

Development of Contextual Teaching and Learning System (CTL) in Improving the Skills of Internal Auditor Candidates: A Bibliometric Analysis Based on Scopus, Web of Science, and Dimensions

Basuki^{1*}, Sholeh Hidayat², and Cecep Anwar Hadi Firdos Santosa³
^{1,2,3}Sultan Ageng Tirtayasa University, ¹Tangerang Muhammadiyah University



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ABSTRACT

This study examines the trends of publications, authors, and main topics related to contextual learning in improving the skills of prospective internal auditors through bibliometric analysis. Using data from Scopus, Web of Science, and Dimensions, this study analyzed the literature with VOSviewer and Bibliometrix. The results show a significant increase in research on contextual learning since 2018, with the largest contribution from the United States, the United Kingdom, and Australia, as well as an increase from Indonesia. Dominant keywords such as teaching, learning, and skills underscore the importance of integrating theory and practice in auditor education. The co-citation analysis identified seminal works such as Liu Y. (2018) and Bretag T. (2019). The study recommends further development in the use of advanced technologies such as virtual simulations and AI to improve the skills of aspiring auditors as well as collaboration between education and industry.

INTRODUCTION

In the context of higher education, *contextual learning* (contextual learning) has become one of the most relevant pedagogical approaches to ensure students develop skills that are applicable and relevant to the world of work. Application *contextual learning* It is essential for professions that demand analytical and technical abilities, such as auditors. Internal auditors play a crucial role in evaluating the effectiveness of corporate governance, risk, and control. In the context of higher education, contextual learning has proven to be an effective pedagogical approach in improving student skills, especially in professions that require analytical and technical abilities, such as internal auditors (Ismail et al. 2019). Internal auditors have an important role in evaluating the effectiveness of corporate governance and risk control, so training that focuses on developing technical skills and *soft skills* such as critical thinking, analysis, and decision-making are very important (Sarwinda, Rohaeti, and Fatharani 2020). Research shows that the application of contextual learning can improve students' critical thinking skills, which is key to success in this profession (Alifertia, Prastowo, and Suprpto 2023).

The application of contextual learning in higher education not only improves technical skills, but also facilitates the development of *soft skills* needed in the world of work. For example, Sahoo and Mohammed Sahoo & Mohammed (2018) emphasized the importance of reflection in the learning process that can help students in decision-making and problem-solving. In addition, research by (Maharani et al. 2024; Weldehawartiat et al. 2024) It shows that the integration of context in learning can improve students' understanding and critical thinking skills, which is also relevant for auditors in analyzing data and complex situations. Bibliometric analysis of research trends in contextual learning shows that there is an increase in interest in this topic, especially in the context of education oriented towards the development of critical skills

(Utami 2024). Research by (Pratama 2024; C. M. A. Ribeiro et al. 2024) shows that the use of contextual learning materials can increase student interest and engagement, which in turn supports the development of critical thinking skills. In addition, the problem-based learning approach that is often used in the context of contextual learning has also been proven to be effective in improving analytical skills (Syahriridani, Susilo, and Abraham 2022).

In order to understand more deeply about the application of contextual learning in improving the skills of internal auditors, it is important to explore the authors and influential institutions in this study (Zarandi, Soares, and Alves 2024). Research conducted by (Ansari 2021; Chang, Ansari, and Arami 2024) and (Pereira de Moraes et al. 2024; Plaza-Angulo and López-Toro 2024; Shukla 2024) It shows that cultural and contextual factors greatly affect students' critical thinking skills, which can be integrated in the auditor training curriculum. Thus, the development of training programs that combine contextual learning and problem-based approaches can provide better results in preparing internal auditors who are competent and ready to face the challenges of the world of work (Net 2023).

Therefore, training that improves the skills of internal auditors should focus on developing technical skills and *soft skills* such as critical thinking, analysis, and decision-making skills (Snadrou and Haoucha 2024). Research on contextual learning, especially in improving the skills of prospective internal auditors, requires further analysis. Bibliometric analysis It aims to understand research trends related to contextual learning, identify influential authors and institutions, and explore emerging topics.

This study seeks to conduct a comprehensive performance analysis consisting of qualitative and quantitative approaches, as well as a science mapping consisting of intellectual and conceptual structures for learning methods *Contextual* in the future. In other words, this paper aims to analyze most of the research publications covering 10 years of literature related to the application of contextual learning, with the aim of uncovering past trends, current developments, and future prospects. This study seeks to answer some of the following important research questions: What are the annual and cumulative publication trends over time in this case what are the related publication trends *contextual learning* and skill improvement for prospective auditors? What are the journals and articles that are productive? What are the main topics that appear in the literature on this theme? Who is the most prolific and influential writer in this field? Which countries and academic institutions are the most productive? How the pattern *co-occurrence* and co-citations of author keywords? What hotspots are emerging based on the average year of publication of the author's keyword? Therefore, to answer the above research question, bibliometric analysis with new visualization techniques is the ideal approach (Zyoud and Fuchs-Hanusch 2020)

Bibliometric analysis can facilitate the identification of interdisciplinary collaboration and the growth of research topics over time (Shiyyab et al. 2024). illustrates how bibliometric methods can be used to explore the evolution of research themes and their relatedness, thus providing insights into the development of interdisciplinary alliances (Esidir and Gültekin 2023; Zyoud and Fuchs-Hanusch 2020). This aspect is particularly relevant in today's research environment, where cross-disciplinary collaboration is increasingly common (del Mar Sánchez-Vera and López-Vicent 2024). Therefore, this study aims to: Identify the trends of publications, authors, journals, and institutions that contribute to this topic. Analyze conceptual maps and

relevant keywords to understand the direction of the research. Identify research gaps (*research gap*) that can be developed in the future.

