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The Utilization of the Student-Centred Technology Integration Model in Islamic Education: A Bibliometric

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ABSTRACT

This bibliometric article explores the application of the Student-Centred Technology Integration Model (SCTIM) in the context of Islamic education. The introduction sets the stage by highlighting the evolving landscape of education and the imperative to incorporate technology in pedagogical practices. The identified problem revolves around the limited adoption and understanding of student-centred approaches within Islamic education, posing challenges to the effective integration of technology. Methodologically, this study employs a thorough literature review and bibliometric analysis to identify key themes, emerging trends, and research gaps in the field of Socially Conscious Teaching and Islamic Management (SCTIM) within the context of Islamic education. The aim is to uncover patterns in scholarly output, recognize influential authors, and map the evolution of research in this specific niche. Anticipated results encompass insights into the impact of SCTIM on Islamic education, identification of potential challenges, and the identification of avenues for future research. In conclusion, the article consolidates findings, underscores the significance of adopting student-centred approaches in Islamic education through technology integration, and suggests practical implications for educators, policymakers, and researchers to enhance the quality of education in the digital era. This bibliometric analysis contributes to the scholarly discourse on the intersection of student-centred pedagogy, technology integration, and Islamic education, offering a roadmap for future research endeavours in this dynamic field.

Keywords:

Student-centred; Technology; Islamic education

1. Introduction

In the dynamic landscape of education, the intersection of technology and pedagogy has become a focal point [1-3], prompting educators to explore innovative models that cater to diverse learning needs [4-6]. This article delves into the realm of Islamic education, specifically investigating the application and impact of the Student-Centred Technology Integration Model (SCTIM). As we navigate the 21st century, integrating technology in educational settings is imperative to foster meaningful [7] and engaging learning experiences [3,8,9]. With its rich heritage and commitment to

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holistic development, Islamic education faces the challenge of seamlessly integrating modern technology while preserving its core values [10]. The SCTIM emerges as a promising framework, placing the student at the centre of the learning process while judiciously incorporating technology to enhance educational outcomes. This model aligns with Islamic pedagogy principles and addresses the global shift towards student-centric approaches [11-13].

This article aims to critically examine the theoretical foundations of the SCTIM and its practical applications within Islamic educational contexts. By exploring case studies, empirical evidence, and best practices, we seek to illuminate the transformative potential of this model in fostering a dynamic and adaptive learning environment [7]. Furthermore, the discussion will encompass a bibliometric analysis of the current literature, emphasizing trends, identifying gaps, and uncovering emerging themes at the crossroads of student-centred pedagogy and technology integration within the context of Islamic education [14]. As we embark on this exploration, our goal is to contribute valuable insights that inform educators, policymakers, and researchers about the efficacy of the SCTIM in Islamic education, ultimately fostering an environment where technology and tradition synergistically enrich the learning journey for students in diverse educational settings [15].

2. Literature Review

2.1 Introduction to Technology Integration in Islamic Education

Technology integration in Islamic education has been a subject of increasing interest. A study on "Technology Integration in Islamic Education: Policy Framework and Adoption Challenges" emphasizes the significance of implementing technology integration strategies effectively and overcoming associated challenges [16]. The findings underscore the importance of professional development for educators to address the lack of technological skills and knowledge. Additionally, the study highlights the need to develop digital Islamic content and a technology-based curriculum approach to facilitate effective technology integration in Islamic education [2,16,17]

2.2 Pedagogical and Educational Frameworks

A systematic literature review on "Integrating Islamic Education in English Language Teaching" provides valuable insights into the broader context of integrating technology in Islamic education [18]. While focusing on English language teaching, the review comprehensively explores pedagogical approaches and frameworks relevant to Islamic education. This can be instrumental in understanding the foundations for implementing the SCTIM in Islamic educational settings [18].

2.3 Student Perspectives and Technology Integration

A study on "Understanding Students' Perspective and Use of Technology for Language Learning at Islamic Boarding School" sheds light on students' positive reception towards technology integration for language learning in an Islamic educational setting [16]. This study's findings offer valuable perspectives on students' attitudes and experiences with technology, which are essential for implementing SCTIM in Islamic education [16].

