study uses a bibliometric analysis to examine the trends and impact of instructional design for competency-based character education in elementary schools. Character education plays a crucial role in shaping students' moral and ethical development alongside academic growth. Using data from the Scopus database (2011–2023), this study identifies key publications, authors, institutions, and collaboration networks in this field. A quantitative bibliometric method, employing performance analysis and science mapping, was utilized to evaluate research productivity, citation influence, and keyword trends. Findings reveal an increasing global interest in character education, with Indonesia leading in publication output, followed by Malaysia and the UK. The study highlights the significance of international collaboration, particularly the involvement of Indonesian researchers working abroad. Keyword analysis indicates emerging trends in technology integration, teacher training, and competency-based curriculum development. The study concludes that a structured instructional design is vital in effectively embedding character education within elementary school curricula. This research contributes to the academic discourse by offering a comprehensive bibliometric overview, identifying research gaps, and advocating for stronger international collaborations to enhance character education frameworks. The findings serve as a reference for policymakers, educators, and researchers in designing impactful character education programs.

Keywords: bibliometric analysis; character education; competency-based learning; instructional design; international collaboration

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INTRODUCTION

Education is a fundamental and integral effort in shaping cognitive, psychomotor, and affective abilities, ensuring a holistic approach to learning (Elya, 2021; Julia et al., 2022). This perspective underscores that education is not solely about academic achievement but also about fostering moral and ethical values, essential in developing students' character and social responsibility (Narvaez & Lapsley, 2014; Chien et al., 2019). Character formation has gained significant global attention as a central component of holistic education, where intellectual abilities must be balanced with strong moral foundations (Firmansyah et al., 2021; Birhan et al., 2021). Research shows that character education plays a pivotal role in shaping young individuals with positive attitudes, values, and behaviors, which are crucial for their personal and professional growth (Baartman & de Bruijn, 2011; Kristiawan et al., 2017). Furthermore, integrating character education into curricula enhances students' motivation, social skills, and academic performance by creating a learning environment that promotes integrity and ethical conduct (Margerison & Ravenscroft, 2020; Nafi'a & Gumiandari, 2024). Given the increasing moral challenges in modern society, character education is indispensable in fostering responsible and ethical citizens (Hang, 2020; Makulova et al., 2015). Therefore, a well-structured instructional design for character education is essential to ensure that students acquire intellectual competencies and the moral and ethical foundations necessary for their future (Julaeha, 2019; Vitchenko et al., 2022). Character education is an effort to develop individuals to have strong morals and ethics (Julia et al., 2022). In the context of global education, character education has become an important concern, including in Indonesia, and has become the main focus in developing the educational curriculum in Indonesia since the elementary school level (Uhbiyati, 2020). It is indispensable today since elementary schools have integrated character education into the curriculum and school environment to ensure students have good academic knowledge, strong character, and integrity (Firmansyah et al., 2021). From an early age, character education is given to form positive attitudes, values, and behaviors in children. The curriculum plays an important role in shaping students' character; therefore, it is urgent to understand how character education is integrated into the curriculum (Firmansyah et al., 2021).

Previous studies have shown a close relationship between curriculum and character education. Curriculum and character education implemented at the elementary school level can help increase students' learning motivation, social skills, and the formation of positive and strong character (Margerison & Ravenscroft, 2020). In addition, the curriculum and character education in learning and all school conditioning can create a fun learning environment and support the formation of students' identities and academic development in a

balanced manner. However, to integrate character education into the curriculum for children in elementary school, it is necessary to have a deep understanding of how character education is implemented in the learning process. Often, the implementation of character education in the early education environment has its challenges. Therefore, it is very necessary to explore learning models for character education for children in primary schools (Birhan et al., 2021). Through learning that suits the needs of students, character education is more effective in preparing students to become individuals who are determined to face all societal changes and can contribute more responsibly.

The phenomenon of increasing violence, cheating, and other negative behaviors among students highlights the need to reinforce moral and ethical values in the curriculum. In today's social life, it is not enough to be an intelligent and smart person. However, what is more demanded and needed is to become an individual with a positive and strong character. This is necessary to face moral decadence that hits various circles, not only adults but also students who are the future generation uncontrollably starting from the elementary school level (Daulay, 2012). It is alleged that moral deterioration occurs due to the lameness of the educational process in schools that prioritize cognitive abilities (intellectual/academic) rather than affective abilities (Ismail, 2015). Schools focus more on pursuing intellectual abilities rather than affective abilities to form behavior and develop moral values (Bagir, 2019). Unsurprisingly, violence in schools is difficult to eliminate because everything can finally be rationalized, including moral vices with intellectual virtue (Risnaedi, 2021). Thus, it is very natural to say that moral problems are acute problems that accompany human life at any time (Murtiningsih et al., 2024). Therefore, efforts to make humans intelligent and smart remain urgent. However, what must be the top priority, which seems to be more difficult or even very difficult, is to make humans with superior character.

To respond to the reality of the lameness in the educational process in schools that prioritize academic-intellectual abilities rather than character or identity formation, it is necessary to build a competency-based character education concept with a good and correct instructional design starting at the elementary school level (Astiarini, 2016). The main goal is to form individuals who are intellectually intelligent and have moral integrity. In this sense, character education is an education that focuses on developing moral and ethical values in students. The main issue in character education is related to the development of individuals with character in a society experiencing moral deterioration, which is increasingly negatively impacted. This follows the development of competency-based character education (Competency-Based Learning) (Julaeha, 2019). Competency-based character education focuses on mastering skills and knowledge relevant to a strong attitude or character (Nafi'a & Gumiandari, 2024). Therefore, competency-based character education always focuses on developing attitudes and values necessary to become responsible and highly competitive members of society (Chappell et al., 2020). It includes learning about ethics, cooperation, leadership, social responsibility, and cultural diversity. Through this approach, character education in schools is an effort to produce individuals with moral and ethical abilities and high social awareness.

