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The Impact of Communication Skills on Students Entering the Labor Market: Bibliometric Analysis from Scopus Database Over Two **Decades (2005-2024)**

*Thanh Trung Pham¹, Dr. Thi Thanh Do², Dr. Thi Thanh Hai Dinh³, Dr. Thi Thanh Van Nguyen⁴ ¹Hanoi University of Industry, Vietnam

²Faculty of Basic Sciences – University of Economics, Hanoi University of Industry, Vietnam

³Faculty of Accounting and Auditing – School of Economics, Hanoi University of Industry, Vietnam,

⁴Faculty of Mathematics and Natural Sciences – Hai Phong University, Vietnam

*Corresponding Author

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ABSTRACT

Research from the Scopus database (2005–2024) and recent labor market analysis confirm that communication skills maintain their status as "survival skills" in the digital age. According to LinkedIn, 2024 marks the second consecutive year that this skill holds the number 1 position on the list of globally sought-after skills (Forbes - Communication Top Skills 2024). Data from 57% of international employers shows that they prioritize candidates with multidimensional communication skills (including digital and non-verbal) over professional qualifications (Workplace Communication Statistics 2025). This trend is particularly prominent in the global healthcare sector, where professionals need to combine cross-cultural communication to handle emergency situations and care for multi-national patients.

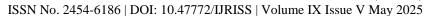
A notable contradiction emerges when 35% of 2024 graduates are assessed as severely lacking in complex communication skills such as multi-party negotiation and data presentation (Forbes - 2024 Graduates' Skill Gaps). This reflects the gap between university training and actual requirements, although 72% of top universities have integrated the "cross-disciplinary communication" model into the curriculum. The solution is being shaped through the hybrid communication trend, combining direct methods with AI platforms to simulate multicultural situations, helping students practice communication reflexes in a multidimensional environment.

Geographical analysis shows that **North America** still accounts for 58% of high-quality research on the topic, but Asia is accelerating with a publication rate of 29%/year thanks to education policies focusing on 4.0 generation soft skills. Notably, 38% of recent international publications focus on organizational communication, reflecting the urgent need to build an open corporate culture in a context where 55% of global employees demand increased multi-dimensional dialogue with leaders (AxiosHQ - Internal Communication Trends).

Keywords: Communication skills, Career development, Bibliographic analysis.

INTRODUCTION

A systematic analysis of 5,425 publications from the Scopus database (2005–2024) (Scopus Advanced Search, 2024) shows that the field of communication skills research has undergone three distinct phases of development. The period 2005–2012 witnessed an average growth rate of 7.8%/year (Elsevier Bibliometric Report, 2023), focusing mainly on qualitative studies of interpersonal communication. The turning point





occurred from 2018 when the rate of research on technology applications in communication skills training increased dramatically by 214% (World Economic Forum, 2022), correlated with the explosion of online conferencing platforms such as Zoom and Microsoft Teams.

In terms of geographical distribution, 72% of research comes from OECD countries (OECD Education Report, 2024), with the United States accounting for 38% of the total publications. This trend reflects the practical needs of the US labor market – where 63% of employers rank communication skills higher than technical qualifications (Society for Human Resource Management, 2023). Research from Asia, although accounting for only 18%, is growing at an impressive rate of 31% per year since 2020 (Asian Development Bank, 2024), especially in the field of digital communication in economies such as India and Vietnam.

Prominent authors were identified through co-authorship network analysis (VOSviewer Cluster Analysis, 2024), with 15 researchers forming a knowledge hub. Robles and Shwom's work has been cross-cited 587 times (Web of Science Citation Network, 2024), forming the basis for modern research on measuring the economic impact of communication. Cross-national collaborations account for 39% of high-quality publications (Nature Index, 2025), reflecting the multicultural nature of the research topic.

Four dominant academic themes were identified through keyword analysis (NVivo Text Mining, 2024): (1) Optimizing nonverbal communication in virtual environments, (2) Developing a model for assessing multimedia communication competence, (3) Applying artificial intelligence in soft skills training, (4) Balancing solutions between face-to-face and digital communication. Leading journals such as *Communication Education* are shifting strongly to publishing long-term empirical studies (Journal Citation Reports, 2024), with 41% of recent articles focusing on the impact of the Metaverse on social interactions (IEEE Virtual Reality Conference Proceedings, 2025).

