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Extending impact beyond the community: Protocol for a scoping review of evidence of the impact of communities of practice on teaching and learning in higher education



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ABSTRACT

The disruption in higher education caused by the COVID-19 pandemic has led to renewed interest in implementing communities of practice (CoPs) as a feasible mechanism for delivering faculty development. The construct of *community of practice* is cited in the literature among the most important strategies for professional development. However, empirical evidence of the impact of CoPs on teaching and learning is scarce and we still know little about the extent to which faculty participation in CoPs affect their teaching practices and students' learning and achievement. This scoping review aims to collect, synthesize, and map existing evidence about the impact of CoPs in higher education. The review is guided by a conceptual framework, which incorporates six elements underlying the purpose and expected outcomes of CoPs: resources and the capacity to mobilize them, knowledge management activities and the expansion of knowledge, changes in policy and practice, and impact on higher education outcomes.

1. Background

The massive disruption in higher education caused by the COVID-19 pandemic and the abrupt transition to virtual and remote teaching and learning has required higher education institutions to develop innovative ways to meet the educational needs of their student population and provide them with the best education possible while campuses continue to be closed (Buckley, 2020; Mulla, Osland-Paton, Rodriguez, Vazquez & Plavsic, 2020). This transition has been particularly challenging for faculty members who have never designed or delivered online courses (DeVaney, Shimshon, Rascoff & Maggioncalda, 2020) and has led to renewed interest in implementing communities of practice (CoPs) as a model for delivering training, resources, materials, and a platform where faculty can engage with each other and share information and experiences (Bolisani, Fedeli, De Marchi & Bierema, 2020; Delgado, Siow, Groot, de, McLane, & Hedlin, 2021).

Defined as “groups of people who share a concern, a set of problems, or a passion about a topic, and who deepen their knowledge and expertise in this area by interacting on an ongoing basis” (Wenger, McDermott, & Snyder, 2002, p. 4), the construct of *community of practice* has been around for almost three decades and is cited in the literature among the most important strategies for professional development (Akinoyemi, Rembe, Shumba & Adewumi, 2019; Arthur, 2016; Bond & Lockee, 2018; Pyrko, Dörfler & Eden, 2019; Richard et al., 2014).

Nowadays, with the advent of the internet and mobile communication, CoPs operate primarily in virtual environments, allowing them to expand their reach beyond a particular workplace or geographical location (Resnick, 2002). These virtual communities share the same three main characteristics with face-to-face CoPs: (1) they are articulated around an area of knowledge or practice, and their members have common interests and commitments; (2) facilitate collaborative relationships between their members, allowing them to engage in joint activities, share information, and help each other; and (3) are characterized by systematic, informal practices of knowledge and experience sharing. (Wenger, McDermott, & Snyder, 2002).

Since its introduction in 1991 (Lave & Wenger, 1991), the construct of community of practice has also provided theoretical guidance for studying the socially-situated nature of learning, and understanding how knowledge, learning, and skills are enabled, shaped, and advanced by social structures and informal interactions between individuals. Over the years, the concept has been adapted and updated (Li et al., 2009) and is now used extensively as an analytical framework and interpretive tool in multiple fields, including, health, business, government, and knowledge management (Wenger, 2010). However, it was among higher education researchers and practitioners that this construct gained immediate popularity. Since the mid-1990s, faculty professional development, knowledge management, and knowledge sharing in higher education have been extensively stud-