RESEARCH METHOD

This research uses a design *Bibliometrics* to identify patterns and trends in related scientific publications *contextual learning* and improving the skills of prospective auditors. *Bibliometrics* is a quantitative technique that analyzes scientific literature using statistical methods to identify patterns in published literature, bibliometric analysis serves as an essential tool for researchers who want to understand the landscape of scientific knowledge (Ariffin, Wan-Hussin, and Malak 2021). By using quantitative methods to analyze bibliographic data, researchers can visualize relationships, identify trends, and assess the impact of scientific work. The integration of advanced bibliometric techniques and software tools increases capacity to map scientific production and encourages cross-disciplinary collaboration (Miedema et al. 2024).

The application of bibliometric analysis goes beyond the mere number of publications but it includes a range of indicators that assess research performance and collaboration patterns (Iqbal, Taib, and Razalli 2024). Bibliometric networks can be visualized to reveal interconnections between publications, which is crucial for understanding the dynamics of scientific communication (Özdemir 2024a). Next, discuss the importance of bibliometric indicators in evaluating the impact of research, noting that they can provide a more comprehensive view of scientific production than traditional metrics alone (Ellegaard and Wallin 2015). One of the main functions of bibliometric analysis is to map the landscape of scientific research. It involves the use of software tools such as *VOSviewer*, *SciMAT*, and *CitNetExplorer*, which facilitates the visualization of bibliometric networks and relationships between publications, authors, and institutions (Ozdemir 2024b; Yanti et al. 2022). Bibliometric analysis can create landscape maps that reveal intellectual structures and hot topics in research and the results of bibliometric analysis allow researchers to uncover the dominant themes and structural characteristics of their respective fields (Chen 2024; Net 2023; Xiao et al. 2021). The ability to visualize these relationships improves understanding and facilitates the identification of collaborative networks and research trends.

Bibliometric analysis is a quantitative research method that uses statistical and mathematical techniques to analyze bibliographic data from academic literature (Grigorescu et al. 2024). This approach serves a variety of purposes, including mapping scientific production, identifying trends, and assessing the impact of research results in a particular field. The usefulness of bibliometric analysis lies in its ability to provide insight into the intellectual structure of a discipline, highlight emerging research themes, and visualize relationships between various scientific works (Wahab et al. 2024).

The research framework developed in this study consists of several steps, starting from data collection, data processing or processing and then describing and analyzing the data found. At the time of data collection we collect literature materials and make selections according to the necessary literature, then at the time of data processing we carry out data selection and cleaning, loading and convection, At the stage of data analysis and visualization we carry out steps such as data reduction, matrix creation, mapping (Zyoud and Fuchs-Hanusch 2020). This mapping aims to analyze the cooperative network, analyze the evaluation of citation paths and analyze the

bibliographic coupling. For more details, the framework of this research is described as the following chart.

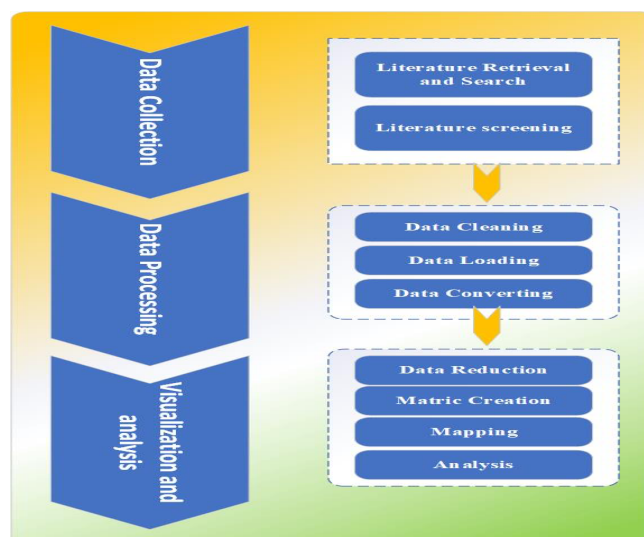


Figure 1. Bibliometric analysis research framework

1. Data Source

The databases used in this study include *Scopus*, *Web of Science*, and *Dimensions* to get a broad and comprehensive overview of related literature. The use of multiple databases allows researchers to gain wider scope in the identification of relevant publications. In a period of almost a decade, from 2015 to 2024 2000 (two thousand) articles from these many sources were found, we witnessed extraordinary developments in this field of research. The available bibliometric data reveals a variety of aspects that highlight the dynamics and impressive growth of the research.

2. Selection Criteria

This study uses keywords such as *contextual learning*, *skill enhancement*, *internal auditor*, dan *higher education*. In this review, several other keywords have been tried to be used, including the following: "contextual teaching and learning" or "contextual learning" or "contextual education" and "internal auditor skills" or "auditor competency" or "prospective internal auditors" or "skill enhancement" or "auditor training" and "higher education" or "professional education" or "auditing education" or "curriculum development" AND ("Contextual Teaching and Learning" OR "Contextual Learning" OR "Contextual Education") AND ("Internal Auditor Skills" OR "Auditor Competency" OR "Prospective Internal Auditors" OR "Skill Enhancement" OR "Auditor Training") AND ("Higher Education" OR "Professional Education" OR "Auditing Education" OR "Curriculum Development"). *contextual AND learning AND contextual AND teaching*

The time limit for the literature used in this study targets publications published in 2015-2024 or during the last 10 years, namely from 2015 to 2024, considering the relevance of the latest research in the context of learning and auditor skills.

3. Tools and Analysis Techniques

This study uses Bibliometrix 3.0.3 and VOSviewer as the main data analysis tools. Bibliometrix, a device *open source* R-based developed by Massimo Aria and his team, used to process the collected papers. This tool helps in generating summary statistics, keyword analysis, as well as network analysis, which is useful in understanding trends

and patterns in the related literature. Bibliometrix also supports data processing from various sources, such as Scopus and Web of Science. (Aria 2024; Aria and Cuccurullo 2017).