Competency-based character education offers an integrated, goal-oriented approach to prepare learners to face real-world challenges with reliable characters (Makulova et al., 2015). By emphasizing the development of practical skills and relevant knowledge, as well as positive attitudes and strong values, competency-based character education can help prepare individuals for success in various aspects of life. Character competencies such as the ability to demonstrate moral and ethical values in daily life, such as honesty, responsibility, justice, courage, compassion, and empathy integrated in the curriculum must be designed with instructional design (Nadlir, 2013). Instructional design is useful in developing character-based competencies (Hannah & Avolio, 2010). Through character education in schools, which includes teaching moral and ethical values, instructional design designs quality learning about moral and ethical values (Vitchenko et al., 2022). Instructional design for competency-based character education in learning is a holistic and structured approach to integrating moral and ethical values in learning (Bukoting, 2023). Combining these two approaches can result in comprehensive learning and developing cognitive skills that are balanced with affective abilities for learners. Instructional design for competency-based character education in learning must be holistic and focus on developing all aspects of learners (Kristiawan et al., 2017). Character values can be deeply internalized through a structured and integrative approach and become part of a learner's daily life. Values such as honesty, responsibility, respect, and care must be explicitly taught with an instructional design used in quality learning. Therefore, instructional design is important in producing quality learning (Mulyani et al., 2021). The systematic practice of designing, developing, and implementing an effective and efficient learning process is called instructional design (Khalil & Elkhider, 2016; Reigeluth, 2013; Radović et al., 2023). It emphasizes the systematic planning of all aspects of learning, from determining learning needs, choosing appropriate teaching strategies, and assessing student learning outcomes (Cotter et al., 2023; González & Quiroz, 2019).

Instructional design for competency-based character education is a learning design concept that has not been widely used in elementary schools (Hang, 2020). As far as the authors have discovered, little research has been done in recent years on instructional design for competency-based character education in primary schools. The researcher argues that with bibliometric analysis, it is crucial to understand and see the trend of

instructional design of competency-based character education in elementary schools. This is because bibliometric analysis is very useful for determining the focus of scientific research and provides a holistic picture of scientific developments in a particular field over time (Moral-Muñoz et al., 2020; Donthu et al., 2021).

From an academic standpoint, this study advances the methodology for assessing research impact and intellectual contributions by utilizing performance analysis and science mapping (Baartman & de Bruijn, 2011). This bibliometric approach identifies key scholars and institutions shaping the discourse on competency-based character education and highlights underexplored areas, encouraging further research in these domains (Al-Jamimi et al., 2022). Moreover, the study underscores the importance of international collaboration, particularly the role of Indonesian scholars working abroad, in advancing research on character education (Firmansyah et al., 2021). The findings provide valuable insights for educators, policymakers, and practitioners by offering a structured understanding of how instructional design can be optimized to enhance character education in primary schools (Kristiawan et al., 2017). Integrating bibliometric indicators enables decision-makers to track research impact, assess the effectiveness of instructional design models, and identify best practices that can be adapted in different educational contexts (Nafi'a & Gumiandari, 2024). This research promotes interdisciplinary collaboration by bridging the gap between educational sciences and data-driven policy-making, leading to more informed and effective educational strategies (Chien et al., 2019). In conclusion, this study provides a groundbreaking contribution by integrating bibliometric analysis into the evaluation of competency-based character education research, facilitating a deeper understanding of its development, effectiveness, and global impact. The findings serve as a reference for future studies, ensuring that character education continues to evolve as a robust and evidence-based educational approach (Julaeha, 2019; Vitchenko et al., 2022).

METHODS

This study uses a bibliometric-based quantitative descriptive method to analyze research trends in the design of competency-based character education learning in elementary schools (Donthu et al., 2021; Todeschini & Baccini, 2016). This method aims to measure and visualize publication patterns and relationships between research through performance analysis and scientific mapping. In this study, the general principles of bibliometrics proposed by Donthu et al. (2021) are applied to ensure the accuracy and relevance of the analysis results. The first step of this research is to determine the scope and limitations of bibliometric studies, such as the year of publication, journal categories, and keywords used in literature searches. This analysis provides a comprehensive overview of academic contributions to competency-based character education, identifies developing research trends, and reveals the potential for scientific collaboration to enrich discussions in this field. This study aims to identify research trends and impacts in designing competency-based character education learning in elementary schools. Using bibliometric analysis, the study explored the productivity of authors, journals, and institutions contributing to this field from 2011 to 2023. In addition, this study also highlights the pattern of scientific collaboration between researchers and academic institutions, both nationally and internationally. The results obtained from this study are expected to provide insights for academics, education practitioners, and policymakers in designing more effective policies and curricula to support the development of competency-based character education in elementary schools. Understanding the existing research landscape also helps to identify knowledge gaps and direct further study in this field.

The data used in this study is sourced from the Scopus database, which is considered one of the leading scientific databases in bibliometric analysis (Baas et al., 2020; Pranckutė, 2021). The search was conducted using the keywords "instructional design," "character education," "competency-based education," and "primary school," which were applied to the title, abstract, and keywords of the relevant article. The search results resulted in 82 documents consisting of journal articles, conference papers, and literature reviews published from 2011–2023. The data obtained were then extracted in RIS and CSV formats to facilitate further analysis. In addition, the study uses VOSviewer and Biblioshiny software to visualize the relationship between authors, keywords, and citation patterns in the research network. Data analysis is carried out in two main stages: performance analysis and scientific mapping. The performance analysis aims to evaluate the productivity of publications based on the number of articles, the number of citations, and the level of collaboration between researchers and institutions (Adeoye et al., 2023). At this stage, grouping is based on the categories of authors, institutions, and countries most active in research on learning design for competency-based character education. Meanwhile, scientific mapping uses co-word and co-author analysis techniques to identify key themes and relationships between various concepts in this field. Data visualization using VOSviewer allows for mapping research trends, including the development of terminology and fields of study developed in the last decade. With this approach, this study not only provides an understanding of the distribution of research globally but also identifies the potential for academic collaboration that can improve the quality and impact of research in the field of competency-based character education.