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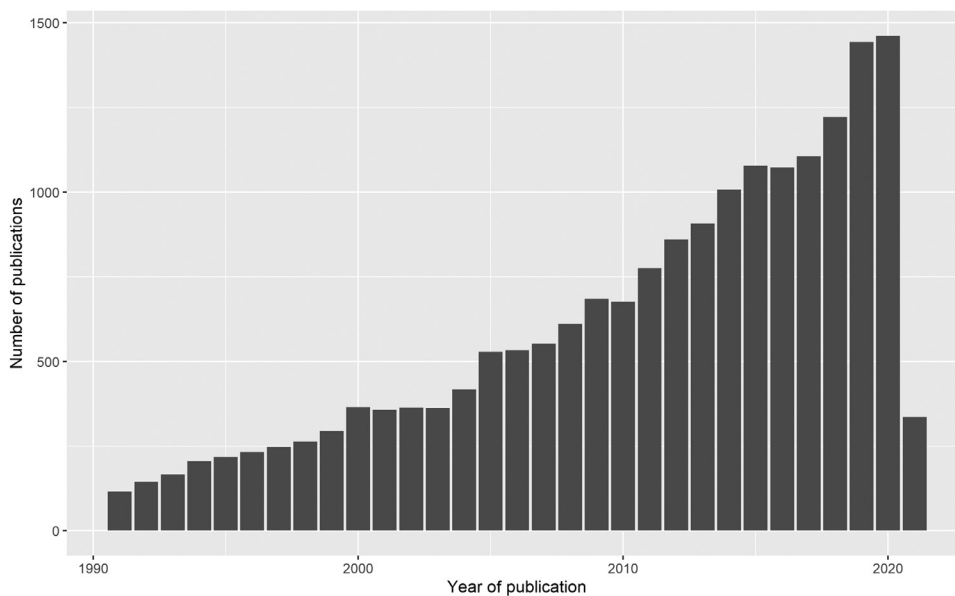


Fig. 1. Published literature on communities of practice in higher education between 1991 and 2021 (March).

ied through the lens of CoPs (Jenkins & Endersby, 2019; Morton, 2012).

The literature is abundant with reports that CoPs are valuable sources of information and professional networking (Gehrke & Kezar, 2017; Lyons, 2008; Warr, 2017), and are important drivers of educational innovation and change, by empowering faculty to be active agents in the generation of knowledge and collaborations (Fullan, 2007). Also, faculty participation in CoPs is reported to translate in increased learning (Eshchar-Netz & Vedder-Weiss, 2021; Voskoglou, 2019), better classroom practices (de Carvalho-Filho, Tio & Steinert, 2019; van As, 2018), and the improvement of educational outcomes at large (Liu & Xu, 2013; Miceli & Zeeng, 2017; Themaat, 2019). This is attributed to the practical and informal nature of CoPs, which allow their members to connect with colleagues quickly and easily through technology, pose specific questions or problems, and get answers, suggestions, or advice almost immediately (Bozu & Imbernon Muñoz, 2009; Serrat, 2017).

Researchers' interest on this topic remains strong as evidenced by the number of publications indexed annually. Fig. 1 shows the steady growth of academic publications on CoPs in higher education from year 1991 to 2021.

However, despite this steady growth in publications and claims about their benefits for faculty and students, empirical evidence of the impact of CoPs on teaching and learning is scarce. Much of the literature is anecdotal and speculative, consisting primarily of descriptions of CoPs characteristics, their alleged advantages and benefits for their members, and approaches for their design and implementation. We still know little about the extent to which faculty participation in CoPs affect their teaching practices and, ultimately, students' learning and achievement.

This scoping review, therefore, aims to collect, synthesize, and map existing evidence about the impact of CoPs in higher education and to identify potential gaps where further research can be pursued. The review is organized using an adapted version of the conceptual framework proposed by Bertone et al. (2013), which incorporates six key elements underlying the purpose and expected outcomes of CoPs: resources and the capacity to mobilize them, knowledge management activities and the expansion of knowledge, changes in policy and practice, and impact on higher education outcomes (Fig. 2).

The impetus for this review arose from the urgent need to find innovative, evidence-based solutions to address the educational issues faced by students and faculty due to the COVID-19 pandemic in Latin America, and particularly in our home country, Colombia, where schools and colleges have been closed for more than a year since the start of the

pandemic. Although higher education coverage in Latin America and the Caribbean improved substantially in the last three decades, going from 17% in 1991 to 51% in 2018 (OECD, 2020), the COVID-19 pandemic is now reversing the progress made. According to recent data from the Colombian Association of Higher Education Institutions (or Ascún, its Spanish acronym), 17% of college students abandoned their studies during the second semester of 2020, and it is expected to increase in the 2021 academic year (El Espectador, 2021). Therefore, by carrying out this scoping review, we want to bring to the attention of practitioners and policy makers the best evidence-based tools for improving teaching and learning in higher education and provide them with the data with which to make informed decisions.

