Tuning Journal for Higher Education

Volume 10, Issue No. 1, November 2022
DOI: https://doi.org/10.18543/tjhe1012022

Perspectives, stakeholders, and competences

GENERAL SECTION — ARTICLES

A bibliometric review of research on student outcomes in higher education 1960-2020

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doi: https://doi.org/10.18543/tjhe.2189

Received: 12 September 2021
Accepted: 18 August 2022
E-published: November 2022

A bibliometric review of research on student outcomes in higher education 1960-2020

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Abstract: This study conducted a bibliometric analysis of studies on student outcomes in higher education from 1960 to 2020, providing a bibliometric content analysis of articles based on 52 Scopus-indexed higher education journals. Bibliometric analysis methodology was used, and Preferred Reporting Items for Systematic Reviews and Meta-analyses were employed to identify and select the 2,375 articles included in the sample. The trajectory of publications over time was also analyzed, and often-cited journals, authors, articles, and co-citations were identified. The topical foci of research on student outcomes were revealed, co-occurrence analysis was performed, and keyword co-occurrence maps are presented. Limitations, interpretation, implications, and recommendations were also made on the basis of the findings.

Keywords: student outcomes; bibliometric review; topics; methodologies; citations; co-citations.

I. Introduction

Research on students arguably constitutes the most comprehensive literature in higher education, and this presents a major challenge to researchers and institutions. Given the exponential growth of publications, "… research on college students is perhaps the single largest area of inquiry in the field of higher

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education …".[1] College outcome literature has expanded considerably and there have been excellent and extensive evaluations of research on college students since 1973, especially in a comprehensive three-volume work that spans over decades.[2] These comprehensive publications indicate the sheer size and scope of research trends in college outcomes for over half a century. Pascarella noted that the "huge and complex body of research on college students is expanding at an accelerated rate" and that it is "encyclopedic".[3] He further predicted there might be up to 10,000 studies produced in the past two decades.

It is also highlighted that although syntheses worked fairly well previously, conducting such syntheses by one or two individuals would be impossible because of the large rate of growth in the number of publications. Even conducting reviews takes one to two years, and a considerable literature emerges during the review periods. Moreover, Pascarella suggested that each of the professional organizations may undertake such reviews with 10–20 scholars, or smaller scale reviews may be conducted:[4]

> … to break the huge body of research on college impacts into more manageable segments and conduct literature reviews in a continuous and overlapping manner rather than in the periodic, serial pattern that has characterized past efforts.[5]

II. Literature review

Several systematic reviews have been conducted in higher education recently.[6] However, the majority have focused on student health, nutrition, and psychological health.[7] Other studies have focused on a specific group of

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[1] Ernest T Pascarella, "How College Affects Students: Ten Directions for Future Research," *Journal of College Student Development* 47, no. 5 (2006): 508-520.

[2] Matthew J. Mayhew, Alyssa N. Rockenbach, Nicholas A. Bowman, Tricia A. Seifert, Gregory C. Wolniak, Ernest T. Pascarella, and Patrick T. Terenzini, *How College Affects Students: 21st Century Evidence that Higher Education Works*, Volume 3, (Indianapolis, IN: Jossey-Bass, 2016).

[3] Ernest T. Pascarella, How College Affects Students: Ten Directions for Future Research," *Journal of College Student Development* 47, no. 5 (2006): 508-520, https://10.1353/csd.2006.0060.

[4] Pascarella, "How College Affects Students, 508-520.

[5] Pascarella, How College Affects Students, 508-520.

[6] Malcolm Tight, "Systematic Reviews and Meta-analyses of Higher Education Research," *European Journal of Higher Education* 9, no. 2 (2019): 133-152, https://doi.org/10.1080/21568235.2018.1541752.

[7] Michelle Richardson, Charles Abraham, and Rod Bond, "Psychological Correlates of University Students' Academic Performance: A Systematic Review and Meta-analysis," *Psychological Bulletin* 138, no. 2 (2012): 353-387, https//: doi.org/10.1037/a0026838.

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doi: https://doi.org/10.18543/tjhe.2189 • http://www.tuningjournal.org/

students such as those at-risk,[8] stress management,[9] mental health and student well-being,[10] and creativity.[11] These reviews have added to our knowledge on specific issues, such as the intersectionality,[12] diversity,[13] special needs,[14] critical thinking,[15] student engagement,[16] social networks, and social capital[17] of college students. In addition, the reviews have focused on the findings of one-country studies, i.e., the US or developing countries.[18] Furthermore, the corpus of these studies on college experiences give valuable implications about higher education, but still lacks a synthesis of student outcomes in higher education.

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[8] Jeffrey C. Valentine, Amy S. Hirschy, Christine D. Bremer, Walter Novillo, Marisa Castellano, and Aaron Banister, "Keeping At-risk Students in School: A Systematic Review of College Retention Programs," *Educational Evaluation and Policy Analysis* 33, no. 2 (2011): 214-234, https://doi.org/10.3102/016237371139812.

[9] Yagmur Amanvermez, Metta Rahmadiana, Eirini Karyotaki, Lenore de Wit, David D. Ebert, Ronald C. Kessler, and Pim Cujipers, "Stress Management Interventions for College Students: A Systematic Review and Meta-analysis," *Clinical Psychology* (2020), https://doi.org/10.1111/cpsp.12342.

[10] Joanne Worsley, Andy Pennington, and Rhiannon Corcoran, "What Interventions Improve College and University Students' Mental Health and Wellbeing? A Review of Review-level Evidence," Accessed December 6, 2020. https://whatworkswellbeing.org/wp-content/uploads/2020/03/Student-mental-health-full-review.pdf.

[11] Hsing-Yuan, Liu, Chia-Chen Chang, and Chang Gung, "Effectiveness of 4Ps Creativity Teaching for College Students: A Systematic Review and Meta-analysis," *Creative Education,* 8, no. 6 (2017): 857-869. https://doi.org/10.4236/ce.2017.86062.

[12] Sue Nichols and Garth Stahl, "Intersectionality in Higher Education Research: A Systematic Literature Review," *Higher Education Research & Development* 38, no. 6 (2019): 1255-1268, https://doi.org/10.1080/07294360.2019.1638348.

[13] Antonio Duran, "Queer and of Color: A Systematic Literature Review on Queer Students of Color in Higher Education Scholarship," *Journal of Diversity in Higher Education* 12, no.4 (2019): 390-400, https://doi.org/10.1037/dhe0000084.

[14] Alison Nuske, Rilotta Fiona, Michelle Bellon, and Amanda Richdale, "Transition to Higher Education for Students with Autism," *Journal of Diversity in Higher Education* 12, no. 3 (2019): 280-295, https://doi.org/10.1037/dhe0000108.

[15] Angelito Calma and Martin Davies, "Critical Thinking in Business Education: Current Outlook and Future Prospects," *Studies in Higher Education* 46, no. 11 (2020):2279-2295, https://doi.org/10.1080/03075079.2020.1716324.

[16] Gloria Aparicio, Tximin Iturralde, and Amaia Maseda, "A Holistic Bibliometric Overview of the Student Engagement Research Field," *Journal of Further and Higher Education* 45, no. 4 (2021): 540-557. https://doi.org/10.1080/0309877X.2020.1795092.

[17] Shweta Mishra., "Social Networks, Social Capital, Social Support and Academic Success in Higher Education: A Systematic Review with a Special Focus on 'Underrepresented' Students," *Educational Research Review* 29, (2020): (100307), https://doi.org/10.1016/j.edurev.2019.100307.

[18] Elaine Unterhalter and Colleen Howell, "Unaligned Connections or Enlarging Engagements? Tertiary Education in Developing Countries and the Implementation of the SDGs," *Higher Education* 81, (2021): 9-29, https://doi.org/10.1186/s13643-016-0384-4.