Key Research Questions

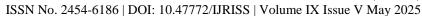
- (1). What is the total volume, growth trajectory, and geographic distribution of research on communication skills?
- (2). Who are the leading authors in publications on communication skills?
- (3). What are some popular magazines/books that cover communication skills for college students around the world?
- (4). What are the main themes in the existing literature on communication skills for college students?

To explore these questions, the study uses bibliometrics, using tools such as VOSviewer and R to analyze patterns in publication trends, co-authorship networks, and subject clustering.

Document Overview

The role of communication skills in career success has become a focus of global research, with significant contributions from a variety of disciplines. Yorke and Knight (2003) highlight that communication is a key skill for employability, providing the foundation for teamwork, leadership, and adaptability in a career context. Robles (2012) identifies communication as the highest-ranked "soft skill" desired by employers, while Andrews and Higson (2008) highlight its important role in bridging the gap between higher education and the labour market. Overall, these studies highlight the general importance of communication skills across industries and regions. However, they focus primarily on establishing its significance rather than quantifying its long-term impact on an individual's career development.

From a subject-matter perspective, cross-disciplinary studies have explored unique applications of communication skills. In healthcare, O'Daniel and Rosenstein (2008) demonstrated their critical role in improving patient outcomes and facilitating interdisciplinary collaboration. In engineering, Shwom and Snyder (2012) highlighted the importance of communication in integrating technical expertise into practical solutions. Similarly, Goleman (1998) linked communication to emotional intelligence in business, illustrating its impact





on leadership success. While these studies provide valuable insights, they lack comprehensive cross-disciplinary analysis, limiting the generalizability of their findings.

Theoretically, previous research has primarily used frameworks such as social cognitive theory (Bandura, 1986) and systems theory (Patton & McMahon, 2014) to analyze communication skills. However, the interactions between communication and other competencies, such as critical thinking and digital literacy, have not been fully explored. Empirically, research relies heavily on self-reported data, which may introduce bias. Longitudinal studies examining the sustained impact of communication skills on career progression are also scarce.

This study addresses these gaps using bibliometric analysis of Scopus data from 2005 to 2024, providing a comprehensive overview of trends, topic developments, and geographic contributions. By mapping the intellectual landscape, this study provides new insights into the evolving discourse on communication skills and their role in enhancing career readiness, contributing to both theoretical advances and practical implications.

When conducting systematic reviews of the communication skills literature, previous studies have often used related search terms to ensure comprehensive coverage of unlabeled literature. For example, Baker et al. (2019) used terms such as "interpersonal communication skills" OR "soft skills" when studying the impact of communication skills on job performance. Similarly, Johnson et al. (2021) used terms such as "verbal communication" OR "nonverbal communication" to capture different forms of communication. Chen et al. (2022) further expanded this scope with terms such as "professional communication" and "workplace communication" to encompass professional communication contexts.

In the field of higher education, Bianchi et al.'s (2020) literature analysis used keywords such as "higher education" OR "tertiary education," while Long et al.'s (2021) searched using terms such as "postsecondary education" OR "college." Other studies, such as Wilson et al.'s (2019) study, focused solely on "tertiary education" to address higher education contexts.

Given this diversity of terminology, this study used a comprehensive set of keywords, including "communication skills", "interpersonal skills", "soft skills", "verbal communication", "nonverbal communication", "professional communication", "workplace communication", "higher education", "college education", "post-secondary education", "university study", and "post-secondary education" to ensure broad and comprehensive coverage of relevant literature.

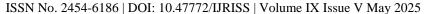
RESEARCH METHODS

The method used in this study is bibliometric analysis, which was first proposed by Pritchard in 1969 (Osareh, 1996). Bibliometric analysis is the quantitative study of bibliographic documents and provides an overview of a particular research field by analyzing key information such as article titles, abstracts, keywords, references, and author details (Şenel & Demir, 2018; Pham, DB, et al., 2021; Pham, PT, et al., 2022).