2. Methods

2.1. Protocol design

The methodological approach of this review is known as a scoping review. The purpose of a scoping review is to map the existing literature in a given field and assess its extent and range, and the quality of its evidence (Arksey & O'Malley, 2005; Aromataris & Munn, 2020; Munn et al., 2018) and to clarify and delineate key concepts or definitions (Anderson, Allen, Peckham & Goodwin, 2008; Munn et al., 2018). Additionally, scoping reviews can be helpful in detecting and analyzing gaps in a body of knowledge and existing literature. Hence, scoping reviews can contribute to a rapid review of the evidence in emerging fields or topics (Munn et al., 2018).

The stages of this review include: (1) a definition of the key research questions and objectives (2) the identification of published quantitative studies; (3) the presentation of a selection of studies that meet the inclusion criteria (4) the extraction and critical appraisal of evidence and data; and (5) the categorization, synthesis, and dissemination of the results and their implications for education policy and practice in higher education.

This protocol follows the Preferred Reporting Items for Systematic Reviews and Meta-Analysis for Scoping Reviews (PRISMA-ScR) to enhance methodological and reporting quality (Liberati et al., 2009). The review is also overseen by an expert advisory panel group, who will contribute their expertise during the design of the protocol, the definition of key research questions, objectives, and inclusion and exclusion criteria, and the validation of the findings and recommendations. This multidisciplinary advisory group includes researchers and practitioners

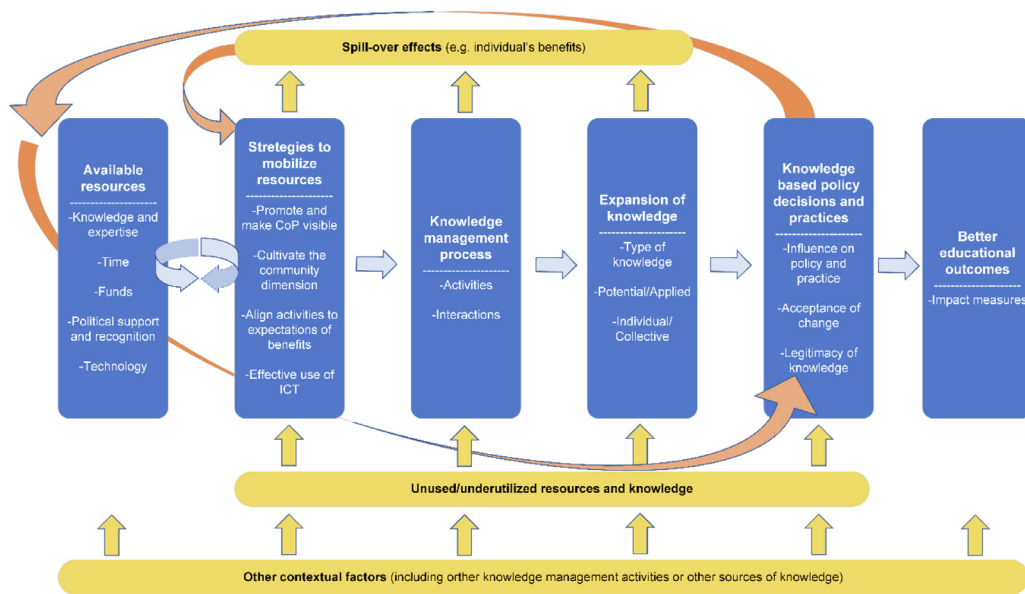


Fig. 2. Conceptual framework for the assessment of the impact of communities of practice. Adapted from Bertone et al. (2013).

with experience in higher education policy, analysis of CoPs, instructional design, and educational assessment and evaluation.

