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Bridging the Skills Gap Among Youth: A Bibliometric Analysis of Research Trends and Employability Outcomes (2002–2025)

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Abstract:
This study conducts a comprehensive bibliometric analysis of global research on skill gaps among youth spanning 2002 to 2025. Drawing on 408 publications from the Scopus database, the analysis highlights research trends, influential authors, sources, and citation patterns in the field. Findings reveal a strong focus on employability, digital literacy, and competency development, with notable disparities in contributions between developed and developing nations. Thematic mapping identifies key areas of emphasis, including youth employability, human capital, and digital skill integration. The study underscores the growing importance of aligning education and training systems with labor market needs. Insights gained serve as a roadmap for policymakers, educators, and industry leaders to design targeted interventions that foster workforce readiness, equity, and sustainable economic growth.

Keywords:
Skill Gap, Youth Employability, Bibliometric Analysis, Workforce Readiness.

Introduction:

In today's rapidly evolving global economy, the alignment between the skills possessed by the youth and the demands of the labor market is paramount. This alignment not only influences individual career trajectories but also significantly impacts broader economic development and societal well-being. However, a discernible gap often exists between the competencies of young professionals and the expectations of employers, commonly referred to as the "skill gap." Understanding and addressing this disparity is crucial for fostering a workforce that is both competent and adaptable. The concept of skill gaps has become increasingly relevant in contemporary discourse on employment, education, and economic development. A skill gap refers to the disparity between the skills possessed by individuals and those required by employers to effectively perform job roles (World Economic Forum, 2020). The phenomenon

is particularly pronounced among youth, who are often at the intersection of completing their education and entering the workforce. Addressing skill gaps among youth is critical not only for individual career progression but also for societal growth, as young people constitute a significant proportion of the global labor force (International Labour Organization [ILO], 2021).

One of the primary factors contributing to skill gaps among youth is the rapid pace of technological advancements and industrial transformations. The Fourth Industrial Revolution has brought about significant shifts in job requirements, emphasizing digital literacy, critical thinking, and adaptability (Schwab, 2017). However, traditional education systems have struggled to keep pace with these changes, resulting in a gap between academic curricula and industry needs (McKinsey Global Institute, 2021).

Bibliometric analysis is an effective method to systematically evaluate the body of literature on skill gap analysis among youth. By employing quantitative methods to assess academic publications, bibliometric studies provide insights into research trends, thematic focuses, and collaborative networks within a specific field (Aria & Cuccurullo, 2017). Such analyses are instrumental in identifying prevailing gaps in knowledge and highlighting areas necessitating further scholarly exploration.Recent bibliometric studies have shed light on various facets of employability and skill development. For instance, Rathee and Mittal (2024) conducted a comprehensive bibliometric analysis focusing on employability skills among work-ready professionals in higher education. Their research synthesized prior studies and identified gaps that future investigations should address, thereby offering a roadmap for enhancing graduate employability through targeted skill development initiatives.

Similarly, Thakur et al. (2023) explored the intersection of skill development, youth employability, and digitalization. Utilizing VOSviewer for their bibliometric analysis, they emphasized the pivotal role of digital technologies in bridging skill gaps and enhancing employment prospects for the youth. Their findings underscore the necessity for integrating digital competencies into skill development programs to meet the evolving demands of the labor market.

Moreover, Devi et al. (2024) presented a bibliometric analysis of skill development training and employability, aiming to identify emerging research trends and propose a future research agenda. Their study highlighted a growing trend in publications on skill development, suggesting ample scope for future research. The thematic analysis identified principal dimensions and directions of research, providing a foundation for policymakers to redesign interventions aimed at enhancing employability and promoting sustainable economic growth.

Despite these contributions, there remains a pressing need for a focused bibliometric analysis specifically addressing the skill gap among youth in relation to their career outcomes. Such an analysis would consolidate existing knowledge and illuminate pathways for future research and policy formulation. By systematically mapping literature on this topic, educators, policymakers, and industry leaders can develop targeted strategies to equip youth with the necessary skills for successful workforce integration (Zupic & Čater, 2015).