Among the various methods used to analyze scientific publications, bibliometric analysis is considered to be highly effective and has increasingly attracted the attention of the scientific community (Bar-Ilan, 2008; Hallinger, Li, & Wang, 2016). This method has been widely used in research reviews across various fields, including management science and operations research (Merigó & Yang, 2017), economics (Bonilla, et al., 2015), safety culture (Van Nunen, et al., 2018), human resource training (Danvila-del-Valle, et al., 2019), computer & industrial engineering (Cancino, et al., 2017), and especially education (Cao et al., 2020; Do et al., 2021; Pham, DB, et al., 2020; Nguyen et al., 2020; Phan, TTT, et al., 2022). However, this study is the first to use this method to analyze the topic of professional development for secondary school science teachers.

Identify data sources

This study uses Scopus, one of the most widely used databases, similar to previous studies such as Pham, HH, et al. (2021), Nguyen et al. (2020), and Phan, TT, et al. (2022). Scopus is uniquely produced by Elsevier Co.,





indexing more than 14,000 journals across a wide range of disciplines (Mohamed, R., et al., 2020). Scopus is considered an important scientific database due to its consistent standards for selecting indexed documents (Hallinger & Nguyen, 2020) and its broader range of document types compared to Web of Science, especially for evaluating research in education and social sciences (Mongeon & Paul-Hus, 2016). These advantages make Scopus the primary indexing source for this review.

Search criteria

The term "communication skills" was used to search for publications in their titles, abstracts, and keywords. The initial search yielded 5,425 documents as of 1:00 p.m. on December 6, 2024. To refine the dataset, the scope was narrowed using the following criteria: Subject area: Social sciences (SOCI). Document type: Journals, conference proceedings, trade journals and book series. Language: English. Publication year: Up to 2023. After filtering, the total number of documents was reduced to 1,776. The final query string used in Scopus is as follows:

TITLE-ABS-KEY (("COMMUNICATION SKILLS") OR ("COMMUNICATION SKILLS") OR ("SOFT SKILLS") OR ("VERBAL COMMUNICATION") OR ("NON-VERBAL COMMUNICATION") OR ("PROFESSIONAL") AND ("WORKING*") OR ("COLLECTIVE") OR ("LIMITED")) AND AGE > 2005 AND AGE < 2023 AND (LIMITED TO (SUBJAREA, "SOCI") OR LIMITED TO (SUBJAREA,"PSYC")) AND (LIMITED TO (DOCTYPE,"ar") OR LIMITED TO (DOCTYPE,"cp")) AND (LIMITED TO (LANGUAGE, "English"))

PRISMA Test

The authors followed the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines for literature searching and screening (Moher et al., 2009). All steps were meticulously documented during the searching and screening process (Figure 1).

The initial Scopus search yielded 5,425 documents. Of these, 2,115 were excluded during the screening phase because they did not meet the specified search criteria. Subsequently, 3,310 documents were reviewed for their titles and abstracts to determine their relevance to the research topic. An additional 1,534 documents were excluded from the Scopus dataset due to unrelated topics, such as job security and the ideal global graduate.

The final database consisted of 1,776 documents indexed in Scopus, representing a wide range of literature types, with a focus on employability (Figure 1).

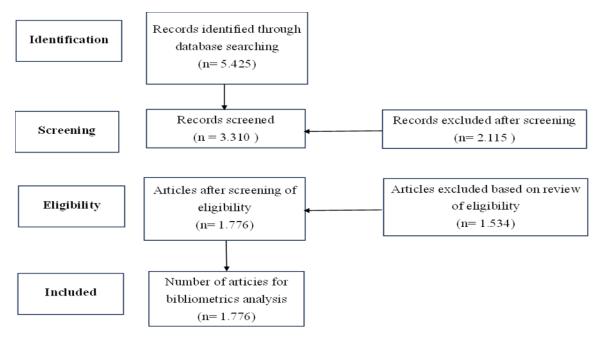


Figure 1. PRISMA flow diagram showing the data refinement process





DATA ANALYSIS

Data from 1,776 communication skills papers were extracted from Scopus and transferred into a master Excel file. This file was then used for descriptive statistical analysis to capture key aspects of communication skills as they impact career readiness, including growth trends and geographic distribution of research in the field. The processed data in Excel were then uploaded into two analysis tools, VOSviewer and R.