2.2. Stage one: research questions and the objectives of the review

The main purpose of this scoping review is to identify, map, evaluate, and synthesize the existing empirical literature on the impact of CoPs in higher education. The following research questions will guide this study:

- What empirical evidence is there on impact of communities of practice to improve teaching and learning in higher education?
- To what extent does the evidence base support the efficacy of communities of practice in improving students' academic outcomes?
- What gaps exist in the current body of research examining communities of practice in higher education and what further research is needed?
- What policy recommendations can be derived from the review?

2.3. Stage two: identification of studies

2.3.1. Eligibility criteria

As shown in the data extraction form (Table 2), this review uses the Perspective, Intervention, Comparison, Evaluation (SPICE) framework (Stern, Jordan & McArthur, 2014) to develop and delineate the inclusion and exclusion criteria, and to frame the review questions. The reasons for the inclusion of relevant evidence will be explained in detail during the full-text review stage. The primary search will be conducted on 15 interdisciplinary electronic databases that index literature related to higher education, engineering, and social sciences in general. Products will be included in the review if they:

- were published in the last decade;
- have been published in English or Spanish;
- address the phenomenon of CoPs as a faculty development strategy in higher education;
- report quantitative outcomes and provide an analysis of empirical data on students' learning and achievement such as changes in behaviors, competencies or skills, or long-term academic outcomes such as persistence, dropout, and graduation rates.

The types of publication that will be included in the review are original research articles, evaluation reports, books, book chapters, and con-

ference articles. Reflection papers, editorials, comments, short communications, reports on scientific meetings, corporate literature, and similar documents will be excluded. Qualitative studies will be excluded but their reference lists will be screened for potential eligible studies.

2.3.2. Information sources

A three-stage process will be used to search and identify potentially relevant studies for the review. Firstly, the primary literature search will be conducted using the following electronic databases accessible to the authors through their home institution, and relevant to the topic of the review: Bibliotechnia, Cambridge Journals Online, Dialnet, DOAJ, Ebsco, Emerald, Eric, Hapi, IEEE Xplore, JSTOR, OECD, SciELO, Science Direct, Scopus, Springer Link, and Taylor & Francis. The search will cover quantitative studies published in Spanish and English in the last decade. Table 1 shows the key terms that will be used in the search process:

The terms will be combined in search strings using Boolean operators "OR" and "AND" in order to identify sources that report on the impact of communities of practice on teaching and learning in higher education. The search strings will be used to query the "title", "abstract", and "subject" fields of each database. Examples of search strings using EBSCO Discovery Service™ are:

- TI "community of practice" AND TI "Higher education"
- TI "community of practice" AND TI "Higher education" AND TI "Faculty development"
- TI "community of practice" AND TI "student achievement" OR TI "academic achievement"
- TI "community of practice" AND TI "student achievement" OR SU (higher education OR college OR university OR post secondary OR postsecondary)

The search strings will be adapted to the syntax of each database, and a detailed appendix with each search string used in the review will be included in the final report.

The second strategy involves conducting citation mining of documents identified during the primary search. This includes a manual backward and forward search of references cited in both previous systematic reviews and in studies selected for the review.

To avoid threatening the validity of the review, the third strategy focuses on the identification of gray literature (McAuley, Pham, Tugwell & Moher, 2000). The search will be conducted in ProQuest Dissertations

Table 1
Key terms for search strings.

Intervention-related	Boolean operators	Outcome-related
“community of practice” “CoP” “CoPs” “virtual community of practice” “VCoP” “VCoPs” Combined with: “higher education” “university” “college” “postsecondary”	“AND” “OR”	“faculty development,” “teaching,” “learning,” “professional development,” “student learning,” “student achievement,” “academic achievement,” “graduation,” “retention,” “dropout,” “Grade Point Average,” “GPA”