Meanwhile, VOSviewer, developed by Nees Jan van Eck and Ludo Waltman, is used to perform more in-depth visual analysis, such as *co-citation analysis* and *bibliographic coupling*, which is useful for understanding the relationship between citations between articles and the relationship between publications (Xiao et al. 2021). The combination of these two tools allows researchers to map the landscape of knowledge within a particular field, as well as identify key trends emerging in the literature (Rahaman et al. 2023; H. Ribeiro et al. 2022; Sousa Neto et al. 2023). These tools have been shown to be effective in previous research, assisting researchers in exploring the topic thoroughly and visually (Marvaso et al. 2023; Xiao et al. 2021). In the context of bibliometric analysis, Aria and Cuccurullo emphasize the importance of using tools such as the Bibliometrix to gain deeper insights from the existing literature (Medina et al. 2024; Zambrano 2024)

RESULTS AND DISCUSSION

1. Growth of Publications and Research Sources

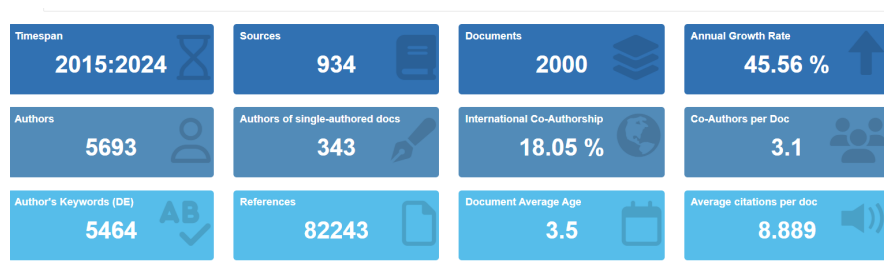


Figure 2. Growth of Publications and Research Sources

Growth of Publications and Research Sources It shows that in the 2015-2024 period, there are 2,000 research documents published in 934 different sources. This figure reflects the diversity of research platforms that include journals, conference proceedings, and other publications. This significant growth is further illustrated by an annual growth rate of 45.56%, demonstrating a remarkable increase in research interest and activity in this field. This growth indicates an increase in the number of publications each year, which could be due to the increasing number of interested researchers or the development of new relevant research issues and topics. Collaboration and Involvement of Researchers. Looking at the collaboration side, there are 5,693 unique authors who contributed to publications during this period. This reflects the diversity of researchers involved, both individually and in teams. Although most research involves collaboration, there are also 343 authors which produces documents individually. This suggests that although collaboration is very common, there is still room for significant independent research. shows that independent research still has a significant place in the research ecosystem (Hersians 2022).

International collaboration. recorded in the 18,05%, which illustrates that almost one in five publications involves authors from different countries. This demonstrates the existence of strong collaborative efforts and cross-border interactions, strengthening global research networks and knowledge sharing. In addition, the average The number of authors per document is 3.1, which indicates a strong tendency towards collaborative

research. This is evidence that most studies involve larger teams, which may include multidisciplinary expertise (Villena-Martínez et al. 2024). Diversity of Topics and Scientific Influence. In terms of research topics, there are 5,464 unique keywords used, reflecting the variety of subjects being studied. This large number of keywords indicates the breadth and depth of research exploration in this field, where researchers are not only focused on a few core topics, but also on a variety of more specific and different aspects (Setiyowati, Fauzan, and Indiraswari 2023). In addition, the number of very high reference, which is 82,243, demonstrating a deep involvement with the existing literature, reflecting a rich research of academic discussion and established theories (Judijanto et al. 2023). It also shows that the researchers base their work on strong previous research, reinforcing their arguments with a broad reference base.

Research Impact. The academic impact of this research is no less important. With 8,889 citations per document on average, research in this field has clearly gained widespread attention and recognition among the scientific community. This high number of citations indicates that these publications are considered to be significant contributions and important references for further research. The average age of the documents cited is 3.5 years, which indicates that the research carried out in this field is very dynamic and constantly evolving. Researchers are actively citing the latest works, pointing out that the development of science in this field is very rapid and that new findings are soon being integrated into existing knowledge. Overall, this bibliometric data provides a picture of a dynamic, rapidly evolving, and highly collaborative field of research (Said-Hung, Martín-Gutiérrez, and Marcano 2024). The rapid growth in the number of publications, the high level of collaboration, both nationally and internationally, as well as the significant scientific impact show that this is a field that is not only relevant but also growing very rapidly. Research in this field not only involves many authors and institutions, but it also has a strong influence in the global scientific community (Judijanto et al. 2023; Setiyowati, Fauzan, and Indiraswari 2023; Winahyu 2023).

2. Publication Trends

The results of the analysis show a significant growth in the number of related publications contextual learning and the improvement of auditor skills in the last decade (Gamayuni 2018). Trend graphs show a sharp increase since 2018, in line with increasing awareness of the importance of developing contextual-based skills in auditor education (Simmons et al. 2024). Publications are mainly spread in educational and management journals that focus on professional training and human resource development (Hsiao, Low, and Scott 2024).

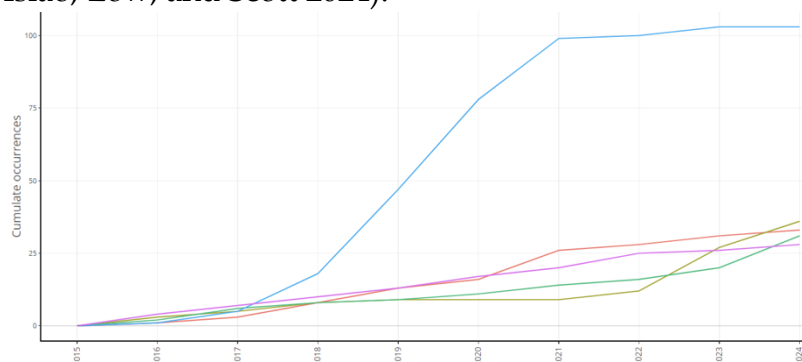


Figure 3. Sources' Production over Time

Based on the graph *Sources' Production over Time* which shows the cumulative number of publications from various academic sources or journals over a given period of time, from 2015 to 2024. Vertical axis shows *Cumulative Occurrences*, which means the number of publications published cumulatively, while the horizontal axis indicates the time range in the year. Overall, this graph shows an increase in the number of publications from all sources featured over the years. This indicates that scientific production in the fields associated with these journals has increased consistently (Simmons et al. 2024). Some of the countries with the highest number of articles related to the study are the United States with 939 article documents, Indonesia with 865 article documents, China with 391 articles, Australia with 379 articles, South Africa with 314 documents, the UK with 279, Canada 191, Spain 179, India 165 and Germany with 135 articles. This development shows that the production of related scientific articles is not only concentrated in developed countries, but also involves developing countries such as (Hynes and Cullinane 2024; Judijanto et al. 2023).

