
The Trend of Research on Learner Autonomy in the Past Two Decades: A Bibliometric Study from the Scopus Database

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Abstract: Learner autonomy has become a significant focus in education and research. Various methods have been experimented with to promote learner autonomy in language education and second language acquisition, and different theoretical approaches have been proposed. This article uses bibliometric analysis of publications extracted from the Scopus database to provide a comprehensive overview of research publications on learner autonomy. One thousand nine hundred seventy relevant publications were collected and analyzed from 2003 to 2022. Using Biblioshiny and VOSViewer software, the author carried out different scientometrics analysis techniques to extract information about a set of publications: General information about the collection and annual publication quantity, the country with the most publications, information about the most influential authors, the most cited articles. The author also performs keyword analysis in the papers to point out research trends in this field. The results of the analysis indicate that the number of publications has seen a significant increase in recent years; authors tend to publish in small groups with limited research collaboration; the three most influential countries in this research topic are China, the United States, and the United Kingdom; the most influential authors in this research direction are Reinders, H., Little, D., Chik, A., Benson, P., and Miller, L.; the three main research trends in this field include learner autonomy linked to English as a second language teaching methods, autonomous learning associated with teaching methods, and autonomy in teaching and learning.

Keywords: Autonomous Learning, Learner Autonomy, Autonomy, Bibliometrics, Scopus

1. Introduction

Learner autonomy is considered an objective of higher education worldwide, since it is a component of learner-centred methodologies and lifelong learning [1, 2]. In language education around the globe, several research has been undertaken to investigate different strategies to encourage student autonomy [3, 4, 5]. In educational psychology, self-directed learning is an important research area. This idea first appeared in discussions about the development of independent thinking and lifelong learning in Western education in the 1950s [6]. This idea was first presented to the subject of teaching foreign languages by Holec [7]. He defined autonomy as the capacity to assume responsibility for one's own learning. Since then, there has

been much debate on self-regulated learning, and many academics have written books and papers on the subject. They have presented several definitions and addressed the theoretical underpinnings of autonomy from diverse angles. Numerous academics have examined factors that affect self-directed learning and the application tactics, educational plans, and practical results of improving learners' capacity for self-learning when learning a foreign language.

Scientometrics, often known as bibliometrics, is a young branch of science that deals with quantitatively assessing scientific literature. Bibliometric analysis was developed in the 1960s [8] and has since been extensively utilized to track the advancement of numerous research topics on a local and international level. Scientific publication analysis, or scientometric analysis, provides quantitative data on citations and publications in the scientific field.

These details can help researchers determine the course of their research and lay the groundwork for funding decisions and policy making by institutions, organizations, and governments that support scientific research [9]. In addition, scientometrics is a crucial instrument used by university ranking bodies to assess universities [10]. It can also be used to evaluate a nation's progress in scientific research and comprehend where it is right now [11, 12].

In this study, bibliometric analysis is used to examine the Scopus-indexed publications on learner autonomy to answer the following research questions: 1) What bibliometric data exists for the scientific literature on learner autonomy that has been indexed in the Scopus database over the past two decades? 2) What are the main current research trends that are receiving the most attention in this field?

2. Research Methodology

To conduct our research, we used the five-step scientific mapping procedure outlined below: (1) Research design; (2) Data acquisition; (3) Data analysis; (4) Data visualization; and (5) Results interpretation, according to Zupic and Cater [13]. This method is also widely employed in bibliometric research [11, 14, 16].

During the research design phase, the research questions (described in the Introduction) were formulated.

The data collection stage consisted of three steps: data retrieval, data filtration, and data cleansing.

