

Article

Research Trends in Education in the Context of COVID-19 in Spain: A Systematic Literature Review

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Abstract: COVID-19 has caused many difficulties worldwide, education being one of the most affected areas. This research aims to disseminate the research trends about education in the context of COVID-19 in Spain. Through a systematic review, all research works about this topic in the Spanish context, that were published between 2020–2022 in national and international high-impact journals, have been analysed. After analysing 242 articles, the results show: (a) the keywords that were used most frequently: “learning” (93); “teaching” (53); “higher education” (43); “pandemic” (30); “competence” (29); and “ICT” (22); (b) research trends, which can be categorised as the following topics, among others: “ICT and Digitalisation”; “Teaching, Learning, and Innovative methodologies”; “Educational Policies”; “Sustainability”; “Acquisition and Development of Skills and Competences”; “Health and Welfare”; (c) that the most popular topic in educational research in Spain was “Teaching, Learning, and Innovative Methodologies” (19.30%), followed by “ICT and Digitalisation” (18.04%), whereas articles about educational policies were a minority (2.85%); (d) that in Spanish educational research, articles about formal education have been the most popular (86.36%), followed by articles about non-formal education (7.02%) and articles about informal education (6.62%). Consequently, the scientific community has highlighted the impact of the pandemic on education, especially in relation to “Teaching, Learning, and Innovative Methodologies”.

Keywords: COVID-19; education; research trends; Spain; systematic review



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1. Introduction

The COVID-19 pandemic has caused substantial changes in all levels of learning–teaching processes worldwide [1]. As a result, scientists have already anticipated several possible scenarios [2–5]. The Royal Decree 463/2020, 4 May, through which a state of alarm was declared for the management of the sanitary crisis occasioned by COVID-19 (original in Spanish: Real Decreto 463/2020, de 14 de marzo, por el que se declara el estado de alarma para la gestión de la situación de crisis sanitaria ocasionada por el COVID-19), was the first legal document in which measures such as school closure and lockdown were established in Spain. Consequently, a virtual learning environment was quickly substituted for classrooms; unfortunately, many teachers, students, and families were not prepared at all, in any formative or material way or at any academic economic level. This alteration caused an important decrease in one of the basic principles of democratic education: equalitarian access to education for all. According to UNESCO, UNICEF, the World Bank, and the OECD [1], “COVID-19 resulted in an unprecedented disruption to education worldwide, affecting more than 1.6 billion students and amplifying the pre-existing learning crisis” (p. 9). This situation resulted in the growth of the inequities that were already rising previously [6,7]. In this situation, many initiatives emerged, and were applied with the purpose of minimising inequalities. For example, some educational centres acquired and provided Information and Communication Technologies (ICT) resources [8].

In addition, multiple guidelines were provided with the aim of creating and consolidating a general framework that was able to lead the intervention of both autonomous and national educational administrations and which had to be rapidly adapted to the changing reality of this pandemic. Focusing on the state level, the Order EFP/365/2020, April 22—through which were established the framework and actuation guidelines for the third term of the academic year 2019–2020 and for the beginning of the academic year 2020–2021 (original in Spanish: Orden EFP/365/2020, de 22 de abril, por la que se establecen el marco y las directrices de actuación para el tercer trimestre del curso 2019–2020 y el inicio del curso 2020–2021)—was enacted to guide the process of school reopening in the middle of the pandemic crisis. The main principle was guaranteeing people's healthcare and wellbeing, as this situation had seriously affected the mental health of the educational community [9,10]. The adaptation of teaching activities, curriculum, and didactics to the current circumstances was essential, and it was also necessary to adapt students' evaluation, promotion, and graduation, as well as the coordinated work between different administrations [11]. In the context of the pandemic, the most vulnerable groups (economic, social, and geographic levels, special needs, etc.) were those that had encountered the greatest difficulties in accessing education. In many cases, these groups lost the possibility of accessing classrooms, as well as other services, such as health care, childcare, or nutrition [12]. Unavoidably, teachers and students were immersed in a multifaceted process of change.