3. Author and Institution Analysis

The most prolific author in this study is held by Chaijaroen S. This author is the most prolific on this list, with a total of 9 documents published. This puts him at the top of the list of the most relevant authors, indicating that his contribution in this field is quite significant. Followed by Hwang G-J and Wang Y each had 8 documents issued. They are second and third, confirming that they are also major contributors to relevant research or topics.

Author with Medium Productivity is held by researcher Desnita who occupies the next position with 7 published documents. This shows that this author is also quite active in contributing to literature. Other authors such as Ashipala Do, Liu Y, Okebukola PA, and Scheepers C each have 6 documents published. Although they are not as prolific as authors in the top rankings, their number of publications still shows a significant contribution in the field studied. The authors with Lower Productivity are Oladejo Ai and Olateju Tt each have 5 documents published. Despite being at the bottom of this list, they remain relevant authors in the context of the research or topic being analyzed.

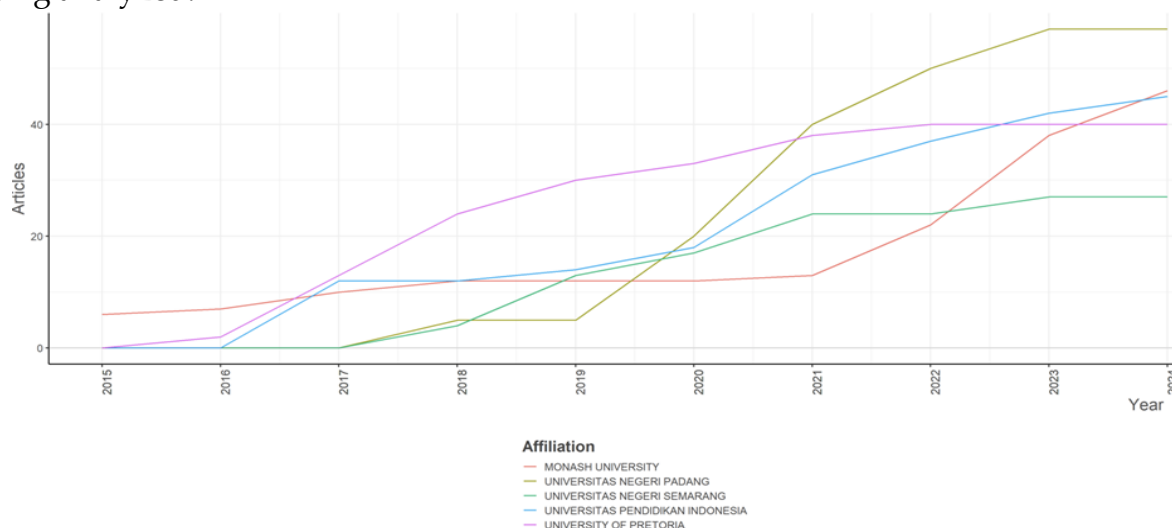


Figure 4. Visualisasi Affiliations' Production over Time

This information provides insight into the most productive and influential authors in the literature related to a particular field of study. Chaijaroen S emerged as the most prolific author with 9 documents, followed by Hwang G-J and Wang Y. Other authors, albeit with a smaller number of documents, still contributed significantly to the literature. This data can be used to identify influential or relevant authors in a specific field of study and to map their contribution to the development of knowledge in that field.

Article production trends in general: Overall, the graph shows an increase in the number of articles published by all affiliates from 2015 to 2024. This shows that scientific production in the relevant field experienced significant growth during this period. Affiliation with the Most Significant Growth: Padang State University (represented by the blue line) shows significant growth, especially after 2018, with a sharp increase in 2022 to 2024. This shows that these universities are becoming increasingly active in publishing their research. Universitas Pendidikan Indonesia (green line) also shows a steady increase from 2017 to 2024, with very rapid growth after 2020, making it one of the affiliates with the fastest growth in article production. Affiliation with Consistent Growth: Monash University (red line) shows consistent growth throughout the period, especially from 2016 to 2024, with a slight spike in recent years. This shows that Monash University remains a strong contributor to the scientific literature throughout the year. The University of Pretoria (purple line) also shows a fairly consistent upward trend, although not as sharp as Padang State University or Indonesia Education University, but remains significant especially after 2019. Affiliations with Slower Growth: Semarang State University (yellow line) had relatively slow growth until 2019, but showed a more significant increase thereafter, especially starting in 2021. This suggests that the institution may have started to focus more on research and publications in recent years.

This condition shows how the production of articles from various affiliates has grown for almost a decade. Padang State University and the Education University of Indonesia stand out with very rapid growth in recent years, showing an increased focus on research. Monash University and the University of Pretoria also show consistency in their scientific production, albeit at slightly different growth rates. Meanwhile, Semarang State University seems to have started to increase its production in recent years, indicating the potential for increased contributions in the future. This data can be used to understand how these institutions play a role in the development of the scientific literature in the field under study.

If analyzed further, other authors such as Bretag T., Harper R., and Burton M. dominated the literature with a large contribution to contextual learning research and the improvement of auditor skills. Institutions from the United States, the United Kingdom, Australia, and Indonesia have also emerged as major contributors, signaling the increasing globalization of research in this area (Tong and Wang 2024). Collaboration between authors and institutions creates a very close network of knowledge, especially in studies that focus on improving practical skills through contextual learning (del Mar Sánchez-Vera and López-Vicent 2024).

