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Research Competencies to Develop Academic Reading and Writing: A Systematic Literature Review

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Rationale: The development of research skills in the higher education environment is a necessity because universities must be concerned about training professionals who use the methods of science to transform reality. Furthermore, within research competencies, consideration must be given to those that allow for the development of academic reading and writing in university students since this is a field that requires considerable attention from the educational field at the higher level.

Objective: This study aims to conduct a systematic review of the literature that allows the analysis of studies related to the topics of research competencies and the development of academic reading and writing.

Method: The search was performed by considering the following quality criteria: (1) Is the context in which the research is conducted at higher education institutions? (2) Is the development of academic reading and writing considered? (3) Are innovation processes related to the development of academic reading and writing considered? The articles analyzed were published between 2015 and 2019.

Results: Forty-two papers were considered for analysis after following the quality criterion questions. Finally, the topics addressed in the analysis were as follows: theoretical–conceptual trends in educational innovation studies, dominant trends and methodological tools, findings in research competencies for innovation in academic literacy development, types of innovations related to the development of academic reading and writing, recommendations for future studies on research competencies and for the processes of academic reading and writing and research challenges for the research competencies and academic reading and writing processes.

Conclusion: It was possible to identify the absence of studies about research skills to develop academic literacy through innovative models that effectively integrate the analysis of these three elements.

Keywords: educational innovation, higher education, research competencies, academic reading and writing, systematic literature review, research skills

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INTRODUCTION

Research skills today must be developed in such a way that students in higher education will be enabled to make them their own for good. This type of competencies is given fundamentally in the aspects of methodological domain, information gathering and the management of document-writing norms and technological tools. Furthermore, the usefulness of the existence of mediating didactics is recognized (Aguirre, 2016). The competencies considered by the Organization for Economic Cooperation and Development in its skills strategy are the following: the development of relevant competencies, the activation of those competencies in the labor market and the use of those competencies effectively for the economy and society (OECD, 2017). The research competences established by Mogonea and Remus Mogonea (2019) from the implementation of a pedagogical research project are as follows: the acquisition of new knowledge, the identification of educational problems, synthesis and argumentation, metacognition, knowledge of new research methods, the possibility of developing research tools and the interpretation and dissemination of results. Research skills work for various disciplines and can even link them. Some studies have affirmed the value of facilitating interactions between researchers from different research fields within a discipline (Hills and Richards, 2013). Therefore, research competencies are approached from distinct perspectives. In this study, the focus is on those that allow for the development of academic reading and writing, because it is an area that requires a boost because it is basic for undergraduate students to be able to understand texts of different kinds and to be able to write with academic rigor.

Academic writing is one aspect that has been focussed on in the educational context. It is a multiple construction that unites such essential elements as the understanding of the scientific field and the understanding of scientific research methodology, statistical knowledge and the understanding of the culture of native and foreign languages (Lamanauskas, 2019). Currently, a change in expectations has emerged around academic writing, and it has become increasingly evident that a much longer and gradual orientation in the process of research and information gathering is desirable to better meet the needs of contemporary students (Hamilton, 2018). On the basis of historical emphasis on writing instruction, five approaches are illustrated, namely, skills, creative writing, process, social practice, and socio-cultural perspective (Kwak, 2017). Academic writing is thus conceived as a way in which young people can construct their own according to elements that provide academic rigor through an efficient interaction with texts.

Academic reading and writing are a fundamental part of the context of higher education. Academic reading and writing also includes the learning of foreign languages as the gender-based approach to the teaching of writing has been found to be useful in promoting the development of literacy through the explicit teaching of characteristics, functions, and options of grammar and vocabulary that are available to interpret and produce various specific genres (Trojan, 2016). Young university students come from a system of basic and upper secondary education in which the fundamental thing was to learn through the repetition of texts, but now their ideas, knowledge, capacity for analysis and critical thinking are a central aspect (Bazerman, 2014). Understanding reading practices and needs in the context of information seeking can refine our understanding of the choices and preferences of users for information sources (such as textbooks, articles, and multimedia content) and media (such as printed and digital tools used for reading) (Carlino, 2013; Lopatovska and Sessions, 2016). In this sense, it is useful to consider academic literacy, a name that Carlino (2013) has given to teaching process that may (or may not) be put in place to facilitate students' access to the different written cultures of the disciplines (p. 370). Currently, the many ways in which students perform the process of academic reading and writing must be addressed so that an improvement in the process can be attained.

Within the study of research competencies for the development of academic reading and writing, theoretical–conceptual trends and methodological designs play an important role. Ramírez-Montoya and Valenzuela (2019) considered psychopedagogical, socio-cultural, use and development of technology, disciplinary and educational management studies as theoretical–conceptual trends. According to Harwell (2014), for methodological analysis, the categories of experimental design, quasi-experimental design, pre-experimental design, and within quantitative methods are used, and for qualitative methods, phenomenological, narrative and case studies, grounded theory and ethnography are contemplated. Documentary research is also added because there are studies on this type related to the subject, which are considered to be excluded.