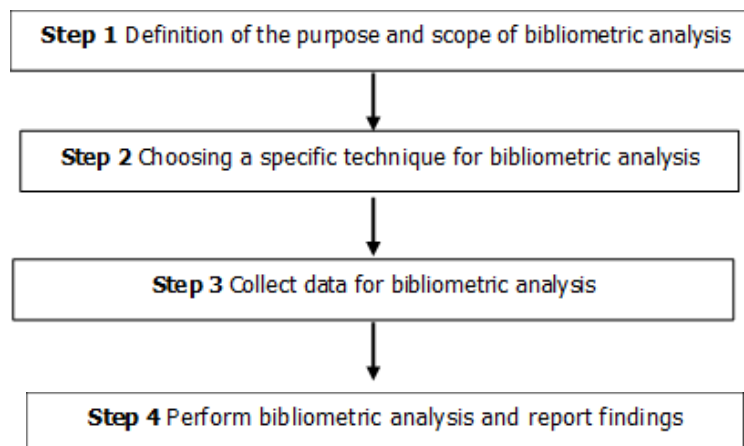


Figure 1. Bibliometric Analysis Procedure (Donthu et al., 2021)

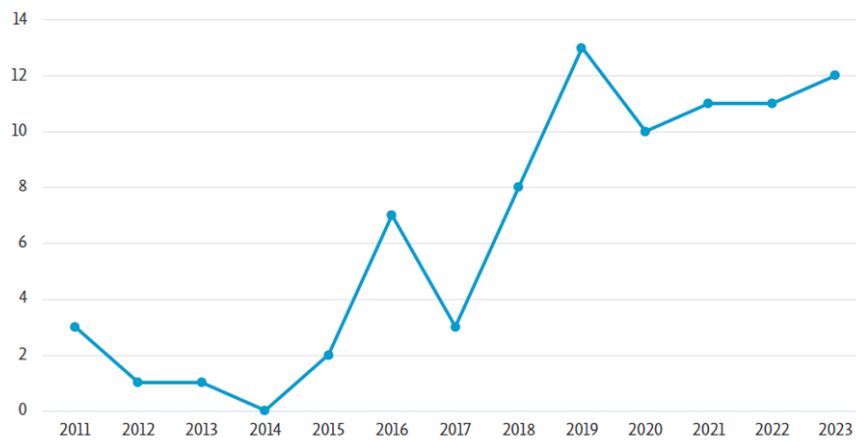
The researcher conducted performance analysis on three different degrees, differentiating productivity, influence, citation, and collaboration at the macro, meso, and micro levels. At the macro level, researchers analyzed publications and citations distributed in different countries to understand where instructional design for competency-based character education in primary schools is becoming a hot topic. Therefore, the author explores the meso level by analyzing which institutions are more interested in researching instructional design in elementary schools. In addition, it focuses on the individual level by analyzing the study's most productive and influential authors as part of the micro level. Finally, the researcher also conducted a science mapping to summarize several trends and key findings in a cluster produced by bibliometric analysis.

Performance analysis and science mapping are the two main procedures commonly used in bibliometric studies. In this study, researchers focused on performance analysis, which aimed to evaluate the productivity and popularity of various actors based on bibliographic data. In addition, this research is also focused on science mapping, which can be seen in the intellectual structure of the field through the construction of bibliometric maps. The data for this study is sourced from the Scopus scientific database (Baas et al., 2020; Prancut, 2021). "Instructional design" OR "character education," OR "competency based education," AND "primary school" are the keywords chosen to be used in the literature search in the Scopus database, which was conducted in May 2024. To start, the researcher chose the document feature in the Scopus database. Then, in the document features subsection, the researcher wrote down the keywords in the "document search" format, with search formats available for 'article title,' 'abstract' and 'keyword.' The search results obtained 82 relevant documents from Article, Data Paper, Erratum, and Review, with the output results arranged in a time range. There are several specific criteria set to obtain documents relevant to this study. First, the title of the document contains the keywords "instructional design" OR "character education" OR "competency based education" AND "primary school". Second, the document is written in English, and third, published in 2011-2023. Fourth, as many as 82 articles were obtained from journal article documents published in 2011-2023.

Research data is then derived from documents that satisfy the requirements. The information was taken from the Scopus database in two formats: Research Information System (RIS) and Comma Separated Values (CSV). Important details about the publication, including bibliographic data, are included in both formats (Ma & Yang, 2014; Pandya, 2017). The data analysis was carried out in two parts. First, performance analysis describes the growth pattern of publications and finds contributions based on authors, country categories, and universities (Adeoye et al., 2023). The second component of analysis centers on science mapping, which examines the intellectual structure of the field using bibliometric maps. Finally, a narrative review of keyword groups is carried out to complement the research results. The analysis allows for a structured summary of several trends and key findings in a cluster produced by bibliometric analysis.

RESULT AND DISCUSSION

This study uses two different kinds of data: science mapping and performance analysis. Co-authoring data and keyword occurrences on bibliometric meta-data are analyzed using the VOSViewer software. The quantity of resources employed determines the relationship between publications, publishing sources, and authors for bibliographic pairing. Examining the emergence of keywords reveals trends in the subject of study throughout time. As a result, using the bibliometric approach to identify trends in a specific field of study is highly beneficial. Citation analysis assists researchers in locating well-liked study subjects that have been studied by Lai (2020). The analysis's findings are then shown on the network visualization map.