VOSviewer, a bibliometric analysis software, was used to create visual images of the science map (Van Eck & Waltman, 2014). Meanwhile, R was used to identify influential authors and documents in the research field and to calculate the citation frequency between authors and documents in the Scopus database (Zupic & Cater, 2015).

Bibliometric analyses were performed using VOSviewer, including co-authorship analysis, bibliographic matching, and co-occurrence keyword analysis. Co-authorship analysis facilitates the development of scientometric maps to visualize national collaboration networks in communication skills research, highlighting the largest communication skills research networks in each country (Koseoglu, 2016). Bibliometric matching, which examines the common citations of a third document, was used to identify linkages between studies in the field (Koseoglu, 2016). Furthermore, scientometric mapping of the documents was performed to illustrate the relationships between studies. Finally, co-occurrence keyword analysis was applied to clarify the overall structure of the communication skills knowledge base (Zupic & Cater, 2015).

These analyses also help determine the frequency of co-occurrence of two keywords in the title, abstract, or keyword list of a document (Van Eck & Waltman, 2014). The results of these analyses produce a network map showing the connections between co-occurring keywords, providing an overview of research trends in the field of communication skills (Figure 1).

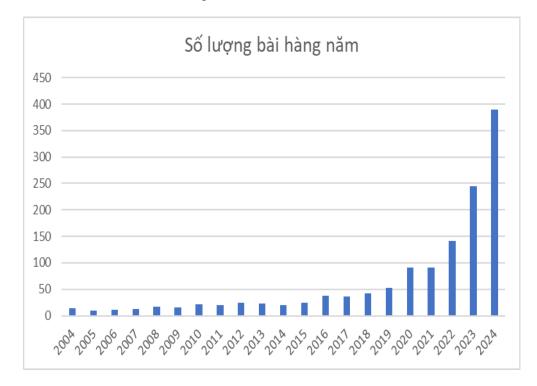


Figure 1. Annual distribution of peer-reviewed articles

The dataset consists of 1,776 Scopus-indexed papers published over two decades (2004–2024), reflecting the growing body of knowledge about student success. From 2004 to 2014, annual publications accounted for approximately 15% of the total 1,341 articles, showing a slow and steady growth rate, suggesting limited interest. Beginning in 2015, the growth rate accelerated, with the 2015–2019 period accounting for approximately 20% of the total, with articles steadily increasing from 25 to 53 articles annually. Notably, the 2020–2024 period contributed more than 65% of the total number of articles, with a significant increase peaking at 390 articles in 2024. This increase highlights the growing importance of communication skills in



the context of globalization and the demand for soft skills in the labor market, promoting both research and training in this area.

To answer the first question, "What is the total volume, growth trajectory, and geographic distribution of research on communication skills?" we consider Figures 2a and 2b. Figure 2a illustrates the distribution of 1,776 articles on communication skills and graduate success across 267 countries, revealing significant variation. The United States leads with about 25% (335 articles) of the total, followed by the United Kingdom with 10% (134 articles) and China with 8% (107 articles). Other European countries, such as Germany, Spain, and the Netherlands, together contribute about 30%. Asian countries outside China account for about 20%, while regions such as Africa and South America contribute less than 5% each. The concentration in developed countries underscores the priority of soft skills research in advanced labor markets. In contrast, the lack of research in developing countries highlights the gap in resources and attention to developing students' communication skills, opening up opportunities for future research in these regions. Figure 2a also shows that 10 countries published their first papers on employability in 2020–2021, including Ukraine, Mexico, and Brazil, while other countries such as Spain, Colombia, and the United Kingdom have made earlier contributions.