In the research field, the findings and innovation that are increasingly present are a fundamental part. For the area of findings, the classification contemplated by Ramírez-Montoya and Lugo-Ocando (2020) must be considered. The author commented that innovation can create a new process (organization, method, strategy, development, procedure, training, and technique), a new product (technology, article, instrument, material, device, application, manufacture, result, object, and prototype), a new service (attention, provision, assistance, action, function, dependence, and benefit) or new knowledge (transformation, impact, evolution, cognition, discernment, knowledge, talent, patent, model, and system). Various types of innovation are available, such as those addressed by Valenzuela and Valencia (2017) which consider the following: (a) continuous innovation: when small deviations in educational practices accumulate, they translate into profound changes; (b) systematic: it is methodical and ordered like the innovation of continuous improvement, but the scope and novelty of its changes may vary and even lead to substantial changes; and (c) disruptive: they are new contributions to the world and generate fundamental changes in the activities, structure and functioning of organizations. Another type of innovation is open innovation, which is defined by Chesbrough (2006) as the deliberate use of knowledge inputs and outputs to accelerate internal innovation and expand it for the external use of innovation in markets. Educational purposes and divergent contexts can determine the type of innovation applied.

Many factors converge in the development of academic reading and writing. Digital skills are essential elements in

enriching academic reading and writing. In the framework for the development and understanding of digital competences in Europe, five areas of digital competences exist, namely, (a) information: judging its relevance and purpose through identifying, locating, retrieving, storing, organizing, and analyzing digital information; (b) communication: taking place in digital environments or using digital tools to link to others and interacting in networked communities; (c) content creation: some elements include creating and editing new content and enforcing intellectual property rights and licenses; (d) security: personal protection, protection of digital identity, and safe and sustainable use and (e) problem solving: some aspects include making informed decisions about which digital tools are best suited for which purpose or need, creatively using technologies and updating the skills of individuals (Ferrari, 2013). The changing environment of higher education offers an uncertain information ecosystem that requires greater responsibility on the part of students to create new knowledge and to select and use information appropriately (Association of College Research Libraries, 2000). The Association of College and Research Libraries 2016 includes some key information literacy (IL) concepts: information creation as a process, information as value, research as inquiry and search as strategic exploration. Academic literacy can be better developed if IL and digital competencies are considered.

Research studies have presented challenges that must be considered for future research. Within the research gaps addressed in the classification of Kroll et al. (2018) for the study of research competencies, some of the categories are appropriate: Research Topic (RT) 1: Collaboration, RT2: Feasibility, RT3: Knowledge Sharing, RT4: Research Opportunities and RT6: Skill Differences. Critical thinking and academic literacy are considered amongst the challenges for developing academic writing from research skills. The first is considered as the process that involves conceptualization, application, analysis, synthesis, and evaluation of the information collected from observation and experience as a guide for belief and action (Sellars et al., 2018). Academic literacy according to Solimine and Garcia-Quismondo (2020) grows within a competency-based educational model, in which competencies are recognized as the developments in the learners of informational behaviors and attitudes that make them expert evaluators of digital and virtual web contents to obtain knowledge and know-how. Reflection and critical thinking are basic elements for an adequate interaction in digital media.

Several items were identified from mapping and systematic literature reviews related to the topics of research skills and academic literacy development. Abu and Alheet (2019) conducted a study to identify those competencies that an individual must possess to be a good researcher. A competency-based assessment throughout the research training process to more objectively evaluate the development of doctoral students and early career scientists is proposed by Verderame et al. (2018). Moreover, Zetina et al. (2017) concluded that designing strategies for the adequate development of research competencies with the purpose of training sufficiently qualified young researchers is crucial. Walton and Cleland (2017) also presented qualitative research with the purpose of establishing whether students as part of a degree module can demonstrate through their online textual publications their IL skills as a discursive competence and social practice. Lopatovska and Sessions (2016) conducted a study examining reading strategies in relation to information-seeking stages, tasks and reading media in an academic setting.

This study aims to determine how the three elements present in the quality criteria (research skills, academic reading and writing and innovation processes) of this systematic review of the literature can be linked so that they can serve as a basis for identifying which research skills can be used to develop academic reading and writing in higher education contexts through innovative models. IL is presented as a fundamental competence because for the adequate development of academic reading and writing, university students must be able to perform efficiently in the search, selection and treatment of information.

METHOD

The method followed for the present research was the systematic review of literature [based on Kitchenham and Charters (2007)], which considers within the phases to follow the review of a protocol to specify the research question. The search started with the articles that emerged from a systematic mapping of literature that was previously carried out; subsequently, quality criteria were defined that allowed refining the selection of articles for the systematic literature review, inclusion and exclusion criteria were also determined, and six research questions were also established for the analysis of the articles.