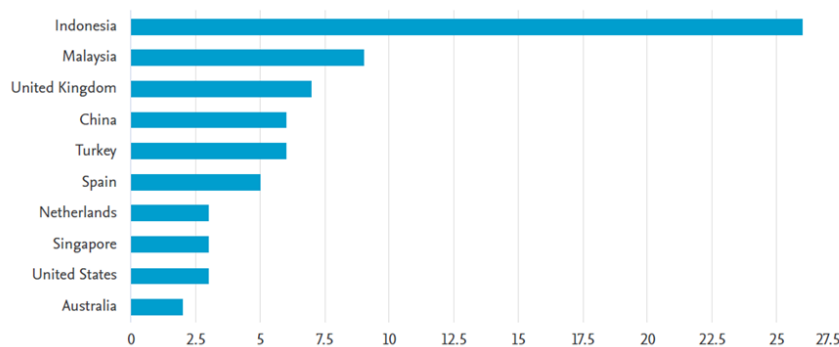


Source: Scopus Database, 2023

Figure 2. Developments in the Number of Publications

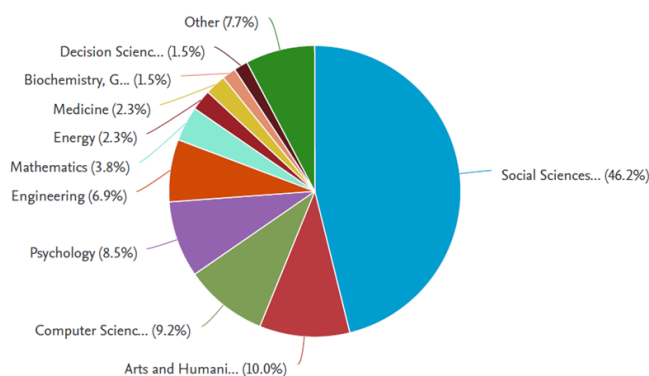
Figure 2 shows that the development of the number of publications related to instructional design for competency-based character education in elementary schools is relatively unstable, especially from 2011 to 2019. Even in 2014, there were no publications. The increase in the number of publications was relatively up in 2015 and peaked in 2019, although the increase was relatively inconsistent. A significant increase in the number of publications occurred from 2017 to 2023.

The relevant publications in this study cover 15 nations, based on the bibliometric analysis in Figure 2, but the researcher used data from the 10 countries that contributed the most to the publication output. Indonesia published 26 publications, making it the top nation. The second place, with nine publications, is Malaysia. The United Kingdom comes next, holding the third spot with seven publications. Additionally, China and Turkey share the same contribution, ranking fourth and publishing six books, respectively. Spain, with five publications, holds the fifth position. Three nations—the Netherlands (Netherlands), Singapore, and the United States (United States)—occupy the sixth spot, with three publications apiece. Australia, with two publications, finally holds the seventh position.



Source: Scopus Database, 2024

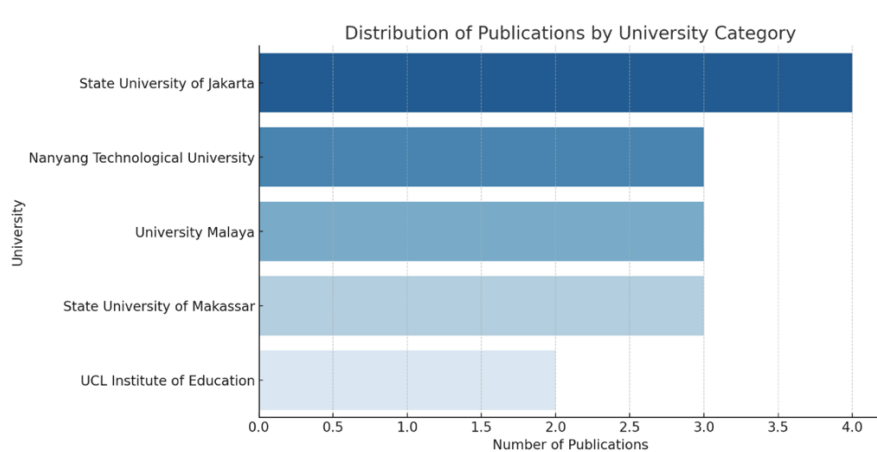
Figure 3. Distribution of Publications by Country Category



Source: Scopus Database, 2024

Figure 4. Distribution of Publications by Subject Area Category

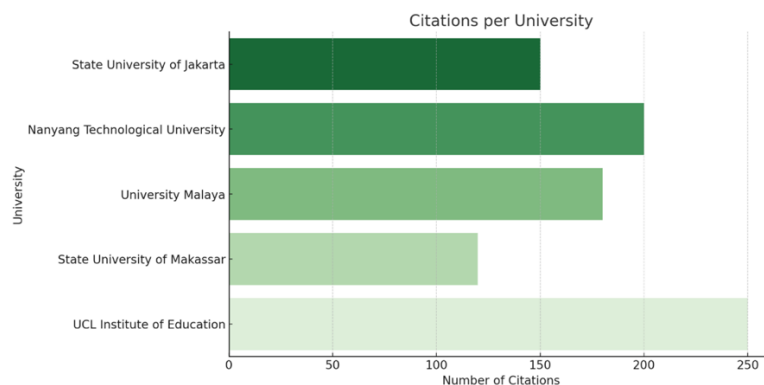
Figure 3 shows the distribution of publications by subject category of the area of interest in this study between 2011 and 2023. "Social Sciences" was the top subject, producing 46.2% or 60 publications. Then, the subject of the "Arts and Humanities" area, with 10.0% or 13 publications, came in second. Next, in third place, the subject area "Computer Science" produced 9.2% or 12 publications; in fourth place, the subject area "Psychology" produced 8.5% or 11 publications. The fifth place is the subject of the "Engineering" area, resulting in 6.9% or nine publications. Next, the subject of "Mathematics" was in sixth place, producing 3.8% or five publications. Seventh, by subject area "Energy" and "Medicine", the results were 2.3% or three publications, respectively. The last order of subjects of the area "Biochemistry, Genetics, and Molecular Biology" resulted in 1.5% or two publications.