In conclusion, conducting a bibliometric analysis on skill gap analysis among youth and their careers is both timely and essential. It promises to provide a comprehensive understanding of the current research landscape, identify critical areas for further investigation, and inform the

development of effective interventions to bridge the skill gap. Such efforts are vital for cultivating a resilient and proficient workforce capable of thriving in an increasingly complex and dynamic global economy.

Objectives of the study:

- The study examines the annual growth rate, document average age, and average citations per document to understand the evolution of research in this field.
- The study highlights the most relevant authors and their contributions, as well as the most influential academic sources and journals.
- The study evaluates the average citation per year of papers and identifies the most globally cited documents and countries with the highest number of citations.
- The study categorizes themes based on their development and relevance, identifying niche themes, motor themes, emerging or declining themes, and basic themes.

Research methodology:

The present study employs a bibliometric analysis to explore research trends and patterns within the selected domain. The bibliometric data was retrieved from the Scopus database, one of the most comprehensive and reliable sources of academic publications. For this research study, we use RStudio for bibliometrics analysis.

Keywords selection:

"Skill Gap Analysis" OR "Skills Gap" OR "Skills Mismatch" OR "Skill Development" OR "Skill Enhancement" OR "Skill Acquisition" AND "Youth" OR "Young People" OR "Young Adults" AND "Performance" OR "Workforce Readiness" OR "Employability" OR "Competency Development" OR "Career Preparedness" OR "Job Skills Requirements".

The analysis spans the period from 2002 to 2025, ensuring an extensive coverage of research publications over two decades. Initially, a total of 880 research papers were identified.

Filteration and final selection:

To refine the dataset, several inclusion and exclusion criteria were applied. The subject area filter focused on five key disciplines: Psychology, Social Sciences, Arts and Humanities, Business Management and Accounting, and Multidisciplinary studies. This filtering process reduced the dataset to 419 relevant publications. Subsequently, document type filters were applied to include articles, conference papers, book chapters, and reviews, narrowing the selection to 411 documents. Further refinement was conducted by applying a language filter, where only English-language publications were considered, resulting in a final dataset of 408 documents for detailed analysis.

The methodology follows a systematic approach to ensure the reliability and relevance of the data. The selected documents were analyzed using bibliometric indicators such as publication trends, subject-specific contributions, citation analysis, and authorship patterns. This rigorous methodology ensures that the study provides valuable insights into the evolution and current state of research within the chosen domain.

Findings and Scholarly Insights:

Main information about the data

Timespan	2002:2025
Sources (Journals, Books, etc)	217
Documents	404
Annual Growth Rate %	0
Document Average Age	7.29
Average citations per doc	18.88
References	0
DOCUMENT CONTENTS	
Keywords Plus (ID)	1725
Author's Keywords (DE)	1193
AUTHORS	
Authors	
Authors of single-authored docs	1421
AUTHORS COLLABORATION	36
Single-authored docs	
Co-Authors per Doc	36
International co-authorships %	3.84
DOCUMENT TYPES	21.53
article	
book chapter	364
conference paper	26
review	8
review article	5
	1