Research Questions

The starting point was to locate themes that were of interest for investigating writing processes within the framework of research skills and educational innovation to establish research questions. Six questions were located, and possible systems for classifying answers were studied on the basis of the literature. **Table 1** lists the questions that guided the study.

Search Strategy

In a systematic mapping of literature (SML) that was previously conducted, the search strings shown in **Table 2** were used. The search criteria are explained below.

On the basis of the 345 articles that emerged from the search process that was conducted for the previous SML, the following quality criteria were considered for the selection of the articles to be included in this SLR: (a) Is the context in which the study is conducted in higher education institutions, (b) Is the development of academic reading and writing considered?, and (c) Are innovation processes related to the development of academic reading and writing considered? It was contemplated that they would cover at least two of three points to define the articles that would remain for the analysis. In the first instance, 52 articles were left, but those whose language was different from English and Spanish were later excluded, given the poor representativeness of articles written in other languages. Therefore, only 42 papers were finally analyzed.

TABLE 1 | Research questions and kind of answers in the systematic literature review.

Research questions (RQ)	Kind of answers
RQ1 What are the theoretical–conceptual trends in educational innovation studies observed in the research skill articles, and what problematic issues do they address?	Psychopedagogical Socio-cultural Disciplinary Use and development of technology Educational management
RQ2 What are the dominant trends and methodological tools observed in the research skill articles, and what is the research design?	**Method and Research design** **Quantitative** Experimental design Cuasiexperimental design Pre-experimental design **Qualitative** *Narratives Phenomenological studies Case study Grounded theory Etnographies Documentary research (se agrega a clasificación) **Mixed methods** *Sequential explanatory design Sequential exploratory design Sequential transformative design Concurrent triangulation design Concurrent nested design
RQ3 What are the findings on research skills for innovation in academic literacy?	New process New knowledge New service New product
RQ4 What types of innovations related to the development of academic reading and writing emerge from the studies consulted?	Continuous Systematic Disruptive Open
RQ5 What are the recommendations the authors give for future studies on research skills and for the processes of academic reading and writing?	Information Communication Content creation Security Problem solving
RQ6 What are the research challenges for the research skills and academic reading and writing processes?	Research opportunities Feasibility Knowledge sharing Collaboration Skills differences

Inclusion, Exclusion, and Quality Criteria

The inclusion and exclusion criteria must capture and incorporate the questions that the SLR seeks to answer, and the criteria must also be practical to apply. If they are too detailed, then the selection may be excessively complicated and lengthy. For the systematic mapping, the disciplinary areas that had the highest number of articles were Education (40%) and Medicine (36%). For the systematic review of the literature, it was considered that the context for the selection of articles should be limited to higher education institutions. **Table 3** shows the inclusion and exclusion criteria for the SML and the quality criteria for article selection.

TABLE 2 | Search strings in Scopus and WOS.

Search string in WOS	Search string in Scopus
You searched for: TOPIC: ("research competence") OR TOPIC: (investig* AND competence) AND TOPIC: ("higher education" OR undergraduate) Refined by: DOCUMENT TYPES: (ARTICLE) AND Open Access: (OPEN ACCESS) Timespan: Last 5 years. Indexes: BKCI-S, BKCI-SSH, SCI-EXPANDED, ESCI, A&HCI, SSCI, CPCI-SSH, CPCI-S.	(TITLE-ABS-KEY ("research competence" OR investig* AND competence) AND TITLE-ABS-KEY ("higher education" OR undergraduate)) AND DOCTYPE (ar) AND ACCESSTYPE (OA) AND PUBYEAR > 2014

TABLE 3 | Inclusion, exclusion, and quality criteria.

Inclusion criteria	Exclusion criteria	Quality criteria
Papers published between 2014 and 2019. Scientific papers Papers containing the keywords research competence and higher education Open access papers	Those papers prior to the 2014 Book chapters, in general any document other than a scientific article Papers not related to the research topic Papers that may have to be accessed through payment by the reader	Studies in higher education institutions Development of academic reading and writing Innovation processes related to academic reading and writing

Finally, after applying the quality criteria, there were 42 articles left to be analyzed in the SLR, which are shown in **Table 4** below.

RESULTS

RQ1 What are the theoretical–conceptual trends in educational innovation studies observed in the research skill articles?

The 42 articles analyzed the disciplinary approaches according to the Library of Congress Classification, which made it possible to place them in the six disciplines referred to in this study and allowed their correspondence with the theoretical–conceptual trends of educational innovation (psychopedagogical, socio-cultural, disciplinary, use and development of technology and educational management), where a greater preponderance was found in articles under the heading of Psychopedagogical Studies (1, 2, 7, 8, 16–18, 20, 22, 24, 29, 30, 32, 34–36, 38), as shown in **Figure 2**.

The disciplinary approach allows for the consideration of which areas the research topic has the greatest influence on and is generating the most interest for study. In carrying out systematic literature mappings, identifying the

TABLE 4 | Articles that were analyzed.