Step 1: Data retrieval. The authors conducted queries in the Scopus database (<http://www.scopus.com>) using advanced search options to input search conditions and appropriate operators based on the search tool syntax. The included studies were English-language social science documents with the terms "learner autonomy" or "autonomous learning" in the abstract, keywords, or document title. The data were restricted to scholarly articles, conference papers, book chapters, and reviews. Additionally, we limited the search to documents published between 2003 and 2022. On 1 May 2023, the data query was executed in the Scopus database. The search returned 1985 documents. In the Scopus database, the search query string was as follows:

TITLE-ABS-KEY ("learner autonomy" OR "autonomous learning") AND PUBYEAR > 2002 AND PUBYEAR < 2023 AND (LIMIT-TO (LANGUAGE, "English")) AND (LIMIT-TO (DOCTYPE, "ar") OR LIMIT-TO (DOCTYPE, "cp") OR LIMIT-TO (DOCTYPE, "ch") OR LIMIT-TO (DOCTYPE, "re") OR LIMIT-TO (DOCTYPE, "cr")) AND (LIMIT-TO (SUBJAREA, "SOCI")).

Step 2: Data filtration. The authors performed data filtering by examining the titles, abstracts, and keywords to eradicate nondirectly relevant documents. The quantity of documents remaining was 1970.

Step 3: Cleansing the data. Before conducting the analysis, it was necessary to standardize the data for certain information, such as author names and affiliations, which can vary considerably between countries such as Vietnam and China.

Data analysis and data visualization were used to extract information from the collection of publications using a variety of analysis techniques. The general information of the published set was summarized, and the annual publication count was analyzed to determine the research field's development tendencies. Using keyword analysis techniques, research trends in this field were identified. The authors conducted data analysis using available resources from Scopus, VOSviewer software, and Biblioshiny.

3. Results and Discussion

3.1. General Details Regarding the Publications

Table 1 shows the information extracted from the Biblioshiny software on the publication collection. According to these data, between 2003 and 2022, 3,536 authors conducted a total of 1,970 studies on learner autonomy and published in 840 distinct Scopus sources. This compilation contains 1,328 articles, 263 book chapters, 315 conference papers, seven conference review articles, and fifty-seven review articles. 2.14 is the average number of authors per document. This index differs significantly compared to bibliometric studies in other fields, such as STEM (Co-Authors per Doc = 3.3) [14, 15], Remote Sensing (Co-Authors per Doc = 6.6) [16], and social sciences in Vietnam (Co-Authors per Doc = 3.9) [11]. There were 683 authors who published single-authored documents, and a total of 783 single-authored publications were recorded (representing 39.74% of all publications). Thus, researchers in this field tend to work in fewer author groups or publish individually, with less author collaboration.

Table 1. General Information Regarding the Learner Autonomy Publications Collection.

| Description | Results |
|---------------------------------|------------|
| MAIN INFORMATION ABOUT DATA | |
| Timespan | 2003: 2022 |
| Sources (Journals, Books, etc) | 840 |
| Documents | 1970 |
| Annual Growth Rate % | 12.88 |
| Document Average Age | 6.87 |
| Average citations per doc | 11.09 |
| AUTHORS | |
| Authors | 3536 |
| Authors of single-authored docs | 683 |
| Single-authored docs | 783 |
| Co-Authors per Doc | 2.14 |
| International co-authorships % | 11.64 |
| DOCUMENT TYPES | |
| article | 1328 |
| book chapter | 263 |
| conference paper | 315 |
| conference review | 7 |
| review | 57 |

This collection has accumulated a total of 21,704 citations as of the current research period, which is equivalent to an average of 11.09 citations per publication. There were 1,080 references to publications published in 2023. The H-index of the collection is 66, indicating that among the published

papers, 66 have been cited at least 66 times.

The cumulative quantity of publications and citations over time is shown in Figure 1. It demonstrates that the learner autonomy research trend has grown unevenly from 2003 to the present. According to the calculations from Biblioshiny software, the annual growth rate of research in this field from 2003 to 2022 is 12.88 percent. However, the number of

studies in this field has increased significantly over the past two years, with both 2021 and 2022 having over 200 publications (2021: 245 publications, 2022: 232 publications). The cumulative number of citations has also increased rapidly each year, paralleling the rising number of published scholarly studies. This growth pattern is consistent with numerous earlier-mentioned studies in other disciplines.