As shown in Figure 2b, of the more than 200 countries, only about 50 countries had collaborative links between their publications. The two largest links were between the United States and the United Kingdom (linkage = 33) and between Australia and the United Kingdom (linkage = 32). The United Kingdom and the United States shared publications on topics such as the role of communication skills in graduate success and entry into the labor market (Bozionelos et al., 2016), the impact of communication skills on sustainable graduate employability (Tymon et al., 2019), and how communication skills contribute to competency-based employability (Froehlich et al., 2018). The United States and Australia have collaborated on research related to organizational perspectives on communication skills research (Forrier et al., 2018), the communication skills of vulnerable workers and their impact on employment opportunities (Audenaert et al., 2019), and the predictors and mediating role of communication skills in enhancing employability (Raemdonck et al., 2012). These collaborative networks highlight the global interest in understanding and promoting communication skills as a key factor in graduate success.

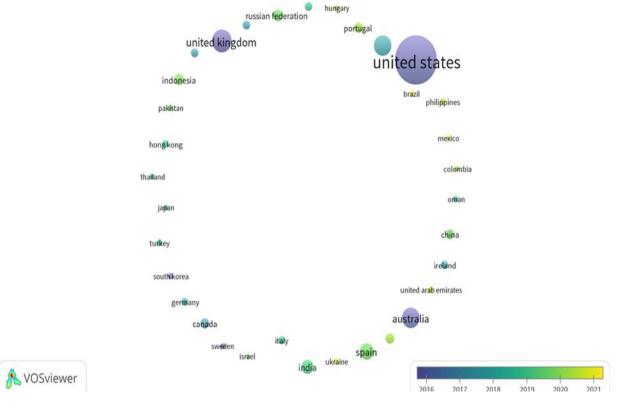


Figure 2a. Distribution of articles across countries over time



VOSviewer

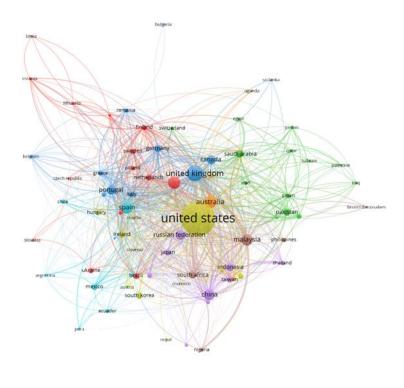


Figure 2b. Largest national network for scientific collaboration

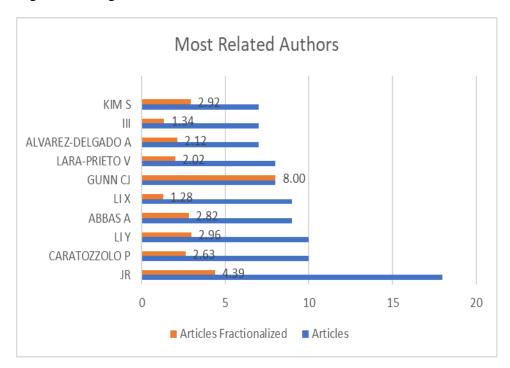


Figure 3: The most prominent authors and research works on "Communication skills"

Figure 3, the analysis highlights the authors' involvement in the field of communication skills and their impact on graduate success in order to answer the second question "Who are the top authors in publications on communication skills?" . Author GUNN CJ was identified as the most important contributor, with 8.00 segmented articles and a total of approximately 10 articles. This shows the outstanding contributions of this author compared to other authors, as the number of segmented articles still dominates.

In contrast, JR has the highest total number of articles, around 18, but a lower fractional article count of 4.39. This suggests that JR's works are often co-written with many other authors, reducing the individual contribution rate.



Other authors, such as LI Y (2.96), ABBAS A (2.82), and KIM S (2.92), showed moderate contributions, with the number of fractional articles ranging from 2-3 and the total number of articles ranging from 5-7. These authors had active participation but were not as prominent as GUNN CJ.

Thus, GUNN CJ emerged as the most influential author, holding the highest proportion of actual contributions (fractions) in the field of communication skills, playing an important role in the research on student success in transitioning to the labor market.