No.	Quote
1	Hosein and Rao, 2017
2	Walton and Cleland, 2017
3	Eybers, 2018
4	Buchberger et al., 2018
5	Willson and Angell, 2017
6	Valverde, 2018
7	Manso et al., 2015
8	Zetina et al., 2017
9	Viera et al., 2017
10	Altomonte et al., 2016
11	Kwant et al., 2015
12	Sukhato et al., 2016
13	Schulz-Quach et al., 2018
14	La Garza et al., 2017
15	Kozlov and Shemshurina, 2018
16	Emelyanova et al., 2017
17	Grijalva and Urrea Zazueta, 2017
18	Álvarez and Arias, 2016
19	Pirela, 2018
20	Winch, 2019
21	Gafiyatova and Pomortseva, 2016
22	Trigo and Núñez, 2018
23	Li et al., 2015
24	Niemczyk, 2018
25	Fernández-Sánchez et al., 2016
26	Belyaeva, 2018
27	Hana and Hacène, 2017
28	Ratnawati et al., 2018
29	Armstrong, 2019
30	Natsis et al., 2018
31	Solobutina and Kalatskaya, 2017
32	Straková and Cimermanová, 2018
33	Vtmnescu et al., 2018
34	Bezanilla-Albisua et al., 2018
35	Rubio et al., 2018a,b
36	Rodríguez-García et al., 2019
37	Marzal and Cruz-Palacios, 2018
38	Castaño-Garrido et al., 2017
39	Hueso-Montoro et al., 2016
40	Barroso-Osuna et al., 2019
41	Cárdenas, 2018
42	Grosseck et al., 2019

disciplinary areas that have a greater presence is highly useful because it serves as a basis for determining which area or areas can be focussed on for future systematic literature reviews.

RQ2 What are the dominant trends and methodological tools observed in the research skill articles?

The study addressed the different research methods: quantitative, qualitative and mixed method. The classification used is shown in **Figure 3** and allows identifying that in the experimental design the quantitative method predominated (4, 5, 10, 14, 21, 27, 30, 31), on the other hand in the documentary research there was a predominance of the qualitative method (6–8, 18, 26, 36–38, 41, 42).

To have a more detailed idea of the trend of the methods used in the articles that deal with the analysis of research skills for academic literacy development, starting only from the three main methods is insufficient. Having a sub-classification that allows us to know the types of research designs that are performed in each method is a must. Presenting the specific research design allows for more detailed information, especially if the entire process followed in the research method is clearly explained.

RQ3 What are the findings in research skills for innovation in academic literacy development?

The findings focussed on four categories: (1) new knowledge (1, 3, 7, 9, 15, 20, 21, 24, 27, 29, 30, 32, 34–36) which were stated in this category when referring to transformation, impact, evolution, cognition, dissent, knowledge, talent, patent, model or system. For instance, Article 1 was considered because it talks about how students acquired knowledge about the choice of an appropriate research instrument and learned to articulate their identity as researchers, and Article 20 was considered in this category because the study investigated whether the teaching of communicative languages helps develop the critical thinking of students; (2) new process (2, 4–6, 8, 12, 14, 16, 18, 19, 22, 23, 25, 28, 37–42), the findings in this category considered an organization, a method, a strategy, a development, a procedure, a training or a technique, e.g., Article 2, were considered as the students who participated in the process of becoming good scholars by using appropriate online publications to create valid arguments by evaluating the work of others and Article 22, as this study analyses the strategies activated by a group of 36 Portuguese university students when faced with an academic writing practice in Spanish as a foreign language; (3) new product (10), findings were considered in this category when considering a technology, an article, a tool, a material, a device, an application, a manufacture, a result, an object or a prototype, e.g., Article 10 was integrated because the document illustrates the development of an online portal and a mobile application aimed at promoting student motivation and engagement; (4) new service (11, 13, 17, 26, 31, 33), the findings were stated in this category when considering elements, such as attention, provision, assistance, action, function, dependence or benefit, e.g., Article 17 that presents the Summer Science Program in México, which aims to provide university students with research competence and Article 33, as it states that online academic networks have been established as spaces for academics from all countries and as outlets for their insight and literacy. Below are the key words that appeared most often in each category in **Figure 4**.

Innovation is present in the findings found in the articles through the idea that it starts from something existing to generate something new, gives a new meaning and a new idea through elements, such as those considered in the classification used in this systematic review of literature. Innovative elements do not necessarily have to contemplate technology, innovating can consist of providing new solutions that respond to specific needs,

which can be useful not only in economic and social scenarios but also in the educational context.

RQ4 What types of innovations related to the development of academic reading and writing emerge from the studies consulted?

The categories on which the classification of the types of innovation focussed were the following: continuous, systematic, disruptive and open. In continuous innovation, the keywords change, competency, improve, solution and training were placed. In systematic innovation, the keywords were competency, development, explore, needs, self-perception, skills, and solution. In disruptive innovation, the keywords were online courses and organizational support. In open innovation, the keywords global, links and ICTS were located. In the systematic category, more articles were about development (2, 5–7, 11, 13, 14, 16, 21–23, 27, 28, 32, 35, 42), as shown in **Figure 5**.