Based on the right of students to opine about their education, it was important to know their perceptions as, during the pandemic, students had lost the opportunity to make decisions about their learning, and their possibilities for political commitment had been reduced, etc. [9]. For these reasons, Spanish students from all educational levels preferred a face-to-face model, rather than a fully virtual one [13,14]. They also appeared to have learnt less during the pandemic due to obstacles that emerged in online learning, such as: lack of digital skills for distance teaching and learning; limited or no internet access; insufficient resources at home (space, adequate materials, equipment, etc.); and the absence of teamwork and social contact [9]. In some regions of Spain, such as the Basque Country, it was demonstrated that the influence of school closure on mathematics and Basque was significant and that its impact was very unequal, depending on factors such as whether the school was public or private, previous knowledge of the students, the emotional welfare of the students, etc. [15]. Both teachers and students preferred face-to-face teaching, as the lockdown caused great tension as a result of work requests—principally because of the need for adaptation to new methodologies, an increase in working hours, the economic costs, and/or the weak participation of students [13,16,17]. Some teachers, however, highlighted positive aspects, such as the achieved professionalisation, or the rethinking of educational practice prior to the pandemic, leading to new practices through online teaching from sustainable perspectives, in which active and collaborative learning were the core [16]. After comparing students' and teachers' answers, researchers concluded that virtual teaching was more complex for teachers, as their satisfaction in relation to evaluation was lower, while the concern about the transmission of COVID-19 in schools was higher [13].

As a consequence of school closures, there were families that had to assume greater responsibility in relation to their children's schooling, especially that of younger children, because of the changing circumstances of the educational processes. This fact—new for many families—revealed several barriers, such as the digital divide, that impeded inclusive education. This happened not only in relation to its educational accessibility but also in terms of educational quality, that was tightly linked to social characteristics of families such as: number of children, family income, age of parents, qualification, professional field, cultural level, and lifestyle, among others [18,19]. According to this idea, the type of school can also be an influential factor when considering appropriate transition of teaching to virtual environments. In this case, private schools were the ones that were adapted to this new situation in a better way, probably because of the insufficient resources that students, and not just schools, had [20]. Insufficient resources were, however, also a problem for many

schools, especially the public ones that were located in low-income environments [21]. The dichotomy between public versus private or half-private schools has been highlighted since school closure has immediate effects on social, cultural, or professional equity of citizens, as it is a public space and service that generates deleterious effects on socioeconomically disadvantaged students if closed [22]. With such disadvantages in public schools, educational administrations should provide their own school network with the appropriate resources and training in order to confront this situation and even to improve the development and social cohesion of the country [23,24].

Another factor that is important to consider is family–school communication. It is minor in public schools, as is the knowledge schools have about students' family situation [25]. Family–school relations are, in this context, even more necessary than usual. Coordinated actions between family and school in which family guidance is provided by teachers contribute to the achievement of better results in relation to academic success, as well as to the social and emotional adaptation of children [26]. It is important to reiterate the importance and necessity of educational administrations getting involved and promoting actions that minimise these effects so that education can be understood from the perspective of social justice. Among these actions, work–family balance cannot be relegated to the background, as it has also been an important challenge for many families in this unprecedented context in which new duties and responsibilities have emerged. All of this should not only be supported by an economic inversion but also by a normative development, implication, and engagement of the educational community [27].

ICT issues have been one of the main protagonists of this pandemic. Their accurate use contributes to the development of learning environments, as well as new methodologies that attend to students' diversity [28]. Teacher training constitutes a key factor in order to enjoy the advantages of ICT, as it is not only necessary to have technologies in the classroom, but also the acquisition and improvement of skills related to its use, design, and development are essential, as is the key that teachers are able to make adaptations for the adequate use of ICT, according to students' needs [28]. Undoubtedly, in the current context, "the digital competencies are a guarantee of an efficient universal access towards a changing education that promotes new competencies but demands new necessities" [29] (p. 138). The use of ICT during the pandemic has been basically dedicated to solving practical problems and, afterwards, has been focused on other aspects such as creating own digital contents, resulting in improved ICT skills [30]. Google Classroom and Moodle were the most-used tools, followed by tools of collaborative edition contents, online surveys, audio–visual recording resources, and tools for creating interactive content or blogs, which were positively valued by most teachers [31].

The appropriate use of ICT has not been an easy path though, as many difficulties that impeded a normalised development emerged due, among other issues, to the abrupt change from face-to-face to virtual classes through the application of "emergency eLearning" protocols [32]. In [33], two main problems were established: (a) Families and students had to tackle the educational processes online from home, while being overwhelmed on many occasions by tasks, the lack of digital resources to complete them, and the emotional pressure due to the current situation. (b) This change to virtuality also brought changes in teaching plans. In rural areas, these difficulties were even more severe [34]. Some research works [23,35] indicate that the current digital divide was even increased during this time, as the three types of digital divide (access, cognitive, and scholar) affected families, students, teachers, administrators, and schools. For that reason, digital literacy is still an objective to be achieved [36]. In order to overcome at least the cognitive digital divide, training is not only essential for teachers but also for families and students in order to improve their digital skills. These actions could minimise some negative effects on the health of the educational community since, according to [37], university students had technological overload, techno-invasion, and techno-complexity during the pandemic. This situation is compounded by the daily stress and fear of COVID-19, which contributed to the generation of a complex situation for students facing their academic duties.