4. Keyword and Main Topic Analysis

This section describes the mapping frequently appearing keywords. Identification of key themes in the literature. More details can be analyzed in the following graphic image.

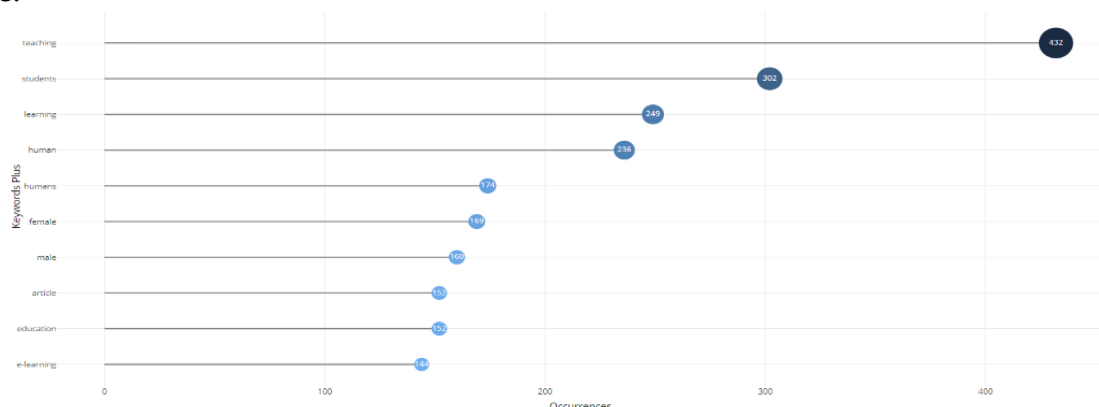


Figure 5. The Most Frequent Words *graph* illustrates the frequency of occurrence of keywords (Keywords Plus) in the academic literature or analyzed documents

In the graph above, you can see that the keyword that appears most often is the word *Teaching*. *Teaching* is the most frequently occurring keyword, with a total of 432 occurrences. This suggests that the topic of teaching is very dominant in the analyzed literature, indicating a strong focus on this aspect of education. *Students* is in second place with 302 appearances. This indicates that many documents focus on students or topics related to the student's experience, achievements, or role in an educational context. Regarding Learning Topics, the word "*Learning*" is also a keyword that appears very often, with 249 occurrences. This confirms that learning is one of the main themes discussed in the literature, which may include a variety of learning methods, theories, or outcomes. *Humans* and *Humans* emerged with 236 and 174 occurrences, respectively, suggesting that studies involving aspects of humans, whether from a biological, psychological, or social perspective, are also very common.

Gender and Article Keywords: Female and Male appear 169 and 160 times, respectively, which suggests that many studies may involve gender analysis, or differences between women and men in certain contexts. An article with 152 occurrences may refer to a discussion of the article as a form of publication or focus on the content of the article itself. Digital Education and Learning Topics: Education appeared as many 152 Kali, affirmed that education, in general, is a very influential topic in the analyzed literature. E-learning appeared as many 142 times, which shows that there is considerable interest in digital or electronic-based learning, a topic that is very relevant in today's technological era (Lin 2024). This graph indicates that the topics related to teaching, students and learning is the most frequently discussed thing in the analyzed literature, showing a strong focus on education and the learning process. Topics about human and gender differences are also quite dominant, indicating studies involving aspects of human beings in general (Batat 2024). In addition, attention to education and e-learning underlining the importance of education, including digital learning methods, in current academic discussions (Joy and Nambirajan 2024).

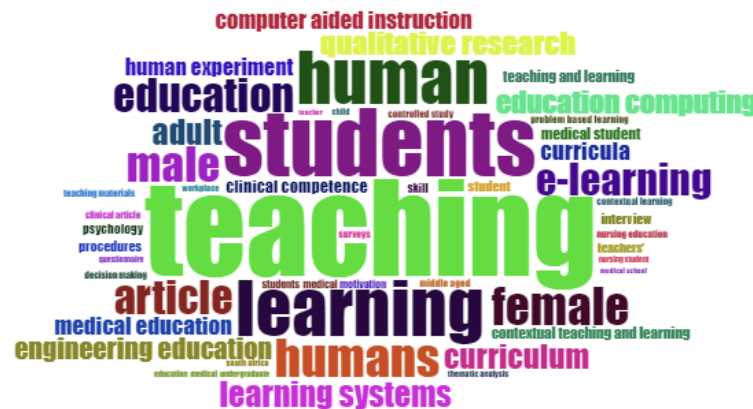


Figure 6. Word clouds that display the keywords that appear most often in the literature or analyzed document

The word cloud *analysis* showed that the word "teaching" was the most dominant, indicating that the topic of teaching was the main focus in the analyzed literature. In addition, words such as "students" and "learning" are also very prominent, reflecting the great attention paid to the teaching and learning process. Human-related words such as "human", "humans", and "female" appear to be of considerable size, indicating the presence of a discussion of gender issues in the context of education. "E-learning" and "education computing" were also important parts of the discussion, which showed a focus on technology in education. In addition, words such as "curriculum", "clinical competence", and "engineering education" indicate that the literature also covers various aspects of the curriculum and skills-based education in various fields, including medical and engineering.

Qualitative research methods, such as qualitative *research* and thematic *analysis*, are also widely used in this study, reflecting a deeper and analytical approach to the research topic. "*Medical education*", "*psychology*", and "*decision making*" show that there is a broad literature on medical education, psychological aspects, and decision-making in education. Overall, the main topics in the study are teaching, students, and learning, with human issues, gender, educational technology, and qualitative research emerging significantly. It shows the diversity in the literature analyzed, covering a wide range of disciplines and methodological approaches.