Source: Scopus Database, 2024

Figure 5. Distribution of Publications by University Category

Universitas Negeri Jakarta has four publications on character education, competency-based education, and instructional design in elementary schools. These publications have a total of 150 citations. This shows the significant contribution of this university in related research fields, although the number of publications is not very large. With three publications and 200 citations, Nanyang Technological University has shown considerable impact from their research. The higher number of citations compared to the number of publications shows that the works published by this university significantly influence academics and practitioners. University Malaya also has three publications with a total of 180 citations. This shows that the publications from this university are quite relevant and are often referenced in further research. The comparison between the number of publications and citations shows the good quality and relevance of the research. With the same number of publications as the University Malaya and Nanyang Technological University, Makassar State University has 120 citations. This may indicate that although the number of publications is sufficient, the impact or relevance of this study may need to be improved. UCL Institute of Education has fewer publications, which is 2, but has the highest number of citations at 250. This shows that the publication from the UCL Institute of Education is very influential and is widely referenced by other studies, indicating a very high quality of research. While the number of publications is an important indicator of research productivity, the number of citations provides a better picture of the impact and quality of the research. The UCL Institute of Education, albeit with a smaller number of publications, shows a significant impact with many citations. Meanwhile, the State University of Jakarta and Nanyang Technological University also showed important research contributions to character education, competency-based education, and instructional design in elementary schools.



Source: Scopus Database, 2024

Figure 6. Author with the Highest Productivity

Furthermore, the number of publications is used to show productivity, while the number of citations is used to show influential authors. First, the authors with the highest productivity are represented by the top 5 documents, as presented in Table 1. According to the Scopus database, this paper had 82 authors. As one of the most respected scientific databases, Scopus can yield valuable information about publishing patterns. For instance, a "citation view" tool can examine how many citations a publication has, and a "document by author" feature can produce information about how many publications each author who is included in the database has. These two illustrations highlight important components of the Scopus database that enable producing fruitful and impactful author data in certain study areas. The five authors listed in the above table are the most productive writers; according to the Scopus database, they have published two papers on instructional design research for competency-based character education in elementary schools for the first three authors and one document for each of the final two authors. Burgos, M., whose paper is titled Prospective Primary School Teachers' Competence For Analyzing The Difficulties In Solving Proportionality Problem, is at the top of the list.

With a publication titled Assessing the Epistemic Analysis Competence of Prospective Primary School Teachers on Proportionality Tasks, Juan D. Godino, a member of the Department of Didactic of Mathematics, University of Granada, Granada, Spain, is the most influential author concerning this research. There are 38 citations to the document in other pertinent studies. The Center for Education and Cultural Policy Research, IAARD, Ministry of Education and Culture, Indonesia, along with Kosasih Ali Abu Bakar, Idris HM Noor, and Widodo, have also published a paper titled Nurturing Nationalism Character Values at The Primary Schools In Jayapura, Papua, which has received 38 citations. Third-place writers Robert White and Tae Seob Shin, whose article is titled School-wide Mediated Prosocial Development: Applying a Sociocultural Perspective to Inclusive Practice and Character Education, also had six citations. In the meantime, Achmad Basari Eko W. et al. (2019) conducted a study in Indonesia on publications on instructional design for competency-based character education in primary schools. A model for preventing drug abuse by using ADDIE and CBT for primary school students is called the Drug Abuse Prevention Model Using ADDIE and CBT for Primary School Students. It is associated with the Faculty of Teacher Training and Education at Sebelas Maret University and was not cited by other researchers until 2023.

Table 1. Author Influences Based on Citation Ranking

Year	Author	Heading	Source	Publisher	Citations
2020	Alalwan, N., Cheng, L., Al-Samarrale, H.,...Ibrahim Alzahrani, A., Sarsam,S.M.	<i>Challenges and Prospects of Virtual Reality and Augmented Reality Utilization among Primary School Teachers: A Developing Country Perspective</i>	Studies in Educational Evaluation	ScienceDirect	114
2018	Chen, O., Castro-alonso, J.C., Paas, F., Sweller, J.	<i>Extending Cognitive Load Theory to Incorporate Working Memory Resource Depletion: Evidence from the Spacing Effect</i>	Educational Psychology Review	Springer	113
2021	Christopoulos, A., Sprangers, P.	<i>Integration of educational technology during the Covid-19 pandemic: An analysis of teacher and student receptions</i>	Cogent Education	Taylor & Francis	49
2012	Cubukcu, Z.	<i>The effect of hidden curriculum on character education process of primary school students</i>	Educational Sciences: Theory and Practice	ERIC	47
2011	Freidenreich, H.B., Duncan, R.G., Shea, N.	<i>Exploring Middle School Students' Understanding of Three Conceptual Models in Genetics</i>	International Journal of Science Education	Taylor & Francis	43
2019	Chien, Y.C., Su, Y.N., Wu, T.T., Huang, Y. M	<i>Enhancing students' learning by using augmented reality</i>	Universal Access in the Information Society	Springer	42

2021	Frerejean, J., van Geel, M., Keuning, T., van Merrienboer, J.J.G., Visscher, A.J Simpson, A.	<i>Ten steps to 4C/ID: training differentiation skills in a professional development program for teachers</i>	Instructional Science	Springer	23
2016		<i>Dialogic teaching in the initial teacher education classroom: "Everyone's Voice will be Heard."</i>	Talking to Learn	Research Papers In Education	23
2011	White, R., Warfa, N.	<i>Building Schools of Character: A Case-Study Investigation of Character Educations' Impact on School Climate, Pupil Behavior and Curriculum Delivery</i>	Journal of Applied Social Psychology	Wiley Online Library	23
2021	Birhan, W., Shiferaw, G., Amsalu, A., tamiru, M., Tiruye, H.	<i>Exploring the context of teaching character education to children in preprimary and primary schools</i>	Social Sciences & Humanities Open	Elsevier	22

