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Reflective Practice in Latin American Higher Education: Contributions and Challenges Toward Sustainable Development

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Abstract

The current study attempts to identify patterns of research output, leading countries, institutions, and journals of reflective practice in Latin American universities, as well as the contribution of reflective practice to sustainable development of education, based on an extensive review of relevant scientific literature published in the Scopus database between 2015 and 2024. The bibliometric method was selected as the main research approach to examine the development and influence of reflective practice on higher education in Latin America. As bibliographic descriptors, the terms "reflective practice" and "university" were used, which initially identified 1,431 publications. Following the selection criteria and the exclusion of irrelevant sources, 38 items were included in the final sample. The findings revealed a steady trend of increasing productivity with a particularly rapid increase observed in 2024, accounting for 29.41% of total publications. Publications in the form of research papers prevail in the sample at 89.47%. In terms of the geographic distribution, Chile is the leader, providing 34.21% of all publications; second place goes to Brazil with 26.32%. Other contributors include Colombia, Mexico, and Argentina. Among the top-ranked journals, a majority have high impact (quartiles Q1 and Q2). Moreover, the keyword association approach demonstrates the presence of five significant themes relating to teacher training, critical reflection, professional development, and innovative teaching practices. In addition to that, the study emphasises the emerging trends of integrating reflective practices with concepts of sustainability, especially in relation to the Sustainable Development Goals, including quality education, social accountability, and institutional innovation. Generally speaking, it can be assumed that the significance of reflective practice is becoming evident because it contributes to improved critical thinking, metacognition, and ethics among teachers and learners. Nevertheless, it should be noted that there are some limitations, including a lack of cross-national research, as well as the need for additional validation of results.

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Introduction

In Latin American higher education, reflective practice has emerged as an essential component to improve educational processes. This practice, linked to the construction of knowledge through critical reflection on teaching-learning experiences, has gained great relevance in recent years due to its impact on the formation of professionals committed to their social environment (Hershkovitz et al., 2024; Gómez-Gómez, 2024; Punín et al., 2024). The importance of reflective practice lies not only in its capacity to improve educational quality, but also in its contribution to teaching and to the construction of more meaningful and transformative learning (Hinestroza & Suárez, 2024).

Reflective practice in teaching is a systematic and critical process through which teachers analyse their own experiences in order to improve their professional practice (Domingo, 2021). This implies the ability to question one's own beliefs, pedagogical decisions and actions in the classroom, as well as to consider the impact of these on student learning. The teacher is positioned as an active agent in his or her professional development, promoting a more ethical teaching based on research and the sociocultural context in which he or she works (Ahumada, 2024). This approach allows articulating theory with practice, favouring the construction of pedagogical knowledge and educational innovation (Bonafé & Anaya, 2021; Novoa-Echaurren, 2024).

Several studies have highlighted the benefits of reflection in educational practice, including the development of critical thinking skills, the promotion of metacognition and the strengthening of the sense of professional identity in educators. Evaluated the impact of a teacher training program on the improvement of their reflective pedagogical practice under the authentic evaluation approach, finding the importance of teachers maintaining spaces to share reflections on pedagogical practices among peers and to position themselves in the continuous improvement of learning processes (Montaño & Rojas, 2023). In order to carry out this process, it was found that the predominant levels of teachers' reflective capacity are located between technical rationality and practical rationality.

In recent years, higher education has been recognised as a strategic actor in advancing sustainable development, not only in the transmission of knowledge, but also in the training of citizens capable of facing global environmental, social, and economic challenges (Torres, 2021; Rivas & Gonzalez, 2024). In this sense, reflective practice emerges as a pedagogical mechanism that enables the integration of sustainability principles into teaching by encouraging teachers and students to review their own beliefs, methods, and the effects of educational action in real contexts (Correa, 2024). Recent studies show that active reflection, cooperation in learning, and the incorporation of the Sustainable Development Goals (SDGs) make it possible to modify educational practice towards models that are more participatory, contextualised, and committed to the environment (Plata Rangel et al., 2022; Aucatoma & González, 2025). This paper attempts to present a bibliometric analysis of reflective practice within the scope of higher education institutions, pointing out trends, gaps in current literature, and the impact of reflective practice towards sustainable development in Latin American higher education institutions.

- An examination of the trends and gaps associated with reflective practice in the Latin American region, particularly in disciplines of engineering and applied sciences, is provided in the paper.
- A discussion on ways through which reflective practices can be improved through technology innovations such as artificial intelligence, digital learning, and the Internet of Things is presented.
- The paper highlights reflective practice in relation to the educational approach known as sustainability in education, noting its importance in promoting critical and ethical thinking skills in students of engineering and applied sciences for sustainability.