Key Contributors and Influential Authors

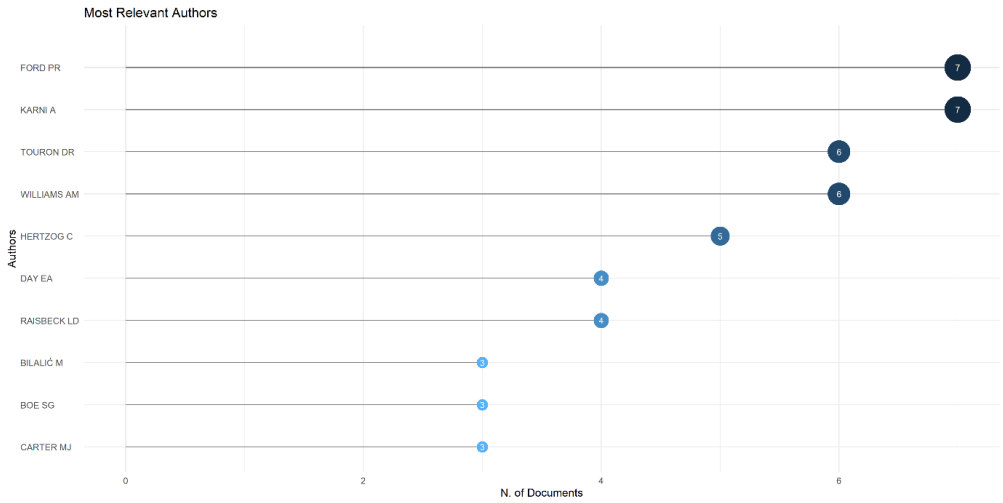

Figure 1

Based on the quantity of published documents, the most pertinent writers are highlighted in Figure 1. With seven papers apiece, authors Ford PR and Karni A top the list, followed by Touron DR and Williams AM, who each contributed six documents. While Day EA and Raisbeck LD each have four publications, Hertzog C has five. With three documents apiece, authors Bilalić M, Boe SG, and Carter MJ complete the list. This distribution highlights the important contributions made by a select group of important authors in the subject, demonstrating their active participation and impact.

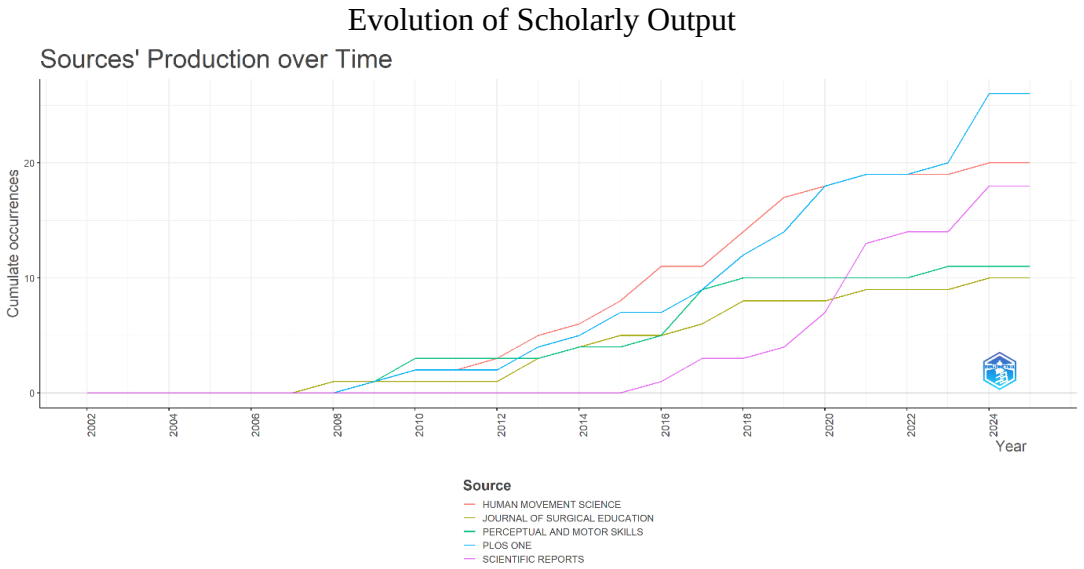

Figure 2

Figure 2 illustrates the cumulative occurrences of publications from five distinct academic sources from the year 2002 to 2024. The sources include:

- HUMAN MOVEMENT SCIENCE (red)
- JOURNAL OF SURGICAL EDUCATION (green)
- PERCEPTUAL AND MOTOR SKILLS (blue)
- PLOS ONE (purple)
- SCIENTIFIC REPORTS (yellow)

The y-axis represents the cumulative occurrences of publications, while the x-axis denotes the years. The graph reveals a general upward trend in the publication output from these sources, with significant growth beginning around 2010. Each source demonstrates varying rates of increase, reflecting their individual contributions to the academic landscape. The analysis highlights the rising influence and prominence of these journals in academic research over the observed period.