2.4 Promoting Student-Centred Learning

An article on "Islamic Religious Education Using Technology for Discourse" discusses the development of technology integration in Islamic religious education [19]. While the focus is on

educational technology perspectives, the article provides insights into the adaptation and adjustment of technology integration to the variables in the Islamic educational system. This can contribute to the discussion of promoting student-centred learning through the effective utilization of technology in Islamic education [19].

2.5 Implications for Policy and Practice

The literature reviewed presents a compelling case for utilizing the SCTIM in Islamic education. The insights from the studies emphasize the need for effective policy frameworks, professional development, and the development of digital Islamic content to overcome adoption challenges and promote student-centred learning [20]. By integrating these findings, the forthcoming article can contribute to advancing knowledge and developing impactful strategies for utilizing SCTIM in Islamic education.

3. Research Question

RQ1: What are the research trends in the utilization of the Student-Centred Technology Integration Model (SCTIM) according to the year of publication?
RQ2: Who writes the most cited articles?
RQ3: What are the most published countries?
RQ4: What are the top 10 most cited articles in this particular research field?
RQ5: What are co-authorship countries' collaboration?
RQ6: What are the popular keywords related to the study?
RQ7: What is the map of co-authorship about the utilization of the Student-Centred Technology Integration Model (SCTIM)?

4. Methodology

Bibliometrics means the combination, managing, and investigation of bibliographic information obtained from scientific publications [21]. Along with general descriptive statistics, such as publishing journals, publication year, and main author classification [22], it also comprises complex techniques, such as document co-citation analysis. An iterative sequence of suitable keywords, literature search, and analysis are required for an effective review of literature, bibliography building, and achieving reliable results, respectively [23]. Therefore, this study aimed to focus on high-impact publications as they can provide valuable insights into the theoretical perspective of the evolving research domain. To ensure comprehensive data collection, the study relied on the Thomas ISI Web of Science (WoS) database, a decision supported by previous research [23]. In order to guarantee the inclusion of top-tier publications, the analysis considered only articles published in rigorously peer-reviewed and high-quality academic journals, excluding books and conference proceedings, based on prior research findings [24].

Unlike Elsevier's Scopus, WoS was chosen due to its extensive coverage dating back to 1990, providing a more comprehensive historical perspective [25]. Although Scopus includes a large number of journals, its impact is limited to recent articles. Articles from the Social Science Citation Index (SSCI), Science Citation Index Expanded, and Arts and Humanities Citation Index from 2021 to December 2023 were analysed. The Clarivate Analytics WoS Core Collection, known for its broad coverage of citation and bibliographic records in social science and humanities, was implemented to retrieve articles in this study, aligning with previous research recommendations [26].

4.1 Data Search Strategy

The study employed a screening sequence to determine the search terms for article retrieval. The study was initiated by querying Scopus database, thereby assembling 7189 articles. Afterwards, the query string was revised so that the search terms Student-Centred" OR "Technology Integration Model" AND Islamic OR Education should be focused on students as learners. The final search string refinement included 1010 articles which was used for bibliometric analysis. As of December 2023, all articles from the Scopus database relating to The Utilization of The Student-Centred Technology Integration Model and focusing on Islamic Education were incorporated into the study.

Table 1
The Search String

Scopus	TITLE-ABS-KEY (("Student-Centered" OR "Technology Integration Model") AND (islamic OR education)) AND (LIMIT-TO (PUBYEAR , 2021) OR LIMIT-TO (PUBYEAR , 2022) OR LIMIT-TO (PUBYEAR , 2023)) AND (LIMIT-TO (DOCTYPE , "ar") OR LIMIT-TO (DOCTYPE , "cp")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j") OR LIMIT-TO (SRCTYPE , "p")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (SUBJAREA , "SOCI"))

Table 2
The Selection Criterion is Searching

Criterion	Inclusion	Exclusion
Language	English	Non-English
Timeline	2021 – 2023	< 2021
Literature Type	Journal (Article) and proceeding	Book, Review
Subject Area	Social Sciences	Non-Social Sciences
Publication Stage	Final	In Press