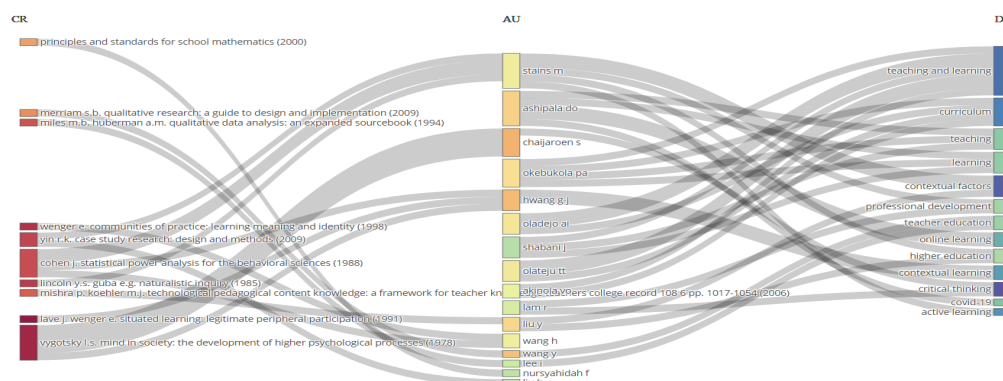


Figure 7. Three-Field Plot that displays the relationship between three important elements in bibliometric research: CR (Cited References), AU (Authors), and DE (Author's Keywords or Descriptors)

In the Cited References (CR) analysis, some of the most frequently cited reference sources show a major focus on pedagogy and educational standards. Books such as "*Principles and Standards for School Mathematics*" (2000) appear frequently, indicating his interest in mathematics education. Qualitative methodological references such as "*Qualitative Research: A Guide to Design and Implementation*" by Merriam (2009) and "*Qualitative Data Analysis: An Expanded Sourcebook*" by Miles & Huberman (1994) also dominate, signaling the frequently used qualitative research methods. In addition, seminal works such as "*Communities of Practice*" by Wenger (1998) and "*Mind in Society*" by Vygotsky (1978) affirm the influence of social and constructivist learning theories.

In terms of lead authors (AUs), names like Stains M, Ashipala DO, and Chaijaroen S stand out for their contributions in the field of teaching and learning. Okebukola PA and Hwang GJ are known for their research related to contextual learning, while Akinjola BY and Lam R contribute to professional development and educational innovation. Author's keywords (DE) such as *teaching and learning*, *curriculum*, and *contextual learning* show a focus on how learning is organized and applied, including factors that affect teaching effectiveness. In addition, keywords such as *professional development*, *higher education*, and *critical thinking* indicate a strong interest in teacher professional development and innovation in higher education. The trend of online learning and adaptation to the COVID-19 pandemic has also emerged with keywords such as *online learning* and *COVID-19*.

Overall, this analysis reveals that the main themes in the current research are the integration of theory and practice in auditor education, as well as the application of technology in contextual learning. Keywords such as *e-learning*, *professional development*, and *critical thinking* highlight the latest trends in the use of technology and critical skills development for auditors.

5. Co-citation and Bibliographic Coupling Analysis

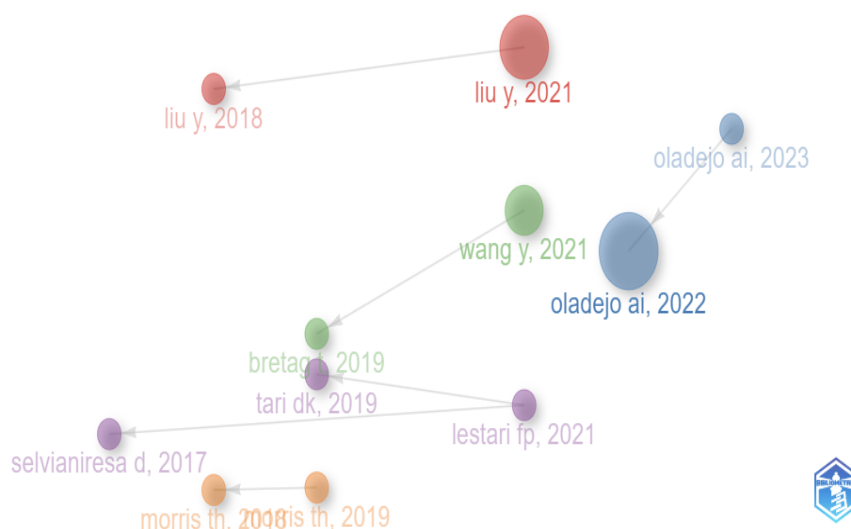


Figure 8. Historiograph that displays historical maps of major scientific works in a field of study

The work of Liu Y., 2018 and Liu Y., 2021 has a significant influence on the historiography of this study, with Liu's work in 2021 showing a greater impact. This shows that the ideas from the 2018 work are expanded and accepted more widely by the academic community. Oladejo AI, 2022 and Oladejo AI, 2023 also emerged as important works, with consistent progression from previous research to more recent ones, demonstrating continuity in Oladejo's research that attracted further attention.

The relationship between works such as Bretag T., 2019, DK Dance, 2019, and more recent research such as Wang Y., 2021 and Oladejo AI, 2022 suggests that works from 2019 provide a theoretical foundation for subsequent studies. Selvianiresa D., 2017 and Morris T.H., 2019 appear to be part of the foundation of the initial research, providing an important basis for the study that developed afterwards.

The progression from Liu Y., 2018 to Liu Y., 2021 shows that the topics raised have become more relevant over time, with significant contributions to the literature. The co-citation analysis shows that the work of Liu Y. (2018) and Bretag T. (2019) is a widely referenced seminal research. While bibliographic coupling shows a close relationship between studies focused on educational technology and contextual learning, especially in the development of skills of internal auditor candidates (Mutiaraningrum et al. 2024).

6. Conceptual Mapping and Future Research Trends

Mapping emerging new topics.