The distinct types of innovation allow us to know at what level an innovation is being conducted to know how much emphasis is given to the part of generating innovation within research if it is considered something that occurs gradually or if, on the contrary, it is considered that it requires drastic changes that can be generated even immediately. Moreover, nowadays, open innovation has become increasingly important, especially in the field of higher education where knowledge repositories are now considered open spaces.

RQ5 What are the recommendations that the authors give for future studies on research skills and for the processes of academic reading and writing?

The study first identified the recommendations that the authors made for future studies in the framework of research skills and academic literacy processes. Subsequently, the categories presented in **Figure 6** were established. The item that had the most presence around the category of Information was the digital element because it was considered in some studies that learning had a positive effect through the use of digital resources (6, 11, 13, 15, 29, 31, 41, 42).

Today, in the digital economy, the role of knowledge production in information systems is increasing dramatically. The same is true in the field of education; therefore, making appropriate use of these digital resources in accordance with the stated research purposes is necessary. The digital era is complex and requires flexible education that enhances new skills, and higher education students must be trained to efficiently use the wide diversity of digital resources now available to them and to perform well in virtual environments.

RQ6 What are the research challenges for the research skills and academic reading and writing processes?

The challenges were analyzed, and the following were located: collaboration (support), feasibility (contexts, technological, training, and support), knowledge sharing (literacy, thinking, creativity and adapted), research opportunities (reflection,

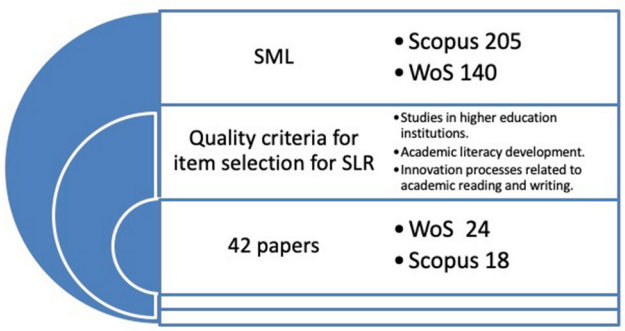

FIGURE 1 | Quality criteria for papers selection for SLR.

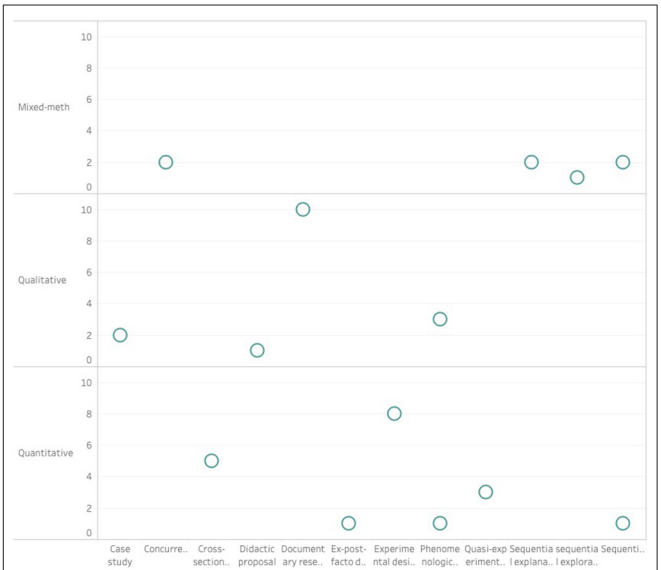

FIGURE 3 | Trends and methodological tools.

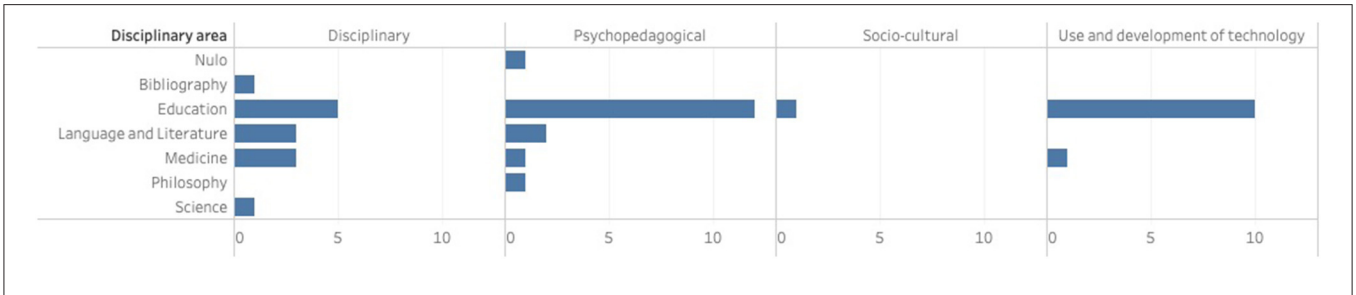

FIGURE 2 | Theoretical–conceptual trends in educational innovation studies.

