



# Exploring the Research Trends of Media Training Kit in Vocational Education through Bibliometric Analysis

Vivi Oktavia<sup>1</sup>, Dedy Irfan<sup>1\*</sup>

<sup>1</sup>Vocational technology education study program, Universitas Negeri Padang, Padang, Indonesia.

Received: June 6, 2024

Revised: August 18, 2024

Accepted: September 25, 2024

Published: September 30, 2024

Corresponding Author:

Dedy Irfan

[dedy\\_irf@unp.ac.id](mailto:dedy_irf@unp.ac.id)

DOI: [10.29303/jppipa.v10i9.9123](https://doi.org/10.29303/jppipa.v10i9.9123)

© 2024 The Authors. This open access article is distributed under a (CC-BY License)



**Abstract:** This study aims to explore research trends on media training kits in vocational education, which have become crucial in preparing skilled workers to meet modern industry demands. Media training kits are essential tools that bridge the gap between theoretical knowledge and practical application, simulating real working conditions to enhance students' skills. Despite their growing use, research on their effectiveness, design, and innovation remains fragmented and poorly structured. A bibliometric analysis was conducted using the Scopus database to systematically map the landscape of media training kit research, identifying key publications, influential authors, major journals, and prevalent research topics. The analysis revealed significant gaps in the literature, underlining the need for continuous research to evaluate technological advancements, such as virtual simulations and augmented reality, in training kits. Results highlight the importance of integrating interactive and adaptive training kits to support evolving pedagogical and technological approaches in vocational education. This study provides valuable insights for researchers, educators, and policymakers, helping them make informed decisions to enhance the development and application of media training kits, ultimately improving the quality and relevance of vocational education in response to industry needs.

**Keywords:** Bibliometric; Biblioshiny; Educational technology; Training kit; Research trends

## Introduction

Research in the field of vocational education has experienced rapid development in line with the increasing need for skilled workers who are ready to face the challenges of modern industry (Kovalchuk et al., 2023; Pambudi & Harjanto, 2020; Purwanto et al., 2023). One important element in vocational education is the use of media training kit, which are learning devices designed to simulate real working conditions in the teaching and learning process (Polat & Ekren, 2023). Media training kit function as tools that facilitate students in understanding concepts and practical skills relevant to the world of work (Lin et al., 2020). In this context, research on media training kit continues to

grow along with technological advances and changes in industry needs, but the map of research developments in this field is still not comprehensively understood.

The importance of media training kit in vocational education cannot be ignored as they serve as a bridge that connects theory with practice (Cattaneo et al., 2021). Training kit allow students to practice in an environment that resembles real work situations, thus improving their understanding of the material being taught as well as the skills required in the workplace (Doyle, 2023; Sanchez et al., 2023). Although the use of training kit has become an integral part of vocational education, research into their effectiveness, design and innovation is scattered and poorly structured. Therefore, an in-depth analysis of media training kit research

### How to Cite:

Oktavia, V., & Irfan, D. (2024). Exploring the Research Trends of Media Training Kit in Vocational Education through Bibliometric Analysis. *Jurnal Penelitian Pendidikan IPA*, 10(9), 667–677. <https://doi.org/10.29303/jppipa.v10i9.9123>

trends is crucial to identify key foci, gaps and directions for future research development.

Bibliometrics is one approach that can be used to analyze research trends systematically and quantitatively (Jing et al., 2024; Muskhir et al., 2024; Passas, 2024; Watrianthos et al., 2022). Bibliometric analysis allows researchers to evaluate the literature based on measurable data such as the number of publications, citations, collaboration between researchers, as well as publishing patterns over time. In the context of media training kit in vocational education, this approach can provide a clear picture of frequently researched topics, prominent authors, influential journals, and geographical regions that are most active in this research. The results of the bibliometric analysis can provide valuable insights for academics, practitioners and policy makers in directing research efforts to the most relevant and potentially impactful areas.

Trends in training kit media research also reflect changes in pedagogical and technological approaches in vocational education. With the development of digital technology, training kit media has transformed conventional models to more interactive and high-tech models, such as virtual simulation, augmented reality, and computer-based learning systems. These changes demand continuous research to evaluate the effectiveness of these innovations. However, to date, no study systematically maps how this research trend is developing, both in terms of the methodology used, the topics researched, and the results achieved. Bibliometric analysis would be an appropriate tool to address this need.

In addition, the importance of understanding the trend of training kit media research in vocational education is also driven by the need to improve the quality and relevance of vocational education. With increasing global competition, vocational education must be able to produce graduates who are not only technically competent, but also adaptive to technological developments and industry demands. Media training kits play an important role in achieving this goal, but without clear research guidance, their development and implementation may not be maximized. Bibliometric analysis can uncover under-explored research areas and potential for further development, thus supporting the overall improvement of vocational education quality.

Furthermore, bibliometrics can also help identify patterns of collaboration between researchers and institutions that play a role in the development of media training kit research. In the era of globalization, cross-border collaboration is becoming increasingly important to enrich perspectives and innovations in research. By analyzing these collaboration networks, we can identify leading research centers and the potential for expanding

international cooperation in media training kit research. This not only enriches scientific insights but also promotes faster and wider diffusion of knowledge, ultimately contributing to the improvement of vocational education practices.