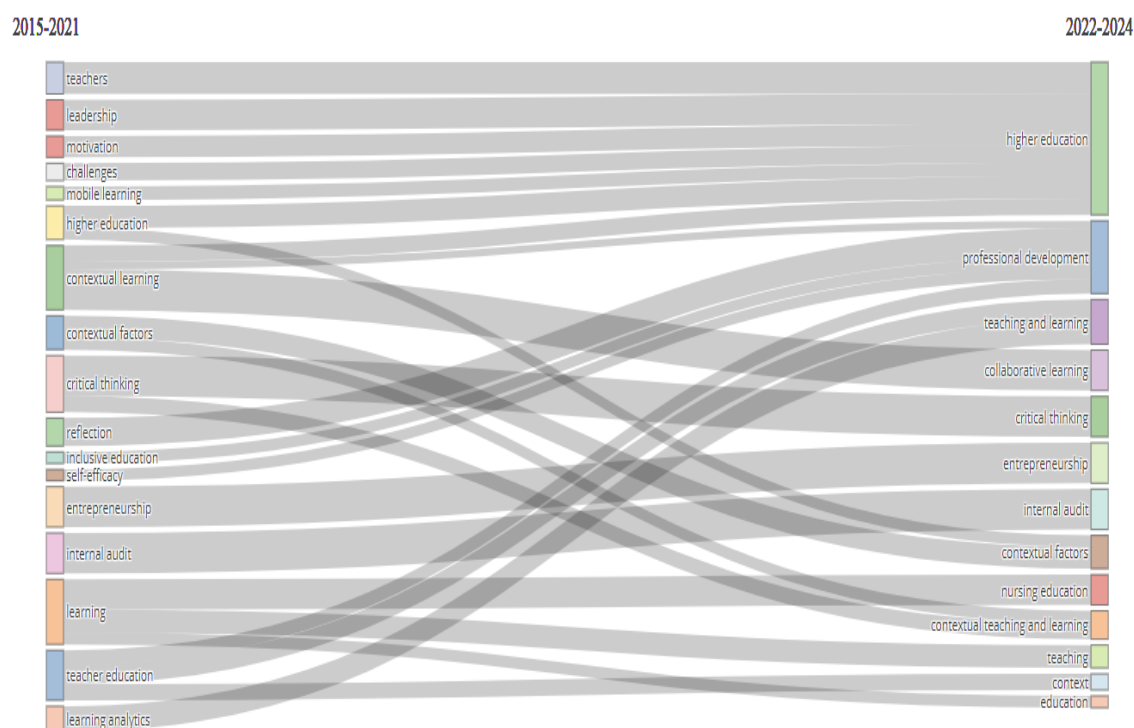


Figure 9. Thematic Evolution Map, which shows the development of research themes from the 2015-2021 period to the 2022-2024 period

In the 2015-2021 period, the main themes in the literature focused on *teachers*, *leadership*, *motivation*, *higher education*, *mobile learning*, *contextual learning*, and *critical thinking*. Research during this period discussed many aspects of education, especially how to improve the quality of education through the role of teachers, leadership, and contextual learning. Entering the 2022-2024 period, *higher education* remains the

dominant theme, reflecting the continuity of the focus on higher education in the face of global change. New themes like *professional development*, *teaching and learning* and *collaborative learning* emerged in response to the need for more interactive learning (Murshed and Uddin 2024). Moreover *critical thinking* remains a priority, demonstrating the importance of developing critical thinking skills in the field of education (Sahoo and Mohammed 2018). Themes like *entrepreneurship* and *internal audit* also began to gain greater attention in these two periods (Hsiao, Low, and Scott 2024).

New themes like *nursing education* and *contextual teaching and learning* emerged in 2022-2024, showing increased attention to special education such as nursing (Nuis, van der Baan, and Beausaert 2024). *Teaching, context and education* also a broader theme, reflecting an increasingly holistic and interdisciplinary approach to research (Graf et al. 2024). There is an evolution of themes where some themes from previous periods, such as *contextual factors* and *contextual learning*, developed into *contextual teaching and learning* (Mussaiyib and Pradhan 2024). In addition, themes such as *motivation* and *leadership* from the previous period seems to have been fused or integrated in a more specific theme in the later period (Maharani et al. 2024).

Potential areas for future research.

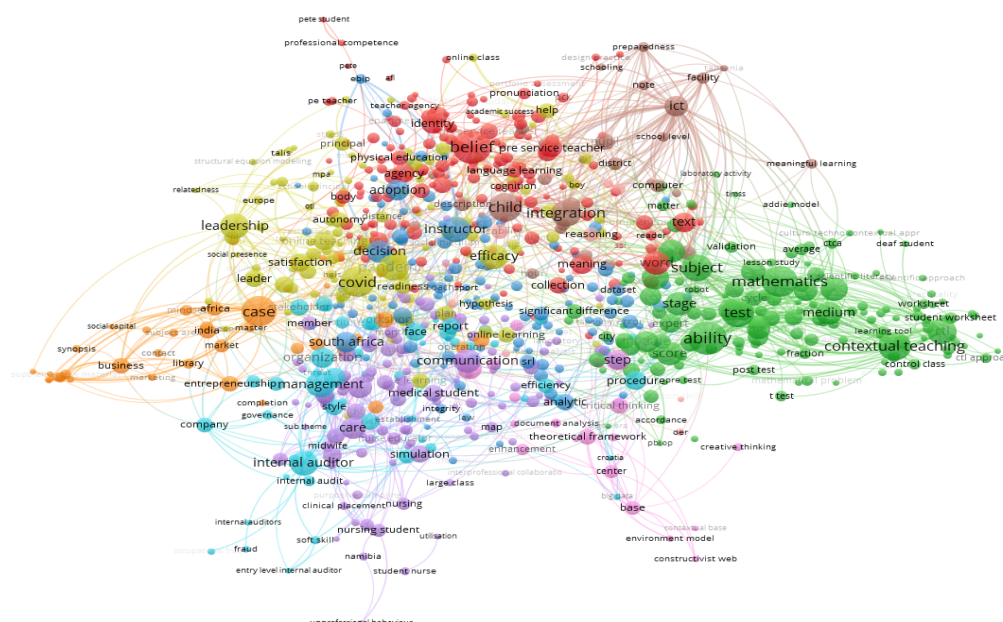


Figure 10. Network Visualization that shows the relationship between different concepts or keywords in the analyzed literature

The study revealed five main clusters in the study *contextual learning* relevant to a wide range of educational, management, and business topics. The green cluster focuses on educational aspects, especially in the teaching of mathematics, testing, and student abilities through a contextual teaching approach. The research in this cluster highlights the importance of a learning approach that links theory to real contexts, where students can apply knowledge directly, especially in the field of mathematics (Ruel and Tajmel 2024).