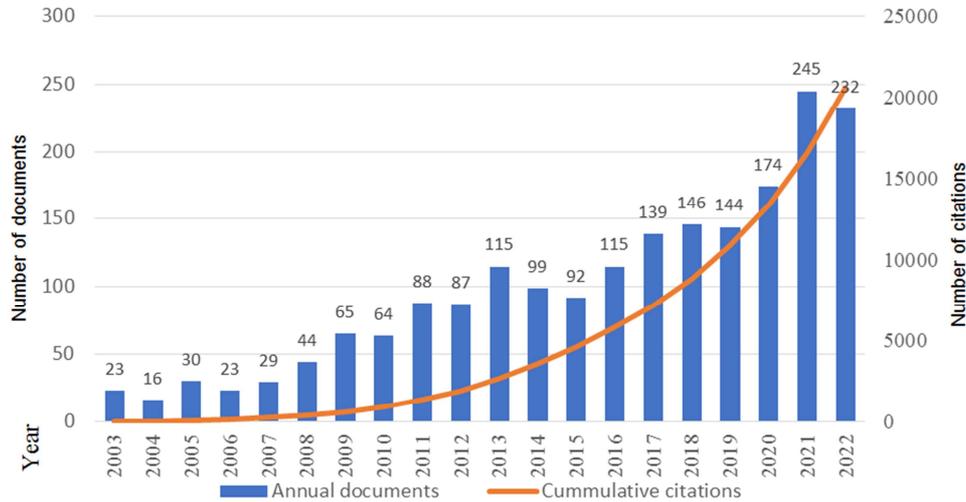


Figure 1. Annual Cumulative Publications and Citations.

3.2. Distribution by Country

According to data from the Scopus database, authors from 95 various countries and territories have contributed to the field of learner autonomy between 2003 and 2022. Table 2 provides data on the top ten countries with the greatest number of publications in this field. The Top 10 countries have collectively published 1300 papers (representing 66.0% of all publications) and have received 15143 citations (representing 69.8% of all citations). It can be said that these nations have shaped learner autonomy research tendencies.

Japan, the United States, and the United Kingdom are the three most influential nations in this discipline in terms of publication output and citations. China ranks first in the number of published papers with an astonishing 329 (representing 16.7% of all publications). It ranks third in terms of citations, with 1295 citations (equivalent to a comparatively low average of 3.9 citations per paper). The

h-index of this country's local population is 18.

The United States ranks second in the number of publications with 221 papers (10.7% of the total), but the quality of its publications is reflected in a significantly higher number of citations than other nations. These articles have been cited 5053 times, representing 23.3% of all citations. The United States also has the greatest average number of citations per paper, at 23.9 citations per paper, as well as the highest local h-index, at 38.

The United Kingdom ranks second on the list with 167 published papers and 3,420 citations, or 15.8% of the total citations. The remaining countries on the list are as follows, along with their respective quantities of published papers and citations: Spain (150 papers; 1148 citations), Japan (94 papers; 680 citations), Australia (81 papers; 1187 citations), Turkey (80 papers; 574 citations), Taiwan (76 papers; 1230 citations), Iran (60 papers; 246 citations), and Indonesia (152 papers; 310 citations) topped the list of countries with the highest number of publications.

Table 2. The top ten nations with the most publications on learner autonomy.

| Rank | Country/ Territory | NP* | % | Cite rank | TC* | % | TC/TP | Local h-index |
|-------|--------------------|------|-------|-----------|-------|-------|-------|---------------|
| 1 | China | 329 | 16.7% | 3 | 1295 | 6.0% | 3.9 | 18 |
| 2 | United States | 211 | 10.7% | 1 | 5053 | 23.3% | 23.9 | 38 |
| 3 | United Kingdom | 167 | 8.5% | 2 | 3420 | 15.8% | 20.5 | 30 |
| 4 | Spain | 150 | 7.6% | 6 | 1148 | 5.3% | 7.7 | 19 |
| 5 | Japan | 94 | 4.8% | 7 | 680 | 3.1% | 7.2 | 14 |
| 6 | Australia | 81 | 4.1% | 5 | 1187 | 5.5% | 14.7 | 18 |
| 7 | Turkey | 80 | 4.1% | 8 | 574 | 2.6% | 7.2 | 14 |
| 8 | Taiwan | 76 | 3.9% | 4 | 1230 | 5.7% | 16.2 | 20 |
| 9 | Iran | 60 | 3.0% | 10 | 246 | 1.1% | 4.1 | 9 |
| 10 | Indonesia | 52 | 2.6% | 9 | 310 | 1.4% | 6.0 | 10 |
| Total | | 1300 | 66.0% | | 15143 | 69.8% | 11.6 | |