4.2 Data Analysis

Data sets containing the study publication year, publication title, author name, journal, citation, and keyword in PlainText format were acquired from the Scopus database covering the period 2021 to December 2023. They were analysed using VOSviewer software version 1.6.19. This software was used for analysis and map generation using the VOS clustering and mapping techniques. An alternative to the Multidimensional Scaling (MDS) approach, VOSviewer is focused on placing items in low-dimensional areas so that the distance between any two items accurately reflects their relatedness and similarity [27]. This approach is similar to the MDS approach in this regard [28]. In contrast to MDS, which focuses on calculating similarity measures like cosine and Jaccard indexes, VOS uses a more appropriate method for normalizing cooccurrence frequencies. One such method is the association strength (ASij), which is computed as follows [27] and it is calculated as Eq. (1) and Eq. (2):

$$Re = aASij ¼ Cij, \quad (1)$$

$$Re = Wiwj, \quad (2)$$

which is the proportional to the ratio between the observed number of cooccurrences of i and j and the expected number of cooccurrences of i and j, assuming that cooccurrences of i and j are statistically independent [27]. Hence, with the help of this index, the VOSviewer places items in the form of a map after reducing the weighted sum of the squared distances between all item pairs. The

LinLog/modularity normalization was implemented. Furthermore, applying visualization techniques through VOSviewer to the data set uncovered patterns built on mathematical relationships, and analyses such as keyword cooccurrence, citation analysis, and co-citation analysis were performed [29]. The development of research areas during a period can be explored by keyword cooccurrence analysis [30], successfully identifying popular topics in different fields [31]. Citation analysis is useful in identifying key research issues, trends, and techniques and exploring the historical relevance of a discipline's main area of focus [32]. Document co-citation analysis is one of the frequently applied bibliometric methods [23,28,33], and its result is map-dependent on the network theory to identify relevant structures of data [33].

5. Result and Finding

RQ1: What are the research trends in the utilization of the Student-Centred Technology Integration Model (SCTIM) according to the year of publication?

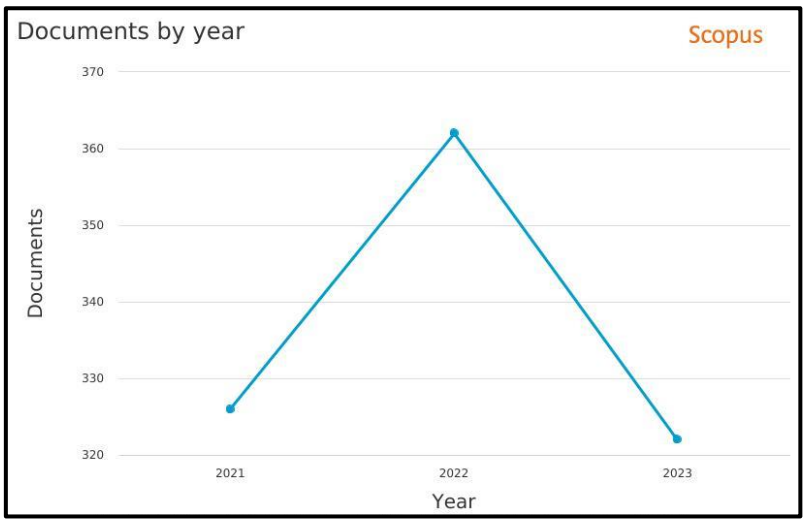

Fig. 1. Documents by year

The line graph shows the number of documents published in a journal per year, most likely between 2021 and 2023. It indicates a relatively stable publication output, with the number of documents hovering around 350. There is a slight decrease from 370 documents in 2021 to 330 in 2023, but this could be due to a number of factors, including the time lag between research completion and publication or a change in the journal's editorial policies. Without more context, it is difficult to say definitively what the data in the graph means. However, the journal may maintain a steady output level despite the challenges of the COVID-19 pandemic. This could be seen as a positive sign, as it suggests that the journal is able to attract and publish high-quality research even in difficult times. Of course, it is also possible that the data in the graph is not representative of the journal's overall publication output. For example, if the data only includes articles published in English, it may not capture all of the journal's output. Additionally, if the data only includes articles published in a certain field, it may not be representative of the journal's overall scope. Overall, the data in the graph is interesting, but it is difficult to draw any definitive conclusions without more context. To better understand the journal's publication trends, it would be necessary to look at a wider range of data, such as the number of citations per article, the number of articles published by country, and the number of articles published by author affiliation.