Therefore, the need to bridge educational gaps becomes obvious, making ICT accessible for everyone, providing for acquisition of digital skills, and affording resources for the educational community in order to achieve adequate learning adapted to the current networked society. Innovation in technology should be applied to the educational field with the purpose of improving quality of life by updating the population's digital skills [38].

Despite all that has been highlighted in the previous text, it is essential that, after the advent of digital tools in classrooms due to the pandemic, in current times it is necessary to consider its proper use, aiming to achieve a critical digital literacy of the educational community [39]. In relation to Sustainable Development Goals (SDG), it is possible to highlight that some of the aims educational systems try to achieve have dwindled, i.e., "Quality Education" (SDG 4), "Good Health and Well-being" (SDG 3), "Decent Work and Economic Growth" (SDG 8), "Gender Equality" (SDG 5), and "Reduced Inequality" (SDG 10) [40].

This time of changes, full of uncertainty and emerging challenges for all members of the educational community, should be considered as a new starting point from which to exhaustively proceed to analyse the pillars of the Spanish educational system, to find strengths that allow tackling important situations effectively, and to avoid those experiences that make difficult teaching–learning processes, especially for vulnerable groups.

The current study aims to disseminate the research trends about education in the context of COVID-19 in Spain through a systematic review of studies that were published in high-impact journals during the period between March 2020 and February 2022. Before starting the research, the following research questions were established: What were the research trends for educational researchers during COVID-19 in the Spanish context? Which topics acquired more importance to educational researchers in Spain in terms of the influence of COVID-19 in education? It has been carefully studied how different collectives of the educational community experienced this unprecedented reality, including, therefore, perspectives of students, families, teachers, and educational administration. The purpose was to understand the development of the Spanish educational system during these last two years, considering indicators such as social justice, information and communications technologies (ICT), psychosocial effects in the educational community, teaching methodologies used in this context, etc.

2. Materials and Methods

In order to carry this study out effectively, and to avoid the lack of rigour in the creation of traditional reviews [41], the methodological strategy that was followed for this research is a systematic literature review (SLR) which, in words of Paul et al. [42], encapsulates:

The process for assembling, arranging, and assessing existing literature in a review domain, wherein "assembling" refers to the identification and acquisition of literature, "arranging" pertains to the organisation and purification of literature, and "assessing" relates to the evaluation and reporting of literature. The outcome of this process suggests that systematic literature reviews, as a product of research, signify a state-of-the-art understanding of existing literature and a stimulating agenda to advance understanding through new literature in the review domain (p. 02)

For this research, a five-step methodological approach has been followed, used in previous research works [41,43], which comprises: (a) framing questions for a review, (b) identifying relevant work, (c) assessing the quality of studies, (d) summarizing the evidence, and (e) interpreting the findings.

2.1. Framing Questions for a Review

What were the research trends for educational researchers during COVID-19 in the Spanish context? Which topics acquired more importance for educational researchers in Spain in terms of the influence of COVID-19 in education? SLR was made with the purpose of identifying and describing the research trends in relation to education and COVID-19 in the Spanish context, analysing open access (OA) papers that have been published in journals and reviews indexed in Web of Sciences (WoS) and Scopus.

2.2. Identifying Relevant Work

By using WoS and Scopus, it is possible to guarantee, find, and consult the most significant scientific publications [44] as both these databases offer a certainly wide coverage of highest quality journals [45]. In this stage, it was essential to establish criteria in an effort to refine the literature selection and gather more detail. This was made through the option “Topic”, using the Boolean operator AND for the first selection, and using the combination of the following keywords: “COVID” AND “educa*” AND “spa*”. The current SLR included original OA papers about education and COVID-19 in Spain, written in Spanish and English language, and published between March 2020 and February 2022, in the research areas detailed in the next section. This period encompasses the time the pandemic started until the time of finishing data collection for this article.