"Student outcomes" are outputs of the process reflecting the procedural and structural dynamics of higher education from the student side. Student outcomes include not only the intended learning outcomes but also the competences or skills that college students receive. Student outcomes are defined here as competences which broadly include cognitive, affective, conscious, and social dispositions that create the basis for performance.

Despite the large size of the literature on college students, only a few studies have explored the structure and processes from the sociology of science perspective. The current study has neither the breadth and depth of the books that synthesize the research produced over decades,[19] nor does it claim that it may substitute the classical synthesis on research. Nonetheless, bibliometric reviews may be utilized as a holistic overview of the literature, are conducted rapidly, and may be used as a supplement to literature reviews. Bibliometric reviews provide a more objective approach, while "a systematic, transparent, and reproducible review process" may lead to better descriptions, evaluations, and monitoring.[20]

This study seeks to systematically review the research on college student outcomes, explore the distribution of the studies, and identify the conceptual trends of student outcomes. The research questions are as follows:

1. What is the volume, growth trajectory, and geographic distribution of the higher education literature based on student outcomes between 1960 (technical genesis of databases) and 2020?
2. What journals, authors, and articles on student outcomes have evidenced the greatest citation impact over the past six decades?
3. What is the intellectual structure of the higher education knowledge base on student outcomes?
4. What topical foci are pertinent to student outcomes that have attracted the attention of higher education scholars between 1960 and 2020?

III. Methodology

Content analysis was conducted as the research design in the current study to achieve the purpose of the study. Content analysis is employed to summarize data from many studies, and data conceptualized through content analysis help

[19] Matthew J. Mayhew et al, *How College Affects Students: 21st Century Evidence that Higher Education Works*, Volume 3, (Indianapolis, IN: Jossey-Bass, 2016).

[20] Ivan Zupic and Tomaz Čater, "Bibliometric Methods in Management and Organization," *Organizational Research Methods* 18, no. 3 (2015): 429-472, https://doi.org/10.1177/1094428114562.

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doi: https://doi.org/10.18543/tjhe.2189 • http://www.tuningjournal.org/

in seeing the relationships between terms.[21,22] Bibliometric analysis has become popular in search of topographical trends within a body of knowledge.[23] It is a way to support empirical investigations of the process and structure of fields or the knowledge base. In addition, bibliometric analyses offset some of the weaknesses of traditional literature reviews. Bibliometric methods provide diversity in conceptualizations and modeling to explore the foundations, intellectual core, and directions for future research of a typical research field, such that these methods offer complementary perspectives to traditional literature reviews that are limited to present holistic perspectives. Additionally, bibliometric methods may be used to generate new knowledge.[24,25] The current study combined bibliometric content analysis in order to document trends in the concepts and intellectual approaches of research on college students.

Our bibliometric content analysis was conducted through a systematic review including the stages of defining questions, determining study types, literature searching, screening of the results of the search, appraising studies, synthesizing studies, and disseminating the findings of the review.[26]

III.1. Selection of sources

The research questions focused on four main issues of students in the higher education literature. The review was delimited to articles published in higher education journals. Books, book chapters, proceedings, conference papers, dissertations, and reports were excluded. These documents were excluded because of the preferred science mapping parameters in the literature, and because the records of journal articles are kept comprehensively in the databases. Further, the journals were delimited to the Scopus index.

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[21] Louis Cohen, Lawrence Manion, and Keith Morrison, *Research Methods in Education* (New York, NY: Routledge, 2007).

[22] Ali Yildirim and Hasan Şimşek, *Sosyal Bilimlerde Nitel Araştırma Yöntemleri* (Ankara: Seçkin yayıncılık, 2016).

[23] Phillip Hallinger and Jesna Kovačević, "A Bibliometric Review of Research on Educational Administration: Science Mapping the Literature, 1960 to 2018," *Review of Educational Research* 89, no. 3 (2019): 335-369, https://doi.org/10.3102/003465431983038.

[24] Gloria Aparicio, Tximin Iturralde, and Amaia Maseda, "A Holistic Bibliometric Overview of the Student Engagement Research Field," *Journal of Further and Higher Education* 45, no. 4 (2021): 540-557, https://doi.org/10.1080/0309877X.2020.1795092.

[25] Alexander Serenko and Nick Bontis, "Global Ranking of Knowledge Management and Intellectual Capital Academic Journals: 2013 Update," *Journal of Knowledge Management* 17, no. 2 (2013): 307–326, https://doi.org/10.1108/13673271311315231.

[26] Mark Petticrew and Helen Roberts, *Systematic Reviews in the Social Sciences: A Practical Guide* (Malden, MA: Blackwell, 2006).

Scopus was selected in order to allow the opportunity to generate databases for systematic reviews. Among the Scopus-indexed higher education journals, 52 journals were identified. The search criteria excluded journals solely on education in general. Consequently, the 52 journals in Table 1 were included in the review.

Table 1

Journal List

Journal name	Cited score 2019
Active Learning in Higher Education	5.4
Alternative Higher Education	Inactive
Art, Design and Communication in Higher Education	0.9
Arts and Humanities in Higher Education	1.8
Assessment and Evaluation in Higher Education	4.8
Assessment in Higher Education	Inactive
Christian Higher Education	0.8
Community College Journal of Research and Practice	0.8
Chronicle of Higher Education	Inactive
European Journal of Higher Education	2.4
Higher Education	5.3
Higher Education for the Future	New
Higher Education Forum	0.7
Higher Education in Europe	Inactive
Higher Education Pedagogies	0.8
Higher Education Policy	2.3
Higher Education Quarterly	2.3
Higher Education Research and Development	3.7
Higher Education, Skills and Work-based Learning	1.5
Industry and Higher Education	1.4
Innovative Higher Education	2.0
International Journal of Educational Technology in Higher Education	5.6
International Journal of Higher Education	0.2

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Journal name	Cited score 2019
International Journal of Learning in Higher Education	0.4
International Journal of Sustainability in Higher Education	3.2
International Journal on E-Learning: Corporate, Government, Healthcare, and Higher Education	0.5
Internet and Higher Education	17.1
Journal of Applied Research in Higher Education	1.2
Journal of College Student Development	2.3
Journal of College Student Retention: Research, Theory and Practice	2.3
Journal of Computing in Higher Education	4.0
Journal of Continuing Higher Education	0.8
Journal of Diversity in Higher Education	3.4
Journal of Further and Higher Education	2.2
Journal of Geography in Higher Education	3.0
Journal of Higher Education	4.1
Journal of Higher Education Outreach and Engagement	1.1
Journal of Higher Education Policy and Management	2.5
Journal of Hispanic Higher Education	1.5
Journal of Marketing for Higher Education	3.5
Journal of Women and Gender in Higher Education	0.1
Language Learning in Higher Education	0.5
Learning and Teaching in Higher Education: Gulf Perspectives	New
NASPA Journal About Women in Higher Education	Inactive
Perspectives: Policy and Practice in Higher Education	1.7
Quality in Higher Education	1.8
Research in Higher Education	3.7
Review of Higher Education	2.0
Studies in Higher Education	5.9
Teaching in Higher Education	3.7
Tertiary Education and Management	2.1
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III.2. Identification

PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-analyses) was developed by Moher et al. and the PRISMA Group[27] was followed to identify the sources in the following four steps: identification, screening, eligibility, and inclusion for synthesis. For the identification stage, the following parameters were conducted: inclusion of time period (1960 to 2020); inclusion of selected journals; inclusion of articles as document types; and the exclusion of commentaries, books, chapters, proceedings, conference papers, dissertations, reports, and editorials. For the screening stage, the keywords, namely, "college students," "higher education," and "student outcomes," were searched. Thus, 2,396 studies were initially screened. The eligibility check was performed in the third stage, and 21 documents were excluded on the basis of their content. Finally, 2,375 articles were included for bibliometric synthesis in the final step. Figure 1 demonstrates the PRISMA flow diagram.