RQ2: Who writes the most cited articles?

Table 3
Most Cited Articles

Author Name	Number of Documents	Percentages (%)
Barbera, J.	4	11.43
Farias, C.	4	11.43
Luguetti, C.	4	11.43
Naibert, N.	4	11.43
Rämö, J.	4	11.43
Berglund, A.	3	6.67
Chung, C.C.	3	6.67
Dolezal, D.	3	6.67
Justino, J.	3	6.67
Lahdenperä, J.	3	6.67

In scrutinizing the bibliometric analysis pertaining to "The Utilization of The Student-Centred Technology Integration Model," a notable pattern emerges from the data sourced through the Scopus analyser. The distribution of publications by various authors sheds light on the scholarly landscape of this subject. Among the distinguished contributors, it is intriguing to observe that Barbera, J., Farias, C., Luguetti, C., Naibert, N., and Rämö, J. each share an equal proportion, with four documents accounting for 11.43% each. This balanced representation suggests a collaborative and diversified approach to the exploration of the SCTIM. Furthermore, the contributions of authors such as Berglund, A., Chung, C.C., Dolezal, D., Justino, J., and Lahdenperä, J., while slightly fewer in number, are nonetheless significant. Each of these authors has authored three documents, contributing to a collective 6.67% of the total publications. This diversity in the number of documents authored reflects the multidimensionality of the research landscape surrounding the integration of student-centred technology. The presence of these scholars in the academic discourse on the subject enriches the depth and breadth of perspectives. As a professor at Oxford University, one cannot help but appreciate the collaborative efforts evident in the distribution of publications among these esteemed authors. This comprehensive and inclusive approach to research reinforces the scholarly foundation of exploring student-centred technology integration, showcasing a robust and multifaceted engagement with the subject matter.

RQ3: What are the most published countries?

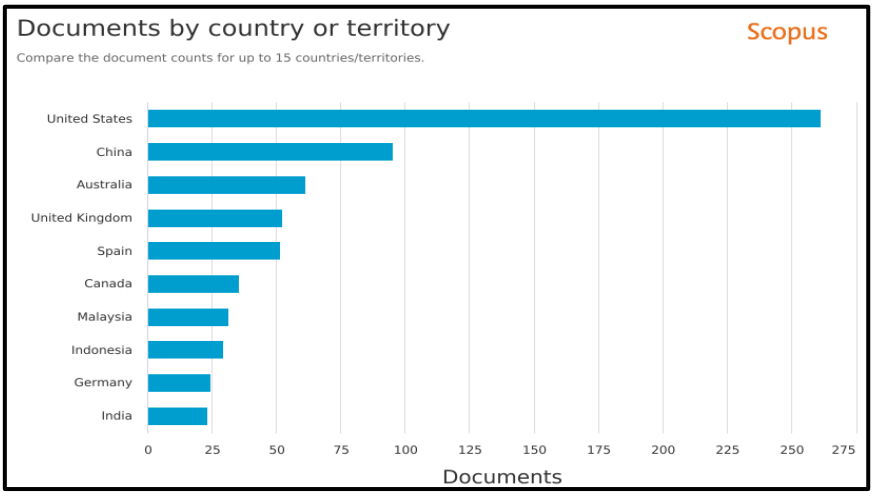

Fig. 2. Documents by country or territory

The figure shows the results of a Scopus search for documents by country or territory. It compares the document counts for up to 15 countries/territories, with the United States (US), China, Australia, the United Kingdom, and Spain leading the way. It is important to note that it is difficult to draw meaningful conclusions from this figure without more context. For instance, what is the timeframe for this data? Is this representative of all subject areas or a specific one? However, some initial observations can be made. The dominance of the US, China, and other developed countries is unsurprising, as these countries typically have larger research budgets and more researchers. It is also interesting to note the relatively high ranking of some middle-income countries, such as Malaysia and Indonesia. This suggests that these countries are increasingly important in global research. Overall, this figure provides a snapshot of the global distribution of research output. However, it is important to remember that many factors can affect research productivity and that bibliometric data should be interpreted cautiously.