This study also aims to identify key journals and conferences where research on media training kits in vocational education is published. This information is important for researchers to determine the right platform to disseminate their research results. By knowing which journals are most frequently referenced or which conferences are most relevant, researchers can be more effective in choosing the appropriate publication media. In addition, the identification of key journals and conferences can also provide an overview of the quality standards of research that should be achieved.

This study therefore aims to make a significant contribution to the field of vocational education by providing a comprehensive overview of media training kit research trends through bibliometric analysis. By understanding the direction and dynamics of research in this area, it is expected to help researchers, educators, and policy makers make more informed decisions regarding the development of media training kits and their application in vocational education. This study also seeks to highlight areas that require further attention, to direct future research in a more relevant and impactful direction.

## Method

In this study, the bibliometric analysis method in this study, the bibliometric analysis method was applied by using the Scopus database as the main data source (Ahmad et al., 2023; Pham-Duc et al., 2023). Scopus was chosen due to its advantage in providing extensive features and comprehensive coverage. The selection of Scopus is based on several main reasons, including the completeness and richness of the information available, its widely recognized reputation, strong citation network, consistency of data management standards, and its ability to provide in-depth and continuous analysis (Pölonen et al., 2020; Gusenbauer, 2022). The credibility and quality of Scopus makes it a reliable reference source, second only to Web of Science (WOS) in producing valid research findings. This research presents a structured description of statistically described data, and there is also an analysis of trends and topics in a particular research area. In Figure 1 there are four stages of research in conducting bibliometric analysis.

The first stage started by identifying a specific search query to extract relevant documents with the search criteria set as follows: (TITLE ("training kit" OR

trainer) which obtained a total of 5814 research articles. In the second stage, filtering was conducted by focusing on filtering article documents related to the topic of media training kit in the context of vocational education. In addition, the screening process also limits the focus of articles that use English writing. From the screening process, the number of publication documents obtained was 117 documents. In the third stage data analysis uses biblioshiny software and Microsoft excel in conducting data analysis and visualization. Biblioshiny is software that can visualize and analyze descriptive and conceptual data (Watrianthos et al., 2023). In the fourth or final stage, we review the literature and conclude some questions that we want to get from the research topic related to mobile learning media research trends in education.

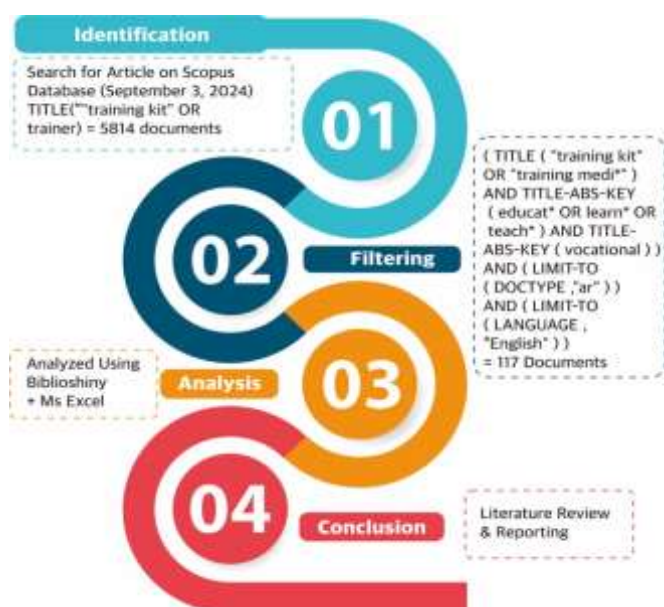


Figure 1. Stages of the bibliometric analysis method

The main objective of this bibliometric analysis was to examine and gain a deeper understanding of the scientific literature related to media training kit in vocational education. The analysis aims to provide a comprehensive overview of the direction and scope of research in this area, as well as identify areas that have not been widely explored or where research gaps exist. Through the search process, 117 documents that met the criteria were identified. These documents will be further processed to reveal trends, key topics, and significant contributions to the field of media training kit in vocational education.

## Result and Discussion

Through bibliometric analysis of media training kit research in vocational education, we screened data from the Scopus database related to this topic. A total of 117

publications relevant to media training kits in vocational education were found. These publications came from 72 different sources, including journals and books. Over the period, there was an average annual growth of 4.79% in the number of publications, which reflects the lack of interest among academics and researchers in the topic of media training kits in the context of vocational education. In addition, our analysis revealed that a total of 319 authors have contributed to this field, indicating a high level of interest among researchers.

In the results and discussion section, we will explore various sub-topics, including publication trends and further trend analysis. The section on publication trends will discuss the most prolific authors, the five most influential affiliations, the five most prolific publication sources, as well as the ten most cited articles related to media training kits in vocational education. This information provides a more in-depth picture of the bibliometric landscape of publications in this field, which can be an important reference in determining the direction of future research on the use and development of media training kits in vocational education.

### Publication Trends

Exploring the under-researched area of training kit media use in vocational education through bibliometric analysis is an important approach to identify gaps and emerging trends in this field. This process involves a comprehensive review of the existing literature to map the frequency, relationships and development of various related research topics. In the context of media training kits in vocational education, under-explored areas may include their effectiveness in enhancing practical skills, the influence of technology use on student learning outcomes, as well as the integration of new technologies such as augmented reality and simulation in vocational learning.