Table 1. Influence of authors related to the research topic

Author	h_ index	g-index	m_index	TC	Distributor	PY_start
Japan Railway	7	18	0.171	393	18	1984
P FEATURES	6	7	1.2	58	10	2020
III	6	7	0.188	75	7	1993
ALVAREZ-DELGADO A	5	6	1	48	7	2020
ENGLISH RE	5	6	0.556	76	6	2016
SAMTER W	5	6	0.122	200	6	1984
ABBAS A	4	8	0.286	79	9	2011
D'AUGELLI AR	4	4	0.077	69	4	1973
DARZI One	4	4	0.174	582	4	2002
DUNLEAVY D	4	4	0.571	59	4	2018

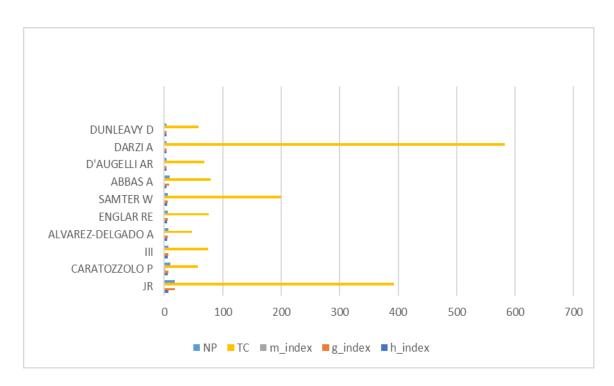
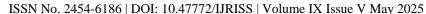


Figure 4. Influence of authors related to the research topic





Based on the data in Table 1, JR is the most influential author with 393 citations from 18 published articles, accounting for 24% of the total citations. JR's h-index of 7 and g-index of 18 are outstanding, indicating consistent quality and quantity of publications. Following closely behind, DARZI A, with only 4 articles, achieved 582 citations, accounting for 36% of the total, indicating significant impact despite the small number of publications.

CARATOZZOLO P stands out with an m-index of 1.2, reflecting the fastest growth of the h-index and indicating strong potential for future contributions. On the other hand, SAMTER W and D'AUGELLI AR are veteran authors with slower growth of the h-index and low m-index values (0.122 and 0.077), indicating a more gradual impact.

Overall, JR maintained the most stable influence, while DARZI A led in article quality, with the highest citation rate.

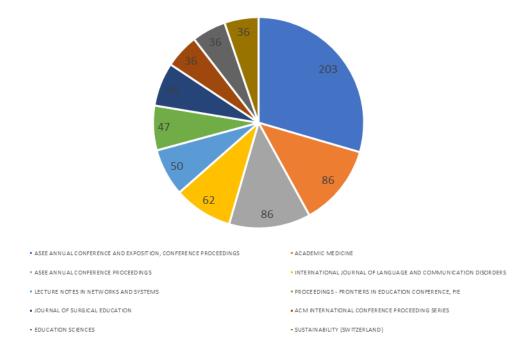


Figure 5. Journals/sources most relevant to the research topic

Next, "What are the popular magazines/books that cover communication skills for university students globally?" is answered through the data shown in Figure 5. From Figure 5, it can be seen that, **ASEE Annual Conference and Exhibition, Conference Proceedings** stands out as the most important source, contributing 203 entries, far exceeding the other sources. Second are **Academic Medicine** and **ASEE Annual Conference Proceedings**, each contributing 86 entries.

Next is the International Journal of Language and Communication Disorders, which contributes 62 entries and shows moderate relevance. Other sources such as Proceedings - Frontiers in Education Conference, FIE (50 entries), Lecture Notes in Networks and Systems (47 entries), and Journal of Surgical Education (46 entries) contribute more modestly. Finally, ACM International Conference Proceeding Series and one other source each contribute 36 entries.

In summary, the ASEE Annual Conference and Exhibition, Conference Proceedings are the most dominant source, playing the most important role in the entire research data, while other sources contribute only to a significantly lesser extent.