2.3. Assessing the Quality of Studies

In order to guarantee the universal access to scientific information, non-OA research works were excluded. In an attempt to homogenise the muster, review articles were also excluded. Then, selected studies were subjected to a more refined accuracy assessment by research areas. In order to achieve this purpose and guarantee no off-topic papers were added to the analysis by mistake, authors considered all the selected research areas should have relation to education. As a consequence, in WoS results were refined by including the following areas: Education Educational Research; Social Sciences Other Topics; Family Studies; Social work; Cultural Studies; Development Studies; Women S Studies; Women Apos S Studies. As for Scopus, it was only possible to refine results by choosing Social Sciences. These areas were chosen because they are the ones which are more likely to embrace papers about educational issues.

2.4. Summarizing the Evidence

The automated search was made according to the previously established keywords in order to find accurate and useful papers for achieving the purpose of this contribution, that is, those that were able to provide rigorous information about the research trends in education in the context of COVID-19 in Spain. This process facilitates the further inclusion and exclusion of publications for its subsequent analysis.

2.5. Interpreting the Findings

A total of 408 papers were initially examined in order to: first, remove duplicate articles; second, analyse abstracts and full texts, third, remove those papers not related to education in the context of COVID-19 in Spain. After this process, 242 were deemed suitable for ongoing evaluation. Table 1 shows the obtained results after the methodological application, that is: keyword searching (“COVID” AND “educa*” AND “spa*”); number of documents; inclusion and exclusion criteria; initial results; refined results. In this section, reasons for excluding some other articles are provided, such as those that were repeated in both databases (WoS and Scopus), those whose topics had no direct relation with the educational field in the context of COVID-19, design of teaching materials, etc.

Table 1. Keywords search results using Boolean operations.

Keyword Search	Number of Documents	Inclusion and Exclusion Criteria	Initial Results	Refined Results
WoS "COVID" AND "educa*" AND "*spa*"	3.197	"COVID" AND "educa*" AND "*spa*" AND (LIMIT-TO (OA, "all")) AND (LIMIT-TO (DOCUMENTTYPE, "articles")) AND (LIMIT-TO (RESEARCH AREAS, "Education Educational Research" ... "Social Sciences Other Topics" ... "Family Studies" ... "Social work" ... "Cultural Studies" ... "Development Studies" ... "Women S Studies" ... "Women Apos S Studies")) AND (LIMIT-TO (YEAR, "2020" ... "2021" ... "2022")) AND (LIMIT-TO (LANGUAGE, "English" ... "Spanish")) AND (LIMIT-TO (COUNTRYREGION, "Spain")) AND (LIMIT-TO (SEARCH FOR DATABASE, "Web of Science Core Collection"))	227	163
Scopus "COVID" AND "educa*" AND "*spa*"	3.187	"COVID" AND "educa*" AND "*spa*" AND (LIMIT-TO (OA, "all")) AND (LIMIT-TO (PUBYEAR, "2020" ... "2021" ... "2022")) AND (LIMIT-TO (SUBJAREA, "SOC")) AND (LIMIT-TO (DOCTYPE, "ar")) AND (LIMIT-TO (PUBSTAGE, "final")) AND (LIMIT-TO (AFFILCOUNTRY, "Spain")) AND (LIMIT-TO (LANGUAGE, "English" ... "Spanish"))	179	79

3. Results

According to the aforementioned methodological strategy, the results were organised in the following four sections: (a) groups of articles; (b) categorisation of articles by topic and year; (c) impact of COVID-19 in formal, non-formal, and informal education; (d) perception of the educational community about the impact of COVID-19.

3.1. Groups of Articles

In the last two years, the pandemic caused by COVID-19 has held the attention of many teachers and educational researchers. This section compiles the obtained results after the analysis that has been described in previous sentences in order to expose the most common worries and focuses of interest for Spanish educational researchers. Seven topics were identified, in which all the analysed articles have been categorised: ICT and Digitalisation; Teaching, Learning, and Innovative Methodologies; Educational Policies; Sustainability; Acquisition and Development of Skills and Competences; Health and Welfare; Others. The creation of these topics was possible after the rigorous analysis of every single paper of the muster, thus enabling researchers to determine which were the major research trends of Spanish educational academics according to how frequent these topics were published.

3.1.1. ICT and Digitalisation

As a consequence of the pandemic and lockdown, face-to-face teaching and learning processes were forced to be substituted by virtual education. Especially during the first months, the lack of resources arose in many families that were not able to assume these extra charges. There was also a lack of teacher training to respond to the new demands. The subsequent months were characterised by hybrid learning contexts, so ICT gained an unprecedented prominence in schools. Digitalisation allowed the continuity of teaching during the exceptional circumstances of the pandemic. As a result, its presence in education has been, and even today still is, a topic of concern for educational researchers and academics. This topic represents the 18.04% of the total. Some of the most repeated keywords are ICT, Online teaching, Online learning, and E-learning.