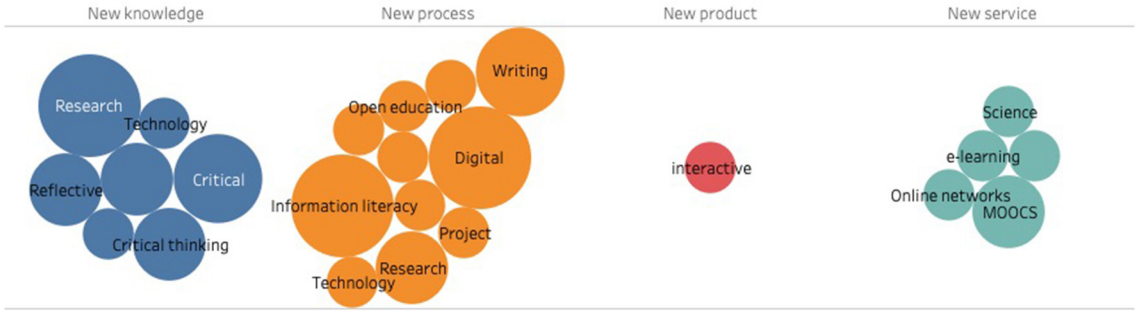

FIGURE 4 | Findings in research skills for academic literacy development.

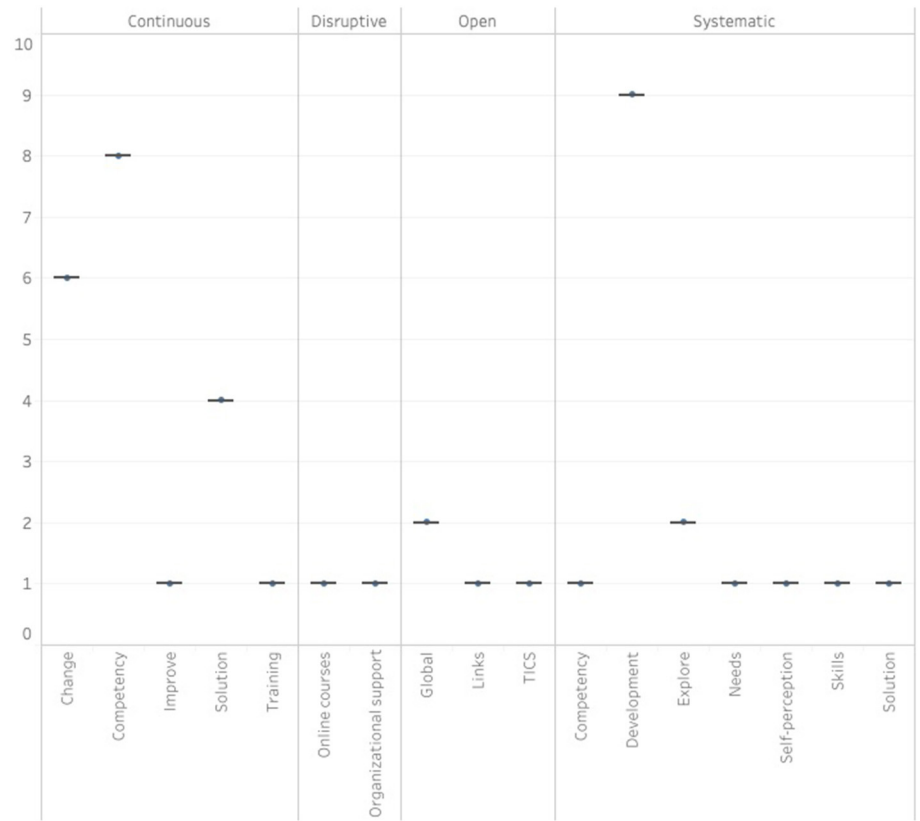

FIGURE 5 | Types of innovations related to the development of academic reading and writing.

scientific, method, sample, formative process, and skills) and differences (literacy and linguistic). Amongst the challenges shown in the studies that were addressed in this study, those related to research opportunities (1, 4–6, 9, 11–14, 16, 17, 19, 30, 33, 34, 36, 39) stand out, followed by learning sharing (2, 8, 18, 20, 26, 27, 31, 42) and viability (7, 10, 15, 25, 29, 32, 38, 40, 41), as can be seen in **Figure 7**.

The challenges in research allow us to identify on which topics the researcher should concentrate to be able to give solutions to problems posed around a research topic because knowing which obstacles have been presented in a specific research process is interesting so that they can serve as a basis for further studies. The challenges presented in research can be of various kinds, from questions such as the financial support required according to the type and time of research to the viability related to aspects such as the necessary skills or the mastery of the use of technology to make research feasible.

