sustainability

MDPI

Review

Policies, Projects, and Initiatives for Sustainable Higher Education with Gender Equity: Literature Review and Case Study—Universidad de La Frontera

Ana Bustamante-Mora [1], Mauricio Diéguez-Rebolledo [1,*], Yemsy Hormazábal [1], Yolanda Valdés [2] and Elizabeth Vidal [3]

[1] Departamento de Ciencias de la Computación e Informática, Universidad de La Frontera, Temuco 4811230, Chile; ana.bustamante@ufrontera.cl (A.B.-M.); yemsy.hormazabal@ufrontera.cl (Y.H.)
[2] Facultad de Administración y Negocios, Sede Talca, Universidad Autónoma de Chile, Talca 3480094, Chile; yvaldesr@uautonoma.cl
[3] Departamento Académico de Ingeniería de Sistemas e Informática, Universidad Nacional de San Agustín de Arequipa, Arequipa 04000, Peru; evidald@unsa.edu.pe
* Correspondence: mauricio.dieguez@ufrontera.cl

Abstract: Today, sustainability in higher education is a key factor for our society, and women play a fundamental role. However, gender faces a series of inequalities in this field of action, and from this point of view, university education is not left out. It is necessary to incorporate strategies and initiatives to reduce these inequalities within the classroom, supported mainly through public policies, which represents a challenge. It is a practical and essential challenge for public and private universities to ensure that their students are prepared for a globalized, sustainable, and gender-sensitive world. In the 2030 Agenda, two Sustainable Development Goals are proposed to address these issues, targeting SDG 5 gender equality and SDG 4 inclusive education. This study considers that to address this issue, it is necessary to identify initiatives that aim to propose measures for sustainable education and reduce the gender gap, to know which and what types of policies or strategies aim to address these issues in higher education in the same way of identifying good practices focused on inclusive policies, models, and teaching styles, also considering scientific research for sustainable education. This study considers the review of policies to reduce gaps in the STEM areas of university education and whether these measures address the goal of sustainable development. As main findings and conclusions, this study highlights the initiatives and good practices found in the literature review since 2007 but concentrated during the last five years. In addition to the literature review, this bibliographic review is complemented by presenting a practical case study with real data from a public, state, and regional university in the south of the country of Chile that takes on this challenge and shares it. The PRISMA protocol guided this study, finding 341 relevant articles to be analyzed, which mainly show how it is possible to implement measures and improve sustainable education with a gender focus through policies and initiatives within a university in the short term.

Keywords: sustainability; gender gap; gender equality; policies; strategies; higher education; STEM; gender-sensitive pedagogy; Sustainable Development Goals

Citation: Bustamante-Mora, A.; Diéguez-Rebolledo, M.; Hormazábal, Y.; Valdés, Y.; Vidal, E. Policies, Projects, and Initiatives for Sustainable Higher Education with Gender Equity: Literature Review and Case Study—Universidad de La Frontera. *Sustainability* **2024**, *16*, 5038. https://doi.org/10.3390/su16125038

Academic Editor: Gazi Mahabubul Alam

Received: 17 April 2024
Revised: 30 May 2024
Accepted: 3 June 2024
Published: 13 June 2024

1. Introduction

The purpose of the UNESCO Chair on Sustainable Development and Environmental Education is to promote applied research, teaching, and specialized studies on Sustainable Development and Environmental Education topics from an interdisciplinary perspective encompassing both natural social and technical sciences. Education is considered the single most important tool that supports the achievement of a nation's sustainable development [1]. In recent years, there has been a growing awareness of sustainability and regulations to address gender inequalities in STEM-related programs and the need to

overcome them, thus closing the gender gap in these academic disciplines. Various initiatives have emerged, including gender equality policies, regulations, and programs [2]. It is recognized that equal and open access to education facilitates the advancement and empowerment of women and girls. The World Bank has reported that 94% of girls in the Caribbean attend school, and, in the context of tertiary education, women outnumber men at the University of the West Indies (UWI) by 63% to 37%. If graduation statistics reflect a similar trend, the number of professionally qualified women will consistently outnumber men attaining tertiary education [3]. While these data suggest progress for gender diversity in the workplace, educational and training enrollment in certain professions are still heavily dominated by men [3].