Leading Journals

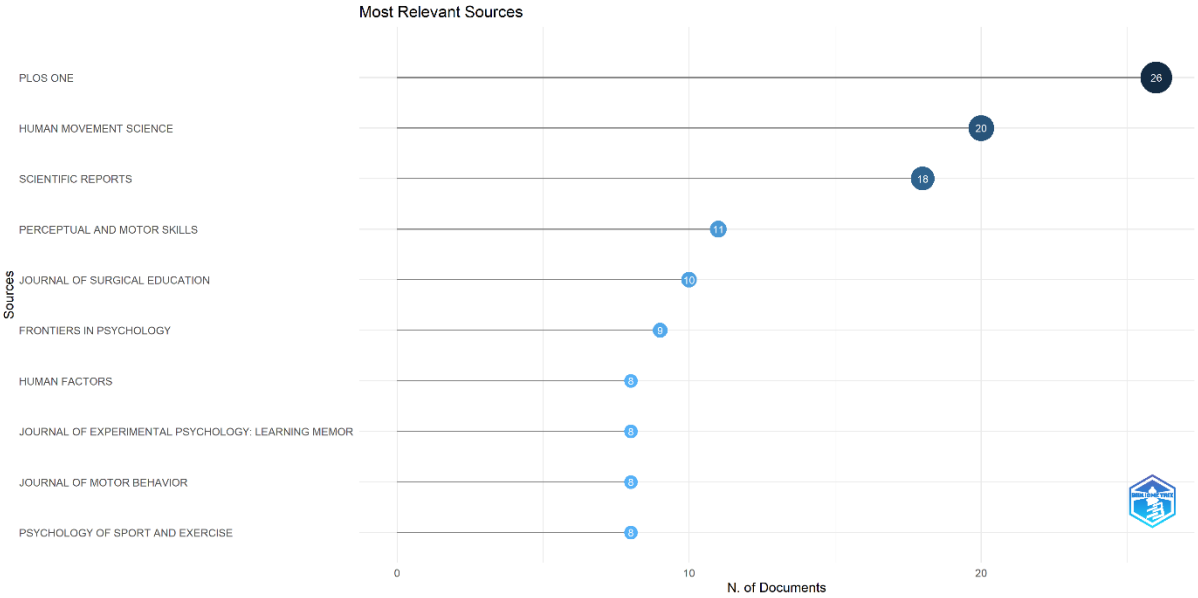

Figure 3

Figure 3 lists the top scholarly journals and publications according to the quantity of papers they have produced. These sources' significance and impact among the academic community are reflected in the statistics. The top sources are:

1. **PLOS ONE**: 26 documents
2. **Human Movement Science**: 20 documents
3. **Scientific Reports**: 18 documents
4. **Perceptual and Motor Skills**: 11 documents
5. **Journal of Surgical Education**: 10 documents
6. **Frontiers in Psychology**: 9 documents
7. **Human Factors**: 8 documents
8. **Journal of Experimental Psychology: Learning, Memory, and Cognition**: 8 documents
9. **Journal of Motor Behavior**: 8 documents
10. **Psychology of Sport and Exercise**: 8 documents