3.1.2. Teaching, Learning, and Innovative Methodologies

The distance learning that was imposed during the lockdown forced the rethinking of both teaching–learning methodologies and processes. In addition, the reopening of schools, with all the sanitary measurements needed, generated a deep change in the understanding of learning and teaching. This category not only includes articles and research works that reflect on teaching practice and teaching–learning processes but also those on innovative teaching methodologies and their application in the classroom. Those related to learning and teacher acquisition of new skills are not included here, nor are those related to ICT. With

19.30% of the total, this is the second-most numerous topic. Some of the most significant keywords are: Face-to-face learning, Teaching methodologies, and Active methodologies.

3.1.3. Educational Policies

Exceptional contexts demand extraordinary proposals. In the case of school education, which follows both the national and regional legislations, as well as the official curriculum, it must require an extraordinary effort to think about efficient educational actions beyond policies. This topic has gained an unquestionable relevance after the impact of COVID-19 at schools, and the unpredictable necessity of invading those areas that were not yet specifically regulated by acts, laws, or other policies. This fact contributed to the continuous development of teaching at that time. This topic represents 2.85%, having Educational policy, Politics, and Educational system reform as some of its most representative keywords.

3.1.4. Sustainability

All articles related to how to contribute to sustainability from schools are included in this fourth topic. On one hand, this makes possible the existence of a flexible school, with the ability to be adapted to new realities; on the other hand, this gives the possibility for these new realities to persist, guaranteeing social justice, equality, and equity in the school community. This is one of the reasons that explains the importance of supporting an inclusive school that is capable of responding to the current and future needs of students and citizenship. Sustainability accounts for 10.76% of the total. Some of the most common keywords are Digital divide, Social justice, and Inclusive education.

3.1.5. Acquisition and Development of Skills and Competences

As it has been already mentioned in previous sentences, global lockdown forced teachers of very diverse educational levels to develop new skills with the purpose of updating their digital literacy in order to continue their teaching duties during school closure. This situation showed the lack in most of the teachers' skills, that is, not only limited to the accurate use of ICT for teaching purposes but also to recent innovations. As a result, an equivalent concern emerges from research areas which focuses on the lack of teaching methodologies in teacher training. Moreover, it highlights the importance of permanent training. In this topic, it is possible to find articles about digital literacy due to its training core, whereas articles focused on the impact of ICT on teaching and learning processes are part of the topic ICT and Digitalisation. This topic contains 9.49% of papers, in which is possible to highlight the following keywords: Digital competence, Teaching competence, and Professional development.

3.1.6. Health and Welfare

It is important to remember that all this transformation, not only in the educational field but also in societies of the entire world, has been caused by a new and uncontrolled virus. Health and welfare of people have become the focus of attention of people's life for months worldwide, as this is also a recurrent topic of study and research not only for the sanitary but also the educational field. This supports why physical and psychological welfare of the educational community became of great importance in the context of COVID-19 [9,10]. Implementing new measurements that guarantee health, both for teachers and students, as well as checking how health issues affect academic efficiency, are just some of the concerns that have emerged in the last two years. A total of 12.35% of the articles are part of this topic. Some of the most representative keywords are Mental health, Anxiety, and Stress.

3.1.7. Others

This additional topic has been added in order to categorise some useful and interesting articles whose topics and keywords do not fit in any of the previous categories. As an example, in this section were included some articles about minority topics such as the

following: family education; management of school, learning, and free time; work–family balance; and other topics that became more relevant, especially during lockdown. In addition, other research works related to praxis in specific higher education courses and university degrees have been included as well, so it is possible to register which fields of knowledge have been more interesting for educational research. Participants in these studies (students, families, teachers, etc.) have also been considered, with the purpose of having a much more precise and concise idea about which were the focuses of interest. All articles that belong to this topic also belong to, at least, another of the topics that have been previously described. This topic represents 27.21% of the total. Here, it is possible to find keywords such as High education, University students, and Family. However, the importance of this topic is that it embraces a miscellany (an assortment or collection) of research papers, most of which already complement some of the other categories from a transversal perspective. For this reason, every article that has been analysed is predisposed to be included in more than one of the abovementioned topics, even though it is not a requisite. This serves as an explanation of why the total of articles is higher than the real number of articles that have been analysed in the current research, as it is possible to see in Tables 2 and 3.