* NP: Number of Publication; TC: Total of Citations

Figure 2 illustrates the collaborative network between the 94 countries/territories whose authors participated in research on learner autonomy. This network consists of forty countries that have published at least ten articles in the subject area. This network is constructed by the VOSviewer software using the following principles: Each circle represents a

country, with their magnitude proportional to the number of publications. The connecting lines between the circles represent international cooperation, and the thickness of the lines represents the intensity of this cooperation. The contiguous circles are clustered in the same colour.

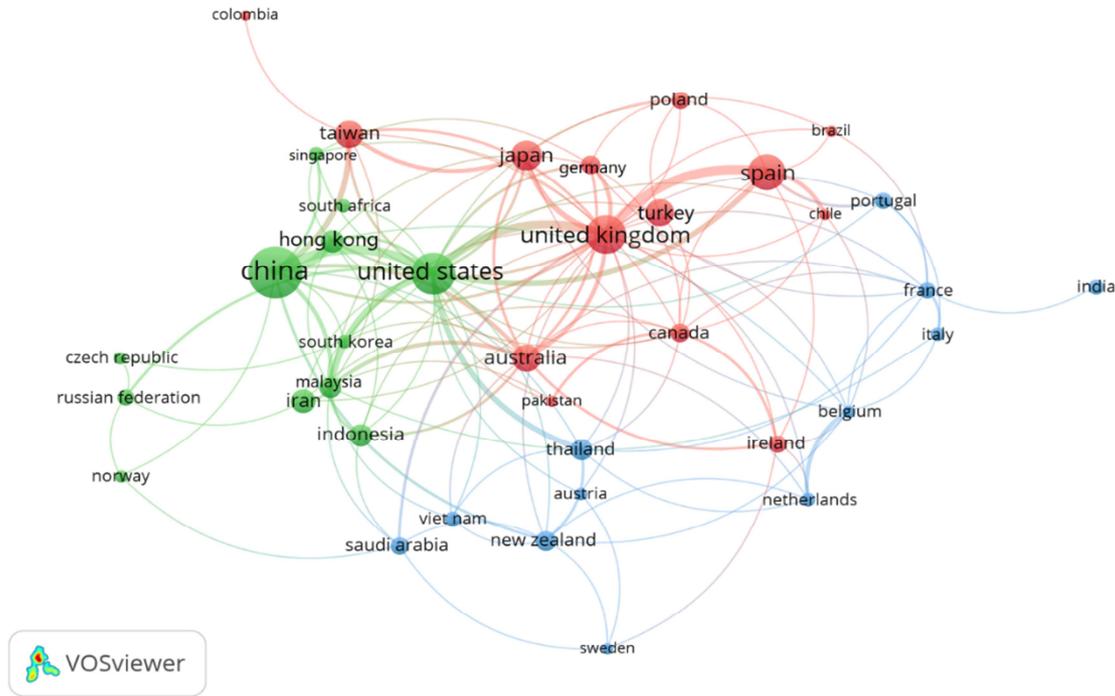


Figure 2. International research collaboration network on learner autonomy.

All the nations enumerated in Table 2 are present in this network. The network is divided into three distinct color-coded clusters: The green cluster contains numerous significant nations, including China, the United States, Hong Kong, Indonesia, Iran, and Malaysia. Included in the red cluster are the United Kingdom, Spain, Turkey, Japan, Australia, Canada, and Germany, among others. These two clusters collaborate in a relatively concentrated manner. The third cluster (in light blue) is comprised of countries such as Thailand, New Zealand, Vietnam, Saudi Arabia, Portugal,

and France, among others.