Citation Trends and Research Influence

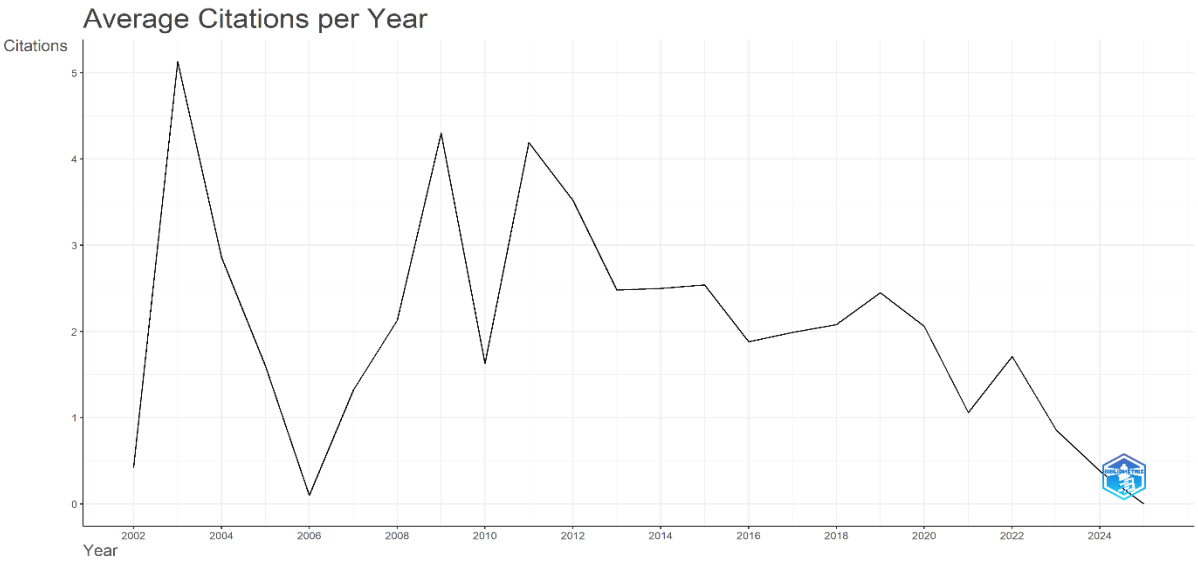

Figure 4

This figure 4, depicts the trend of average citations per year over the observed time period. Initially, there is a significant rise, peaking around 2003-2004, followed by a sharp decline around 2006. The trend remains inconsistent, with periods of fluctuations observed between 2008 and 2016. After 2016, a steady decline is evident, with the lowest average citations recorded in 2024. This downward trend in recent years suggests a possible reduction in the influence or reach of published articles, warranting further investigation into the factors contributing to this decline.

Most global cited documents:

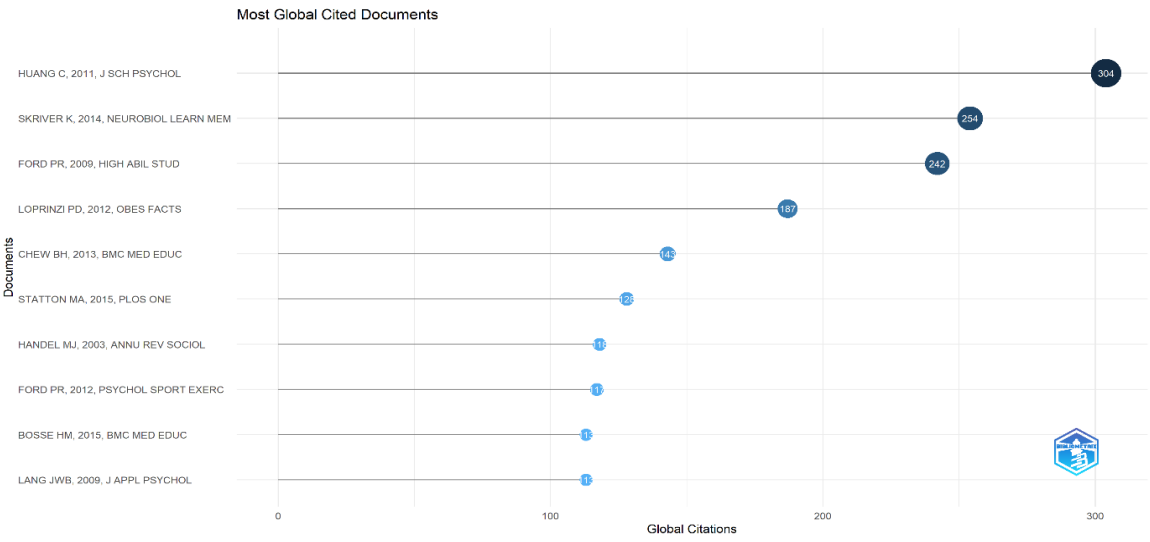

Figure 5

Figure 5 provides an analysis of the top 10 academic documents with the highest number of global citations. The data highlights the significant impact and influence of these documents within the academic community. The three most cited documents are:

- HUANG C, 2011, Journal of School Psychology - 304 citations
- SKRIVER K, 2014, Neurobiology of Learning and Memory - 254 citations
- FORD PR, 2009, High Ability Studies - 242 citations

This chart emphasizes the prominence of these documents as pivotal references in their respective fields, illustrating their contribution to ongoing research.

Most cited documents or articles

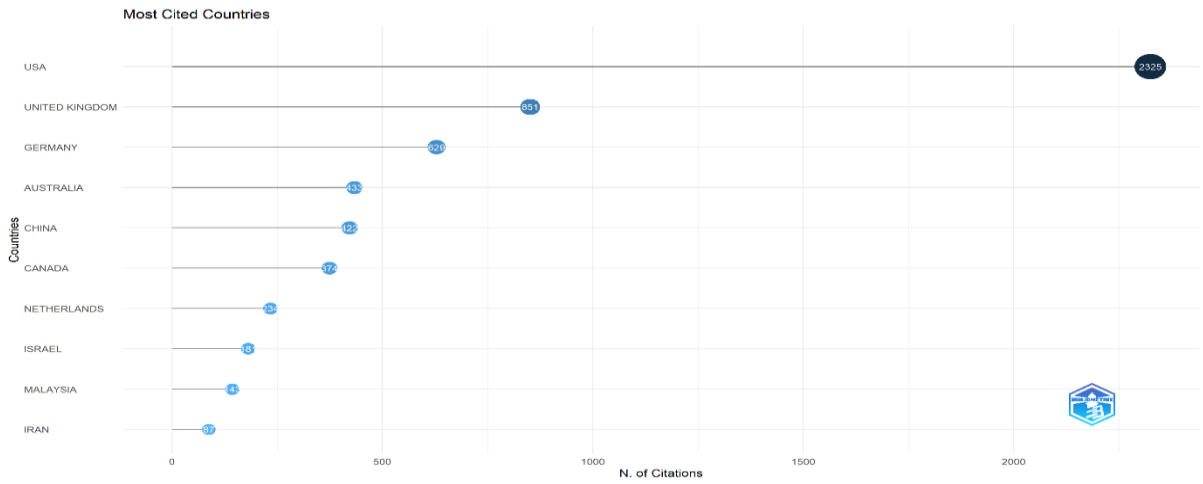

Figure 6

The bar chart titled "Most Cited Countries" provides a comprehensive analysis of the number of academic citations received by various countries, showcasing their research influence and impact. The data is as follows:

- **USA**: 2325 citations
- **United Kingdom**: 851 citations
- **Germany**: 629 citations
- **Australia**: 433 citations
- **China**: 422 citations
- **Canada**: 374 citations
- **Netherlands**: 234 citations
- **Israel**: 181 citations
- **Malaysia**: 143 citations
- **Iran**: 87 citations

This chart highlights the prominence of these countries in the global research landscape, with the USA leading by a significant margin. The citation counts reflect the academic contributions and the international recognition of research outputs from these countries.