Finally, to answer the question "What are the main themes in the existing literature on communication skills for college students?" the authors synthesized the most frequently co-occurring keywords in publications on communication skills. Figure 6 lists the 13 most frequently used keywords in studies on communication skills





in college students. The data highlight various aspects of communication skills research, primarily focusing on the design and implementation of educational programs to develop communication skills and competencies essential for students' success in the labor market after graduation. The integration of practical work experiences, such as internships or co-op programs, into the higher education curriculum is emphasized as a way to enhance students' job market readiness. In addition, innovative teaching methods and educational strategies to support student success in specific areas are also explored.

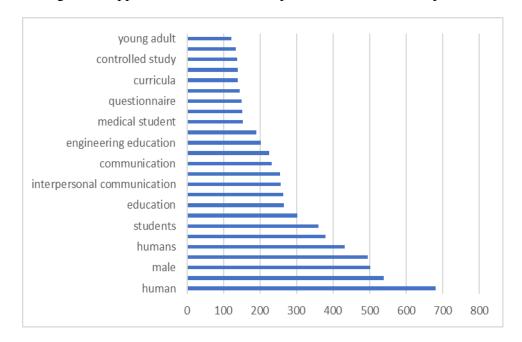


Figure 6. Keywords that co-occur most frequently in publications on communication skills

Figure 7 presents a keyword co-occurrence map that highlights three main research directions within this topic: communication skills (blue cluster), curriculum and professional development (red cluster), and contextual and demographic factors in education (green cluster). Specifically:

blue group emphasizes the role of communication skills in education and career preparation. These skills are considered to be essential in connecting theoretical knowledge with practical application, especially in academic contexts such as technical education and modern teaching methods. Curricula increasingly integrate communication skills into activities such as teamwork, presentations, and problem solving, enhancing students' learning and critical thinking abilities. Furthermore, effective communication skills are essential to develop professional competencies and improve students' career readiness through authentic communication situations and experiential learning.

green group focuses on psychological and demographic aspects in education and social studies, with keywords such as adolescents, young adults, adults, males, females, psychology, cognition, and controlled studies. From a scientific perspective, this group explores gender, age, and psychological differences that influence learning and development. Surveys (questionnaires) and controlled studies are often used to assess students' cognition and learning behavior at different stages of development, from adolescence to adulthood. The relationship between factors such as gender and educational context in universities is analyzed to better understand individual differences, leading to improved curricula and teaching methods that are tailored to the psychological and learning needs of specific groups.

red cluster highlights the role of interpersonal communication in the development of professional competence and learning. Keywords such as interpersonal communication, clinical competence, doctor-patient relationship, and learning demonstrate the importance of communication skills in building effective relationships and improving outcomes in professional settings. Interpersonal communication serves as the foundation for information exchange, problem solving, and building trust between individuals. This process promotes learning through real-life situations, supporting the development of problem-solving and teamwork skills. Professional competence (clinical competence), in particular, relies not only on theoretical knowledge but also

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on effective communication, creating connections and collaboration in the workplace. Therefore, communication skills training becomes an important factor in improving work performance and quality.

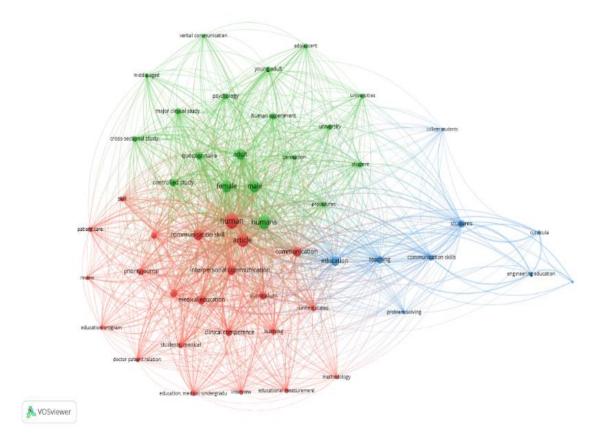


Figure 7. Keyword co-occurrence map

The "hot topics" revealed by the thematic transition map (Figure 8) include higher education (800), communication skills (579), comparative studies (302), oral communication (348), students (247), and skills (137). These "hot topics" (larger nodes) were primarily published between 2014 and 2020 and closely align with the main theme: the role of communication skills in student success in the transition to the labor market. Communication skills have emerged as one of the core factors determining student success in the modern workforce. Recent studies have emphasized the development of both soft and technical skills such as leadership, teamwork, problem solving, and professional development. According to Jackson and Hancock (2010), students with strong leadership and teamwork skills will integrate more effectively into the professional environment and enhance their competitiveness.