Bibliometric analysis on this topic uses databases such as Scopus to collect relevant publications. The analysis focused on key aspects such as the number of publications over time to identify trends, citation analysis to measure the influence of specific works, author networks and collaborations to understand the academic landscape in this field, as well as keyword frequency analysis to detect emerging themes and under-researched areas in the context of media training kits in vocational education.

The results of this analysis will be very useful for researchers, educators, and practitioners in the field of vocational education. It can guide the direction of future research, inform the development of more effective media training kits, and ensure that challenges faced in the implementation of these technologies are identified and addressed thoroughly. In this publication trend analysis result, the discussion includes the ten most

prolific authors, the ten most prolific affiliations, the ten most prolific publication sources, and the ten most cited articles related to the topic of media training kits.

The relationships between publication trends, most prolific authors, affiliations, related sources, and most cited articles reflect the complex dynamics of media training kit research in vocational education. Publication trends are influenced by the collective contributions of prolific authors, the institutions they are affiliated with, and the sources they choose to publish their research (Borgman & Furner, 2002). Actively contributing authors and consistent affiliations in the research shape the direction and focus of these trends, while influential sources become important platforms for researchers to disseminate their findings (Kanmounye et al., 2021).

This first analysis of publication trends focuses on the most prolific authors in research related to training kit media in vocational education. Table 1 shows the top 5 authors who have published the most work on this topic. The results of this analysis can serve as a reference for other researchers in referring to authors who have made significant contributions in the field of media training kits in the context of vocational education. From a total of 319 authors identified in this analysis, table 1 filters out the 5 authors who are most productive in conducting and publishing research related to the use and development of media training kits in vocational education. This analysis helps to clarify who the key players are in this field and can guide researchers to collaborate or deepen relevant literature.

**Table 1.** Top Five Most Productive Authors

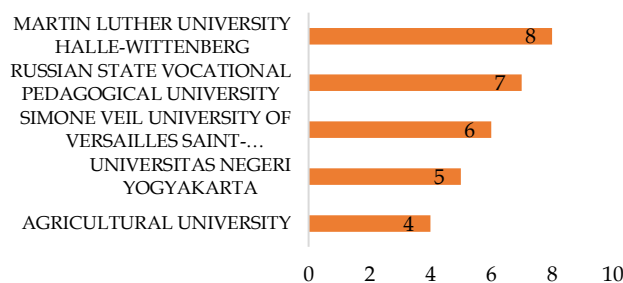
Authors	Doc	Affiliation
Jhon Hasler	4	University of Oxford
Neil Johnson	4	University of Oxford
Janet Grant 3	3	University of Adelaide
Brian Grieveson	3	Mersey Deanery
Brian mckinstry	3	University of Edinburgh

Table 1 presents the leading researchers contributing to the study of media training kit in vocational education, showing their number of publications and affiliations. Jhon Hasler and Neil Johnson, both from the University of Oxford, lead with four publications each, followed by Janet Grant from the University of Adelaide, Brian Grieveson from Mersey Deanery, and Brian McKinstry from the University of Edinburgh, each with three publications. The concentration of these productive authors at prestigious institutions indicates that research on media training kit in vocational education is being actively pursued in highly regarded academic environments.

This analysis underscores the significant roles of these universities, particularly the University of Oxford, in advancing research in this field, reflecting a strong

commitment to educational innovation. Identifying these prolific authors and their affiliations provides valuable insights into the key players driving research trends. This information can guide researchers in seeking collaborations, exploring influential works, and identifying gaps in the literature, thereby informing future studies to enhance the effectiveness of media training kit in vocational education settings.

In addition to identifying the top ten most productive authors, this study also identifies the affiliations of authors researching media training kit in vocational education. Figure 1 presents data on affiliations from various institutions worldwide that contribute to research in this field. Out of a total of 118 affiliations identified through the analysis, Figure 1 filters and highlights the 5 most productive affiliations that consistently contribute to research related to the use and development of media training kit in vocational education contexts.



**Figure 1.** Top five most productive affiliations

In figure 1 the bar chart illustrates the most productive affiliations contributing to research on media training tools in vocational education, highlighting the institutions with the highest number of publications in this field. Martin Luther University Halle-Wittenberg leads with eight publications, followed closely by the Russian State Vocational Pedagogical University with seven publications. Simone Veil University of Versailles Saint-Quentin-en-Yvelines and Paris contributes six publications, while Universitas Negeri Yogyakarta and Agricultural University contribute five and four publications, respectively.

This data emphasizes the global interest in exploring media training kit within vocational education, with leading contributions from European and Asian institutions. The significant output from Martin Luther University and Russian State Vocational Pedagogical University reflects strong academic engagement with the development and evaluation of media training kit, focusing on enhancing practical skills in vocational training. The involvement of diverse universities indicates that research in this area is collaborative and international, reinforcing the need for

innovative educational tools that bridge the gap between theory and practice in vocational education settings.

