









ORIGINAL

Contrasting Educational Strategies in Health Sciences vs. Non-Health Sciences Disciplines: Insights from Scopus Database

Contrastando Estrategias Educativas en Ciencias de la Salud vs. Disciplinas No Relacionadas con la Salud: Reflexiones desde la Base de Datos Scopus

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Cite as: Silva-Nieves DS, Serrato-Cherres AG, Soplin Rojas JM, Pomacaja Flores AC, Sullca Tapia PJ. Contrasting Educational Strategies in Health Sciences vs. Non-Health Sciences Disciplines: Insights from Scopus Database. Salud, Ciencia y Tecnología. 2023; 3:439. <https://doi.org/10.56294/saludcyt2023439>

Submitted: 21-04-2023

Revised: 10-05-2023

Accepted: 18-06-2023

Published: 19-06-2023

Editor: Dr. William Castillo González 

ABSTRACT

Introduction: education plays a pivotal role in shaping the knowledge, skills, and competencies of individuals across various fields of study.

Objective: to contrast educational strategies used in health sciences with those employed in disciplines unrelated to health.

Methods: the present study is primarily based on primary literature, mostly academic articles, indexed in the Scopus database. The aim of using this method is to quantify the documents referring to bibliometric analysis as a working tool in two categories for subsequent analysis: non-health-related categories (NH) and health-related categories (H). The groups were examined separately with a productivity and citation analysis to assess their impact.

Results: during this period, there is a gradual increase in the number of documents in both groups. In the NH group, the number of documents increased from 907 in 2013 to 2422 in 2022. Meanwhile, in the H group, the number of documents increased from 192 in 2013 to 490 in 2022. Overall, there is an increase in the number of documents in both groups over time, with the NH group exhibiting a higher number of documents compared to the H group in each year. It is observed that both groups have a low level of international collaboration, although the NH group shows a slightly higher proportion. On the other hand, the H group exhibits a higher proportion of national collaboration and a lower lack of collaboration compared to the NH group. Both groups demonstrate a high level of institutional collaboration. A greater heterogeneity is observed in areas other than health.

Conclusions: this study has provided an integrated view of research in health-related and non-health-related categories. The results emphasize the importance of promoting international collaboration and strengthening collaboration networks in both groups. Furthermore, key thematic areas in the field of nursing education, healthcare and clinical practice, human behavior and psychology, and teaching and learning have been identified. These findings can be useful for researchers, educators, and healthcare professionals interested in addressing these topics in the context of training and clinical practice, as well as for those seeking to understand current trends and interrelationships in the field of education.

Keyword: Educational Strategies; Health Sciences; Social Sciences; Bibliometric; Contrasting; Scopus.

RESUMEN

Introducción: la educación desempeña un papel fundamental en la formación de los conocimientos, habilidades y competencias de las personas en diversos campos de estudio.

Objetivo: contrastar las estrategias educativas utilizadas en ciencias de la salud con las empleadas en disciplinas no relacionadas con la salud.

Métodos: el presente estudio se basa fundamentalmente en literatura primaria, en su mayoría artículos académicos, indexados en la base de datos Scopus. El objetivo de la utilización de este método es cuantificar los documentos referidos al análisis bibliométrico como herramienta de trabajo en dos categorías para su posterior análisis: categorías no relacionadas con la salud (NH) y categorías relacionadas con la salud (H). Los grupos se examinaron por separado con un análisis de productividad y de citas para evaluar su impacto.

Resultados: durante este periodo, se observa un aumento gradual del número de documentos en ambos grupos. En el grupo NH, el número de documentos aumentó de 907 en 2013 a 2422 en 2022. Mientras tanto, en el grupo H, el número de documentos aumentó de 192 en 2013 a 490 en 2022. En general, se observa un aumento del número de documentos en ambos grupos a lo largo del tiempo, siendo el grupo NH el que muestra un mayor número de documentos en comparación con el grupo H en cada año. Se observa que ambos grupos tienen un bajo nivel de colaboración internacional, aunque el grupo NH muestra una proporción ligeramente superior. Por otro lado, el grupo H muestra una mayor proporción de colaboración nacional y una menor falta de colaboración en comparación con el grupo NH. Ambos grupos muestran un alto nivel de colaboración institucional. Se observa una mayor heterogeneidad en ámbitos distintos del sanitario.