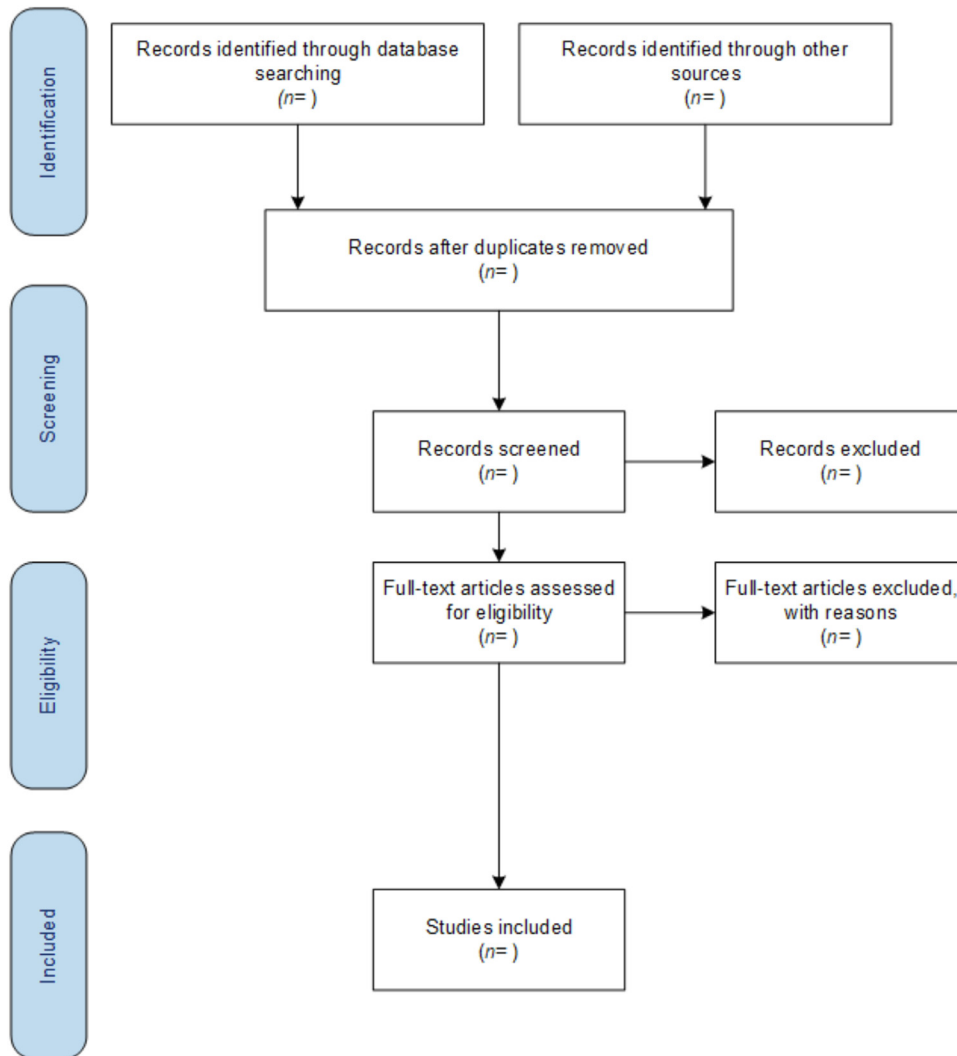


Fig. 3. PRISMA flow diagram for scoping reviews (Liberati et al., 2009).

and Thesis, Google, Google Scholar, OpenGrey, and Semantic Scholars. gray literature sources will be evaluated if they meet the inclusion criteria described above for the primary published studies. Two reviewers will independently carry out this process and if any disagreement arises, then it will be resolved via mutual discussion.

2.4. Stage three: selection of studies

The selection of studies will follow a three-stage process, as suggested by the PRISMA guidelines and shown in the flow diagram for the scoping review process (Fig. 3) (Liberati et al., 2009). In the first

stage, the title will be screened for topic relevance. In the second stage, and if the title is in line with the objectives of the review, the abstract will be read. In the third stage, the reviewers will independently read the full text of the studies selected in the second stage, in order to determine whether they meet the inclusion criteria.

2.5. Stage four: extraction of data

Data from the selected studies will be extracted onto a form (see Appendix) adapted from the Joanna Briggs Institute (JBI) data extraction instrument (Aromataris & Munn, 2020). The extracted results

Table 2
Critical appraisal checklist (University of Glasgow, n.d.).