As indicated in the study "Integrating education and research on the transversality of the SDGs: gender and health, essential dimensions of sustainability" [4], universities, with their vast responsibility in the generation and dissemination of knowledge, play an essential role in the achievement of the Sustainable Development Goals through teaching and research [4]. Education and research are crucial in designing and overseeing how we should manage the planet. This involves providing policy leaders with effective tools from diverse disciplines and recognizing and building on socioecological cultures and traditions that have proven sustainable systems in interacting with the environment [5]. Many regulations, initiatives, good practices, and strategies worldwide have successfully increased women's participation in science and engineering; however, only a few efforts have been made to share these practices worldwide. Despite their successes, no nation has found the magic formula for achieving gender parity [6]. Unfortunately, women's participation remains low, although there are differences from one country to another [7], and gender inequality in STEM careers has proven to be a global problem, leading to the question of whether to avoid prejudice and not maintain the gap. Education and policies aligned with the SDGs can certainly be a solution and make a difference [8].

It is essential, when analyzing this issue, to consider the role that universities play in promoting sustainability in education and gender equity. Therefore, several studies have emphasized the importance of teaching innovation and empowering faculty by incorporating these competencies. This involves not only providing online tools and resources but also offering teacher training with a gender perspective, enabling them to design activities and strategies specifically tailored to progressively address and improve the problem [8].

On the other hand, studies have shown that women in STEM present a higher average perception of achievement in systemic and critical thinking, and men have a higher perception of scientific thinking [9]. From this, social and cultural elements influence the perception of achievement that men and women develop in thinking and problem solving. Therefore, governments and higher educational institutions must establish training programs that do not follow gender stereotypes and equally promote reasoning skills by complexity in men and women. It is necessary to create more scientific and academic spaces and projects that involve women in science [9]. In highly masculinized disciplines, the inclusion of a gender perspective is essential for future sustainability whenever the content, results, or applications of a subject may directly or indirectly affect human beings. Technological advances affect men and women differently, especially in technology-related disciplines where it is widespread [10].

By way of introduction, female and male STEM graduates play a key role in the sustainable development of society, contributing to the economy's productivity, competitiveness, and progress. However, the number of students enrolled in STEM courses is low despite the high demand and valuation by the labor market. This reality is even more striking when analyzing the figures related to the presence of women in STEM fields, particularly in engineering careers [11]. This is why, at the international level, there are initiatives and programs to reduce the gender gap and bet on gender equality, such as UN Women [12] (and also with a Latin American focus) and the achievement of the Sustainable Development Goals (SDG) of the 2030 Agenda. Olavarria (2011) told us that

women had higher graduation rates and lower dropout rates and graduated more than men in undergraduate programs. This is an important factor in encouraging women to study for higher education [13]. Gender-sensitive education is essential because education, in general, is widely recognized as a key factor for the progress and stability of nations. Both international organizations, governments, researchers, and education experts have highlighted the crucial role of education in building a democratic, participatory, and diverse society. Education is considered a basic human right, essential for sustainable development, and vital for citizen inclusion in social and economic systems [14]. The economic vitality of a country depends on the expansion of education; if a country has more inhabitants prepared to contribute, then the economy and effective participation in democracy will improve. This is when it takes value to empower women in higher education to enhance economic growth [15].

Students need to comprehend the gender disparities within their society and culture concerning global regulations while respecting cultural differences. This entails acknowledging how gender intersects with other social categories such as disability, religion, and race. Moreover, they should recognize the advantages and opportunities that full gender equality offers and understand the importance of engaging in legislative and governance processes, including the allocation of public resources, the labor market, and decision making in both public and private spheres. Lastly, students should grasp the critical roles of education, technology, and legislation in empowering and ensuring equal participation for all gender identities [16].