The red cluster emphasizes on aspects of teaching, self-confidence, and integration in children's education. Keywords like *beliefs*, *integration* and *efficacy* shows that the research in this cluster focuses on how teachers' confidence in managing classrooms

and educational integration can affect student learning outcomes, especially in children's education (Bao et al. 2024). The blue cluster is more inclined to research related to business management, particularly in internal audits and the use of simulations for risk management or corporate efficiency. The research in this cluster explores how simulation and internal audit play a role in improving the quality of corporate governance and business risk management (Yangchen et al. 2024).

The yellow cluster discusses leadership issues and case studies, with special attention to the impact of COVID-19. The pandemic has been a major focus in this cluster, with numerous studies highlighting how leaders in different sectors of business and education are managing the challenges that arise during times of crisis, and how case studies help analyze successful approaches (Kazemian and Grant 2024). The orange cluster is closely related to entrepreneurship and business engagement, highlighting the dynamics and challenges faced by entrepreneurs. Research in this cluster addresses important aspects of running a business, such as innovation, business strategy, and active engagement in the competitive business world (Śliwa et al. 2024).

Although each cluster has a different focus, they are all connected through overlapping themes (Trevisan et al. 2024). For example, the green cluster (education) is closely related to the red cluster (trust and integration), which shows the relationship between teaching, educational psychology, and the influence of confidence in teaching (Agustina, Mutia, and Azizi 2024). Leadership and business clusters (yellow and orange) indicate that the leadership strategy play an important role in entrepreneurship and Business adaptation during times of crisis such as the pandemic (Cenkci and Bircan 2024).

Several central themes, such as communication, integration, and efficacy, emerged as the main link between clusters (Riapina 2024). COVID-19 has also been a key theme linking various studies on leadership, management, and education, demonstrating the widespread impact of the pandemic across various disciplines (Şahin et al. 2024). This network visualization shows the close relationship between the themes and topics analyzed, reflecting the multidisciplinary approach to this literature.

The research also identifies emerging new topics, such as Virtual-based audit simulation (Vejačka 2024) Use Big Data in audits (Aria 2024), and the development of soft skills through contextual learning. New technologies such as *artificial intelligence* (AI) and *machine learning* emerging as a potential area to be applied in future auditor training (Sri Tulasi and Inayat Ahmed 2024). Future studies are expected to explore how this technology can be effectively integrated into auditor curricula, to prepare aspiring auditors to be more adaptive and ready to face the challenges of the modern world of work.

CONCLUSION

This bibliometric research has provided in-depth insights into developments and trends in the literature related to *contextual learning* in an effort to improve the skills of prospective internal auditors. Based on the results of the analysis, some of the main findings can be summarized as follows:

Summary of the main findings from the bibliometric analysis.

This study found that there was a significant increase in literature related to *contextual learning* and the improvement of the skills of prospective auditors. Many studies

emphasize the importance of integration between theory and practice, as well as the use of modern technology in learning.

There has been a significant increase in the number of publications related to *contextual learning* and skill development of internal auditor candidates since 2018. This shows that this topic is gaining increasing attention among researchers, especially related to the relevance of contextual skills in the modern world of work

The United States, the United Kingdom, and Australia dominate research in this area, demonstrating that these countries have made a significant contribution to the development of contextual learning theory and practice. However, Indonesia has also shown a significant increase in research contributions, signaling a strong focus on improving the quality of education and professional training.

Writers like Bretag T., Liu Y., and Harper R. dominate citations in this area, suggesting that their work became the main foundation for further research. The co-citation analysis shows that their research is often referenced in studies that focus on the integration of technology and contextual learning in education.

Keywords that often appear in the literature include *teaching, learning, contextual learning*, and skills development, which reflects the main focus on the integration of theory and practice in auditor education. In addition, collaborative learning and technology-enhanced learning are also important topics that continue to grow.

Relevance of findings for curriculum development and auditor candidate training.

The results of this analysis show that there is a need to design a more contextual and problem-based curriculum for auditors. Educational institutions and training of internal auditors need to integrate *soft skills, technology*, and **practical simulations** in their teaching.

This research makes an important contribution to the development of curriculum in the field of auditor education, especially in terms of integrating technology and problem-based approaches. Future research is suggested to focus more on developing adaptive, innovative, and sustainable learning methods to ensure prospective auditors have relevant skills in the professional world.

Limitations in the use of databases and analysis. The limitations of this study lie in the limitations of the database sources used and the time span of publications analyzed. Older publications may not be fully covered, which may affect the overall understanding of the historical development of this topic.

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***Basuki (Corresponding Author)**

Sultan Ageng Tirtayasa University, ¹Tangerang Muhammadiyah University
Jl. Raya Jkt No.3, Sindangsari, Kec. Pabuaran, Kota Serang, Banten 42163
Email: 17782220031@untirta.ac.id, 1mr.basuki.tng@gmail.com

Sholeh Hidayat

Sultan Ageng Tirtayasa University,
Jl. Raya Jkt No.3, Sindangsari, Kec. Pabuaran, Kota Serang, Banten 42163
Email: sholeh.hidayat@untirta.ac.id

Cecep Anwar Hadi Firdos Santosa

Sultan Ageng Tirtayasa University,
Jl. Raya Jkt No.3, Sindangsari, Kec. Pabuaran, Kota Serang, Banten 42163
Email: cecepanwar@untirta.ac.id