Source: Scopus Database, 2024

Table 2 allows the researcher to characterize the influential authors based on the citation ranking. The following authors are evident: With 114 citations, the work "Challenges and Prospects of Virtual Reality and Augmented Reality Utilization among Primary School Teachers: A Developing Country Perspective" by Alalwan N., Cheng L., Al-Samarrate H., Ibrahim Alzahrani A., and Sarsam S.M. placed top. Next, with 113 citations, for the paper "Extending Cognitive Load Theory to Incorporate Working Memory Resource Depletion: Evidence from the Spacing Effect," were Chen O., Castro-Alonso J.C., Paas F., and Sweller J. At 49 citations, Christopoulos A. and Sprangers P. came in third place, followed by Cubukcu Z. at 47 and Freidenreich H.B., Duncan R.G., and Shea N. at 43. These articles address various subjects, such as how educational technology was used during the COVID-19 pandemic, how concealed curriculum affected character education, and how well students understood genetics conceptual models. Chien Y.C., Su Y.N., Wu T.T., and Huang Y.M. topped the list with 42 citations for their paper "Enhancing Students' Learning through Augmented Reality." Numerous citations highlight the important contributions of other writers, including Simpson A., White R., Birhan W., and Frerejean J. et al., as well as their influence on character education and the professional development of teachers. This analysis emphasizes how crucial author collaboration is to advancing educational knowledge and practice through comprehensive works.

The authors also performed a co-authorship analysis, a science mapping technique based on the premise that works frequently referenced together have related themes (Smith, 2017; Johnson & Lee, 2020). In essence, this technique is used to show the social connections among writers (Kim & Park, 2021). The analysis's findings are applied to evaluate the caliber of structures in a specific field of study (Taylor et al., 2019), such as the underlying subject (Wang et al., 2016). When two papers appear together in the reference list of another article, they are considered co-authored. This approach helps researchers identify notable researchers in a subject (Jackson, 2020). According to Garcia et al. (2021), co-authorship can also be understood as research collaboration involving various stakeholders, including scholars, institutions, organizations, and society. Within each discipline, researchers collaborate to varying degrees. The potential for research achievement increases with the frequency of author collaboration (Nguyen et al., 2021; Smith et al., 2021). Variations in the degree of disciplinary collaboration can be caused by many things, including gender, the informational behavior of researchers, and demographics (Martin & Clark, 2013; Williams et al., 2018).

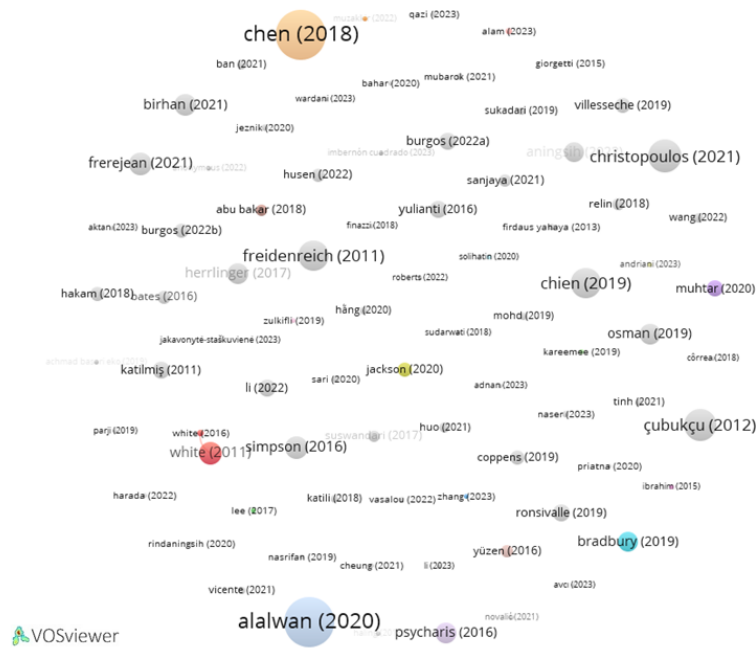


Figure 7. Co-Authorship Relationship Map

82 authors contributed to this study area between 2011 and 2023. In Figure 4, co-authorship is visualized as a network, with each researcher represented by a circle and their relationships represented by the network. The VOSviewer-generated co-authorship relationship map illustrates the exchange and cooperation among prominent educators, particularly concerning character education, competency-based education, and elementary school instructional design. The circle size shows the number of citations on this map, and the connecting lines indicate the authors' participation. The two circles with the most excellent size, [Chen et al. \(2018\)](#) and [Alalwan \(2020\)](#) show they are highly cited and significantly influence this cooperative network. Authors such as [Christopoulos \(2021\)](#), [Chien et al. \(2019\)](#), and [Freidenreich et al. \(2011\)](#) also stand out in the network, signaling their significant contribution to the study. Intensive collaboration among the various authors working on related topics reflects close collaboration and collective contributions in advancing educational knowledge and practice. This map illustrates how researchers from different institutions and countries contribute to developing and disseminating research in basic education. Collaborative research can potentially improve the quality of research in an organization. The more research is conducted collaboratively, the more there will be an increase in both the quantity and quality of research produced by the organization ([Smith et al., 2022](#)). Additionally, empirically, collaborative research has been shown to improve research quality ([Johnson et al., 2022](#)), with articles that have more authors tending to get more citations ([Brown, 2022](#); [Green et al., 2015](#); [Wang et al., 2020](#)).