Table 2. Topics, keywords, and analysed articles.

Topics	Keywords	WoS Articles	Scopus Articles	Total	Total %
ICT and Digitalisation	ICT; Online teaching; Online learning; E-learning; Social media	74	40	114	18.04%
Teaching, Learning, and Innovative Methodologies	Distance education; Face-to-face learning; Blended learning; Teaching methodologies; Active methodologies	84	38	122	19.30%
Educational Policies	Educational policy; Politics; Educational system reform	8	9	17	2.85%
Sustainability	Digital divide; Sustainability; Right to education; Social justice; Inclusive education	43	25	68	10.76%
Acquisition and Development of Skills and Competences	Digital competence; Teaching competence; Professional development; Teacher training	38	22	60	9.49%
Health and Welfare	Pandemic; Confinement; Lockdown; Mental health; Sport; Anxiety; Stress	60	18	78	12.35%
Others	High education; Primary education; Family; University students; Schools; University teachers; Communication	123	49	172	27.21%

Table 3. Classification of articles by topic, database, and year of publication.

Topics	WoS			Scopus		
	2020	2021	2022	2020	2021	2022
ICT and Digitalisation	15.79%	42.98%	6.14%	7.89%	25.44%	1.75%
Teaching, Learning, and Innovative Methodologies	16.39%	48.36%	4.10%	5.74%	22.95%	2.46%
Educational Policies	11.11%	27.78%	11.11%	5.56%	44.44%	0.00%
Sustainability	20.59%	38.24%	4.41%	7.35%	26.47%	2.94%
Acquisition and Development of Skills and Competences	11.67%	43.33%	8.33%	3.33%	28.33%	5.00%
Health and Welfare	19.23%	51.28%	6.41%	3.85%	17.95%	1.28%
Others	18.02%	47.67%	5.81%	8.14%	17.44%	2.91%
Total	15.79%	42.98%	6.14%	7.89%	25.44%	1.75%

Figure 1 shows a word cloud that compiles the 50 most relevant keywords that have been mentioned in the analysed articles. The size of those that have been mentioned more frequently is bigger than the that of ones that were mentioned fewer times. “Learning” is the keyword that has been used the most (93 times), followed by “teaching” (53 times), “higher education” (43 times), “pandemic” (30 times), “competence” (29 times), and “ICT” (22 times). The frequency of the rest of the keywords is under 20.



Figure 1. Word cloud of most relevant keywords in articles (WoS and Scopus).

3.2. Categorisation of Articles by Topic and Year

With the purpose of providing information about how research trends about education and COVID-19 have been developed in the last two years, as well as which have been the different focuses of interest during the different phases of the pandemic, Table 3 shows a classification of the total number of articles that have been published between 2020 and 2022. This information enables detection of changes about research trends in relation to both the main topics of interest and year of publication.

When working with periods of time as short as the ones in this study, it is not possible to establish annual theme waves per se. In the current research work, there are significant differences in the publication of articles depending on the publication year. These differences are due to the fact that this research embraces the articles that were published between March 2020 and February 2022, with 2021 being the only year that has been completely analysed. For this reason, it is obvious that the higher number of published articles is directly proportional to the number of months of the year that have been included in the analysis. As a result, most of the analysed articles were published in 2021, as it includes the whole year; followed by 2020, which encompasses 9 months; and just the two first months of 2022. Furthermore, in all topics, the number of published articles is very reduced in 2020 and 2022. According to the theoretical framework, several studies have shared testimonies of teachers that affirm they felt overwhelmed by pandemic circumstances, especially because of professional duties, along with the urgency of adapting to new methodologies as soon as possible [17]. This could justify the increasing number of articles that, on the one side, share reflections about how this issue has increasingly become a common and generalised concern and, on the other side, demonstrate that teachers consider their training as a real, growing demand.

3.3. Impact of COVID-19 in Formal, Non-Formal, and Informal Education

Since COVID-19 had a significant impact on all dimensions of education, educational research has not just been limited exclusively to the formal context. This section shows the

research tendencies about education and COVID-19, considering if articles were centred on formal (intentional, is generally regulated by the school system, i.e., elementary education, secondary education, etc.), non-formal (intentional, can be regulated by other institutions and organisations, i.e., sports club, cultural associations, etc.), and informal education (it is not necessarily intentional, it does not need specific regulations, i.e., learning mother tongue, principles, etc.). As in previous cases, this information has also been categorised by publication year and database (see Table 4).

Table 4. Classification of articles about formal, non-formal, and informal education.