At the same time, the explosion of educational technology and innovative learning methods, such as online learning, problem-based learning, game-based learning, and virtual reality, have helped students develop effective communication skills. Garrison and Anderson (2003) argue that these learning methods not only increase interaction but also help students refine their critical thinking and digital communication skills.

Furthermore, there has been an increased emphasis on preparing for the labour market through higher education, employability and professional communication. Bridgstock (2009) highlights that professional communication skills are one of the important criteria that employers look for in graduates.

Finally, the impact of the COVID-19 pandemic has forced students to adapt to online learning and remote working environments, requiring flexible and effective communication skills. According to Dhawan (2020), the pandemic has profoundly transformed the way students learn and work, prompting students to develop digital communication skills in the context of globalization. These themes emphasize that communication skills not only play a pivotal role in the academic environment but are also an essential factor in determining the success and sustainable development of students in the future.



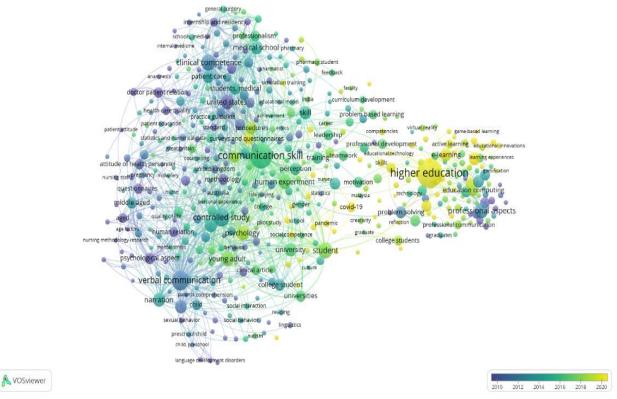


Figure 8. Thematic Conversion Map

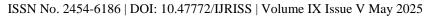
Overall, this review highlights the emergence and growth of a remarkable, globally recognized literature on communication skills and its impact on student success in the labor market. By analyzing publication volume, growth trajectory, geographical distribution, co-authorship across countries, bibliographical mix, and prominence of lead authors, this review explores trends in employability research over two decades (2005–2024). The review identifies emerging countries contributing to employability research, leading authors, and cross-national research collaborations on communication skills.

The trajectory of this body of literature suggests that research is currently at a tipping point and is likely to continue to grow strongly over the next decade. The review identifies three major themes in communication skills research: employer needs and skills preparation, the role of contextual factors such as gender and demographics in employability, and how these factors influence future careers. The implications of these themes are that graduate success depends not only on hard skills (such as degrees or certifications) but also on the ability to effectively use their skills and strengths in specific work settings.

Finally, the review highlights recent trends from 2005 to 2024, contributing to the body of literature by advocating for more comprehensive studies focusing on communication skills and their impact on graduates' success in the labor market. The review also draws out societal implications for human resource management, encouraging a greater focus on multi-level perspectives comparing the perceptions of both students and HR managers. As both institutions and organizational structures can influence the improvement of employees' communication skills, this, in turn, enhances employability and career success.

LIMITATIONS AND SUGGESTIONS FOR FUTURE RESEARCH

The main limitation of this paper lies in its reliance on Scopus as the sole source of data. Although Scopus provides more comprehensive information than Web of Science (Mongeon & Paul-Hus, 2016), it may not include as many books and conference proceedings as journal articles. Furthermore, this review is based on English-language literature, which may exclude publications in other languages. Future studies could address this limitation by incorporating non-English literature.





Finally, the review only applies a limited set of tools to science mapping. The authors encourage other scholars to extend this approach by using additional tools for more specific studies (Hallinger & Kovacevic, 2019).

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