The prominence of these affiliations suggests that research on media training kit is supported by institutions with a strong focus on educational technology and vocational training. This aligns with the broader trend identified through bibliometric analysis, which shows a growing commitment to integrating media training kit into vocational education curricula to improve learning outcomes. Understanding the contributions of these key institutions can help researchers and educators identify potential collaborators and draw insights from the most influential studies, driving further innovation in the use of media training kit in vocational education.



Figure 2. Top five most productive sources

In addition to analyzing the researchers' affiliations, information on the number of publications in specific journals is also an important part of the results of this study, as it can help determine the direction of future research on media training kits in vocational education. For example, if a journal has a high number of publications on the topic of media training kits, this can be an indication that the topic is relevant and needs to be explored further. Figure 2 displays the top 5 journals that publish the most research related to media training kits in vocational education. This analysis can help researchers choose the right journals to publish their research. If the research is in line with the topics that are often discussed in a particular journal, then that journal can be a strategic choice for article submission. From a total of 72 journals identified through the analysis, Figure 2 filters and displays 5 journals that are most productive in publishing research related to media training kits in vocational education.

Figure 2 presents the top five most productive sources contributing to the research on media training kits in vocational education, highlighting journals that have published the highest number of relevant articles. The leading journal, "Education for Primary Care," published 16 articles, indicating a strong focus on

educational practices that align with vocational training contexts. Following this, the "British Dental Journal" contributed eight articles, reflecting the interdisciplinary nature of research where media training kits are utilized not only in general vocational education but also in specialized fields like dental education.

"Education for General Practice" published six articles, emphasizing the application of media training kits in vocational training for healthcare professionals, aligning well with hands-on and practical skill development essential in vocational education. Other notable sources include the "Journal of Athletic Training" and "Vocations and Learning," each publishing four articles, showcasing the integration of media training kits in diverse vocational settings, including athletic and technical education.

These findings underscore the importance of media training kits in enhancing vocational education across various disciplines. The presence of journals from healthcare, technical training, and general vocational learning highlights the growing acceptance and exploration of these kits as effective tools in educational environments. This analysis provides valuable insights for researchers aiming to publish their work, guiding them toward journals that are receptive to topics on media training kits, thereby supporting the broader research trend in vocational education.

The final publication trends analysis focuses on the most cited articles related to media training kits in vocational education, using citation analysis to measure the impact and importance of these works. Table 2 highlights the top 10 most cited articles, reflecting key trends and influential studies that shape the field. These frequently cited articles serve as valuable references for researchers aiming to explore further studies on media training kit in vocational education. From 117 documents analyzed, the top 10 articles with the highest citation counts are showcased, guiding future research and development in this area.

Table 2 lists the top ten most cited articles related to vocational education and media training kits, highlighting the significant impact these works have had on the field. The most cited article, "Restoration longevity and analysis of reasons for the placement and replacement of restorations provided by vocational dental practitioners and their trainers in the United Kingdom," cited 137 times, underscores the importance of practical training in vocational education, especially within dental and healthcare settings. This study illustrates how media training kits can enhance hands-on learning, enabling students to practice and refine their skills in real-world scenarios, a crucial component in fields that demand precision and manual dexterity (Burke et al., 1999). This article underscores the importance of strengthening practical training in

vocational education curricula to produce skilled professionals (Jalinus et al., 2023).

The second most cited article, "Undergraduate Training as Preparation for Vocational Training in England: A Survey of Vocational Dental Practitioners' and their Trainers' Views," with 80 citations, reflects the emphasis on preparatory and foundational training in vocational settings. It showcases the vital role of media

training kits as preparatory tools that help bridge the gap between theoretical knowledge and practical application (Patel et al., 2006). By understanding both practitioners' and trainers' perspectives, this study highlights the need for interactive and adaptable training kits that cater to the evolving demands of vocational education (Wu, 2024).

**Table 2.** Top Ten Most Cited Article

Title	DOI/Link	Cited	TC
Restoration longevity and analysis of reasons for the placement and replacement of restorations provided by vocational dental practitioners and their trainers in the United Kingdom (Burke et al., 1999).	<a href="https://openurl.ebsco.com/EPDB%3Aagcd%3A12%3A26394748/detailv2?sid=ebsco%3Aplink%3Ascholar&amp;id=ebsco%3Aagcd%3A37297853&amp;crl=c">https://openurl.ebsco.com/EPDB%3Aagcd%3A12%3A26394748/detailv2?sid=ebsco%3Aplink%3Ascholar&amp;id=ebsco%3Aagcd%3A37297853&amp;crl=c</a>	137	5.27
Undergraduate training as preparation for vocational training in England: a survey of vocational dental practitioners' and their trainers' views (Patel et al., 2006)	10.1038/sj.bdj.4814067	80	4.21
The Professional Socialization of Certified Athletic Trainers in High School Settings: A Grounded Theory Investigation (Pitney, 2002)	<a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC164358/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC164358/</a>	50	2.17
Experiences and perceptions of vocational training reported by the 1999 cohort of vocational dental practitioners and their trainers in England and Wales (Bartlett et al., 2001)	<a href="https://www.nature.com/articles/4801159">https://www.nature.com/articles/4801159</a>	41	1.71
What are the characteristics of the competent general practitioner trainer? (Boendermaker et al., 2000)	10.1093/fampra/17.6.547	41	1.64
A Warm-up Laparoscopic Exercise Improves the Subsequent Laparoscopic Performance of Ob-Gyn Residents: a Low-Cost Laparoscopic Trainer (Do et al., 2006)	<a href="https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3015706/">https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3015706/</a>	38	2
Conceptions of Connectivity: How Swiss Teachers, Trainers and Apprentices Perceive Vocational Learning and Teaching Across Different Learning Sites (Sappa & Aprea, 2014)	10.1007/s12186-014-9115-y	33	3
Traumatic brain injury vocational rehabilitation: Preliminary findings for the coworker as trainer project (Curl et al., 1996)	10.1097/00001199-199602000-00009	31	1.07
The learning context within the workplace: as perceived by apprentices and their workplace trainers (Brooker & Butler, 1997)	10.1080/13636829700200028	27	0.96
Training and educating interpreter and translator trainers as practitioners-researchers-teachers (Orlando, 2019)	10.1080/1750399X.2019.1656407	24	4