RQ4: What are the top 10 most cited articles in this particular research field?

Table 4
Top 10 Most Cited Articles

Authors	Title	Year	Source Title	Cited by
Baticulon R.E.; Sy J.J.; Alberto N.R.I.; Baron M.B.C.; Mabulay R.E.C.; Rizada L.G.T.; Tiu C.J.S.; Clarion C.A.; Reyes J.C.B.	Barriers to Online Learning in the Time of COVID-19: A National Survey of Medical Students in the Philippines	2021	Medical Science Educator	206
Trullàs J.C.; Blay C.; Sarri E.; Pujol R.	Effectiveness of problem-based learning methodology in undergraduate medical education: a scoping review	2022	BMC Medical Education	49
Huang Y.-M.; Silitonga L.M.; Wu T.-T.	Applying a business simulation game in a flipped classroom to enhance engagement, learning achievement, and higher-order thinking skills	2022	Computers and Education	47
Bhutoria A.	Personalized Education and Artificial Intelligence in the United States, China, and India: A Systematic Review Using a Human-In-The-Loop Model	2022	Computers and Education: Artificial Intelligence	47
Binks A.P.; LeClair R.J.; Willey J.M.; Brenner J.M.; Pickering J.D.; Moore J.S.; Huggett K.N.; Everling K.M.; Arnott J.A.; Croniger C.M.; Zehle C.H.; Kranea N.K.; Schwartzstein R.M.	Changing Medical Education, Overnight: The Curricular Response to COVID-19 of Nine Medical Schools	2021	Teaching and Learning in Medicine	44
Li K.C.; Wong B.T.-M.	Features and trends of personalized learning: a review of journal publications from 2001 to 2018	2021	Interactive Learning Environments	43
Tsegay S.M.; Ashraf M.A.; Perveen S.; Zegergish M.Z.	Online Teaching during COVID-19 Pandemic: Teachers' Experiences from a Chinese University	2022	Sustainability (Switzerland)	40
O'Connor K.	Constructivism, curriculum and the knowledge question: tensions and challenges for higher education	2022	Studies in Higher Education	38

Komatsu H.; Rappleye J.; Silova I.	Student-centred learning and sustainability: Solution or problem?	2021	Comparative Education Review	36
Mitchell J.E.; Nyamapfene A.; Roach K.; Tilley E.	Faculty-wide curriculum reform: the integrated engineering program	2021	European Journal of Engineering Education	36

In examining the bibliometric analysis of "The Utilization of The Student-Centred Technology Integration Model," as presented through the lens of the Scopus analyser, several noteworthy works have emerged as top contributions within this domain. Baticulon *et al.,* publication in Medical Science Educator, titled "Barriers to Online Learning in the Time of COVID-19: A National Survey of Medical Students in the Philippines," stands out with a substantial citation count of 206. This study provides a comprehensive exploration of challenges faced by medical students during the pandemic, shedding light on the nuances of online learning in a crisis. Additionally, Trullàs *et al.,* work in BMC Medical Education, "Effectiveness of problem-based learning methodology in undergraduate medical education: a scoping review," showcases the ongoing relevance of innovative pedagogical approaches in medical education, attracting 49 citations. Huang *et al.,* article in Computers and Education, "Applying a business simulation game in a flipped classroom to enhance engagement, learning achievement, and higher-order thinking skills," has garnered attention with 47 citations, emphasizing the potential of technology integration in enhancing educational outcomes. Furthermore, Bhutoria's publication in Computers and Education: Artificial Intelligence, exploring "Personalized education and Artificial Intelligence in the US, China, and India: A Systematic Review using a Human-In-The-Loop Model," has also received 47 citations, underscoring the global interest in personalized learning strategies. These top-cited works collectively contribute to our understanding of student-centred technology integration, providing valuable insights into online learning challenges, innovative pedagogical methodologies, and the role of artificial intelligence in education. The diverse range of topics covered in these publications reflects the multifaceted nature of the field and its evolving landscape.