DISCUSSION

Amongst the theoretical–conceptual trends, the one corresponding to Psychopedagogical Studies has turned out

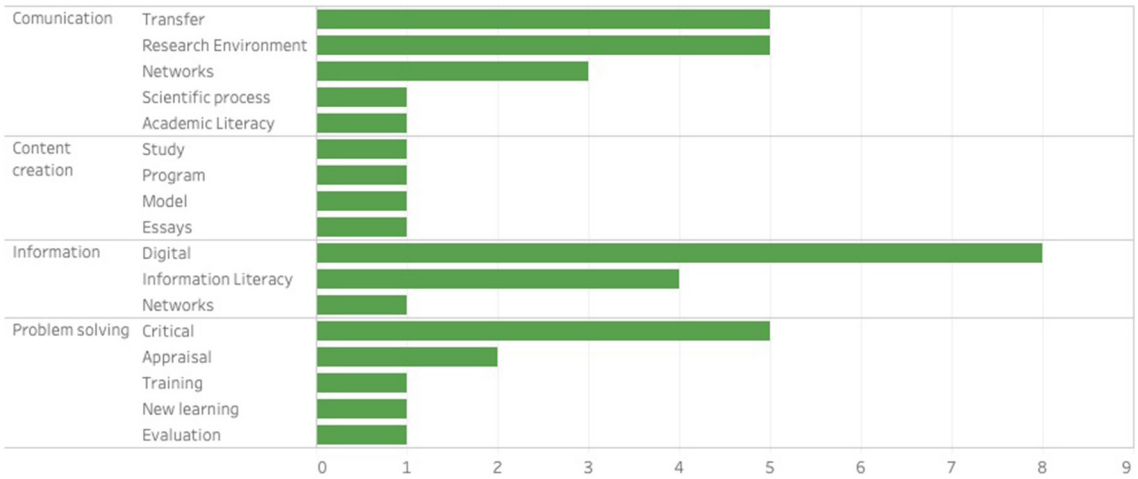

FIGURE 6 | Recommendations for future studies on research skills and processes of academic reading and writing.

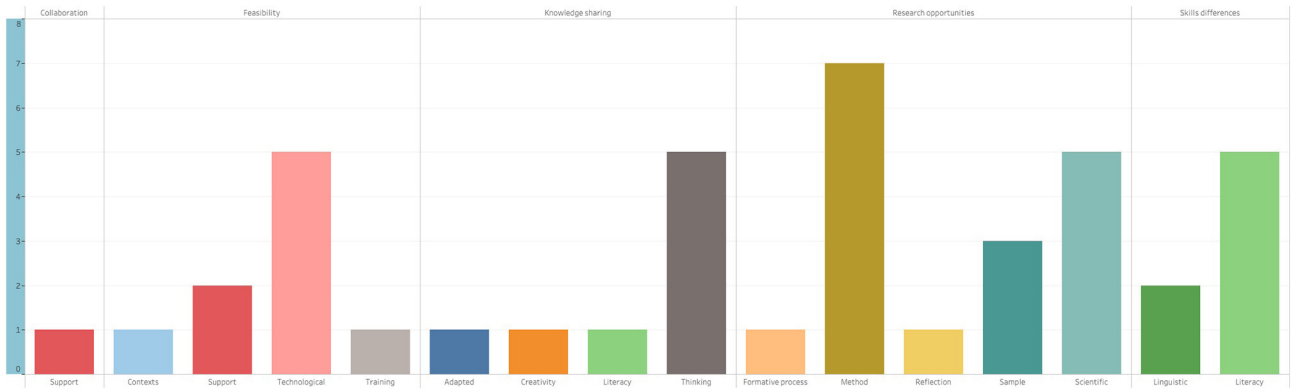

FIGURE 7 | Research challenges for the research skills and academic reading and writing processes.

to be the one that has focussed more on the analysis of research skills for the development of academic writing. **Figure 1** depicts that there was a greater trend of articles in psychopedagogical matters and that they were distributed in various disciplinary areas. Psychopedagogical studies focus on cognitive elements and on social–emotional elements and improvements in academic achievement (Ramírez-Montoya and Valenzuela, 2019). In this review, the psychopedagogical approach is framed mainly in the application of didactic techniques, educational programmes, forms of evaluation and training and capacity building.

Experimental studies are a frequently used method in the topic of research skills. **Figure 2** shows that the most commonly used research design in the articles consulted is the experimental design. However, methodological designs are available in the studies analyzed. The older categorisations of experimental designs tend to use the language of the analysis of variance to describe these arrangements (Harwell, 2014). In this study, the approach of that type of design was considered because randomization was sought for the selection of the sample to be investigated. Nonetheless, various methodological designs were used in the review, and it was even decided to consider research of a documentary nature to guide the present study.