Through a survey of the views of practitioners and trainers, this article underscores the need for the development of interactive and adaptive training kits to meet the evolving needs of vocational education. These training kits serve not only as learning tools but also as bridges that ease the transition from theory to practice (Zamiri et al., 2023). By understanding the perspectives of both parties, this research encourages innovation in the development of training tools that better suit the demands of vocational education, ensuring that the training provided can keep up with the changes and challenges in the real world of work.

Another highly cited work, "The Professional Socialization of Certified Athletic Trainers in High School Settings: A Grounded Theory Investigation," has been cited 50 times. This article extends the discussion of media training kits beyond traditional vocational contexts, demonstrating their applicability in athletic

training and other specialized areas. The findings emphasize the role of media training kits in enhancing the professional development of trainers and educators, supporting continuous learning and adaptability in diverse vocational environments (Pitney, 2002). Media training kits not only help facilitate the transition from theory to practice, but are also an important tool in shaping professional skills and responses to workplace dynamics, demonstrating their flexibility and added value in a variety of training contexts (Scott, 2020).

The article "Experiences and perceptions of vocational training reported by the 1999 cohort of vocational dental practitioners and their trainers in England and Wales," cited 41 times, delves into the experiences of those involved in vocational training. This work highlights the value of media training kits tailored to specific vocational needs, suggesting that such tools can significantly improve the effectiveness of

training programs (Bartlett et al., 2001). It also points to the importance of feedback loops between trainers and trainees, a feature that media training kits can effectively facilitate, enhancing learning outcomes.

“What are the characteristics of the competent general practitioner trainer?” also cited 41 times, explores the competencies required in effective vocational trainers. This article underlines the role of media training kits in developing these competencies by providing structured, simulated environments for trainers to hone their teaching skills (Boendermaker et al., 2000). The findings support the broader research trend that emphasizes the need for quality training materials that can be easily adapted and implemented across various vocational fields.

The sixth most cited article, “A Warm-up Laparoscopic Exercise Improves the Subsequent Laparoscopic Performance of Ob-Gyn Residents: a Low-Cost Laparoscopic Trainer,” highlights the impact of affordable and accessible media training kits in medical education, specifically laparoscopic surgery. Cited 38 times, this article showcases the significant benefits of integrating practical training aids into vocational education, reinforcing the notion that such tools are indispensable in preparing students for high-stakes, skill-intensive careers (Do et al., 2006).

Lastly, articles such as “Conceptions of Connectivity: How Swiss Teachers, Trainers, and Apprentices Perceive Vocational Learning and Teaching Across Different Learning Sites” and “Traumatic brain injury vocational rehabilitation: Preliminary findings for the coworker as trainer project,” with 33 and 31 citations respectively, explore the broader implications of media training kits in vocational learning. They emphasize how these tools facilitate connectivity between different learning environments, supporting both independent and collaborative learning (Sappa & Aprea, 2014). The insights gained from these studies underline the essential role of media training kits in modernizing vocational education, making learning more interactive, engaging, and tailored to real-world applications (Curl et al., 1996). This bibliometric analysis highlights that the continued development and research into media training kits are vital for advancing vocational education, addressing current challenges, and meeting future demands.

#### *Trend Analysis*

Investigating research trends provides essential insights into the dynamic changes within the study of

media training kits in vocational education. By examining and analyzing patterns in publications over time, this type of analysis uncovers shifts in academic interest, research methodologies, and topical focus related to media training kits. It is a crucial tool for researchers, educators, and policymakers engaged in vocational education. Co-occurrence analysis, a bibliometric technique, is used to identify trends and patterns within the literature on media training kits. This method is based on the assumption that keywords frequently appearing together in a document indicate a strong connection beyond mere coincidence. In the context of this study, co-occurrence analysis helps identify emerging topics, track the evolution of research themes related to media training kits, and project future research directions. Moreover, trend analysis findings serve as valuable references for identifying research gaps that need further exploration in the context of vocational education.

Figure 3 shown is a visualization of the research topic network resulting from the bibliometric analysis, showing the relationship between various key concepts in the context of vocational education and training. Larger nodes, such as “general practice trainers” and “vocational training,” indicate key topics that are frequently discussed in the literature. The size and thickness of the lines connecting these nodes reflect the strength of the relationship between these topics, meaning that there is a high frequency of co-citation or conceptual linkage between them. This visualization is important in understanding how different elements of research relate to each other in the context of vocational education and shows the dominant research focus (Radianti et al., 2020; Spöttl & Windelband, 2021).