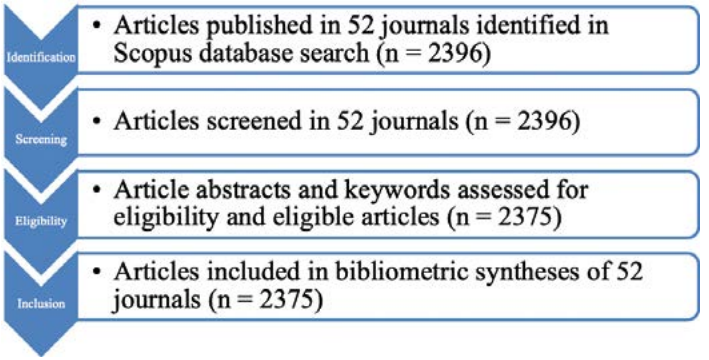

Figure 1
PRISMA Flow Diagram

III.3. Data extraction and analysis

A total of 2,375 articles was recorded to be synthesized and analyzed. The metadata of each article from the Scopus database were stored in an

[27] David Moher, Alessandro Liberati, Jennifer Tetzlaff, Douglas G. Altman, Antes, G., ... and Jocalyn Clark, "Preferred Reporting Items for Systematic Reviews and Meta-analyses: The PRISMA Statement (Chinese edition)," *Journal of Chinese Integrative Medicine* 7, no. 9 (2009): 889-896, https://doi.org/10.3736/jcim20090918.

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Excel file. The metadata included authors with their affiliations, sources, article title, abstract, keywords, references, and values related to citations. The current study used descriptive analysis, citation analysis, co-citation-analysis, and social network analysis. Scopus analytic tools, Excel functions, Tableau, and VOSviewer were used to conduct these analyses. Moreover, Scopus analytical tools together with Excel were used to present descriptive analysis results; such as the number of citations, author affiliations, and growth over time. Tableau was also employed to construct a heat map demonstrating the geographical distribution of articles. Finally, VOSviewer was applied to conduct citation analysis and co-citation and to represent the relationships among structures through social network maps.

IV. Results

This section presents the findings of the study. Each sub-section corresponds to the research questions.

IV.1. What is the volume, growth trajectory, and geographic distribution of the higher education journal literature based on student outcomes between 1960 and 2020?

A total of 2,375 HE journal articles were found, as noted above. Since there were no articles between 1960 and 1972, the first two articles were found in 1973. Seventy-six articles were detected in the 1970s and 1980s. The 1990s included 156 studies, while the first decade of the millennium had 479 articles. Between 2010 and August 2020, the researchers reached 1,591 journal articles. With 293 articles, the largest number of articles was published in 2019, while 209 articles were published in 2020, although the year 2020 had not yet been completed when the data were collected. This unprecedented increase in the number of articles may be an indication of the importance ascribed to students in a more global and competitive era. Globalization, competition, the covid-pandemic, and advances in computer technology introduce new challenges for higher education institutions to attract students. Hence, the number of studies over time tends to be upward regarding student outcomes.

The geographical distribution of articles on student outcomes is depicted via the heat map in Figure 2 indicating the intensity of countries in terms of number of articles published. The heat map was created with the version of Tableau 2020.3, which was used to specify the distribution of articles. The map shows the dominance of Anglo-American communities; such that the

United States, United Kingdom, Australia, and Canada brought in 1,373, 330, 216, and 66 articles, respectively. These countries account for 83.5% of the articles in the Scopus database. Conversely, most African countries, some Middle-East countries, and a few Western Asian countries had either few or no studies. Figure 2 demonstrates the geographical distribution of articles on student outcomes.

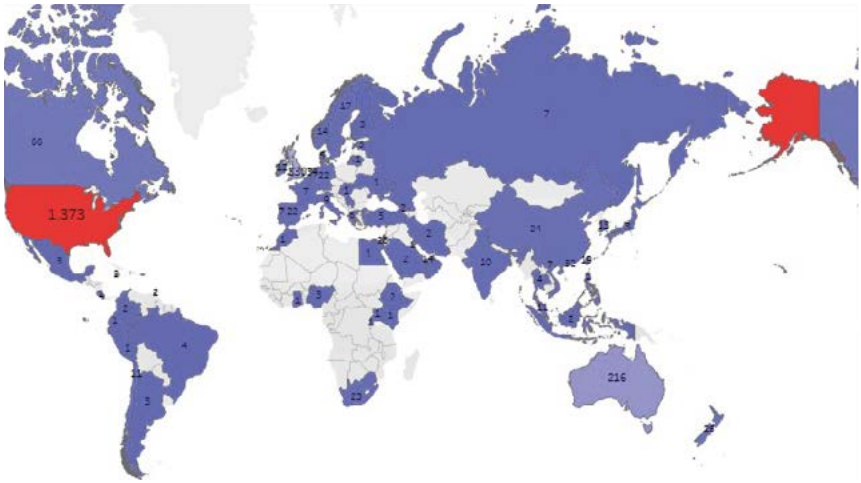

Figure 2

Geographical Distribution of Articles on Student Outcomes

The distribution of these articles is aligned with the development levels of the countries. Therefore, developed countries produce more than the developing ones. Table 2 shows this differentiation in terms of the publications in some countries.

Table 2

Countries in terms of Number of Publications

Developed countries		Developing countries	
Country	Number of studies	Country	Number of studies
United States	1,373	Kuwait	1
United Kingdom	330	Lithuania	1

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Developed countries		Developing countries	
Country	Number of studies	Country	Number of studies
Australia	216	Morocco	1
Canada	66	Peru	1
Netherlands	34	Philippines	1
Hong Kong	32	Rwanda	1
Israel	28	Serbia	1
New Zealand	25	Slovakia	1
China	24	Uganda	1
South Africa	23	Ukraine	1
Germany	22	Kenya	1
Spain	22	Hungary	1
Taiwan	19	Ghana	1
Sweden	17	Egypt	1
Norway	14	Ecuador	1
United Arab Emirates	14	Costa Rica	1

IV.2. What journals, authors, and articles on student outcomes have evidenced the greatest citation impact over the past six decades?

Table 3 presents the top 20 journals in terms of the number of articles published, authors cited and co-cited, and articles cited and co-cited. The publications of articles on student outcomes according to the journals. For instance, "Studies in Higher Education (SiHE)" published the highest number of articles. The "Community College Journal of Research and Practice" and "Research in Higher Education" followed SiHE, respectively. Highly regarded journals and databases, such as Web of Science and Scopus, value and publish papers on students. This may be considered an indication of the paradigmatic development of research on students. As mentioned earlier, competitiveness in higher education has made journals more sensitive to articles focusing on students. This reality is evident by considering the ratio of number of documents to citations per document (CPD). Table 3 presents the journals that have published the largest number of articles.