Item	Assessment criteria**
Q1	Is there a clearly focused question?
Q2	Was there a clear learning need that the intervention addressed?
Q3	Was there a clear description of the educational context for the intervention?
Q4	Was the precise nature of the intervention clear?
Q5	Was the study design chosen able to address the aims of the study?
Q6	Were the outcomes chosen to evaluate the intervention appropriate?
Q7	Were any other explanations of the results explored by the authors?
Q8	Were any unanticipated outcomes explained?
Q9	Were any reported behavioral changes after the intervention linked to measurement of other, more objective measures e.g. changes in referral rates?
Q10	What were the results of the intervention? (Open response)
Q11	How precise were the results? (Open response)
Q12	Was the setting sufficiently similar to your own and/or representative of real life?
Q13	Does it require additional resources to adopt the intervention?

** Items Q1 through Q9, Q12 and Q13 will be scored as “Yes”=2; “Can’t tell” = 1; “No”=0. Items Q10 and Q11 are open response items.

will be classified under the main categories of the conceptual framework for analyzing and assessing communities of practice proposed by Bertone et al. (2013). This framework provides a logical structure for the review, by focusing on six key elements underlying the purpose and expected outcomes of CoPs: resources and the capacity to mobilize them, knowledge management activities and the expansion of knowledge, changes in policy and practice, and effect on higher education outcomes (Fig. 2). This process will be carried out in duplicate by two independent reviewers and a random sample of completed forms will be selected for inspection by the principal investigator. Any disagreement will be resolved through discussion or by a third independent reviewer.

2.6. Stage five: analysis, synthesis, and dissemination of results

In this stage of the review, the inclusion/exclusion pathway will be presented using a flow diagram which conforms to the PRISMA-ScR statement for systematic reviews (Fig. 3) (Liberati et al., 2009).

An overview table will be created to display information about study characteristics from retrieved documents. This table will display information about location, author, year of publication, title, and sources (Card, 2012). A table will also be used to present the results of the quality appraisal process. Two reviewers and the principal investigator will discuss and consolidate the results.

We will employ a narrative strategy to summarize and synthesize data about the effects of CoPs reported in the documents selected for revision. This analysis will be organized around the categories proposed in the conceptual framework for analysis and assessment of CoPs proposed by Bertone et al., 2013 (Fig. 2).

The analysis will also include an identification of the gaps in the literature, assessment of the quality of evidence of the impact of CoPs on students’ learning and achievement, recommendations for further research, and policy implications for higher education.

2.6.1. Quality assessment and risk of bias

The reviewers will assess the quality of the studies and their risk of bias, but the results will not be used to exclude them from the review, given that one of the objectives of this scoping review is to evaluate the existing evidence of the impact of CoPs on teaching and learning in higher education. Two reviewers will perform the quality assessment and independently score each included study. Studies will be evaluated using The Critical Appraisal Checklist for an Article on an Educational Intervention Tool (University of Glasgow, n.d.). This checklist consists of 13 items grouped under four major categories: the clarity of the research question, the nature and precision of the results, the validity of results, and the applicability of the results to other settings (Table 2.). Eleven items can be classified into three categories: “Yes”, “Can’t Tell”, and “No” and there are two open-response items (10 and 11). For assessing the quality of the studies, a score of two points will be assigned to the

“Yes” category, one point to “Can’t Tell”, and zero points to “No”. Based on the final score, the studies will be sorted into three groups according to quality: high (>70%), medium (50–70%) and low (<50%).

3. Discussion

The COVID-19 pandemic is testing the capacity of our educational system and its ability to provide the best learning opportunities to millions of students while schools and colleges remain closed. Educational practitioners, researchers, and policy makers have to recognize their obligation to find cost-effective, innovative, evidence-based solutions to the educational challenges faced by faculty and students during this period of remote learning. Anecdotal evidence suggests that CoPs may provide important professional development opportunities and support for faculty members who have never designed or delivered online courses and this, in turn, could translate into better outcomes in terms of students’ learning and achievement. If this anecdotal evidence is supported by empirical data, then it may provide college administrators and policy makers with a wider repertoire of effective tools to address some of the challenges associated with remote working and studying.