Structure of this paper includes six sections that are namely Section I: Introduction where overview of the subject and objectives of research are presented; Section II: Literature review, where literature on the subject is reviewed along with existing gaps in literature; Section III: Methodology that elaborates on methodology used for bibliometric analysis, such as database and methods used for analysis; Section IV: Results where results attained from this study are discussed; Section V: Discussion, where the results attained from this research are interpreted and limitations discussed; and finally Section VI: Conclusion.

Literature Review

A number of research works have shown the advantages that can be gained from using reflective activities in educational practice, such as the development of critical thinking skills and the cultivation of metacognition. To investigate the effect of an educational program for improving teachers' reflective pedagogical practice based on the authentic assessment approach, and found the significance of having reflective spaces where teachers could reflect upon their pedagogical practice amongst peers and put themselves in a position to continuously improve learning processes (Montaño & Rojas, 2023). To implement such reflective spaces, it was found that the most prevalent level of teachers' reflective skills lies between technical and practical rationality.

In a global context, reflective practice has been acknowledged as a very effective method of improving education, especially within technical and applied sciences. It allows students to apply theory in practice and develop important skills that will be helpful in working in an industrial company in the future (Pulla, 2021). The importance of reflective practices in the improvement of professional and technical skills is evident on a global scale, as they allow for greater adaptability and innovation on the part of students.

Reflective practice improves not only the quality of education itself but is also closely connected with sustainable development, especially from the point of view of technical disciplines such as engineering. Reflective practices can help students learn more about sustainability and how to consider it when solving problems, thus ensuring that students are prepared to solve global issues in the future.

However, despite the various studies on this topic in different contexts, there is a need to map the scientific production on reflective practice in Latin America, particularly in the field of higher education. Bibliometric studies allow quantitative analysis of scientific production in a specific area of knowledge, identifying publication patterns, collaboration networks, most influential authors, sources of greatest impact and emerging topics. This type of analysis offers a panoramic and objective view of the development of the field, facilitating strategic decision-making in research, teaching and educational policies. This article seeks to provide a bibliometric profile of this subject in the region, identifying trends and existing research gaps.

In this context, the problem arises of understanding how research on reflective practice in Latin American higher education has developed and evolved, and to what extent it incorporates visions, strategies, or results oriented toward sustainable development.

In addition, this literature review highlights the importance of reflective practices as ways to improve critical thinking, metacognitive processes, and professional identity development, particularly in technical disciplines such as engineering. It also makes an association between reflective practices and sustainability by promoting sustainable behaviours in higher education through teaching ethics and sustainability concepts to students. Although reflective practice is globally recognised, a need arises for bibliometric analysis in Latin American universities regarding reflective practices.

Methodology

Study Design

A bibliometric analysis was performed. The documents used for the analysis came from the Scopus database, indexed during the period 2015-2024. Scopus was selected because it is considered the main multidisciplinary bibliographic database worldwide, with a large citation and journal coverage.

Search Strategy

To extract the documents, the descriptors *"reflective practice" AND "university"* were used in the title, abstract and keyword fields. The variables of author, institution, country, journal, citations and keywords were normalised to generate production indicators.

Sample

The search was conducted in April 2025. Through the search strategy, 1431 documents were retrieved, which were subjected to a process of metadata normalisation and elimination of documents that did not meet the general objective. The final sample consisted of 38 documents fig. 1.

The sample was limited only to the type of source journals, i.e., research articles (n=34; 89.47%) (defined as those that had the structure: abstract, introduction, methods, results, discussion; or some similar structure); books (n=03; 7.89%), conference papers (n=01; 2.63%).

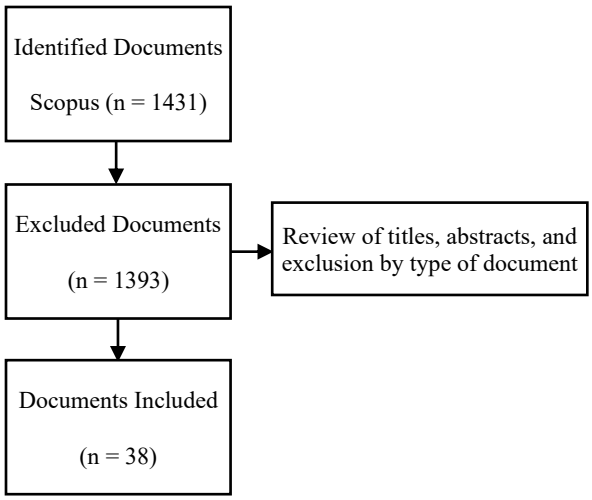


Fig. 1: Methodological Process of Search, Retrieval and Selection of Information for the Analysis

Data analysis

A database was organised with the articles included in Microsoft Excel, which included bibliometric indicators of annual production and type of scientific publication, considering the following data: authors, title of publication, type of publication, affiliation institutions of the authors, journal of publication, country of publication, and citations. Finally, with the support of the *VOSviewer software*, a network was created with the main thematic axes associated with the keywords of the publications based on the coincidence of terms.