Database	Formal Education				Non-Formal Education				Informal Education			
	2020	2021	2022	Total %	2020	2021	2022	Total %	2020	2021	2022	Total %
WoS	35	99	10	88.35%	4	6	1	6.75%	-	6	2	4.9%
Scopus	15	44	6	82.28%	1	5	-	7.59%	5	3		10.13%
Total	50	143	16	86.36%	5	11	1	7.02%	5	9	2	6.62%

In this case, the total of articles that have been presented on the table coincide with the total of analysed publications. Table 4 shows how formal education is the type of education that educational researchers have been more interested in studying, as it involves 86.36% of the analysed articles. The percentage of articles about formal education that have been published in journals indexed in WoS (88.35%) is higher than that in Scopus (82.28%), whereas in Scopus, the percentage of articles about non-formal (7.59%) and informal education (10.13%) is higher than in WoS (6.75% and 4.9%, respectively). This disparity could be explained by two different reasons: (a) From Scopus were excluded all publications that were already found in WoS and, therefore, analysed in the first place. (b) In WoS, publications about STEM are very popular. Therefore, when this fact is linked to educational descriptors in the search tool, it is common for most of the results to be related to innovation, teaching methodologies, and university teaching experiences, among others, but mostly limited to these kinds of fields of expertise. However, the representation of Social Sciences publications in Scopus is more popular than in WoS, so research works strictly related to education and pedagogy could have probably been more likely to be published in journals that are indexed in Scopus than in WoS [46].

3.4. Perception of Educational Community about the Impact of COVID-19

Pandemic and lockdown had an unquestionable impact on people's lives worldwide. Therefore, being able to know first-hand, personal experiences about the impact of COVID-19 pandemic and lockdown in people's lives worldwide makes it possible to understand their potentiality [47]. By gathering the opinion of the educational community members, it is possible to systematise the interpretation that protagonists had about school realities [48], thus providing valuable information about the impressions that stakeholders had. This contribution is particularly focused on the educational, sanitary, and social impact on those people that educational communities are composed of. Several articles made the most of the teleological possibilities this methodology offers, using it in order to gather experiences of the Spanish educational community first-hand [49–52]. Figure 2 presents the percentage of articles whose results are based on the experiences of stakeholders by classifying this information depending on the databases.

As it is possible to see in Figure 2, in WoS, 34.35% of the total analysed articles base their results and findings in experiences of members of the educational community in relation to the pandemic and its impact on their lives. As for Scopus, this percentage rises to 54.43% of the analysed articles, which means that more than the half of the analysed articles that have been published in journals indexed in Scopus are inspired and/or compile direct information and testimonies about educational stakeholders. In relation to this fact, it is important to remember the exclusion criteria that has already been previously mentioned. It is possible to also deduce that qualitative research works are more likely to be published

by journals that are indexed in Scopus than in WoS, where quantitative research is more popular. In an unprecedented context that has been characterised by the lack of previous experiences, many educational researchers and academics used methodologies such as the analysis of testimonies for their research works, as it became one of the bigger and better information sources during the pandemic.

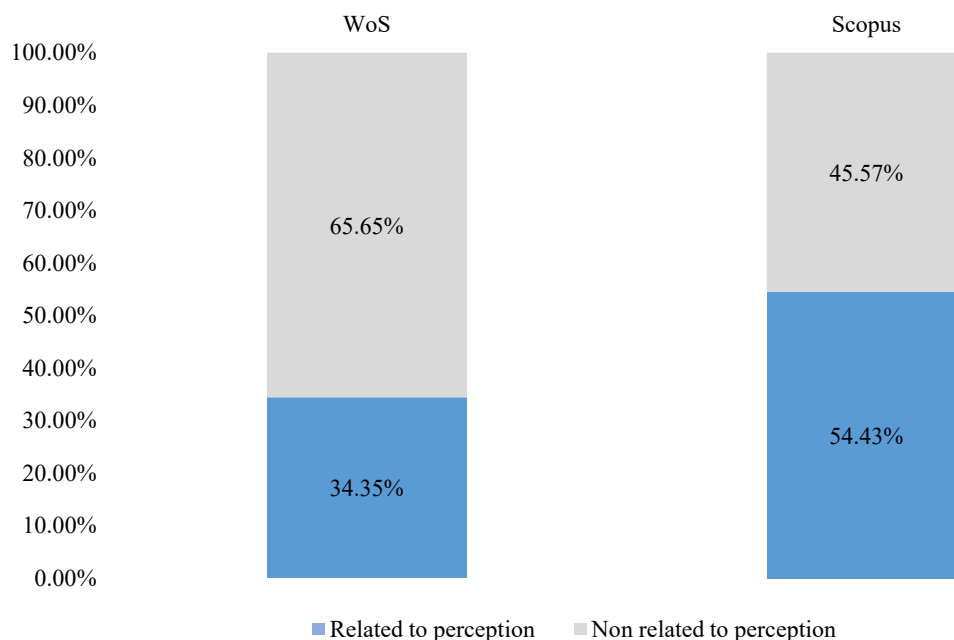


Figure 2. Articles about perceptions of members of the educational community.