Conclusiones: este estudio ha proporcionado una visión integrada de la investigación en categorías relacionadas y no relacionadas con la salud. Los resultados destacan la importancia de promover la colaboración internacional y fortalecer las redes de colaboración en ambos grupos. Además, se han identificado áreas temáticas clave en el ámbito de la educación en enfermería, la asistencia sanitaria y la práctica clínica, el comportamiento humano y la psicología, y la enseñanza y el aprendizaje. Estos resultados pueden ser de utilidad para investigadores, educadores y profesionales sanitarios interesados en abordar estos temas en el contexto de la formación y la práctica clínica, así como para aquellos que buscan comprender las tendencias actuales y las interrelaciones en el campo de la educación.

Palabra clave: Estrategias Educativas; Ciencias de la Salud; Ciencias Sociales; Bibliometría; Contraste; Scopus.

INTRODUCTION

Education plays a pivotal role in shaping the knowledge, skills, and competencies of individuals across various fields of study. In the realm of health sciences, where the well-being and quality of life of individuals are paramount, effective educational strategies are crucial for preparing healthcare professionals to deliver exceptional care.⁽¹⁾ However, educational approaches are not limited to the realm of health sciences alone. Disciplines unrelated to health also rely on innovative teaching and learning methodologies to equip students with the necessary skills for success in their respective fields.^(2,3)

Understanding the similarities and differences in educational strategies employed in health sciences and non-health-related disciplines can shed light on the unique approaches used to facilitate knowledge acquisition, skill development, and critical thinking. Such insights can contribute to a broader understanding of effective pedagogical practices and promote interdisciplinary collaboration in education.^(4,5,6,7)

The purpose of this article is to contrast educational strategies used in health sciences with those employed in disciplines unrelated to health. By examining and comparing these strategies, we aim to identify commonalities, divergences, and potential areas of cross-pollination between these two domains.

This analysis will provide valuable insights for educators, policymakers, and researchers seeking to optimize teaching and learning approaches in both health sciences and non-health-related fields.⁽⁸⁾

METHODS

The present study is primarily based on primary literature, mostly academic articles, indexed in the Scopus database. The chosen database is Scopus, which provides the most diverse and comprehensive records of citation indexes and includes a useful analysis tool. It is assumed that a sufficient amount of high-quality literature is represented, allowing for the investigation of the trends adequately. The methodology of this study was similar to that proposed by Ellegaard and Wallin.⁽⁹⁾

To create a representative corpus of documents for the research, the following search profile was established in Scopus:

- Health: (TITLE-ABS-KEY ("Educational Learning Strategies") OR TITLE-ABS-KEY ("Pedagogical strategies") OR TITLE-ABS-KEY ("Instructional strategies") OR TITLE-ABS-KEY ("Teaching and learning strategies") OR TITLE-ABS-KEY ("Effective learning strategies") OR TITLE-ABS-KEY ("Active learning strategies") OR TITLE-ABS-KEY ("Cognitive learning strategies") OR TITLE-ABS-KEY ("Metacognitive strategies") OR TITLE-

ABS-KEY ("Cooperative learning strategies") OR TITLE-ABS-KEY ("Problem-based learning strategies") OR TITLE-ABS-KEY ("Inquiry-based learning strategies") OR TITLE-ABS-KEY ("teaching strategy") OR TITLE-ABS-KEY ("Instructional strategy") OR TITLE-ABS-KEY ("Classroom teaching strategy") OR TITLE-ABS-KEY ("Effective teaching strategy") OR TITLE-ABS-KEY ("Active teaching strategy") OR TITLE-ABS-KEY ("Student-centered teaching strategy") OR TITLE-ABS-KEY ("Differentiated teaching strategy") OR TITLE-ABS-KEY ("Cooperative teaching strategy") OR TITLE-ABS-KEY ("Technology-based teaching strategy") OR TITLE-ABS-KEY ("Inquiry-based teaching strategy") OR TITLE-ABS-KEY ("Problem-based teaching strategy")) AND SUBJAREA (medi OR nurs OR vete OR dent OR heal OR mult) AND PUBYEAR > 2012 AND PUBYEAR < 2023