Trends in Annual Research Productivity

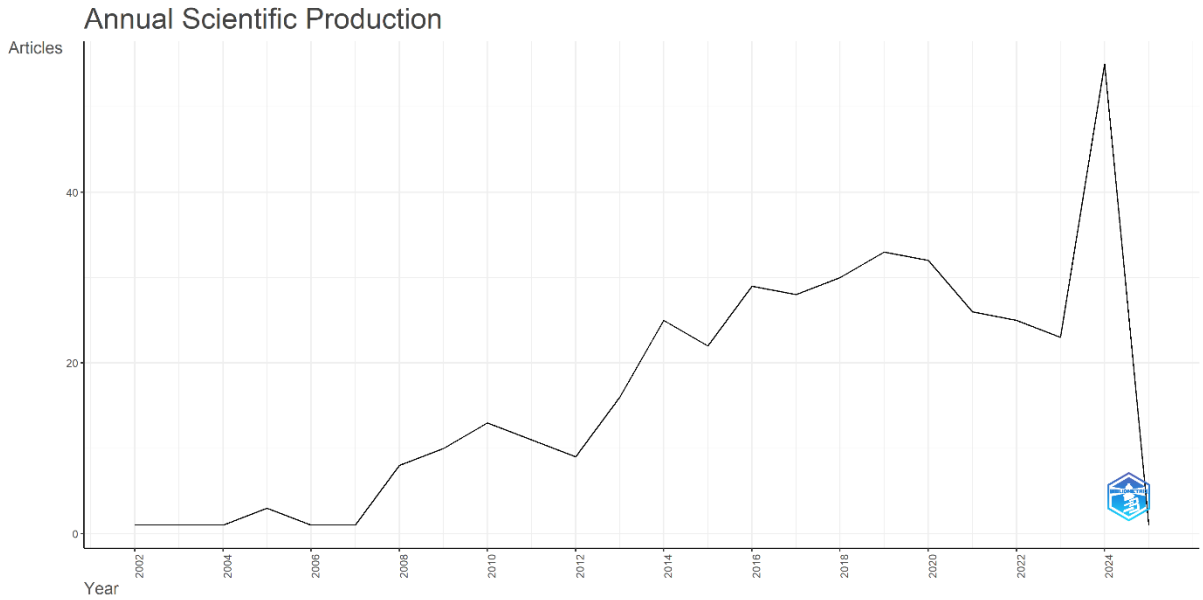

Figure 7

This figure illustrates the annual scientific production over a specified time period. The data shows a fluctuating trend with periods of both growth and decline. Between 2000 and 2010, the output remained relatively low, with minor increases. From 2012 onwards, a steady increase is observed, peaking in 2023 with the highest number of publications, indicating significant growth in research activity during this period. However, there is a sharp decline in 2024, suggesting a possible reduction in productivity or data availability for that year. This trend highlights the dynamic nature of research output and suggests further investigation into factors contributing to these variations.