3.3. The Most Influential Authors

Table 3 lists the 12 authors with the greatest number of publications on the topic of learner autonomy, out of the 3536 authors who contributed to this study. Australia has two authors, while Thailand, Ireland, Pakistan, Malaysia, Hong Kong, the United Kingdom, Turkey, Poland, the United States, and Portugal each have a single author.

Table 3. The top twelve authors with the most publications on learner autonomy.

| Rank | Author | Institution/ Country | NP* | TC* | TP/TC |
|------|-------------------|---|-----|-----|-------|
| 1 | Reinders, H. | King Mongkuts University of Technology, School of Liberal Arts, Bangkok, Thailand | 13 | 248 | 19.1 |
| 2 | Little, D. | Trinity College Dublin, Dublin, Ireland | 10 | 220 | 22.0 |
| 3 | Chik, A. | Macquarie University, Sydney, Australia | 7 | 181 | 25.9 |
| 4 | Yasmin, M. | University of Gujrat, Gujrat, Pakistan | 7 | 87 | 12.4 |
| 5 | Benson, P. | Macquarie University, Sydney, Australia | 6 | 238 | 39.7 |
| 6 | Kaur, N. | Universiti Teknologi MARA, Shah Alam, Malaysia | 6 | 24 | 4.0 |
| 7 | Miller, L. | City University of Hong Kong, Hong Kong, Hong Kong | 5 | 204 | 40.8 |
| 8 | Smith, R. | University of Warwick, Coventry, United Kingdom | 5 | 102 | 20.4 |
| 9 | Balçıklanlı, C. | Gazi Üniversitesi, ELT Program, Ankara, Turkey | 5 | 23 | 4.6 |
| 10 | Pawlak, M. | Uniwersytet im. Adama Mickiewicza w Poznaniu, Poznan, Poland | 5 | 21 | 4.2 |
| 11 | Confessore, G. J. | The George Washington University, Graduate School of Education and Human Development, Washington, D.C., United States | 5 | 15 | 3.0 |
| 12 | Duarte, M. | Instituto Politécnico do Porto, Porto, Portugal | 5 | 1 | 0.2 |

* NP: Number of Publication; TC: Total of Citations

Table 4. Information on the Top 10 highly cited studies on learner autonomy.

| Order | Document Title | Author | First author affiliation | Journal Title | PY* | TC* | TC/year |
|-------|--|---|---|--|------|-----|---------|
| 1 | The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course | Kop R. | Yorkville University, Fredericton, Canada | International Review of Research in Open and Distance Learning | 2011 | 403 | 33.58 |
| 2 | Creative learning environments in education-A systematic literature review | Davies D., Jindal-Snape D., Collier C., Digby R., Hay P. | University of Bath, Bath, UK | Thinking Skills and Creativity | 2013 | 357 | 35.70 |
| 3 | The responsibility gap: Ascribing responsibility for the actions of learning automata | Matthias A. | Lingnan University, Hong Kong, Hong Kong | Ethics and Information Technology | 2004 | 350 | 18.42 |
| 4 | A pedagogy of abundance or a pedagogy to support human beings? Participant support on massive open online courses | Kop R., Fournier H., Mak J. S. F. | Yorkville University, Fredericton, Canada | International Review of Research in Open and Distance Learning | 2011 | 289 | 24.08 |
| 5 | Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning | McBrien J. L., Jones P., Cheng R. | University of South Florida Sarasota-Manatee, Sarasota, United States | International Review of Research in Open and Distance Learning | 2009 | 257 | 18.36 |
| 6 | Pharmacy student engagement, performance, and perception in a flipped satellite classroom | McLaughlin J. E., Griffin L. M., Esserman D. A., Davidson C. A. | UNC Eshelman School of Pharmacy, Chapel Hill, United States | American Journal of Pharmaceutical Education | 2013 | 246 | 24.60 |
| 7 | The use of 'exploratory learning' for supporting immersive learning in virtual environments | Freitas S. d., Neumann T. | Birkbeck, University of London, London, UK | Computers and Education | 2009 | 237 | 16.93 |
| 8 | Investigating acceptance toward mobile learning to assist individual knowledge management: Based on activity theory approach | Liaw S.-S., Hatala M., Huang H.-M. | China Medical University, Taichung, Taiwan | Computers and Education | 2010 | 217 | 16.69 |
| 9 | Developing collaborative autonomous learning abilities in computer mediated language learning: Attention to meaning among students in wiki space | Kessler G., Bikowski D. | Ohio University, Athens, United States | Computer Assisted Language Learning | 2010 | 211 | 16.23 |
| 10 | A conceptual model for understanding self-directed learning in online environments | Song L., Hill J. R. | Ohio University, Athens, United States | Journal of Interactive Online Learning | 2007 | 206 | 12.88 |