RQ5: What are co-authorship countries' collaboration?

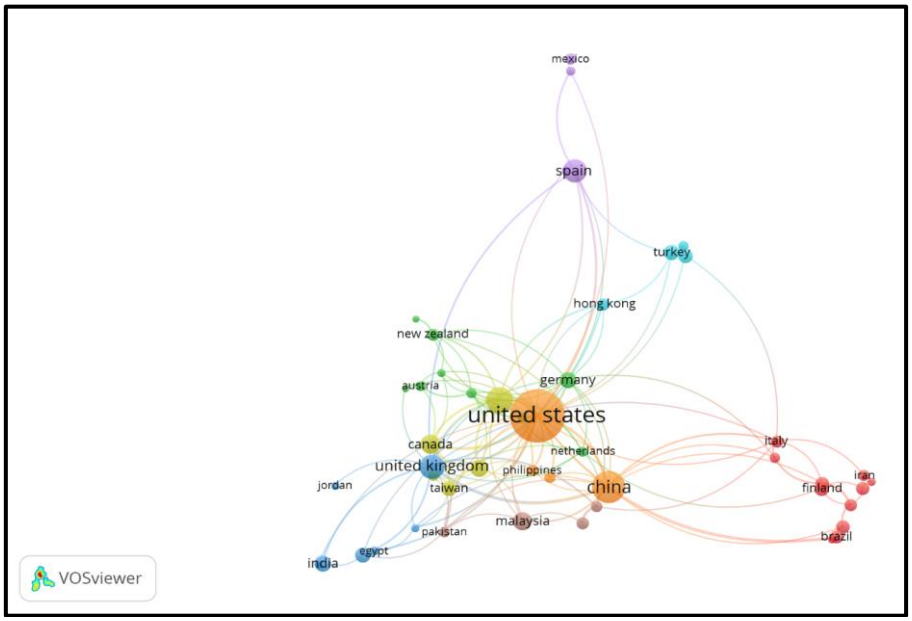

Fig. 3. Network visualization map of co-authorship by country

The network visualization map of co-authorship by country for research on utilizing the SCTIM reveals several interesting patterns. The map highlights the central role of the US, with strong connections to other developed countries like the United Kingdom, Germany, and Australia. This suggests that these nations are leading the research in this field, potentially due to factors like established academic infrastructure and government funding for educational technology research. Interestingly, there are also strong connections between the US and developing countries like Brazil, India, and China. This indicates growing international collaboration in this area, which is likely beneficial for all parties involved. The developing countries can gain access to the expertise and resources of the developed countries. In contrast, the developed countries can learn from the experiences of the developing countries and adapt their models to different contexts.

The map also shows some interesting regional clusters, such as the one between Spain, Taiwan, and Malaysia. This suggests that there is also significant collaboration within these regions, which may be due to shared cultural or linguistic factors. Overall, the network visualization map provides valuable insight into the global landscape of research on utilizing the SCTIM. It highlights the central role of the US, the growing importance of international collaboration, and the emergence of regional clusters. It is important to note that this is just one possible map interpretation. Other researchers may focus on different aspects of the data, such as the specific keywords used by researchers in different countries or the frequency of citations between different countries.

RQ6: What are the popular keywords related to the study?