Table 3

Number of Articles Published in HE Journals

Rank	Journal	Number of relevant articles (1960–2020)	Number of total documents (2016–2019)	Scopus citations (2016–2019)	CPD* (2016–2019)
1	Studies in Higher Education	217	591	3,485	5.90
2	Community College Journal of Research and Practice	197	325	264	0.81
3	Research in Higher Education	186	170	624	3.67
4	Journal of Diversity in Higher Education	174	103	349	3.39
5	Higher Education	164	436	2,293	5.26
6	Review of Higher Education	108	144	291	2.02
7	Journal of Further and Higher Education	103	288	645	2.24
8	Assessment and Evaluation in Higher Education	81	352	1,679	4.77
9	Journal of College Student Development	76	242	552	2.28
10	Journal of College Student Retention Research Theory and Practice	76	99	228	2.30
11	Higher Education Research and Development	74	392	1,453	3.71
12	Journal of Hispanic Higher Education	71	80	117	1.46
13	Christian Higher Education	70	84	66	0.79
14	Chronicle of Higher Education	64	N/A	N/A	N/A

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Rank	Journal	Number of relevant articles (1960–2020)	Number of total documents (2016–2019)	Scopus citations (2016–2019)	CPD* (2016–2019)
15	Innovative Higher Education	57	125	245	1.96
16	Teaching in Higher Education	55	254	943	3.71
17	Journal of Marketing for Higher Education	54	57	201	3.53
18	Journal of Applied Research in Higher Education	52	201	232	1.15
19	Internet and Higher Education	48	111	1,896	17.08
20	Higher Education Skills and Work Based Learning	44	178	269	1.51

* CPD: Citations per document.

Additionally, the researchers investigated the authors of the articles. Nicholas. A. Bowman, Ernest. T. Pascarella, and Matthew J. Mayhew published more than 10 articles each. Specifically, these scholars are from the Anglo-American countries mentioned above; therefore these findings confirm one another. Further, it may be linked to the research culture of higher education institutions. For instance, institutional differentiation and the focus of scholars on student outcome research have made a difference.[28] Contrarily, the financial support and promotions of higher education institutions may also make a difference. Table 4 exhibits the most productive HE scholars who have published at least six or more articles.

[28] "World University Rankings 2020," Times Higher Education (THE), accessed July 10, 2021, https://www.timeshighereducation.com/world-university-rankings/2020/world-ranking#!/page/0/length/25/sort_by/rank/sort_order/asc/cols/stats.

Table 4

Authors with a High Number of Articles

Rank	Author	Country	Institution	Number of relevant articles (1960–2020)	Number of total documents	Scopus citations	CPD
1	Bowman, N. A.	US	U. of Iowa	16	88	1,983	22.53
2	Pascarella, E. T.	US	U. of Iowa	15	155	5,820	37.55
3	Mayhew, M. J.	US	Ohio State U.	11	66	1,016	15.39
4	Museus, S. D.	US	U. of California	9	32	600	18.75
5	Denson, N.	Australia	Western Sydney U.	8	47	1,420	30.21
6	Park, J. J.	US	U. of Maryland	8	48	797	16.60
7	Crisp, G.	US	U. of Texas	7	22	980	44.55
8	Duran, A.	US	Auburn U.	7	24	46	1.92
9	Hu, S.	US	Florida State U.	7	51	1,431	28.06
10	Kuh, G. D.	US	Indiana U.	7	74	5,347	72.26
11	Burd, S.	US	U. of New Mexico	6	185	259	1.40
12	Dugan, J. P.	US	Arete Association	6	46	735	15.98
13	Hurtado, S.	US	U. of California	6	48	4,592	95.67
14	Latz, A. O.	US	Ball State U.	6	16	60	3.75
15	Liu, O. L.	US	Educational Testing Service	6	55	1,181	21.47
16	Miller M. T.	US	U. of Arkansas	6	53	165	3.11

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Lastly, the articles that had the highest number of citations were examined. Scopus provides tools to sort studies in terms of citations. By sorting from the highest citation to the lowest citation, analyses affirmed that "A performance indicator of teaching quality in higher education: the course experience questionnaire," "Findings on Facebook in higher education: A comparison of college faculty and student uses and perceptions of social networking sites," and "The use of flipped classrooms in higher education: A scoping review" were among the frequently-cited articles. The most influential article was about teaching quality, while other highly influential articles were related to technology integration. Instructional technology, distance education, and online learning, which are also linked to student learning, were frequently studied topics, just to name a few. In sum, student outcomes in highly influential studies were commonly related to teaching, learning, and technology. Table 5 displays the 20 most influential articles.

Table 5

Highly-Cited Articles

Rank	Author	Article	Scopus citations	Topic
1	Ramsden, P.	A performance indicator of teaching quality in higher education: the course experience questionnaire	659	Teaching
2	Roblyer, M.D., McDaniel, M., Webb, M., Herman, J., Witty, J.V.	Findings on Facebook in higher education: a comparison of college faculty and student uses and perceptions of social networking sites	647	Instructional technologies
3	O'Flaherty, J., Phillips, C.	The use of flipped classrooms in higher education: A scoping review	612	Instructional technologies
4	Kahu, E.R.	Framing student engagement in higher education	390	Engagement
5	Kabilan, M.K., Ahmad, N., Abidin, M.J.Z.	Facebook: An online environment for learning of English in institutions of higher education?	328	Instructional technologies

Rank	Author	Article	Scopus citations	Topic
6	Song, L., Singleton, E.S., Hill, J.R., Koh, M.H.	Improving online learning: Student perceptions of useful and challenging characteristics	316	Online learning
7	Crisp, G., Cruz, I.	Mentoring college students: A critical review of the literature between 1990 and 2007	312	Mentoring
8	Shea, P., Sau Li, C., Pickett, A.	A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses	254	Distance education
9	Zepke, N., Leach, L.	Improving student engagement: Ten proposals for action	253	Engagement
10	Broadbent, J., Poon, W.L.	Self-regulated learning strategies and academic achievement in online higher education learning environments: A systematic review	250	Online learning
11	Wals, A.E.J., Jickling, B.	"Sustainability" in higher education: From doublethink and newspeak to critical thinking and meaningful learning	244	Sustainable development
12	Rovai, A.P.	In search of higher persistence rates in distance education online programs	237	Attrition
13	Thomas, S.L., Heck, R.H.	Analysis of large-scale secondary data in higher education research: Potential perils associated with complex sampling designs	228	Complex sample

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Rank	Author	Article	Scopus citations	Topic
14	Bliuc, A.-M., Goodyear, P., Ellis, R.A.	Research focus and methodological choices in studies into students' experiences of blended learning in higher education	226	Learning
15	MacNell, L., Driscoll, A., Hunt, A.N.	What's in a name: Exposing gender bias in student ratings of teaching	210	Gender inequality
16	Tymon, A.	The student perspective on employability	198	Employability
17	Kirkwood, A., Price, L.	Learners and learning in the twenty-first century: What do we know about students' attitudes toward and experiences of information and communication technologies that will help us design courses?	194	Information & communication techno.
18	Locks, A.M., Hurtado, S., Bowman, N.A., Oseguera, L.	Extending notions of campus climate and diversity to students' transition to college	185	Transition
19	Salisbury, M.H., Umbach, P.D., Paulsen, M.B., Pascarella, E.T.	Going global: Understanding the choice process of the intent to study abroad	166	Internationali-zation
20	Tomlinson, M.	Graduate employability: A review of conceptual and empirical themes	165	Employability

In addition to the citation analysis of authors and articles, co-citation analyses for authors and articles were performed via VOSviewer. An "author co-citation network" represents the frequency with which two authors are cited together. It was conducted by setting a threshold of at least 50 co-citations. Respectively, Ernest T. Pascarella, Sylvia Hurtado, and George D. Kuh, Patrick Terenzini, and Alexander Astin were the most influential

scholars, with more than 500 co-citations on student outcomes. This finding is similar to the citation analysis results. Table 6 exhibits the top 20 co-cited HE scholars for the period of 1960–2020.