The main topics of “general practice trainers” and “vocational training” are interconnected with several other relevant sub-topics, such as “assessment,” “feedback,” and “consultation skills,” which are all important elements in the vocational training process. The linkages between these topics highlight the important role of trainers in vocational education, particularly in providing effective feedback and evaluation to trainees (Sauli, 2021). This is relevant to the exploration of the trend for media training kit as these tools are often used to support a more interactive and practical learning and assessment process, in line with vocational training needs (Ramírez-Montoya et al., 2021).



Figure 3. Co-occurrence analysis

The figure also shows that research on vocational training includes broader aspects such as “continuing professional development,” “educational management,” and “e-learning.” The integration of media training kit in vocational education often involves the use of modern technology to support continuous learning and more efficient educational management (Beer & Mulder, 2020). These elements emphasize the importance of technological innovation in vocational education, where media training kit can play a key role in connecting theory and practice in a more effective and scalable way (Castañeda & Williamson, 2021; González-Pérez & Ramírez-Montoya, 2022; Hennessy et al., 2022).

In addition, the presence of topic clusters such as “medical education,” “family medicine,” and “general practice registrars” indicates that the application of vocational training also extends to the medical field, where a practice-based approach is essential. In this context, a media training kit can be used to simulate real medical situations, allowing trainees to develop clinical skills in a controlled and safe environment (Elendu et al., 2024). Research into the use of media training kit in a medical context can provide valuable insights for vocational education in other fields, emphasizing the importance of a hands-on approach to teaching (Ma, 2023).

The figure also shows that trends in vocational training research are not only limited to teaching techniques, but also include managerial and professional development aspects, as shown by the connections to “educational management” and “continuing professional development”. This is relevant to media training kit, which not only serve as training

tools but can also be used for professional development purposes for instructors (Bragg, Walsh, & Heyeres, 2021). Through understanding these research trends, the development of media training kit can be optimized to support both aspects.

Overall, the network analysis of this topic provides deep insights into how research trends in vocational education are evolving and interrelated. In the context of exploring trends in media training kit, this analysis highlights opportunities to integrate innovative learning technologies into vocational education, strengthen practice-based approaches and improve training quality and learning outcomes. The findings are highly relevant in efforts to direct future research towards the development of more effective media training kit that meet the needs of modern vocational education.

**Conclusion**

It can be concluded that research in the field of vocational education has grown rapidly along with the increasing need for a skilled workforce that is ready to face the challenges of modern industry. Training kit media is an important element in vocational education, serving as a bridge that connects theory with real practice, thus improving students' understanding of concepts and practical skills. Bibliometric analysis provides an overview of research trends, identifying influential authors, institutions, journals and topics in this field. Although media training kits have been widely used, research on their effectiveness, design and innovation is still scattered and poorly structured. Therefore, mapping these research trends is important



to identify gaps and future development directions, to support the improvement of the quality of vocational education that is more relevant and adaptive to technological change and industry needs.

#### Acknowledgments

We extend our gratitude to all parties who have supported the implementation of this research. We hope that the findings of this research will be beneficial.

#### Author Contributions

Writing—original draft preparation, methodology and analysis, V.O; Conceptualization, review and editing, formal analysis, D.I.

#### Funding

This research received no external funding.

#### Conflicts of Interest

The authors declare no conflict of interest.