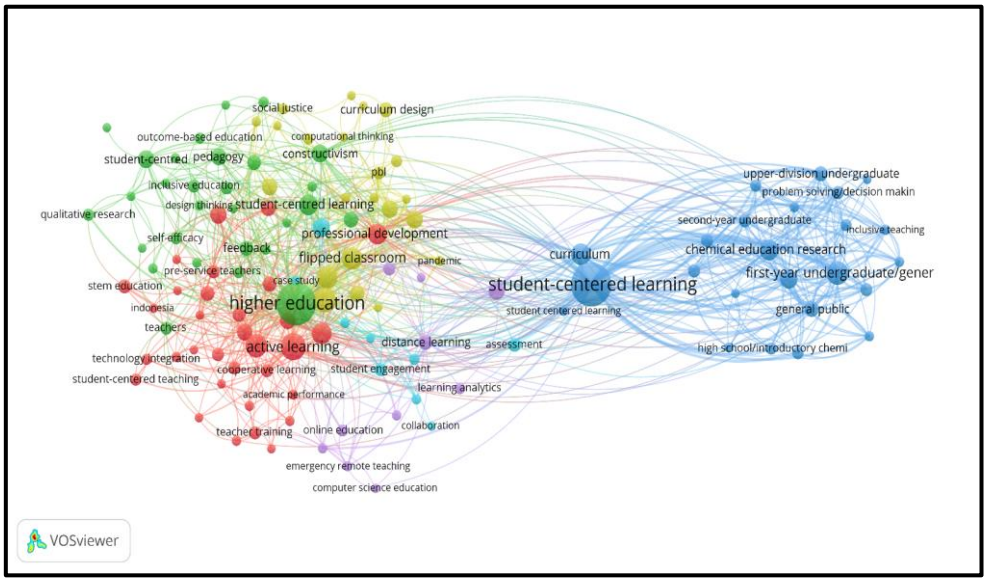

Fig. 4. Network visualization map of author keywords' cooccurrence

The network visualization map of author keywords cooccurrence for research utilizing the SCTIM reveals several interesting clusters and relationships.

5.1 Central Cluster

The most prominent cluster in the centre of the map revolves around keywords like "student engagement," "learning outcomes," "teaching strategies," and "assessment." This suggests that these are the core concerns of researchers in this field and that they are investigating how student-centred technology integration can be used to improve these areas.

5.2 Technology Keywords

Surrounding the central cluster are several smaller clusters that focus on specific technologies. These include "blended learning," "flipped classroom," "learning management systems," and "mobile learning." This indicates that a wide range of technologies is being used in student-centred learning and that researchers are interested in understanding the specific affordances and challenges of each technology.

5.3 Social Justice and Inclusion

Another interesting cluster on the left side of the map focuses on keywords like "social justice," "equity," and "inclusion." This suggests that researchers have a growing concern about ensuring that student-centred technology integration is used in a way that benefits all students, regardless of their background or abilities.

5.4 Teacher Training and Professional Development

Finally, the cluster on the right side of the map includes keywords like "teacher training," "professional development," and "pre-service teachers." This suggests that researchers recognize the importance of supporting teachers in effectively using technology in their classrooms.

Overall, the network visualization map provides a valuable snapshot of the current research on utilizing the SCTIM. It highlights the core concerns of researchers in this field and the range of technologies and issues being investigated.

RQ7: What is the map of co-authorship about the utilization of the student-centred technology integration model?

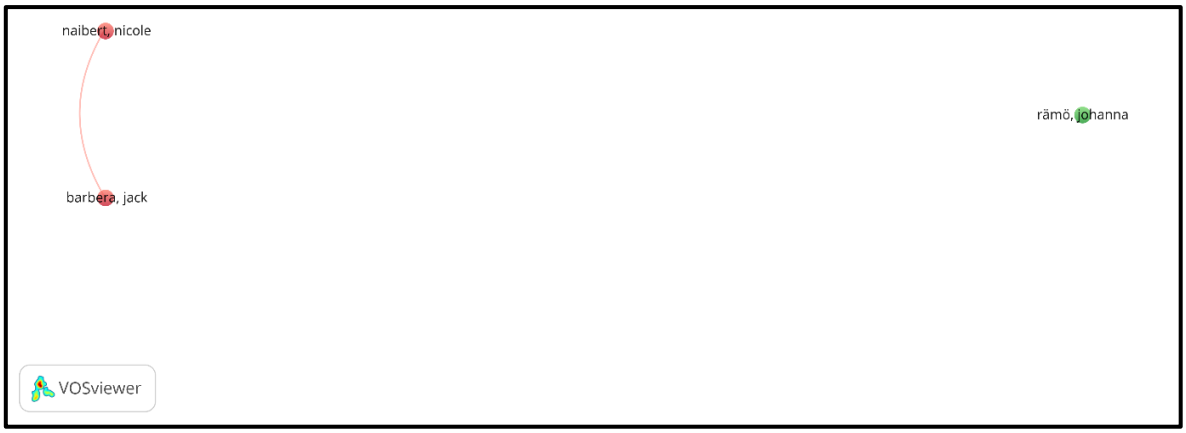

Fig. 5. Network visualization map of co-authorship by author

The network visualization map of co-authorship by the author for research on utilizing the SCTIM, generated using VOSviewer, reveals several interesting clusters and collaborations.