Table 6

Twenty Highly Co-Cited Scholars in Higher Education

Rank	Author	Co-citation	Link strength
1	Pascarella, E.T.	687	20,598
2	Hurtado, S.	573	17,914
3	Kuh, G.D.	568	15,383
4	Terenzini, P.T.	511	14,079
5	Astin, A.W.	513	12,941
6	Nora, A.	398	12,657
7	Tinto, V.	559	10,538
8	Bowman, N.A.	208	8,381
9	Chang, M.J.	210	7,489
10	Cabrera, A.F.	234	7,390
11	Milem, J.F.	161	5,043
12	Pike, G.R.	137	4,927
13	Kinzie, J.	179	4,834
14	Braxton, J. M.	173	4,459
15	Denson, N.	115	4,449
16	Gurin, P.	139	4,369
17	Pascarella, E.	140	4,264
18	Mueus, S.D.	163	4,113
19	St. John, E.P.	140	4,062
20	Perna, L.W.	191	4,018

Finally, a "document co-citation network" was created in which the frequency of two authors was cited together. The network set a threshold of at least 10 co-citations, and 26 articles were found. The studies by Gurin et

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al., Denson, and Hurtado emerged from the document co-citation analysis. The first three of the most co-cited documents were about diversity. Other influential documents were focused on topics related to student retention, such as persistence, attrition, and degree completion. Table 7 demonstrates the top 20 co-cited HE articles for the period 1960–2020.

Table 7

Twenty Most Co-Cited Documents in the Field of Higher Education*

Rank	Document	Co-citation	Link strength
1	Gurin, P., Dey, E. L., Hurtado, S., Gurin, G. (2002). Diversity and higher education: Theory and impact on educational outcomes	22	29
2	Denson, N. (2009). Do curricular and co-curricular diversity activities influence racial bias? A meta-analysis	11	28
3	Hurtado, S. (2005). The next generation of diversity and intergroup relations research	13	25
4	Antonio, A. L. (2001). The role of interracial interaction in the development of leadership skills and cultural knowledge and understanding	10	24
5	Chang, M. J. (1999). Does racial diversity matter? The educational impact of a racially diverse undergraduate population	13	13
6	Tinto, V. (1975). Dropout from higher education: A theoretical synthesis of recent research	36	19
7	Astin, A. W. (1993). What matters in college: Four critical years revisited	17	16
8	Bean, J. P., (1980). Dropouts and turnover: The synthesis and test of a causal model of student attrition	11	14
9	Pascarella, E. T., Terenzini, P. T. (1991). How college affects students	12	9
10	Umbach, P. D., Wawrzynski, M. R. (2005). Faculty do matter: The role of college faculty in student learning and engagement	13	10
11	Tinto, V. (1987). Leaving college: Rethinking the causes and cures of student attrition	12	9

Rank	Document	Co-citation	Link strength
12	Astin, A. W., Student involvement: A developmental theory for higher education (1984)	12	7
13	Tinto, V. (1997). Classrooms as communities: Exploring the educational character of student persistence	10	8
14	Bean, J. P., Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition	12	5
15	Pascarella, E. T., Terenzini, P. T. (2005). How college affects students: A third decade of research	13	5
16	Adelman, C. (2006). The toolbox revisited: Paths to degree completion from high school through college	10	3
17	Lave, J., Wenger, E. (1991). Situated learning: Legitimate peripheral participation	12	2
18	Braun, V., Clarke, V. (2006). Using thematic analysis in psychology	15	1
19	Moustakas, C. (1994.) Phenomenological research methods	10	1
20	Arum, R., Roksa, J. (2011). Academically adrift: Limited learning on college campuses	11	0

* Some studies were available two or three times due to different coding or classifications. Documents with the total link strength were considered.

IV.3. What is the intellectual structure of the knowledge base on student outcomes?

The intellectual structure of a knowledge base is the representation of complex relationships between concepts in a specific field. In the current study, the intellectual structure of the higher education knowledge base on student outcomes depicts the interrelations of concepts related to student outcomes in higher education. The intellectual structure of the knowledge base of student outcomes was examined within "author co-citation analysis." The logic behind author co-citation analysis is to detect author similarity in a cited document. In other words, author co-citation is the frequency with which two authors are cited by at least two other authors. Accordingly, VOSviewer was employed to generate the co-citation map visualizing the similarities of research by HE scholars. A threshold of at least 50 citations

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doi: https://doi.org/10.18543/tjhe.2189 • http://www.tuningjournal.org/

with a display of 167 authors was selected. Figure 3 shows that the maps classified authors into five clusters and that the researchers assigned labels to those groups on the basis of the content of the studies. The density of links connecting scholars was proportional to the number of times a scholar was co-cited with another scholar. Further, the density of links connecting the clusters referred to the interconnectedness nature of the knowledge base on student outcomes. Pascarella, E. T., Hurtado, S., Terenzini, P. T., and Tinto, V. received the greatest attention as the largest nodes such that this form was consistent with the results presented in Table 6. Moreover, Pascarella, E. T., Terenzini, P. T., and Kuh, G.D. played a boundary spanning role for integrating the concepts of every five clusters. These clusters imply the communities of scholars in the same topic, building upon the works of one another as it was underlined in the Invisible Colleges.[29] The content and development of the publications are influenced by a social structure within disciplines, and they create norms in specialized fields. Individuals adhere to this scheme, and thus the literature expands and develops.

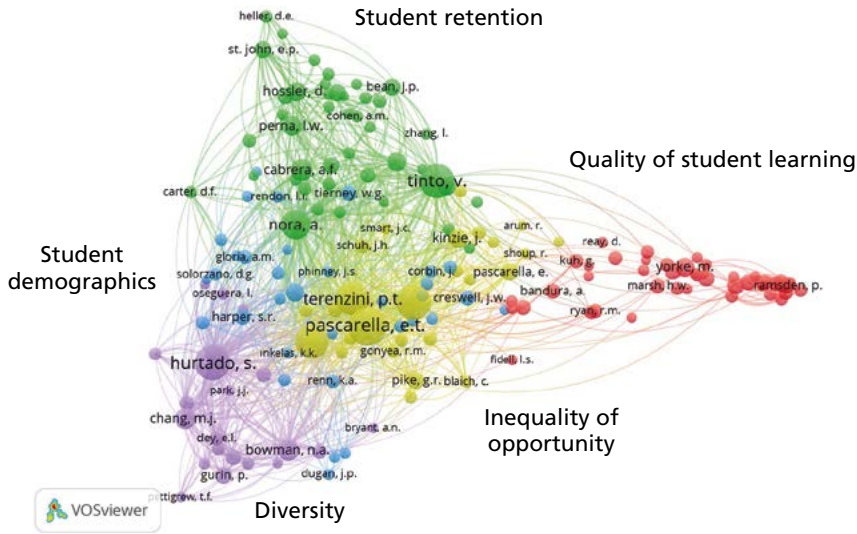

Figure 3

Author Co-Citation Network

[29] Diana Crane, *Invisible Colleges: Diffusion of Knowledge in Scientific Communities* (Chicago: University of Chicago Press, 1972).

The coding and categorization procedure in the content analysis and common perspectives in the literature were followed in order to label the clusters. By considering the positions of clusters provided by VOSviewer in terms of the interconnectedness of the knowledge base, the labels of clusters were placed in the author co-citation network map. Further, the density of the links indicates the interconnectedness of the knowledge base. The first cluster included 44 articles and was labeled as the quality of student learning. This cluster in the middle-right region of the map, represented by the scholars such as Kember, D., Yorke, M., and Ramsden, P., was associated with student learning. The second cluster consisted of 43 articles and was named as student retention. This cluster, placed on the upper side of the map and signified by Tinto, V., Nora, A., and Cabrera, A. F., was on student persistence and attrition. The third cluster had 33 articles and was termed as student demographics, and this cluster appeared dispersed at the center of the map. In this cluster, Harper, S., Museus, S. D., and Gloria A. M. studied the students from different demographics, especially minority students. The fourth cluster had 26 articles and was called the inequality of opportunity. This cluster was located in the center of the map, and Pascarella, E. T., Terenzini, P. T., and Kuh, G.D focused more on inequalities in transition to college, persistence in higher education, student success, and degree completion. The final cluster included 21 articles and was named as diversity. This cluster was placed at the bottom of the map, and Hurtado, S. Cheng, M. J., and Bowman, N. A. were among the scholars who studied student diversity.