Thematic Structure and Research Clusters

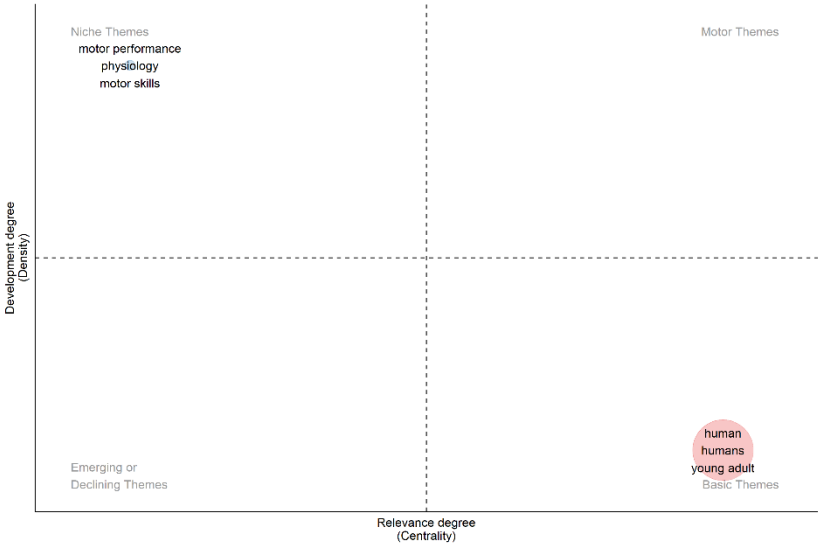

Figure 8

This thematic map categorizes themes based on two metrics: their development degree (Density) and their relevance degree (Centrality). The map is divided into four quadrants:

1. **Niche Themes** (top-left): These themes are highly developed but not very relevant. They include:
    - motor performance
    - physiology
    - motor skills
2. **Motor Themes** (top-right): This quadrant is empty, indicating no themes with both high development and high relevance.
3. **Emerging or Declining Themes** (bottom-left): This quadrant is also empty, indicating no themes with low development and low relevance.
4. **Basic Themes** (bottom-right): These themes are not very developed but highly relevant. They include:
    - human
    - humans
    - young adult

The x-axis represents relevance (Centrality), and the y-axis represents development (Density). This map is helpful for identifying areas of focus or neglect in a particular field.

Conclusion:

The findings of this research underscore the importance of addressing the skill gap among youth to foster sustainable economic development and enhance individual employability. The bibliometric analysis conducted on the literature from 2002 to 2025 has provided valuable insights into the evolution of research on skill gaps, highlighting key trends, thematic focuses, and significant contributions from scholars and institutions. These insights serve as a foundation for formulating effective policies and strategies to bridge the skill gap and align youth competencies with the demands of the labor market.

A significant observation from the analysis is the growing emphasis on digital literacy, critical thinking, and adaptability, driven by the Fourth Industrial Revolution. The integration of these competencies into educational curricula and training programs is essential for preparing the workforce for future challenges. Furthermore, the role of public-private partnerships in enhancing skill development initiatives has emerged as a pivotal factor in addressing the gap.

The thematic analysis revealed a diverse range of research areas, with certain themes demonstrating high relevance and developmental potential. These include employability, digital skills, and competency development. However, the study also identified gaps in existing literature, particularly in understanding the nuanced relationship between skill development initiatives and long-term career outcomes for youth. These gaps present opportunities for future research to explore innovative approaches and methodologies.

Geographically, the analysis highlighted disparities in research output and citations, with developed countries such as the USA, UK, and Germany contributing significantly to the body of knowledge. In contrast, developing countries, including India, have shown promising growth in publications but require more robust contributions to global discourse. Addressing these disparities through international collaboration and resource sharing can enrich the global understanding of skill gaps and their solutions.The study's objectives, including the examination of research trends, identification of influential authors and sources, and analysis of thematic categorizations, have been effectively achieved. The comprehensive methodology employed, utilizing tools such as RStudio and VOSviewer, ensures the reliability and validity of the findings. By systematically mapping the research landscape, this study provides a roadmap for educators, policymakers, and industry leaders to implement targeted interventions.

Moving forward, it is imperative to adopt a holistic approach to bridging the skill gap among youth. This includes revising educational policies, fostering industry-academia collaboration, and leveraging technological advancements to deliver scalable and inclusive training programs. Additionally, addressing socio-economic barriers that hinder access to quality education and skill development opportunities is critical for ensuring equity and inclusivity.

In conclusion, the research highlights the dynamic and multifaceted nature of skill gaps and their impact on youth employability and economic growth. By synthesizing existing knowledge and identifying areas for further exploration, this study contributes to the global effort to create a resilient and future-ready workforce. The insights gained from this bibliometric analysis not

only enrich academic discourse but also offer practical implications for shaping the future of skill development and workforce integration.

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