- Non-health: (TITLE-ABS-KEY ("Educational Learning Strategies") OR TITLE-ABS-KEY ("Pedagogical strategies") OR TITLE-ABS-KEY ("Instructional strategies") OR TITLE-ABS-KEY ("Teaching and learning strategies") OR TITLE-ABS-KEY ("Effective learning strategies") OR TITLE-ABS-KEY ("Active learning strategies") OR TITLE-ABS-KEY ("Cognitive learning strategies") OR TITLE-ABS-KEY ("Metacognitive strategies") OR TITLE-ABS-KEY ("Cooperative learning strategies") OR TITLE-ABS-KEY ("Problem-based learning strategies") OR TITLE-ABS-KEY ("Inquiry-based learning strategies") OR TITLE-ABS-KEY ("teaching strategy") OR TITLE-ABS-KEY ("Instructional strategy") OR TITLE-ABS-KEY ("Classroom teaching strategy") OR TITLE-ABS-KEY ("Effective teaching strategy") OR TITLE-ABS-KEY ("Active teaching strategy") OR TITLE-ABS-KEY ("Student-centered teaching strategy") OR TITLE-ABS-KEY ("Differentiated teaching strategy") OR TITLE-ABS-KEY ("Cooperative teaching strategy") OR TITLE-ABS-KEY ("Technology-based teaching strategy") OR TITLE-ABS-KEY ("Inquiry-based teaching strategy") OR TITLE-ABS-KEY ("Problem-based teaching strategy")) AND NOT SUBJAREA (medi OR nurs OR vete OR dent OR heal OR mult) AND PUBYEAR > 2012 AND PUBYEAR < 2023

This profile, although not exhaustive, produces a comprehensive number of documents for further analysis. The aim of using this method is to quantify the documents referring to bibliometric analysis as a working tool in two categories for subsequent analysis: non-health-related categories (NH) and health-related categories (H).

The groups were examined separately with a productivity and citation analysis to assess their impact. This division ensures that any differences in citation patterns between the communities publishing in the two categories can be revealed. Thus, the citation data collection was performed in a reproducible manner.^(10,11)

The different topics are considered in more detail by extracting keywords from the documents. Both primary sources were downloaded into an " CSV Excel " file for further keyword analysis in Vosviewer Version 1.6.19. The frequency of keywords provides a good indication of the investigated thematic fields. In this way, we seek to establish a connection between publication patterns and the impact of bibliometric analysis as an applied tool within different areas.

RESULTS AND DISCUSSION

The analysis of Table 1 reveals the number of documents for non-health-related categories (NH) and health-related categories (H) from 2013 to 2022. During this period, there is a gradual increase in the number of documents in both groups. In the NH group, the number of documents increased from 907 in 2013 to 2422 in 2022. Meanwhile, in the H group, the number of documents increased from 192 in 2013 to 490 in 2022. Overall, there is an increase in the number of documents in both groups over time, with the NH group exhibiting a higher number of documents compared to the H group in each year.

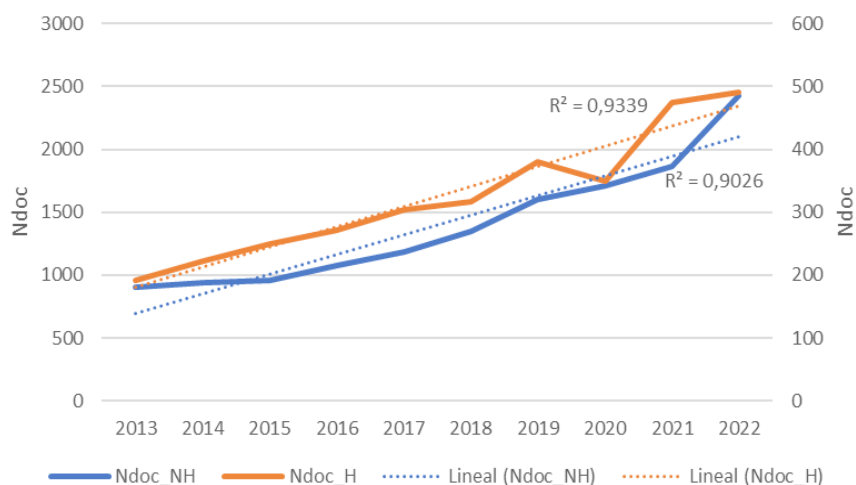


Figure 1. Output per year

The data presented in Table 1 reveals information about research collaboration, particularly in terms of international, national, institutional collaboration, and lack of collaboration. In general, it is observed that both groups have a low level of international collaboration, although the NH group shows a slightly higher proportion. On the other hand, the H group exhibits a higher proportion of national collaboration and a lower lack of collaboration compared to the NH group. Both groups demonstrate a high level of institutional collaboration. These findings suggest the importance of promoting international collaboration and strengthening collaboration networks in both groups.