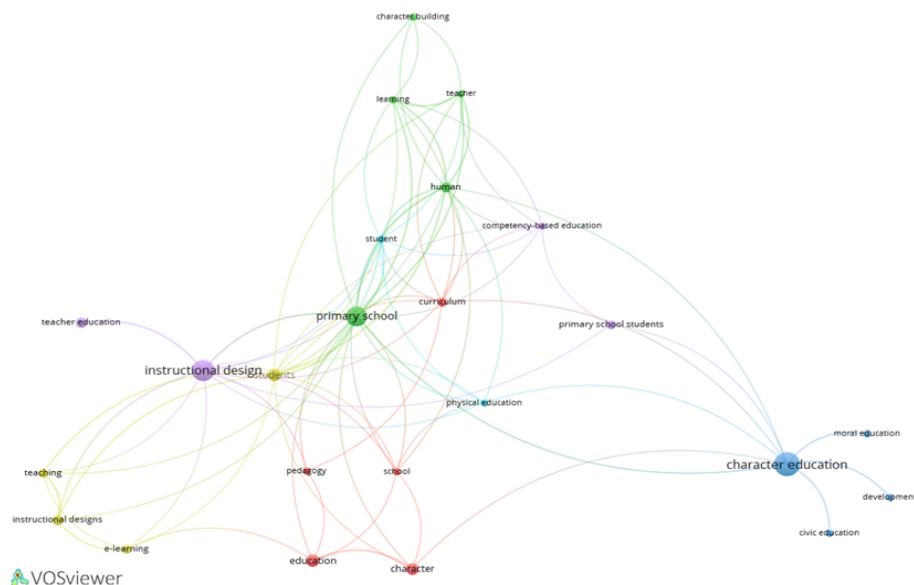


Figure 8. Visualization of Keyword Relationships Based on Co-Occurrence

Next, a network or association between terms based on text data is formed by choosing the 'build a map based on text data' data option to analyze the dataset. The dataset is calculated using full counting, and the terms are taken from the abstract and title. As seen in Figure 5, the analysis's findings indicate that the keywords are divided into six groups. Information about research subjects in the field of interest is available through the cluster's keywords (Goksu, 2021). Thus, it can be explained that there is an interaction and relationship between numerous phrases frequently appearing together in research connected to character education, competency-based education, and instructional design by referring to the Network Visualization keywords provided by VOSviewer. On this map, each circle represents a keyword, while the line connecting the circles shows how often those keywords appear together in the same document. The first group is the keyword Character Education. This keyword takes center stage in the map, indicating that it is a major topic that is often associated with other keywords such as "moral education," "civic education," and "development." This indicates the importance of character education in this analyzed study. The second group of keywords is Primary School. The circle on this keyword is large and is connected to many other keywords such as "teacher," "student," "curriculum," and "learning". This shows that many studies focusing on character education and instructional design are conducted in the context of primary schools. The third group of keywords is Instructional Design.

These keywords are linked to keywords such as "teaching," "e-learning," and "instructional designs," which show the close relationship between instructional design and teaching methods and learning technologies. The fourth group is the keyword Competency-Based Education. Connect with keywords such as "curriculum" and "human," which indicates a focus on developing a curriculum oriented towards student competence. The fifth group of keywords is Human and Learning: These have many connections with other keywords, suggesting that human aspects and learning processes are central to educational research. Moreover, the sixth group is the keyword Teacher Education. Connect with keywords like "instructional design" and "teaching," focusing on teacher education and professional development. Thus, the visualization of these keyword relationships shows that character education and instructional design are central themes in the analyzed research. Many studies highlight the importance of effective teaching and competency-oriented curriculum development, particularly in basic education. This visualization of relationships also highlights the interactions between various aspects of education, such as learning, teaching, and teacher professional development, as well as the importance of a collaborative approach in educational research. After finding the mapping using network visualization, the researcher also mapped and classified instructional design research trends for competency-based character education in primary schools based on the year of study publication. The state of the art in instructional design research for competency-based character education in primary schools can be found and detected using the data gathered from the overlay visualization results in Figure 9.

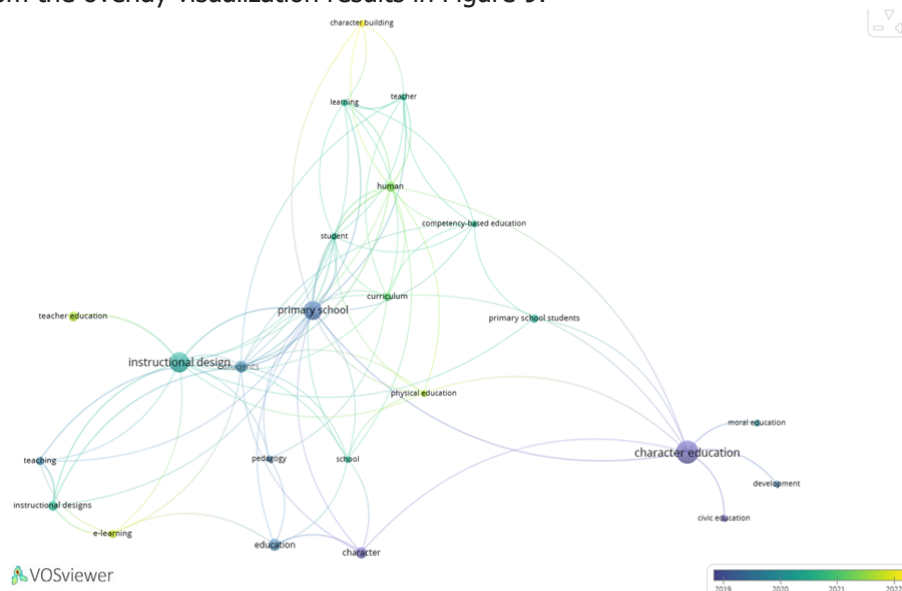


Figure 9. Visualization of Keyword Overlays Based on Co-Occurrence

The visualization of keyword overlays based on co-occurrence generated by VOSviewer shows the evolution of research topics in character education, competency-based education, and instructional design in elementary schools from 2019 to 2022. In this map, each node represents a keyword, with a color indicating the year of the relevant publication. For example, "character education" and "instructional design" appear as the older central nodes (colored purple), suggesting that these topics have long been the focus of research. Meanwhile, "teacher education" and "e-learning" in light green to yellow indicate newer and more current topics. The close relationship between "primary school," "student," and "curriculum" shows that there has been special