By publishing this scoping review protocol in an open access journal, we seek to reduce the chances of duplication and increase the transparency of the process. In this way, other researchers and interested parties will be able to assess whether the final review conforms to the provisions of the protocol, and also offer their input and recommendations to improve the quality of the study.

Potential limitations of the review include the heterogeneity of programs, approaches, populations, types of educational institutions, and individual characteristics of students and faculty. These factors can all influence the approaches and strategies used in CoPs and the measures used to assess their impact on student learning. For this reason, whenever possible, we will report results by subgroups and control for individual and institutional characteristics to the greatest possible extent in our analyses.

Other limitations of the review include the exclusion of qualitative studies, which could be an important source of information about barriers to the access and participation in CoPs, or faculty’s and students’ personal experiences, attitudes, and beliefs about these tools, all of which could play an important role in the decision-making process. However, due to the theoretical and methodological foundations of qualitative research, this type of study requires a different approach in terms of quality, trustworthiness and appraisal than do quantitative studies (Marshall & Rossman, 2015; Sandelowski, 2008). This, coupled with the challenges identified when searching for qualitative research studies, including the wide variety of methodologies, the use of descriptive non-explicit titles, and the absence or lack of structured abstracts (Booth, 2016), could compromise the manageability of the review. For this reason, and as mentioned in Section 2.3, qualitative studies will not be included in

the review but their reference lists will be screened for potential eligible studies.

These potential limitations notwithstanding, by mapping, synthesizing, and identifying the evidence of the impact of communities of practice on teaching and learning, the resulting scoping review will provide educational practitioners, and policy makers with useful evidence-based information to make decisions that contribute to the continual improvement in quality of higher education.

Declaration of Competing Interests

The authors declare that they have no competing interests.

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Author’s contributions

RLG conceived the study, outlined the proposal, and is the guarantor of the review. RLG and AMS contributed to the design of the review and writing of the protocol. RLG and AMS jointly developed the search strategy and data extraction framework. RLG and AMS drafted and approved the final version of the manuscript as submitted.

Appendix: data extraction form

Form field	Description
Scoping review title:	Extending impact beyond the community: Protocol for a scoping review of the evidence of the impact of communities of practice on teaching and learning in higher education
Review objective/s:	To identify, synthesize and map the existing empirical evidence of the impact of CoPs on teaching practices and students’ outcomes.
Review questions:	What empirical evidence is there on impact of CoPs to improve teaching and learning in higher education? To what extent does the evidence base support the efficacy of CoPs in improving students’ academic outcomes? What gaps exist in the current body of research examining CoPs in higher education and what further research is needed? What policy recommendations can be derived from the review?
Concepts (what*):	Communities of practice, faculty professional development, higher education, student learning and achievement
Population (for whom*):	Humans
Core concept:	Impact of communities of practice on teaching practices and students’ learning in higher education
Languages:	English, Spanish
Date of publication:	January 2010-March 2021
Data extraction:	Name (i.e., person extracting data), date of data extraction
Author(s):	Authors of reviewed document

(continued on next page)

Form field	Description
Title of document: Type of publication or source: Year and place of publication: Aim(s)/research question(s): Type of study or methodological approach: Academic discipline/disciplinary approach: Location (where*): Context:	e.g. book chapter, academic journal including data collection methods and analytical approach, if available . e.g. higher education, faculty professional development Place where study was implemented e.g. higher education research institution, college, community college
Sample size: Year(s) of data collection: Other results:	 Other results extracted from the study or document content
Conceptual/theoretical framework or approach: Domains addressed/focus of study: What result: Comments: Reported community of practice-related aspects: What else:	 e.g., communities of practice, student motivation, teaching, learning outcomes Key findings that relate to the scoping review question(s) Comments on gaps, inconsistencies, biases and unmet needs in CoPs for improving teaching and learning in higher education e.g., Resources, strategies to mobilize resources, knowledge management processes, expansion of knowledge, influence of CoPs on policy and practice, impact on educational outcomes. Other emerging information or themes

*Asterisks indicate components of the SPICE framework: Setting (where); Perspective/Population (for whom); Intervention/Phenomena of Interest (what); Comparison (what else); Evaluation (what result or how well).

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