Metric	%ColabH	%Colab NH	$\Delta H-NH$	FWCI_H	FWCI_NH	$\Delta H-NH$
International collaboration	11,4	13,1	-1,7	1,23	1,52	-0,29
Only national collaboration	33,1	26	7,1	1,06	1,12	-0,06
Only institutional collaboration	38,3	37,3	1	0,97	0,96	0,01
No collaboration	17	23,5	-6,5	0,8	0,78	0,02

A greater heterogeneity is observed in areas other than health. Figure 2 shows the distribution of topics by categories in Health and Non-Health.



Figure 2. Topics & Topic Clusters

Based on the term co-occurrence data in the health field (Figure 3), it was conducted an analysis to identify patterns among the terms and group them into major thematic areas. Here is an integrated summary of the most relevant findings:

In the Nursing Education thematic cluster, terms such as "nursing education," "nursing student," "curriculum," "education, nursing, baccalaureate," and "education, nursing, graduate" stand out. These terms suggest a focus on the training and development of nursing students, as well as the curriculum structure of educational programs.

In the Healthcare and Clinical Practice thematic cluster, terms like "medical education," "clinical competence," "patient care," "evidence-based practice," and "patient safety" are observed. These terms reflect an interest in improving the quality of healthcare through education, clinical competence, and the application of evidence-based practices to ensure patient safety.

In the Human Behavior and Psychology thematic cluster, relevant terms include "perception," "attitude of health personnel," "motivation," "empathy," "health knowledge, attitudes, practice," and "interpersonal communication." These terms indicate a focus on understanding and addressing the psychological and social

learning systems, engineering education, and active learning.

In the second cluster, terms such as "human," "education," "humans," "learning," "curriculum," "adult," "medical education," and "problem-based learning" stand out. These terms relate to human-centered education, encompassing areas such as medical education, problem-based learning, and curriculum.

In the third cluster, terms such as "nursing education," "methodology," "nursing student," "clinical competence," "United States," "attitude of health personnel," and "decision making" are observed. These terms focus on nursing education, exploring aspects related to clinical competence, attitudes of healthcare personnel, and decision making.

Other relevant terms distributed across different clusters include "artificial intelligence," "virtual reality," "information technology," "communication," "higher education," "social networking," "cognitive systems," "pandemic," "quality control," "visualization," "game-based learning," "leadership," "biology," and "mobile learning." These terms address diverse topics such as artificial intelligence, virtual reality, information technology, communication, higher education, social networking, cognitive systems, the pandemic, quality control, visualization, game-based learning, leadership, biology, and mobile learning.

These results reveal that the main areas addressed by the different clusters are related to teaching and learning, human-centered education, and nursing education. Additionally, emerging topics such as artificial intelligence, virtual reality, information technology, and communication are identified, which are impacting the field of education. These findings may be of interest to researchers and education professionals seeking to understand current trends and interrelationships among different educational aspects.