Integration with Applied Sciences

The bibliometric approach played a significant role in revealing the reflective practice in engineering education and applied sciences. With the help of information gathered from the Scopus database, one could identify the trends concerning the usage of reflective practice in technical sciences. As a result, the research managed to reveal how the reflective practice can be used to combine theory and practice in technical disciplines. Since the research focused on these disciplines, one should emphasise that reflective practice is crucial for the professional development of students who need to face challenges in the field of engineering.

Multidisciplinary Collaboration

The idea of reflective practice is one that does not belong to any specific discipline but can be used in various settings. This research took into consideration sources from various disciplines to give a wider picture of how reflective practice can be applied in different disciplines such as engineering, IT, and environmental science. Such an approach will allow for the identification of how reflective practices aid the development of critical thinking and problem-solving skills in students.

Incorporation of Educational Innovations

Advances in technology continue to change how reflective practices are employed in educational settings. The current study documents how reflective practice is being applied through the use of various technological developments, such as artificial intelligence, learning management systems, and others. Through these tools, reflection enhances self-evaluation and metacognition. For instance, AI is capable of giving personalised feedback to learners while learning management systems track and evaluate learners' performance. It is essential that reflective practices are facilitated through such tools to ensure that learners within engineering and applied science disciplines enjoy a dynamic learning experience.

Ethics

The study did not have human subjects as units of analysis, and therefore, the approval of a research ethics committee was not required.

Results

A total of 38 documents published and indexed in the Scopus database were found; three types of documents were included in the study. There was evidence of a progressive increase in research during the last 10 years; it is from the year 2024 that the production equals 10 articles per year (see table 1).

Table 1: Evolution of the Scientific Production Published in Reflective Practice in Higher Education

Year	Research articles		Books		Conference papers		Total	
	n	%	n	%	n	%	n	%
2015	4	11.76	0	0.00	0	0	4	10.53
2016	0	0.00	0	0.00	0	0	0	0.00
2017	1	2.94	0	0.00	0	0	1	2.63
2018	1	2.94	0	0.00	0	0	1	2.63
2019	2	5.88	2	66.67	0	0	4	10.53
2020	4	11.76	0	0.00	0	0	4	10.53
2021	3	8.82	0	0.00	0	0	3	7.89
2022	5	14.71	0	0.00	0	0	5	13.16
2023	4	11.76	1	33.33	0	0	5	13.16
2024	10	29.41	0	0.00	1	100	11	28.95

Out of a total of 07 Latin American countries, Chile is the country that contributes the highest scientific production on *reflective practice* (34.21% of the production), followed by Brazil with 26.32% (see table 2).

Table 2: Countries with Scientific Production on Reflective Practice in Higher Education

Country	n	%
Chile	13	34.21
Brazil	10	26.32
Colombia	6	15.79
Mexico	4	10.53
Argentina	3	7.89
Ecuador	1	2.63
Venezuela	1	2.63

Table 2 indicates the frequency of scientific production regarding reflective practices in higher education among the Latin American countries. The country that leads the region in scientific production is Chile, because it contributes 34.21% to the total publications. The second highest is Brazil, with a percentage of 26.32%. The other significant countries include Colombia, which has 15.79%; Mexico, with 10.53%; and Argentina, with 7.89%. However, the two countries with the least scientific production are Ecuador and Venezuela, each contributing 2.63%.

In terms of productivity by institution, out of a total of 87 international institutions. Table 3 shows the list of the top ten, among which institutions from Brazil and Chile stand out. In addition, the National Autonomous University of Mexico is the one that is in the top 100 according to the QS World University Rankings 2025.