New processes are identified with greater emphasis on the analysis of research toward the development of academic reading and writing within the framework of research competencies. **Figure 3** illustrates that according to the classification addressed, the category of new processes is the one that received the most mention in the analysis. Ramírez-Montoya and Lugo-Ocando (2020) validated that a new process is characterized amongst its elements by an organization, a method, a technique, and a procedure. In this analysis, it was possible to observe that to a great extent, the findings are based on processes that imply a follow-up to determine how the evolution to reach the proposed objectives occurs.

Systematic and continuous innovations have a strong presence in the area of innovation in research skill studies. **Figure 4** shows the trend in these types of innovation. In terms of systematic innovation, there was a greater presence of the development

aspect, whilst continuous innovation had a greater presence of the competence aspect. Continuous innovation is something that has to do with small changes that can make a difference, and systematic innovation is methodical and orderly like continuous improvement innovation. However, the scope and novelty of its changes can vary and even lead to substantial changes (Valenzuela and Valencia, 2017). The innovations must be based on the objectives to be achieved and always with a view to achieving substantial improvement.

Digital resources and skills present a valuable opportunity to enhance academic literacy development through research skills. **Figure 5** shows that the digital aspect had a greater presence in the area of Information that was presented for the categorization of Recommendations for Future Studies. The digital competencies according to Ferrari (2013) are focussed on Information, Communication, Content Creation, Problem Solving and Security, but the latter was not present in the studies analyzed. Interacting through digital tools or in digital environments is a reality we are currently facing; therefore, students must be prepared to have digital competences, which allow them to have a better performance in general and enrich the framework in which they develop their academic reading and writing.

Challenges in research skill studies show various themes, such as collaboration, sharing of learning, difference in skills or feasibility, and no single line is to be addressed. The categories corresponding to the challenges that have the greatest presence according to **Figure 6** are the following: research opportunities and knowledge sharing. However, there is variety in the keywords that are derived from these. However, critical thinking and literacy (academic and information) are considered relevant by the subject matter. IL has important advantages for the proper selection and use of information (Association of College Research Libraries, 2016), and academic literacy is now closely linked to the competencies for evaluating digital content and producing knowledge (Solimine and Garcia-Quismondo, 2020). What is important is the acquisition of skills so that students in higher education can be effective in research and can adequately develop the process of academic reading and writing.

LIMITATIONS

Only the Web of Science and Scopus databases were used for the selection of articles for analysis in this systematic literature review. Although they are amongst the most important, other articles that could be relevant to the topic addressed in this study were left out. By including only studies that had higher education institutions as their context, we excluded studies conducted in extra-school contexts that could be significant. The three quality criteria that were used reduced the selection to 42 articles, which may be a small number, but they are the articles that are related to the specific objective of the research, which is to identify research skills that allow for the development of academic reading and writing.

CONCLUSIONS

Research competencies can work for several disciplines. In this systematic review of literature, the articles analyzed correspond to the disciplinary areas of Education; Language and Literature; Medicine; Library Science; Philosophy, Psychology and religion and Science, which implies that there is a multidisciplinary character to address the issues of research competencies and the development of academic literacy. Nevertheless, the discipline with the greatest presence is education, which allows us to identify that there is an increasing concern to promote the culture of research in this area, as well as to seek that students acquire the skills necessary for the better development of academic literacy.

Academic literacy is indeed a fundamental part of the higher education environment. The types of innovation to develop academic literacy that have the greatest presence are systematic and continuous innovation, the aspect that stands out from the first is development, and from the second are competition and change. Competencies are thus identified as a key element to be considered to achieve the development of academic literacy.

Research competencies for the development of academic reading and writing imply not only taking care of methodological aspects. It is not enough to take care of elements such as the formulation of the research question, the selection of the research method and design, the selection of instruments and the evaluation system. Crucial competencies, such as academic and information literacy (IL), must be considered because in this information society, which is not necessarily a knowledge society, one must be literate to be able to use information for the proposed purposes and to develop quality academic texts that can subsequently disseminate and support the expansion of knowledge in the various areas of higher education.

The aim of this research is to identify studies that address research competencies and those that address academic literacy through innovative elements, so that it can be determined how these three elements can be linked to each other to benefit university students in the sense of serving as a basis for generating initiatives to promote research competencies that can be used to develop academic literacy in higher education contexts through innovative models. It is intended that with the development of these competencies, university students can develop research skills, search for information efficiently in different environments and platforms, understand specialized texts in their area of study, and finally generate quality writing that can be published.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

AUTHOR CONTRIBUTIONS

IC-M carried out the systematic review of literature, carried out the analysis of the articles considered to be integrated in the present study, investigated and integrated the theoretical part, made the graphs and tables, wrote the article, and took care of form and content. MR-M reviewed in detail the form

and content of the article, suggested authors for theoretical support, checked that the paragraphs had an adequate structure, and that the references were current, consistent, and correctly cited. All authors contributed to the article and approved the submitted version.

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SUPPLEMENTARY MATERIAL

The Supplementary Material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2020.576961/full#supplementary-material

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