4. Discussion and Conclusions

Changes caused by COVID-19 have been undoubtedly significant (UNESCO et al., 2021). As proof that this purpose has been achieved, findings from the collected and analysed data basically show the shared interest in educational research about this topic, since a substantive number of studies have emerged and been published in many different and academically well-positioned reviews and journals. The aim of this study was to disseminate the research trends about education in the context of COVID-19 in Spain through a systematic review of studies that were published in high-impact journals between March 2020 and February 2022, like others [2,4,5] who have tried to analyse, from different perspectives, the impact of the pandemic for the educational community at a global level.

According to the findings in the Spanish context, and as a result of the analysis of the publications retrieved from Scopus and WoS databases in the aforementioned period, the initial number of papers was 408, which, after analysis, remained at 242. After the review, it is possible to conclude that they revolve around seven topics: ICT and Digitalisation; Teaching, Learning, and Innovative Methodologies; Educational Policies; Sustainability; Acquisition and Development of Skills and Competences; Health and Welfare; and Others. In this research, Teaching, Learning, and Innovative Methodologies (19.30%), as well as ICT and Digitalisation (18.04%) are the two most relevant topics. This result coincides with other works [2] in which the focus of attention of educational research works in Spain is mainly on the role of technology in the transition processes from face-to-face to virtual education, the impact of school closure on students, and the challenges faced by educational systems while dealing with teacher training. This conclusion is not trivial, since ICT enabled continuation of teaching and learning processes during the pandemic [28,30,31]. The challenging situation for both educational systems and educational communities is unquestionable [18,19,23,34,35]. Furthermore, the Teaching, Learning, and Innovative Methodologies topic has a strong connection with digitalisation, as its purpose is to improve the quality of life of students, teachers, and families through the improvement of their

skills [38], since the impacts of the COVID-19 in the educational community have been important. The quality of life has also been affected by the pandemic, not only because of the disease itself but also in the aftermath [9,10,37], necessitating the study of health and welfare issues from the field of educational research (12.35%).

As it has been previously expounded, COVID-19 brought irreversible changes for the future of citizens, who are the most vulnerable collectives especially affected [12]. Thus, rethinking educational practices based on sustainability is essential [16], as SDGs still need to be achieved [40]. However, the popularity of sustainability as a research topic is slightly below the average of the rest (10.76%).

In the process of searching for more sophisticated and resilient educational systems, the Acquisition and Development of Skills and Competences is essential (9.49%). It is not only necessary to have well-trained teachers, but students must also be well prepared to participate in their own learning process [9,17,28,29]. The encouragement of educational administrations is crucial in order to promote this, since educational policies play a key role for achieving these improvements. However, the percentage of published research works about Educational Policies in such an unprecedented crisis is moderately low, as it just represents 2.85% of the analysed articles.

To summarise, the impact of COVID-19 on education has been more than notorious. In fact, the crisis caused by the pandemic has only exacerbated a latent crisis in educational systems, causing greater levels of inequality to emerge [1,6,7]. Despite this, the situation, marked by the challenges of recent years, must become an opportunity of learning to overcome the gaps left by the pandemic (learning, training, digital literacy, etc.) and look towards more resilient educational systems that guarantee their proper functioning in various situations.

These articles have been distributed differently throughout this period of time. The highest number of articles was published in 2021 (68.19%). Similar data are found in several studies [4,5]. However, these data should be considered with caution because it was not possible to analyse the same sample every year. This is a limitation of the study. Likewise, the changes caused by the COVID-19 mean that the publications may vary in terms of their number, since its impact on education has varied throughout this time.

Possible future research lines could be related to replicating this study by expanding both the years of study and the countries explored. Doing so will allow researchers to address with greater perspective the changes in research trends linked to COVID-19 and its impact on different spheres of education, such as learning, teaching, practices, etc. It would be also possible to better understand their consequences on the educational community, as well as their impact on the teaching-learning processes.

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