Table 3: Institutions Involved in Studies on Reflective Practice in Higher Education

Institution	Country	QS World University Rankings 2025	n
Federal University of Santa Catarina	Brazil	781-790	3
University of Guanajuato	Mexico	1401+	3
University of the North	Colombia	1001-1200	3
Universidad Autónoma de Chile	Chile	1401+	3
Fluminense Federal University	Brazil	1001-1200	2
University of Chile	Chile	139	2
University of Santiago de Chile	Chile	461	2
Catholic University of the Santisima Concepcion	Chile	1401+	2
National Autonomous University of Mexico	Mexico	94	2
Municipal Health Foundation of Niterói	Brazil		1

Table 4 shows the list of the five most productive journals, among which Reflective Practice stands out, with 4 papers published on the subject. 60% of these were placed in Q1 and Q2. The thematic areas of these five journals are in the social sciences. Scientific production was concentrated in European and American journals.

Table 4: Most Productive Journals on the Topic of Reflective Practice in Higher Education

Journal	n	Quartirl SJR 2024	Subject area	Country
Reflective Practice	4	Q1	Arts and Humanities	United Kingdom
International Journal of Sports Science and Coaching	2	Q1	Health and Social Sciences	United Kingdom
Bolema Mathematics Education Bulletin	1	Q3	Mathematics and Social Sciences	Brazil
Cogent Education	1	Q2	Social sciences	United Kingdom
Science Education	1	Q3	Social sciences	Spain

Table 5: Relationship between Reflective Practice and Sustainable Development in Latin American Higher Education

Category	Description of reflective practice	Link to sustainable development	Related SDGs
Critical teacher training	Promotes self-assessment and critical analysis of one's own teaching practices.	Contributes to strengthening quality education by fostering teachers capable of transforming educational contexts.	SDG 4 (Quality education)
Student-centered learning	Reflective practice promotes active methodologies where students take on a leading role.	It promotes autonomy, self-regulation, and critical thinking, which are essential skills for sustainable societies.	SDG 4 and SDG 16
Sustainable educational innovation	Teacher reflection generates contextualised pedagogical strategies.	It fosters institutional practices that integrate sustainability into the curriculum.	SDG 4 and SDG 12
Social transformation through education	Critical reflection allows education to be understood as a process of social transformation.	It promotes the development of citizens committed to social justice.	SDG 10 and SDG 11
Collaboration and communities of practice	It promotes collective work between teachers and researchers to improve educational practices.	It reinforces the exchange of knowledge for sustainable development.	SDG 17
Professional ethics and social responsibility	This involves questioning the principles that guide educational action.	Contributes to ethical training consistent with the principles of sustainability.	SDG 4 and SDG 16

Table 5 depicts the relationship that exists between reflective practice and sustainable development in Latin American universities. The table categorises several dimensions of reflective practice and indicates the amount of contribution that each has made to the achievement of sustainability, based on its relation to certain SDGs. Some of the dimensions highlighted in the table include critical teacher education, which enhances quality education (SDG 4) and learner-based education, which promotes critical thinking and autonomy – characteristics of a sustainable society (SDGs 4 & 16). Other dimensions mentioned include sustainable educational innovations, which involve the incorporation of sustainable development in the activities of the institution (SDGs 4 & 12), and social change through education, which is concerned with promoting social justice (SDGs 10 & 11).

With the 164 descriptors selected in the 38 documents retrieved, the grouping of five clusters is evident. The green cluster refers to studies regarding the training of teachers within the education discipline that involve studies on methods used for improving teacher training within higher education institutions. The yellow cluster involves research studies conducted on teacher training, particularly those concerning teaching practice and reflective practices. It is particularly interested in teaching in pre-service contexts, analysing how future teachers develop their reflective capacity. Cluster 3 (blue) summarises studies on reflective practice that promote teachers' critical analysis of their own teaching with the aim of transforming and enriching educational experiences.