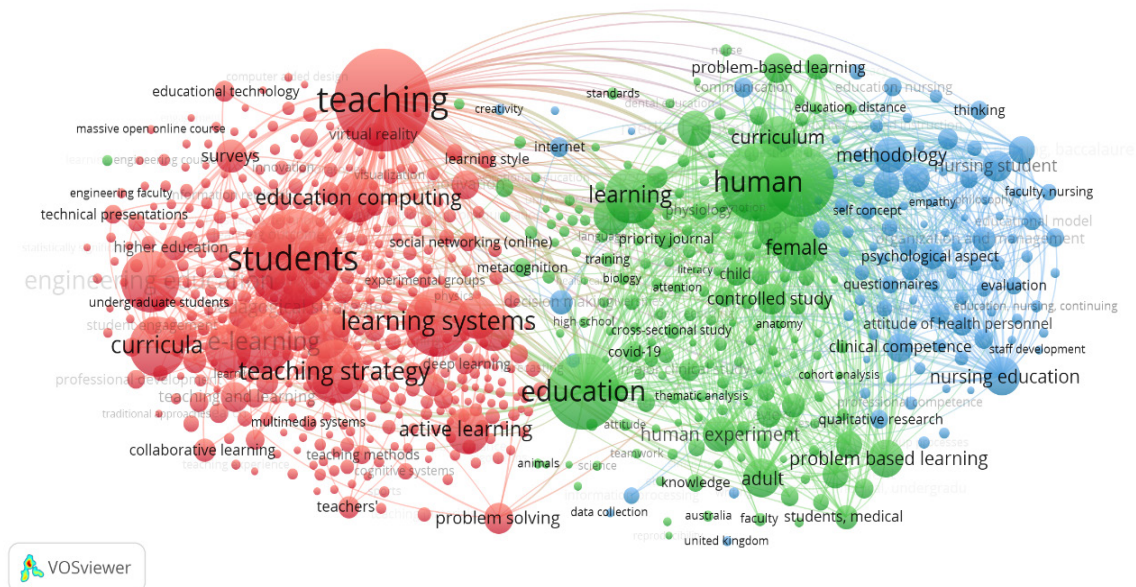


Figure 4. Cooccurrence of terms (Non-Health Categories)

Pettersson⁽¹⁴⁾ proposes insights into the current state of digital competence in educational contexts and highlights the need for further research in this area. The analysis of complexity in educational contexts can be used by policymakers, educational leaders, and teachers to understand the importance of digital competence in education and to develop strategies for improving digital competence in educational contexts. The paper also highlights the need for collaboration between stakeholders in educational contexts to ensure that digital competence is effectively integrated into teaching and learning practices. Overall, the paper provides a valuable contribution to the field of digital competence in education and can be used to inform future research and practice in this area.

The research of González-Valiente et al.⁽¹⁵⁾ provides insights into the terminological similarities and differences between information management (IM) and knowledge management (KM) in the library and information sciences (LIS) space. The paper describe the terminological composition of information management (IM) and knowledge management (KM) to show how much these areas overlap within the library and information sciences (LIS) space. The term co-occurrence analysis using documents extracted from Web of Science, covering the period 1980-2015, to examine the terminological (di) similarity between IM and KM. Applying two approaches, 'overlay visualization and 'topic detection, to examine the terminological (di) similarity between IM and KM. Finding that the percentage of terminological similarity between IM and KM oscillates between 24 % and 38 %

according to the 'overlay visualization and 'topic detection techniques. The identification of the core of the terminological intersection between IM and KM lies the study around processes, technologies, and information systems. Highlighting that IM refers to the library and information organizations, emphasizing personal information management, human information behavior, health information management, and information resource management, while KM highlights the business, management, and accounting realms, emphasizing knowledge sharing and social networks, knowledge management strategies, and knowledge management projects. The research suggest that these results could help to (re)define curricular contents of LIS programs as well as research and practical activities conducted by academicians and managers. Considering that the methodological procedures employed in this study might be suitable to understand the boundaries between similar fields.

CONCLUSIONS

The present study provided a comprehensive overview of the evolution of research in health-related and non-health-related categories during the period from 2013 to 2022. A gradual increase in the number of documents was observed in both groups over time, with the non-health-related group having a higher number of documents each year.

In terms of collaboration, it was found that both groups have a low level of international collaboration, although the non-health-related group showed a slightly higher proportion. On the other hand, the health-related group exhibited a higher proportion of national collaboration and a lower lack of collaboration compared to the non-health-related group. Both groups demonstrated a high level of institutional collaboration, highlighting the importance of strengthening collaboration networks at both national and international levels.

Analyzing the distribution of topics across categories, greater heterogeneity was observed in areas other than health. The results of the term co-occurrence analysis in the health field revealed four main thematic clusters: Nursing Education, Healthcare and Clinical Practice, Human Behavior and Psychology, and Teaching and Learning. These clusters reflect key aspects of training and clinical practice, as well as the importance of understanding and addressing the psychological and social aspects related to human behavior in the context of healthcare.

On the other hand, analyzing the term co-occurrence in publications outside the health field, three main thematic clusters were identified: Teaching and Learning, Human-Centered Education, and Nursing Education. Additionally, emerging topics such as artificial intelligence, virtual reality, information technology, and communication were identified, which are having a significant impact on the field of education.

This study has provided an integrated view of research in health-related and non-health-related categories. The results emphasize the importance of promoting international collaboration and strengthening collaboration networks in both groups. Furthermore, key thematic areas in the field of nursing education, healthcare and clinical practice, human behavior and psychology, and teaching and learning have been identified. These findings can be useful for researchers, educators, and healthcare professionals interested in addressing these topics in the context of training and clinical practice, as well as for those seeking to understand current trends and interrelationships in the field of education.

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FINANCING

No external financing.

CONFLICT OF INTEREST

No conflict of interest.

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