* PY: Publication Year; TC: Total of Citations

The most cited article is "The challenges to connectivist learning on open online networks" by Rita Kop of Yorkville University, Canada, with 403 citations (33.58 citations per year) [26]. With 357 citations (35.70 citations per year), the systematic literature review on "Creative learning environments in education" ranks second [27]. The article "Assigning responsibility for the actions of learning automata" with 350 citations covers the third spot on the list [28]. The following articles are "Participant support on massive open online courses" with 289 citations [29] and "Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning" with 257 citations [30].

3.5. The Main Research Trends

We identified the primary research trends by analyzing the keywords proposed by authors in their studies with the VOSViewer tool for analyzing the co-occurrence network of author keywords and trend topic analysis with Biblioshiny software. In conducting the keyword analysis, we standardized the keywords through a series of steps:

harmonizing singular/plural keywords, standardizing abbreviations, and removing nonrelevant keywords that do not reflect research trends.

Figure 4 depicts the co-occurrence network of the 59 most frequent keywords, where each node represents a keyword, and the size of the nodes is proportional to the frequency of the keyword's occurrence in published studies. The links between nodes represent the co-occurrence of keywords, with the thickness of the links proportional to the frequency of co-occurrence. Similar nodes are clustered and represented with the same color.

Learner autonomy research trends are divided into three primary clusters: The greatest cluster, represented by green, reflects the learner autonomy research trend in relation to English as a Foreign Language (EFL) teaching methods. It contains important keywords such as learner autonomy, EFL, EFL learners, self-directed learning, computer-assisted language learning, English for academic purposes, English instruction, and foreign language acquisition. The red cluster represents the autonomous learning and instructional methods research trend. It contains terms like independent learning, higher education, integrated learning, online

The research trends in this discipline are depicted in Figure 5 based on an analysis of related keywords. Each timeline represents the temporal incidence of a keyword, and the circle on each timeline represents the year in which that keyword occurred most frequently. The magnitude of each circle corresponds to the number of publications that contain the respective keyword. Only keywords that appeared in at least 10 publications per year were considered, and up to three keywords with the highest frequency were chosen to represent the trends for that year. However, we only analyzed research trends for the past five years (2017-2022).

The following are the representative keywords for the previous five years: 2017: learner autonomy, autonomy, self-directed learning; 2018: Autonomous learning, motivation, language learning; 2019: higher education, blended learning, e-learning; 2020: flipped classroom, online learning, elf; 2021: self-regulated learning, covid-19, artificial intelligence; 2022 with two representative keywords: Hybrid learning, and effectiveness. These keywords are also evident in the co-occurrence network previously analyzed. These keywords have appeared frequently in publications over the past few years. Particularly, the representative keywords for the most recent three years (2020-2022), such as COVID-19 and artificial intelligence, are relatively new.

4. Conclusion

This article investigates the development trend of global research on learner autonomy over the past two decades using bibliometric analysis and Scopus database data. By analyzing the metadata of 1970 publications, this study revealed the following key findings: With an average annual growth rate of 12.88 percent, research in the field of learner autonomy has garnered considerable scholarly interest. The annual growth rate of research in this field has been inconsistent, with a substantial increase in the number of studies in recent years compared to earlier years. China, the United States, and the United Kingdom are the three most influential nations on this subject, as measured by the number of publications and citations. International author collaboration is quite diverse. Researchers in this field typically publish studies with a small number of authors or as the sole authors. Collaboration among research organizations is not readily apparent. Reinders, H., Little, D., Chik, A., Benson, P., and Miller, L. are among the most influential authors in this area of study. The top 10 most-cited articles (each with more than 200 citations) are regarded as the most influential in determining the direction of research. Learner autonomy in relation to teaching English as a second language, autonomous learning in relation to teaching methods, and autonomy of the teaching and learning are the three main research trends.