#### References

- Ahmad, S. T., Watrionthos, R., Samala, A. D., Muskhir, M., & Dogara, G. (2023). Project-based Learning in Vocational Education: A Bibliometric Approach. *International Journal Modern Education and Computer Science*, 15(4), 43–56. <https://doi.org/10.5815/ijmecs.2023.04.04>
- Bartlett, D. W., Coward, P. Y., Wilson, R., Goodsman, D., & Darby, J. (2001). Experiences and perceptions of vocational training reported by the 1999 cohort of vocational dental practitioners and their trainers in England and Wales. *British Dental Journal*, 191(5), 265–270. <https://doi.org/10.1038/sj.bdj.4801159a>
- Beer, P., & Mulder, R. H. (2020). The effects of technological developments on work and their implications for continuous vocational education and training: A systematic review. *Frontiers in Psychology*, 11, 918. <https://doi.org/10.3389/fpsyg.2020.00918>
- Boendermaker, P. M., Schuling, J., Jong, B. M., Zwierstra, R. P., & Metz, J. C. M. (2000). What are the characteristics of the competent general practitioner trainer? *Family Practice*, 17(6), 547–553. <https://doi.org/10.1093/fampra/17.6.547>
- Borgman, C. L., & Furner, J. (2002). Scholarly communication and bibliometrics. *Annual Review of Information Science and Technology*, 36(1), 1–53. <https://doi.org/10.1002/aris.1440360102>
- Bragg, L. A., Walsh, C., & Heyeres, M. (2021). Successful design and delivery of online professional development for teachers: A systematic review of the literature. *Computers & Education*, 166, 104158. <https://doi.org/10.1016/j.compedu.2021.104158>
- Brooker, R., & Butler, J. (1997). The learning context within the workplace: as perceived by apprentices and their workplace trainers. *Journal of Vocational Education and Training*, 49(4), 487–510. <https://doi.org/10.1080/13636829700200028>
- Burke, F. J., Cheung, S. W., Möhr, I. A., & Wilson, N. H. F. (1999). Restoration longevity and analysis of reasons for the placement and replacement of restorations provided by vocational dental practitioners and their trainers in the United Kingdom. *Quintessence International*, 30(4). Retrieved from <https://shorturl.at/3XfSP>
- Castañeda, L., & Williamson, B. (2021). Assembling new toolboxes of methods and theories for innovative critical research on educational technology. *Journal of New Approaches in Educational Research*, 10(1), 1–14. <https://doi.org/10.7821/naer.2021.1.703>
- Cattaneo, A. A. P., Gurtner, J.-L., & Felder, J. (2021). Digital tools as boundary objects to support connectivity in dual vocational education: Towards a definition of design principles. In *Developing Connectivity between Education and Work* (pp. 137–157). Routledge. <https://doi.org/10.4324/9781003091219-11>
- Curl, R. M., Fraser, R. T., Cook, R. G., & Clemmons, D. (1996). Traumatic brain injury vocational rehabilitation: preliminary findings for the coworker as trainer project. *The Journal of Head Trauma Rehabilitation*, 11(1), 75–85. <https://doi.org/10.1097/00001199-199602000-00009>
- Do, A. T., Cabbad, M. F., Kerr, A., Serur, E., Robertazzi, R. R., & Stankovic, M. R. (2006). A warm-up laparoscopic exercise improves the subsequent laparoscopic performance of Ob-Gyn residents: a low-cost laparoscopic trainer. *JLS: Journal of the Society of Laparoendoscopic Surgeons*, 10(3), 297. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3015706/>
- Doyle, T. (2023). *Helping students learn in a learner-centered environment: A guide to facilitating learning in higher education*. Taylor & Francis. <https://doi.org/10.4324/9781003445067>
- Elendu, C., Amaechi, D. C., Okatta, A. U., Amaechi, E. C., Elendu, T. C., Ezech, C. P., & Elendu, I. D. (2024). The impact of simulation-based training in medical education: A review. *Medicine*, 103(27), e38813. <https://doi.org/10.1097/MD.00000000000038813>
- González-Pérez, L. I., & Ramírez-Montoya, M. S. (2022). Components of Education 4.0 in 21st century skills frameworks: systematic review. *Sustainability*, 14(3), 1493. <https://doi.org/10.3390/su14031493>
- Gusenbauer, M. (2022). Search where you will find most: Comparing the disciplinary coverage of 56