Interestingly, the fourth cluster was placed in the center or the hearth of all other clusters. It may be an indicator of the interrelatedness of all clusters, and it is closely related to all knowledge bases on students. To name a few, quality problems in student learning from the first cluster, student attrition topics from the second cluster, diversity issues and minority students from the third cluster, and homogeneous structures in higher education from the final cluster were all related to the fourth cluster, namely, the inequality of opportunity. This highlights the general importance of social structure in higher education and inequalities based on the differentiated educational opportunities of student background variables.

IV.4. What topical foci are pertinent to student outcomes that have attracted the attention of scholars between 1960 and 2020?

Co-occurrence analysis in VOSviewer was performed to ascertain the topical foci on college students. The co-occurrence analysis or co-word analysis is a technique to identify trends in topical foci studied by HE scholars. The co-

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word analysis indicates the close relations between concepts behind words that frequently co-occurred in the documents (Zupic & Cater, 2015).[30] The co-word analysis is based on keywords coming from documents, and it also presents a comprehensive picture of the knowledge base. The map emerged from the co-word analysis that depicted the network of themes and their relationships.

The co-word analysis was adjusted to concepts in titles, keywords described by authors, and index keywords. In the analysis, a threshold of at least 10 co-occurring cases of a keyword was set, and the 63 most frequently co-occurring keywords were displayed. The most commonly co-occurring five keywords were higher education (n = 389), retention (n = 54), assessment (n = 53), diversity (n = 51), and college students (n = 50). Naturally, higher education had the highest total link strength between the keywords, and all other keywords were almost equally important.

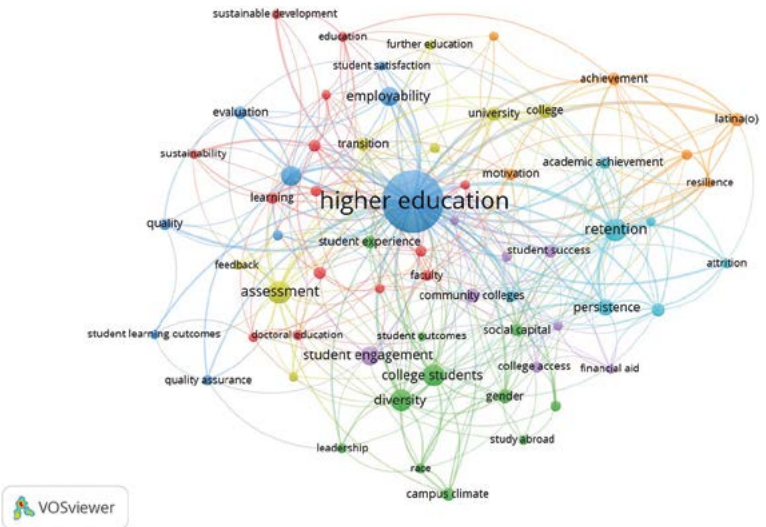

Figure 4

Keyword Co-Occurrence Map

Author citation analysis and document co-citation analysis gave similar patterns so findings in these two analyses are complementary. Thus, the

[30] Ivan Zupic and Tomaz Čater, "Bibliometric Methods in Management and Organization," *Organizational Research Methods* 18, no. 3 (2015): 429-472, https://doi.org/10.1177/1094428114562629.

topical foci of the studies were found to be compatible with the intellectual structure highlighted earlier. The most commonly co-occurring keywords, namely, retention, diversity, and college students, correspond to the intellectual structure based on student retention, diversity, and the quality of student learning. Figure 4 depicts the keyword co-occurrence map based on 2,375 articles focused on student outcomes.

The co-word analysis map exhibits clusters, namely, student development, diversity, process and structure in higher education, assessment and evaluation, higher education economics, student retention, and student behaviors. Regions from the central left to the upper side of the map (red) include keywords on student development, such as learning, doctoral education, and sustainability. The bottom of the map (green) contain keywords on diversity, i.e., gender, social capital, and study abroad. A more dispersed region beginning from the center (dark blue) consists of keywords related to process and structure in higher education, such as employability, quality, and learning outcomes. A region from the bottom left to the upper right (yellow) comprised of keywords on assessment and evaluation, including feedback, assessment, and further education. Additionally, a region from the bottom right to the center (purple) is composed of keywords of higher education finance, financial aid, higher education finance, and college access. The region at the center-right (light blue) presents keywords related to student retention, for example, retention, persistence, and attrition. Finally, the region from the upper right side (orange) encompasses keywords on student behaviors, such as motivation, self-efficacy, and resilience.

A topical analysis is performed using articles published in Scopus-indexed journals between 2011 and 2017 to discover recent trends. Klavans and Boyack proposed this procedure as an indicator of trends that have emerged in recent documents.[31] Temporal or topical analysis confirms that research in HE research focused more on "student learning outcomes," "international students," "sustainability," "student experience," "faculty," "equity," "stem," and "student success." As "student learning outcomes" is among the trend-topics, it may be accepted as an indication of the importance of the current study. Figure 3 highlights the relative emphasis of recent topics. Topics like employability, student achievement, student experience, and faculty have increased recently.

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[31] Richard Klavans and Kevin W. Boyack, "Which Type of Citation Analysis Generates the Most Accurate Taxonomy of Scientific and Technical Knowledge?," *Journal of the Association for Information Science and Technology* 68, no. 4 (2017): 984-998, https://doi.org/10.1002/asi.23734.

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doi: https://doi.org/10.18543/tjhe.2189 • http://www.tuningjournal.org/

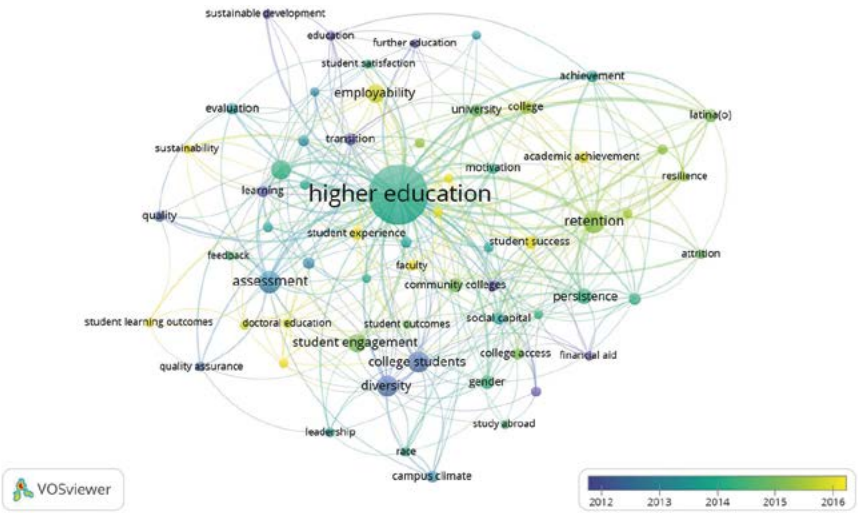

Figure 5

Temporal Overlay for the Keyword Co-Occurrence Map on Articles from 2011 to 2017

V. Conclusions and discussion

This bibliometric systematic review aimed to examine the knowledge base of student outcomes in higher education. A bibliometric analysis was performed by conducting the mapping of the HE literature on student outcomes to realize such a goal. The researchers analyzed 2,375 articles published in 52 Scopus-indexed HE journals between 1960 and 2020. The review's limitations, interpretation of findings, and the implications and recommendations of the study are highlighted in this section.