This is the first global bibliometric analysis of learner autonomy. The research results provide academics interested in this research direction with a global overview of learner autonomy, including the field's evolution, key contributors, and collaborative efforts. The study also provides

quantitative information that will be beneficial to scholars conducting future research in this area. It is essential to note that the information reported in this article will quickly change and diverge in the future. Therefore, this type of analysis should be performed frequently to closely monitor the development of this research field.

References

- [1] B. Sinclair, "Learner autonomy: The next phase," in *Learner autonomy, teacher autonomy: Future directions*, vol. 3, no. 2, B. Sinclair, I. McGrath, and T. Lamb, Eds. 2000, pp. 4–14.
- [2] M. Ciekanski, "Fostering learner autonomy: Power and reciprocity in the relationship between language learner and language learning adviser," *Cambridge J. Educ.*, vol. 37, no. 1, pp. 111–127, 2007.
- [3] P. Benson, "Teaching and researching autonomy in language learning," 2001.
- [4] R. Breeze, "Attitudes towards learner autonomy among Spanish university students," *Atlantis*, pp. 23–36, 2002.
- [5] V. Chan, "Readiness for learner autonomy: What do our learners tell us?," *Teach. High. Educ.*, vol. 6, no. 4, pp. 505–518, 2001.
- [6] L. Wang, "The Bibliometric Analysis of Autonomous Learning Studies in China," in *Proceedings of the 2013 International Conference on Advances in Social Science, Humanities, and Management*, 2013, vol. 43, no. Asshm. doi: 10.2991/asshm-13.2013.15.
- [7] H. Holec, *Autonomy and foreign language learning*. ERIC, 1981.
- [8] A. Pritchard, "Statistical bibliography or bibliometrics," *J. Doc.*, vol. 25, no. 348, pp. 348–349, 1969.
- [9] L. Waltnam and E. Noyons, *Bibliometrics for research management and research evaluation: A brief introduction*. AX Leiden: CWTS, 2018.
- [10] B. G. Charlton and P. Andras, "Evaluating universities using simple scientometric research-output metrics: Total citation counts per university for a retrospective seven-year rolling sample," *Sci. Public Policy*, vol. 34, no. 8, pp. 555–563, 2007, doi: 10.3152/030234207X254413.
- [11] B. Pham-Duc, T. Tran, T.-P.-T. Trinh, T.-T. Nguyen, N.-T. Nguyen, and H.-T.-T. Le, "A spike in the scientific output on social sciences in Vietnam for recent three years: Evidence from bibliometric analysis in Scopus database (2000–2019)," *J. Inf. Sci.*, vol. 8, no. 5, p. 016555152097744, Nov. 2020, doi: 10.1177/0165551520977447.
- [12] C. T. Ha, T. T. P. Thao, N. T. Trung, L. T. T. Huong, N. Van Dinh, and T. Trung, "A Bibliometric Review of Research on STEM Education in ASEAN: Science Mapping the Literature in Scopus Database, 2000 to 2019," *Eurasia J. Math. Sci. Technol. Educ.*, vol. 16, no. 10, p. em1889, 2020, doi: 10.29333/ejmste/8500.
- [13] I. Zupic and T. Čater, "Bibliometric Methods in Management and Organization," *Organ. Res. Methods*, vol. 18, no. 3, pp. 429–472, 2015, doi: 10.1177/1094428114562629.