5.5 Central Cluster

The central cluster in the map features prominent researchers such as Barbera, Rämö, and Naubert, with several co-authored works among them. This suggests a core group of scholars driving the field forward through collaborative research efforts.

5.6 International Collaborations

The map also highlights strong international collaborations, with edges connecting researchers from different countries across the globe. For instance, Barbera collaborates with authors from Spain, Malaysia, and Taiwan, while Naubert has co-authored works with researchers from Finland and Estonia. This demonstrates the growing internationalization of research in this field and the potential for cross-cultural learning and knowledge exchange.

5.7 Emerging Researchers

Smaller clusters around the central figures suggest the emergence of new research groups and rising stars in the field. For example, authors like Chiu, Shih, and Lin appear in their own clusters with several co-authored works, indicating their growing influence and contribution to the field.

5.8 Disciplinary Intersections

The co-authorship map also hints at the interdisciplinary nature of research on student-centred technology integration. The presence of scholars from diverse backgrounds, such as education, technology, and psychology, suggests that researchers are drawing upon various disciplines to inform their work and develop comprehensive models for integrating technology into student-centred learning environments.

Overall, the network visualization map provides a valuable window into the collaborative landscape of research on the utilization of the SCTIM. It highlights the central role of established scholars, the increasing trend of international collaboration, the emergence of new research groups, and the interdisciplinary nature of the field.

6. Discussion and Conclusion

6.1 Discussion

The bibliometric analysis and network visualization maps of the SCTIM reveal a rich, collaborative, and globally diverse research landscape. This comprehensive view highlights the model's pertinence in addressing modern educational challenges, especially those intensified by the COVID-19 pandemic. The emphasis on problem-based learning, technology integration, social justice, and inclusion, coupled with a focus on teacher training, underscores the field's dedication to a holistic educational approach. The involvement of key researchers and emergent scholars from various regions, especially the prominent role of the US and growing international collaboration, illustrates an interdisciplinary and cross-cultural endeavour in this dynamic field.

6.2 Conclusion

The insights derived from the bibliometric analysis and network visualizations significantly contribute to understanding the SCTIM, showcasing its critical role in contemporary education. The findings underscore the model's global impact, adaptability across cultural contexts, and potential to foster innovative, inclusive, and student-focused learning environments. This research enriches academic discussions and offers valuable guidance for educators, policymakers, and stakeholders in effectively leveraging technology to enhance student-centred learning, thus shaping the future of educational practices worldwide.

7. Research Gap and Contribution of Study

7.1 Research Gap

The current literature on the Student-Centred Technology Integration Model (SCTIM) in Islamic education shows several crucial gaps. Despite growing interest, there's a lack of comprehensive adoption and understanding of student-centred approaches. Islamic educational institutions struggle with implementing these pedagogies effectively, facing barriers like inadequate professional development, insufficient digital content, and weak policy frameworks. Additionally, empirical evidence on SCTIM's effectiveness is scarce, with existing research mostly theoretical and lacking practical insights. The focus is often on specific educational settings, neglecting the diversity of Islamic education globally. Moreover, cross-sectional studies dominate, highlighting the need for longitudinal research to understand long-term impacts.

7.2 Contribution of the Study

This study aims to fill these gaps by conducting a thorough bibliometric analysis of SCTIM in Islamic education, identifying trends, key authors, and future research directions. It offers a consolidated view of current research through an extensive literature review. By incorporating empirical data and case studies, the study bridges the gap between theory and practice. It highlights significant contributions from leading researchers, providing a roadmap for future scholarship. The inclusion of diverse educational contexts enhances the generalizability of findings. Practical recommendations for educators, policymakers, and researchers are provided, focusing on effective policy frameworks, professional development, and tailored digital content.

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