V.1. Interpretation of results

This paper provides an overview of journals, articles, citations and co-citations, and the intellectual structure of research on student outcomes over time. The corpus of studies focusing on student outcomes revealed an upward trend. Sixty-seven percent has been the highest number of articles published in the most recent decade (2011–2020) (n = 1591) since 1960. The reason for this unprecedented increase in the number of studies in the preceding decade may be attributed to the greater emphasis on higher education as a result of the unprecedented expansion. Increases in the number of programs, number of journals, and professional associations may provide an explanation.

The higher education literature encompasses various studies from student learning[32,33,34] to academic motivation.[35,36,37] The volume and growth trajectory of the literature on student outcomes offered evidence for the importance of the topic in higher education.

Topographical analysis on the literature indicated a skewed geographical distribution in that the majority of HE studies came from the US, the UK, Australia, and Canada. The field emerged in the US and expanded to other countries. Despite this dominance, a positive and remarkable note is that there were many studies from divergent regions or communities of the world. For instance, African, Latin American, and few Middle Eastern countries have published articles on the topic. Nonetheless, the differences between the countries concerning the knowledge base were large. The differences may stem from the amount of investment, expansion, and access because investment in HE in developing countries tended to be lower. Similar conclusions were reached in other studies.[38,39,40]

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[32] Libba McMillan, Tanya Johnson, Francine M. Parker, Caralise W. Hunt, and Diane E. Boyd, "Improving Student Learning Outcomes Through a Collaborative Higher Education Partnership," *International Journal of Teaching and Learning in Higher Education* 32, no. 1 (2020): 117-124.

[33] Tatiana Melguizo and Jacques Wainer, "Toward a Set of Measures of Student Learning Outcomes in Higher Education: Evidence from Brazil," *Higher Education* 72, no. 3 (2016): 381-401, https://doi.org/10.1007/s10734-015-9963-x.

[34] O Zlatkin-Troitschanskaia, Hans A. Pant, and Hamish Coates, "Assessing Student Learning Outcomes in Higher Education: Challenges and International Perspectives," *Assessment and Evaluation in Higher Education* 41, no. 5 (2016): 655-661, https://doi.org/10.1080/02602938.2016.1169501.

[35] Anushree Chauhan, Manisha Goel, and Ritu G. Arora, "Motivation Among Higher Education Academicians: A Factor Analytical Approach," *ANVESHAK-International Journal of Management* 7, no. 1 (2018): 172-189, https://doi.org/10.15410/aijm/2018/v7i1/119884.

[36] Ching Y. Huang, "How Background, Motivation, and the Cooperation Tie of Faculty Members Affect their University–Industry Collaboration Outputs: An Empirical Study Based on Taiwan Higher Education Environment," *Asia Pacific Education Review* 19, no. 3 (2018): 413-431, https:/doi.org/ 10.1007/s12564-018-9546-5.

[37] Gordana Stankovska, Slagana Angelkoska, Fadbi Osmani, and Svetlana P. Grncarovska, "Job Motivation and Job Satisfaction among Academic Staff in Higher Education," *Bulgarian Comparative Education Society* 15, (2017): 159-166.

[38] Taherah Dehdarirad, Anne Villarroya, and Maite Barrios, "Research on Women in Science and Higher Education: A Bibliometric Analysis," *Scientometrics* 103, no. 3 (2015): 795-812, https://doi.org/ 10.1007/s11192-015-1574-x

[39] Phillip Hallinger et al., "A Bibliometric Review of Research on Educational Administration: Science Mapping the Literature, 1960 to 2018," *Review of Higher Education* 89, no. 3 (2019): 335-369, https://doi.org/10.3102/0034654319830380.

[40] Ömer F. Sönmez, "Bibliometric Analysis of Educational Research Articles Published in the Field of Social Study Education based on Web of Science Database," *Participatory Educational Research* 7, no. 2 (2020): 216-229, https://doi.org/10.17275/per.20.30.7.2.

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doi: https://doi.org/10.18543/tjhe.2189 • http://www.tuningjournal.org/

"Studies in Higher Education" published more than 200 articles, and this journal is highly reputable and included in the Web of Science. Kwiek[41] reached similar conclusions by elucidating that "Studies in Higher Education" was one of the two most elite global journals in HE. The interest of high-ranking journals on student outcomes may indicate the importance and attraction of the topic for international scholars. In addition, the current study put forward evidence for the contributions of pioneer HE scholars, such as Astin, Pascarella, Hurtado, and Tinto, based on citation impacts. Other bibliometric reviews reported similar results on influential authors.[42,43,44] Finally, some highly-cited documents were on instructional technology, while highly co-cited documents were about diversity. Documenting these studies in terms of citation impacts may be valuable. First, these documents highlighted the prominent role of research in the evolution of the HE knowledge base. According to Hallinger and Kovacevic,[45] readers or other scholars may synthesize current and future ideas so that knowledge accumulation and fresh insights may resolve challenges in the studying practice of HE. By contrast, this review identified "canonical texts"[46] that made paradigmatic contributions to interdisciplinary approaches by documenting studies on HE[47] and other related fields,[48] which may underpin

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[41] Marek Kwiek, "The Prestige Economy of Higher Education Journals: A Quantitative Approach," *Higher Education* 81 (2021): 493-519 https://doi.org/10.1007/s10734-020-00553-y.

[42] Gloria Aparicio et al., "A Holistic Bibliometric Overview of the Student Engagement Research Field." *Journal of Further and Higher Education* 45, no.4 (2021): 540-557, https://doi.org/10.1080/0309877X.2020.1795092.

[43] Ali Özkaya, "Bibliometric Analysis of the Publications Made in STEM Education Area," *Bartin Üniversitesi Egitim Fakültesi Dergisi* 8, no. 2 (2019): 590-628, https://doi.org/10.14686/buefad.450825.

[44] Kim H. Yeoh and Kiran Kaur, "Subject Support in Collection Development: Using the Bibliometric Tool," *Collection Building* 27, no. 4 (2008): 157-166, https://doi.org/10.1108/01604950810913724.

[45] Phillip Hallinger et al., "A bibliometric review of research on educational administration: science mapping the literature, 1960 to 2018," *Review of Higher Education* 89, no. 3 (2019): 335-369, https://doi.org/10.3102/0034654319830380.

[46] Howard D. White and Katherine W. McCain, "Visualizing a Discipline: An Author Co-Citation Analysis of Information Science, 1972–1995," *Journal of the American Society for Information Science* 49, no. 4 (1998): 327-355.

[47] Patricia Gurin, Eric Dey, Sylvia Hurtado, and Gerald Gurin, "Diversity and Higher Education: Theory and Impact on Educational Outcomes," *Harvard Educational Review* 72, no. 3 (2002): 330-367, https://doi.org/10.17763/haer.72.3.01151786u134n051.

[48] Anthony L. Antonio, "The Role of Interracial Interaction in the Development of Leadership Skills and Cultural Knowledge and Understanding," *Research in Higher Education* 42, no. 5 (2001): 593-617.

the intellectual structure of the HE knowledge base. In conclusion, the identification of highly cited and co-cited documents provides evidence for the evolution of the HE field.