- [14] L. T. T. Huong, T. Tran, T. T. T. Phuong, T. L. T. Tuyet, H. Le Huy, and T. V. Thi, "Two Decades of STEM Education Research in Middle School: A Bibliometrics Analysis in Scopus Database (2000–2020)," *Educ. Sci.*, vol. 11, no. 7, p. 353, Jul. 2021, doi: 10.3390/educsci11070353.
- [15] N. L. Phuong *et al.*, "Implementation of STEM education: A bibliometrics analysis from case study research in Scopus database," *Eurasia J. Math. Sci. Technol. Educ.*, vol. 19, no. 6, p. em2278, Jun. 2023, doi: 10.29333/ejmste/13216.
- [16] B. Pham-Duc, H. Nguyen, C. Le Minh, L. H. Khanh, and T. Trung, "A Bibliometric and Content Analysis of Articles in Remote Sensing From Vietnam Indexed in Scopus for the 2000–2019 Period," *Ser. Rev.*, vol. 46, no. 4, pp. 275–285, Oct. 2020, doi: 10.1080/00987913.2020.1854155.
- [17] H. Reinders and C. White, "20 years of autonomy and technology: How far have we come and where to next?" *Lang. Learn. Technol.*, vol. 20, no. 2, pp. 143–154, 2016.
- [18] H. Reinders, "Towards a classroom pedagogy for learner autonomy: A framework of independent language learning skills," *Aust. J. Teach. Educ.*, vol. 35, no. 5, pp. 40–55, 2010, doi: 10.14221/ajte.2010v35n5.4.
- [19] D. Little, "Language learner autonomy and the European Language Portfolio: Two L2 English examples," *Lang. Teach.*, vol. 42, no. 3, pp. 222–233, 2009, doi: 10.1017/S0261444808005636.
- [20] D. Little, "The Common European Framework and the European Language Portfolio: Involving learners and their judgements in the assessment process," *Lang. Test.*, vol. 22, no. 3, pp. 321–336, 2005, doi: 10.1191/0265532205lt311oa.
- [21] A. Chik and J. Ho, "Learn a language for free: Recreational learning among adults," *System*, vol. 69, pp. 162–171, 2017, doi: 10.1016/j.system.2017.07.017.
- [22] A. Chik, "Digital gaming and language learning: Autonomy and community," *Lang. Learn. Technol.*, vol. 18, no. 2, pp. 85–100, 2014.
- [23] P. Benson, *The philosophy and politics of learner autonomy*. 2014.
- [24] P. Benson, "Commenting to learn: Evidence of language and intercultural learning in comments on YouTube videos," *Lang. Learn. Technol.*, vol. 19, no. 3, pp. 88–105, 2015.
- [25] C. A. Hafner and L. Miller, "Fostering learner autonomy in english for science: A collaborative digital video project in a technological learning environment," *Lang. Learn. Technol.*, vol. 15, no. 3, pp. 68–86, 2011.
- [26] R. Kop, "The challenges to connectivist learning on open online networks: Learning experiences during a massive open online course," *Int. Rev. Res. Open Distance Learn.*, vol. 12, no. 3, pp. 19–38, 2011, doi: 10.19173/irrodl.v12i3.882.
- [27] D. Davies, D. Jindal-Snape, C. Collier, R. Digby, P. Hay, and A. Howe, "Creative learning environments in education-A systematic literature review," *Think. Ski. Creat.*, vol. 8, no. 1, pp. 80–91, 2013, doi: 10.1016/j.tsc.2012.07.004.
- [28] A. Matthias, "The responsibility gap: Ascribing responsibility for the actions of learning automata," *Ethics Inf. Technol.*, vol. 6, no. 3, pp. 175–183, 2004, doi: 10.1007/s10676-004-3422-1.
- [29] R. Kop, H. Fournier, and J. S. F. Mak, "A pedagogy of abundance or a pedagogy to support human beings? Participant support on massive open online courses," *Int. Rev. Res. Open Distance Learn.*, vol. 12, no. 7 SPECIAL ISSUE, pp. 74–93, 2011, doi: 10.19173/irrodl.v12i7.1041.
- [30] J. L. McBrien, P. Jones, and R. Cheng, "Virtual spaces: Employing a synchronous online classroom to facilitate student engagement in online learning," *Int. Rev. Res. Open Distance Learn.*, vol. 10, no. 3, pp. 1–17, 2009, doi: 10.19173/irrodl.v10i3.605.