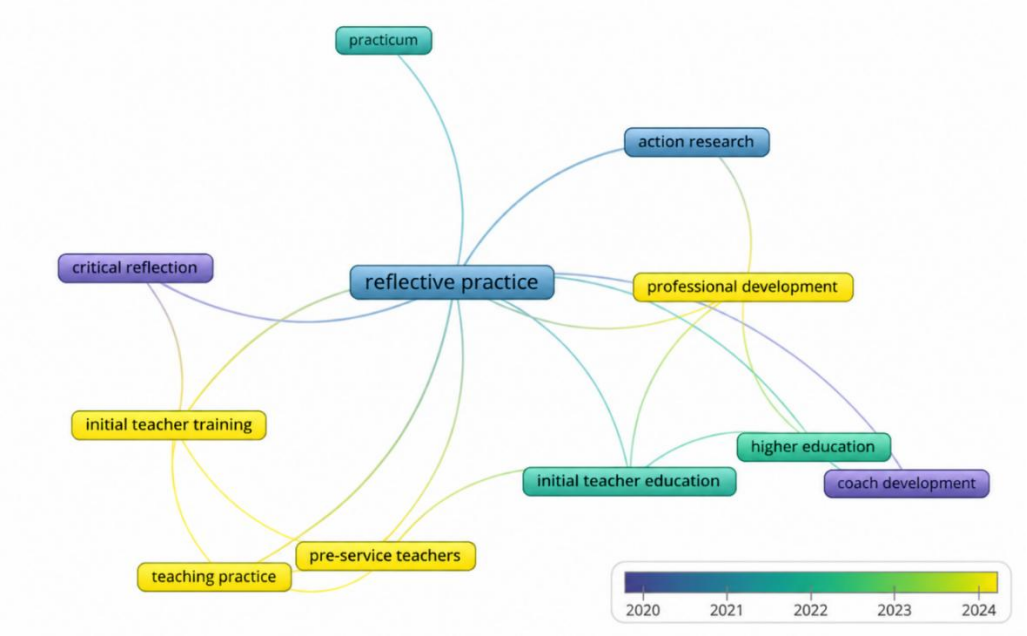


Fig. 2: Cluster Grouping based on the Selected Descriptors

Fig. 2 shows clustering of some of the terms associated with reflective practice in higher education. There are five separate clusters that come out of the analysis. Cluster 1 (green) is concerned with trainer development, involving initial teacher training and development, and seeks to provide ways to develop teacher training within higher education institutions. Cluster 2 (yellow) deals with initial teacher education, especially teaching practice and critical reflection, highlighting the need to develop reflective abilities among pre-service teachers. Cluster 3 (blue) is concerned with practices that involve critical reflection among teachers about their teaching approaches to enhance their experiences.

Discussion

The results obtained in the present study show a sustained growth of academic interest in reflective practice in higher education, especially during the last decade. This trend is consistent with the paradigmatic changes in current university educational models ,which are moving from transmissive approaches to student-centred perspectives, autonomy and critical thinking (Brueggemann et al., 2017; Litardo Conforme et al., 2025; Ballesteros et al., 2024).

Regarding the production of scientific articles, it is possible to observe that there is a considerable number of publications in journals dedicated to the area of education, thereby demonstrating thematic consolidation in certain fields of knowledge. This observation corroborates the findings presented (Martínez-Alvarez & Martínez-López, 2024; Molina-Moreno et al., 2024). However, the present analysis provides a more precise delimitation by focusing exclusively on reflective practice at the higher education level, which allows for a more in-depth approach to the phenomenon in the Latin American context.

This pattern may be related to the strengthening of educational policies aimed at teacher professionalisation, as well as the consolidation of academic communities that actively research reflective practice as an axis of pedagogical transformation.

Cooccurrence network analysis of the keywords reveals a still divided structure, with clusters with little interconnection between them. However, approaches such as critical reflection, situated practice, reflective evaluation and metacognitive thinking have been incorporated. These findings indicate a considerable theoretical advance in the understanding of reflective practice as a complex, dynamic and transformative process, when contrasting this result with similar bibliometric studies in fields such as formative assessment or competency-based learning, an analogous situation is noticed, which reinforces the need to promote research that associates other psychoeducational variables.

This study has some limitations. First, the analysis was restricted to articles published in scientific journals indexed in a single database, which could have excluded research disseminated in other formats; this delimitation may have limited the diversity of approaches and contexts present in regional scientific production. Likewise, it focused exclusively on publications from Latin American countries, which, while allowing a more in-depth regional approach,

prevents comparisons with other regions of the world that also address reflective practice from different or complementary perspectives.

Conclusion

The bibliometric study shows that there is an increased scientific output on reflective practice within Latin America, with a constant increase in scientific production over the last ten years. Of all the documents examined, 34.21% have been produced by researchers from Chile, while 26.32% of the studies have been produced by Brazilian authors. This positive trend signifies the increasing importance of reflective practice as an indispensable pedagogical method within the region. Nevertheless, some weaknesses are observed in the literature reviewed, and one of them includes a lack of comparative studies and research on the practical effects of reflective practice on students' academic success. Reflective practice can be regarded as an important instrument to shape professionals who will not only be technically skilled but also be critical thinkers who will act ethically and demonstrate interpersonal competence. It helps contribute to achieving SDG 4 (Quality Education). From the results of this study, it is clear that institutions of higher learning in Latin America have become pivotal in ensuring sustainable teaching processes that promote ethical consideration, hence leading to sustainability in the future. Although there has been progress, there is still much that can be researched in relation to interpersonal competence and how reflective practice can make an impact on teaching and learning processes.

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