The intellectual structure of the higher education knowledge base was examined within the author co-citation analysis. Pascarella, E. T., Hurtado, S., Terenzini, P. T., and Tinto, V. appeared as the most frequently co-cited authors. These scholars also appeared in citation impacts, and the results were consistent. Moreover, five clusters emerged, namely, student retention, quality of student learning, inequality of opportunity, diversity, and student demographics. These clusters offered a useful base to represent the constructs in the cognitive structure of HE. Learning and teaching,[49] the retention of minorities,[50] socio-economic status as a student demographic,[51] and diversity[52] are frequently studied constructs in HE, just to name a few. Even though variations in the disciplines, geographical areas, and cultural traditions make a more complex intellectual structure of the higher education knowledge base, the current study presents an opportunity to interrogate the inter-relations between the constructs. One of the most essential findings concerning the intellectual structure was the inequality of opportunity. As Figure 1 demonstrates, the central location of the cluster of the inequality of opportunity is also at the center of all other HE student outcomes, such as retention and learning. From past to present, scholars[53,54,55,56] have placed a

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[49] Elisabeth J. Spelt, Harm J. Biemans, Hilde Tobi, Pieternel A. Luning, and Martin Mulder, "Teaching and Learning in Interdisciplinary Higher Education: A Systematic Review," *Educational Psychology Review* 21, no. 4 (2009): 365-378, https://doi.org/10.1007/s10648-009-9113-z

[50] Gurnam Singh, "Black and Minority Ethnic (BME) Students' Participation in Higher Education: Improving Retention and Success: A Synthesis of Research Evidence," https://s3.eu-west-2.amazonaws.com/assets.creode.advancehe-document-manager/documents/hea/private/bme_synthesis_final_1568036653.pdf.

[51] Marybeth Walpole, "Socioeconomic Status and College: How SES Affects College Experiences and Outcomes," *The Review of Higher Education* 27, no. 1 (2003): 45-73, https://doi.org/10.1353/rhe.2003.0044.

[52] Sylvia Hurtado, "The Next Generation of Diversity and Intergroup Relations Research," *Journal of Social Issues* 61, no. 3 (2005): 595-610, https://doi.org/10.1111/j.1540-4560.2005.00422.x.

[53] Gary A. Berg, *Low-income Students and the Perpetuation of Inequality: Higher Education in America* (New York, NY: Routledge, 2016).

[54] Neil Guppy, Paulina D. Mikicich, and Ravi Pendakur "Changing Patterns of Educational Inequality in Canada," *Canadian Journal of Sociology* 9, no.3 (1984): 319-331, https://doi.org/10.2307/3340158.

[55] William H. Sewell, "Inequality of Opportunity for Higher Education," *American Sociological Review* 36, no. 5 (1971): 793-809, https://doi.org/10.2307/2093667.

[56] Yossi Shavit (Ed.), *Stratification in Higher Education: A Comparative Study* (Stanford, CA: Stanford University Press, 2007).

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special emphasis on inequality in higher education through different lenses. In sum, the in/equality of opportunity has always been a problem and is likely to continue to complicate other issues.

Similar patterns observed in the intellectual structure of HE also appeared in the topical foci of the studies. Co-word analysis based on author keywords offered clusters on student development, diversity, process, and structure in higher education, assessment and evaluation, higher education finance, student retention, and student behaviors. Higher education finance was discerned from the intellectual structure, and globalization may be the reason for this differentiation. As a typical result, competitiveness makes a difference for the economic power of countries. The close associations between globalization and higher education were also emphasized by scholars.[57,58,59,60]

Student learning outcomes, international students, sustainability, student experience, faculty, equity, STEM, and student success were common, and these topics were more closely aligned with student needs and expectations. Recent studies[61] have highlighted student-focused approaches. This bibliometric review was made conceivable by organizing and systematizing the corpus of research. This review provided a perspective on the evolution and the recurrent themes of research on student outcomes. Researchers may develop more innovative approaches to the study of student outcomes.

V.2. Implications and recommendations

Several implications may be offered for the current study. Scopus provides scholars with an opportunity to perform bibliometric reviews on various topics concerning students. Scopus may also contribute by enhancing

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[57] Ludmila Aleksejeva, "Country's Competitiveness and Sustainability: Higher Education Impact," *Journal of Security & Sustainability Issues* 5, no.3 (2016): 355-363, http://dx.doi.org/10.9770/jssi.2016.5.3(4).

[58] Philip. G. Altbach and Jane Knight, J, "The Internationalization of Higher Education: Motivations and Realities," *Journal of Studies in International Education* 11, no. 3/4 (2007): 290-305, https://doi.org/10.1177/1028315307303542.

[59] Christopher D. Hammond, "Internationalization, Nationalism, and Global Competitiveness: A Comparison of Approaches to Higher Education in China and Japan," *Asia Pacific Education Review* 17, no. 4 (2016): 555-566, https://doi.org/10.1007/s12564-016-9459-0.

[60] Santos Lopez-Leyva and Gary Rhoades, "Country Competitiveness Relationship with Higher Education lIndicators," *Journal of Technology Management & Innovation* 11, no. 4 (2016): 47-55, https://doi.org/10.4067/S0718-27242016000400007.

[61] Gloria Aparicio et al., "A Holistic Bibliometric Overview of the Student Engagement Research Field," *Journal of Further and Higher Education* 45, no.4 (2021): 540-557, https://doi.org/10.1080/0309877X.2020.1795092.

literature reviews and partly validating the results. A second implication is that studies on students are limited in their geographical distribution vis-à-vis the development of HE. Further, bibliometric reviews may help in literature reviews, and scholars may identify gaps or build on trends on topical foci in the literature. The scholars reading bibliometric reviews are more aware of where and how they begin the literature review than other scholars, since bibliometric reviews presented are both the most frequently and least frequently studied topics. Bibliometric reviews are conceived more as objective evaluation of research impact, since they are quantified. They are easily reproducible using similar steps, and they take less time and cost less. Individuals can easily scale the literature based on the unit of analysis: individual, institutional, national, and international levels. These advantages also create disadvantages if they are used to increase personal gain.

Researchers and practitioners may use bibliometric reviews for cross-cultural comparisons and draw a more global picture of HE. Practitioners may become accustomed to multi-dimensional perspectives by identifying the links between perspectives. The Web of Science (WoS) database may be utilized to perform similar or more creative bibliometric reviews. Finally, policy-makers may identify the (complexity of policies) to improve student outcomes. Scholars and administrators may also synthesize research on the basis of several studies and may construct more effective policies.

V.3. Limitations

This study does not claim that the results cover all the knowledge base and intellectual structure of HE on student outcomes. The reality is much more complex and the sheer size of the studies in the literature attest this. The bibliometric reviews provide a general representation of the published work within a narrowly defined topic. The current study is limited by the information provided by the Scopes database. Moreover, it does not have the breadth and depth of research synthesis and meta-analysis studies, although it offers a general overview and useful complementary information for those studies. Another limitation was related to the inclusion and exclusion criteria because publications such as books, chapters, and dissertations were excluded from the study. Thus, this review did not include the entire HE literature around the world. However, Scopus is the largest medium to compile the reviews of research, and "co-citation analysis" provides an opportunity to overcome this limitation to a certain extent. Nonetheless, the findings cannot be generalized to cover the whole knowledge base. Another limitation arose from cultural and contextual issues because we only included studies

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doi: https://doi.org/10.18543/tjhe.2189 • http://www.tuningjournal.org/

published in English. The study was limited to the context of more dominant communities, such as the US and the UK, such that contextual or cultural biases may prevent the broader applicability of findings to other societies. Accordingly, there may be unobserved trends, topics, or hidden trends. Finally, the current study was limited to choices on the method of analysis. The gender, ethnicity, or age of the authors were not considered.

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doi: https://doi.org/10.18543/tjhe.2189 • http://www.tuningjournal.org/

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