attention to basic education and curriculum over the past few years. This map reveals that although key themes such as character education remain relevant, there is a shift towards applying educational technology and teacher upskilling as an area of increasing demand.

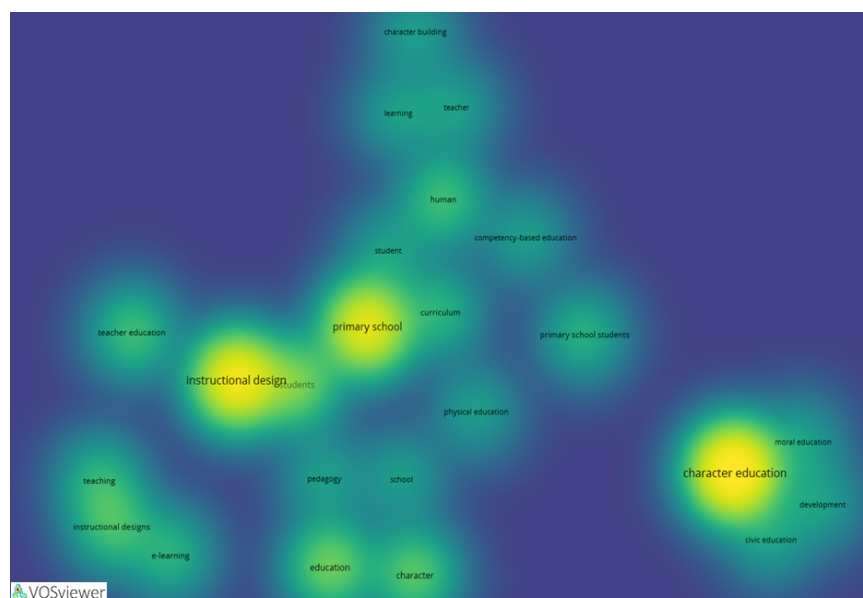


Figure 10. Visualization of Keyword Density Based on Co-Occurrence

The visualization of keyword density generated by VOSviewer in Figure 10 provides a comprehensive view of the frequency distribution and intensity of research in character education, competency-based education, and instructional design in elementary schools. In this visualization, lighter colors (yellow) indicate a high density of keywords, while darker colors (blue) indicate a lower density. "Character education" emerged as one of the highest-density terms, highlighting the significant and ongoing attention to this topic. Keywords such as "moral education," "civic education," and "development," which are closely related to "character education," also show high density, reflecting the deep research focus in this area. In addition, "instructional design" and "primary school" also stand out in bright yellow, indicating that instructional design and the context of primary education are discussed very often. The strong relationship between "primary school" and keywords such as "student," "curriculum," and "learning" shows that research in this context focuses on important elements of the educational process. "Teacher education" and "e-learning" show moderate but significant density, signaling an increase in interest in teacher professional development and technology integration in education. Keywords such as "teaching," "instructional designs," and "physical education," indicating green to yellow, indicated moderate but important frequencies in the study. Meanwhile, "competency-based education," which shows a fairly high density, shows that the competency-based approach in education is getting more attention.

Overall, this density map reveals that research in character education and instructional design in primary schools is dynamic and diverse. There is a clear shift toward new topics, such as the use of technology in teaching, competency-based curriculum development, and teacher training for character education. This visualization not only maps the main keywords and their relationships but also provides an overview of how this field of research has evolved, reflecting the shift and expansion of focus in the academic literature. The findings contribute to scientific knowledge by highlighting the growing interdisciplinary nature of competency-based character education and emphasizing the need for adaptive instructional frameworks. Moreover, this study reinforces the importance of data-driven educational decision-making, where bibliometric insights can be leveraged to enhance curriculum design and teacher training programs. The results also underline the necessity of international collaboration, particularly involving scholars from various cultural and educational contexts, to develop globally adaptable character education models. Furthermore, by identifying research gaps and emerging trends, this study serves as a foundation for future investigations, ensuring that instructional design strategies continue to evolve in response to societal and educational demands. This underscores the significance of a multidisciplinary and collaborative approach in addressing challenges and leveraging opportunities to strengthen character education in the digital era.

CONCLUSION

This study provides a comprehensive bibliometric analysis of instructional design for competency-based character education in elementary schools, highlighting key research trends, influential contributors, and emerging thematic developments. The findings indicate a growing global interest in integrating character

education into instructional frameworks, with a notable increase in studies focusing on technology-enhanced learning and teacher training. The results emphasize the significance of international collaboration, particularly the role of Indonesian researchers working abroad, in advancing research on character education. By employing performance analysis and science mapping, this study identifies gaps in the literature and underscores the necessity of a multidisciplinary approach to addressing contemporary educational challenges. The insights derived from this research contribute to the academic discourse by offering a data-driven understanding of the evolution and impact of character education models. Moreover, the study provides practical implications for policymakers, educators, and curriculum designers, advocating for evidence-based instructional strategies that foster students' academic competence and moral integrity. As the field continues to evolve, further research is needed to explore innovative instructional designs and collaborative efforts that enhance the effectiveness of competency-based character education globally.

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