- bibliographic databases. *Scientometrics*, 127(5), 2683–2745. <https://doi.org/10.1007/s11192-022-04289-7>
- Hennessy, S., D'Angelo, S., McIntyre, N., Koomar, S., Kreimeia, A., Cao, L., & Zubairi, A. (2022). Technology use for teacher professional development in low-and middle-income countries: A systematic review. *Computers and Education Open*, 3, 100080. <https://doi.org/10.1016/j.caeo.2022.100080>
- Jalinus, N., Haq, S., & Kassymova, G. K. (2023). Work-based learning for the engineering field in vocational education: Understanding concepts, principles and best practices. *Journal of Engineering Researcher and Lecturer*, 2(1), 9–17. <https://doi.org/10.58712/jerel.v2i1.22>
- Jing, Y., Wang, C., Chen, Y., Wang, H., Yu, T., & Shadiev, R. (2024). Bibliometric mapping techniques in educational technology research: A systematic literature review. *Education and Information Technologies*, 29(8), 9283–9311. <https://doi.org/10.1007/s10639-023-12178-6>
- Kanmounye, U. S., Robertson, F. C., Sebopelo, L. A., Senyuy, W. P., Sichimba, D., Keke, C., ... Graffeo, C. S. (2021). Bibliometric analysis of the 200 most cited articles in World Neurosurgery. *World Neurosurgery*, 149, 226–231. <https://doi.org/10.1016/j.wneu.2021.01.121>
- Kovalchuk, V. I., Maslich, S. V., & Movchan, L. H. (2023). Digitalization of vocational education under crisis conditions. *Educational Technology Quarterly*, 2023(1), 1–17. <https://doi.org/10.55056/etq.49>
- Lin, L., Shadiev, R., Hwang, W.-Y., & Shen, S. (2020). From knowledge and skills to digital works: An application of design thinking in the information technology course. *Thinking Skills and Creativity*, 36, 100646. <https://doi.org/10.1016/j.tsc.2020.100646>
- Ma, Y.-C. (2023). Using Participatory Teaching in Hands-On Courses: Exploring the Influence of Teaching Cases on Learning Motivation. *Education Sciences*, 13(6), 547. <https://doi.org/10.3390/educsci13060547>
- Muskhir, M., Luthfi, A., Watrianthos, R., Usmeldi, U., Fortuna, A., & Dwinggo Samala, A. (2024). Emerging Research on Virtual Reality Applications in Vocational Education: A Bibliometric Analysis. *Journal of Information Technology Education: Innovations in Practice*, 23, 005. <https://doi.org/10.28945/5284>
- Orlando, M. (2019). Training and educating interpreter and translator trainers as practitioners-researchers-teachers. *The Interpreter and Translator Trainer*, 13(3), 216–232. <https://doi.org/10.1080/1750399X.2019.1656407>
- Pambudi, N. A., & Harjanto, B. (2020). Vocational education in Indonesia: History, development, opportunities, and challenges. *Children and Youth Services Review*, 115, 105092. <https://doi.org/10.1016/j.childyouth.2020.105092>
- Passas, I. (2024). Bibliometric Analysis: The Main Steps. *Encyclopedia*, 4(2). <https://doi.org/10.3390/encyclopedia4020065>
- Patel, J., Fox, K., Grieveson, B., & Youngson, C. C. (2006). Undergraduate training as preparation for vocational training in England: a survey of vocational dental practitioners' and their trainers' views. *British Dental Journal*, 201(5), 9–15. <https://doi.org/10.1038/sj.bdj.4814067>
- Pham-Duc, B., Tran, T., Huu Hoang, D., & Bao Do, C. (2023). Global scientific literature on human resource development: a bibliometric analysis using Scopus database. *European Journal of Training and Development*, 47(7/8), 846–861. <https://doi.org/10.1108/EJTD-01-2022-0004>
- Pitney, W. A. (2002). The professional socialization of certified athletic trainers in high school settings: a grounded theory investigation. *Journal of Athletic Training*, 37(3), 286. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC164358/>
- Polat, Z., & Ekren, N. (2023). Remote laboratory trends for Distance Vocational Education and Training (D-VET): A real-time lighting application. *International Journal of Electrical Engineering & Education*, 60(2), 188–203. <https://doi.org/10.1177/0020720920926679>
- Pölönen, J., Laakso, M., Guns, R., Kulczycki, E., & Sivertsen, G. (2020). Open access at the national level: A comprehensive analysis of publications by Finnish researchers. *Quantitative Science Studies*, 1(4), 1396–1428. [https://doi.org/10.1162/qss\\_a\\_00084](https://doi.org/10.1162/qss_a_00084)
- Purwanto, M. B., Hartono, R., & Wahyuni, S. (2023). Essential skills challenges for the 21st century graduates: Creating a generation of high-level competence in the industrial revolution 4.0 era. *Asian Journal of Applied Education (AJAE)*, 2(3), 279–292. <https://doi.org/10.55927/ajae.v2i3.3972>
- Radianti, J., Majchrzak, T. A., Fromm, J., & Wohlgenannt, I. (2020). A systematic review of immersive virtual reality applications for higher education: Design elements, lessons learned, and research agenda. *Computers & Education*, 147, 103778. <https://doi.org/10.1016/j.compedu.2019.103778>
- Ramírez-Montoya, M. S., Andrade-Vargas, L., Rivera-Rogel, D., & Portuquez-Castro, M. (2021). Trends for the future of education programs for

- professional development. *Sustainability*, 13(13), 7244. <https://doi.org/10.3390/su13137244>
- Sanchez, D. R., Rueda, A., Kawasaki, K., Van Lysebetten, S., & Diaz, D. (2023). Reviewing Simulation Technology: Implications for Workplace Training. *Multimodal Technologies and Interaction*, 7(5), 50. <https://doi.org/10.3390/mti7050050>
- Sappa, V., & Aprea, C. (2014). Conceptions of connectivity: How Swiss teachers, trainers and apprentices perceive vocational learning and teaching across different learning sites. *Vocations and Learning*, 7, 263–287. <https://doi.org/10.1007/s12186-014-9115-y>
- Sauli, F. (2021). The collaboration between Swiss initial vocational education and training partners: perceptions of apprentices, teachers, and in-company trainers. *Empirical Research in Vocational Education and Training*, 13(1), 10. <https://doi.org/10.1186/s40461-021-00114-2>
- Scott, G. (2020). *Change matters: Making a difference in education and training*. Routledge. <https://doi.org/10.4324/9781003115137>
- Spöttl, G., & Windelband, L. (2021). The 4th industrial revolution—its impact on vocational skills. *Journal of Education and Work*, 34(1), 29–52. <https://doi.org/10.1080/13639080.2020.1858230>
- Watrianthos, R., Ahmad, S. T., & Muskhir, M. (2023). Charting the Growth and Structure of Early ChatGPT-Education Research: A Bibliometric Study. *Journal of Information Technology Education: Innovations in Practice*, 22, 235–253. <https://doi.org/10.28945/5221>
- Watrianthos, R., Ambiyar, A., Rizal, F., Jalinus, N., & Waskito, W. (2022). Research on Vocational Education in Indonesia: A Bibliometric Analysis. *JTEV (Jurnal Teknik Elektro Dan Vokasional)*, 8(2). <https://doi.org/10.24036/jtev.v8i2.117045>
- Wu, S. (2024). Application of multimedia technology to innovative vocational education on learning satisfaction in China. *PLoS One*, 19(2), e0298861. <https://doi.org/10.1371/journal.pone.0298861>
- Zamiri, M., Sarraipa, J., Ferreira, J., Lopes, C., Soffer, T., & Jardim-Goncalves, R. (2023). A Methodology for Training Toolkits Implementation in Smart Labs. *Sensors*, 23(5), 2626. <https://doi.org/10.3390/s23052626>