This article includes a systematic mapping summarizing proposals, good practices, and initiatives for sustainability and gender equality in higher education. In addition, the practical and political changes generated at the Universidad de La Frontera, Chile, aligned with the 2030 Agenda, are presented as a case study. It is necessary to mention that the contribution of this article is crucial to show how some goals of the 2030 Agenda are successfully addressed in the framework of the generation of policies and strategies in state university education. Then, this paper is divided as follows: Section 2 covers the general essential concepts related to the research. Section 3 details the methodology of the systematic mapping Study and the results of the article selection process. Section 4 presents the study's main results. Section 5 analyzes the main challenges of this research. Section 6 explains this study's limitations. Section 7 presents the actual case study and identifies good practices for sustainability and their implementation from 2018 to the present within the Universidad de La Frontera. The challenges, measures, policies, laws, initiatives, and projects of the case study applied for sustainability and reducing the gender gap are considered. Finally, Section 8 presents the conclusions, implications, and possible future research.

2. Background

2.1. Sustainable Development Goals (SDGs)

On 25 September 2015, global leaders adopted a series of international objectives aimed at eradicating poverty, safeguarding the planet, and fostering prosperity for everyone as part of a fresh sustainable development initiative. Each objective delineates specific targets to be accomplished within the following 15 years. Specifically, Objectives 4 and 5, relevant to this study, pertain to ensuring inclusive, equitable, and high-quality education to promote gender equality for all and to empower women and girls universally [17].

2.2. Education for Sustainable Development ESD

Education for Sustainable Development (ESD) equips people of all ages with the knowledge, skills, values, and agency necessary to address interrelated global challenges, such as climate change, biodiversity loss, unsustainable resource exploitation, and social disparities. It enables individuals of all ages to make informed decisions and act individually and collectively to transform society and protect the planet. ESD is a continuous educational process that is an integral part of quality education. In addition, it enhances

the cognitive, socio-emotional, and behavioral dimensions of learning, covering both its content and results, pedagogy, and the learning environment [18]

2.3. Gender Inequality

Gender inequality represents a sociocultural phenomenon that regulates social relations by considering people as inferior or superior based on their gender, which is also linked to categories such as race, class, and sexuality, among others. It implies that social inequalities and discrimination are justified on the basis of sexual differences, giving men what is considered a masculine level of superiority and privileges. [19].

2.4. Gender Gap

This is an indicator that shows the distance between the position or condition of men, women, and LGTBIQA+ people concerning the same area. It translates into inequalities about autonomy, access to resources, participation, opportunities, exercise of rights, and access to spaces of power, among others. They are a consequence of the gender discrimination present in society [19].

2.5. STEM

The National Science Foundation of the United States refers to science, technology, engineering, and mathematics (STEM) disciplines. The word's literal meaning in English stems from the notion that new solutions could emerge from these four disciplines to boost the country's competitiveness as a world leader in innovation and development. STEM education is an educational movement followed to improve student learning regarding knowledge and skills. Both perspectives coexist and have enriched each other, giving rise to different interpretations of STEM education's content, methods, and objectives [20].

2.6. Gender Equity

This involves the means, processes, or programs aimed at achieving gender equality, considering the diversity of the experiences of women and different social groups in their insertion in the social structure, belonging to native peoples, age differences, and living conditions; seeking fair treatment toward people about their specific needs and the recognition of the differences leading to the complete development and the exercise of their human rights; taking into consideration the distribution of opportunities, resources, and benefits, in addition to areas such as wealth, power, and time [19].

3. Materials and Methods

Systematic mapping is a research methodology used mainly in fields such as computer science and medicine to review and synthesize the existing literature on a specific topic in a structured way. Its main objectives are to identify, categorize, and present an overview of the current state of knowledge in a given area of study [21].

This technique involves conducting a comprehensive search for relevant publications and then classifying and analyzing these studies to identify trends, gaps in existing research, and possible areas for future studies [21]. Unlike systematic reviews, which focus on answering specific research questions through the detailed analysis of a limited number of studies, systematic mapping seeks to provide a broader picture of the field of study, highlighting the amount and type of research conducted, as well as the methodologies used and the results obtained.

This study applied Petersen's proposal as a methodological guide, implementing the stages described in Figure 1 (adapted from [22]).

The activities that make up the systematic mapping process are described in the following sections.

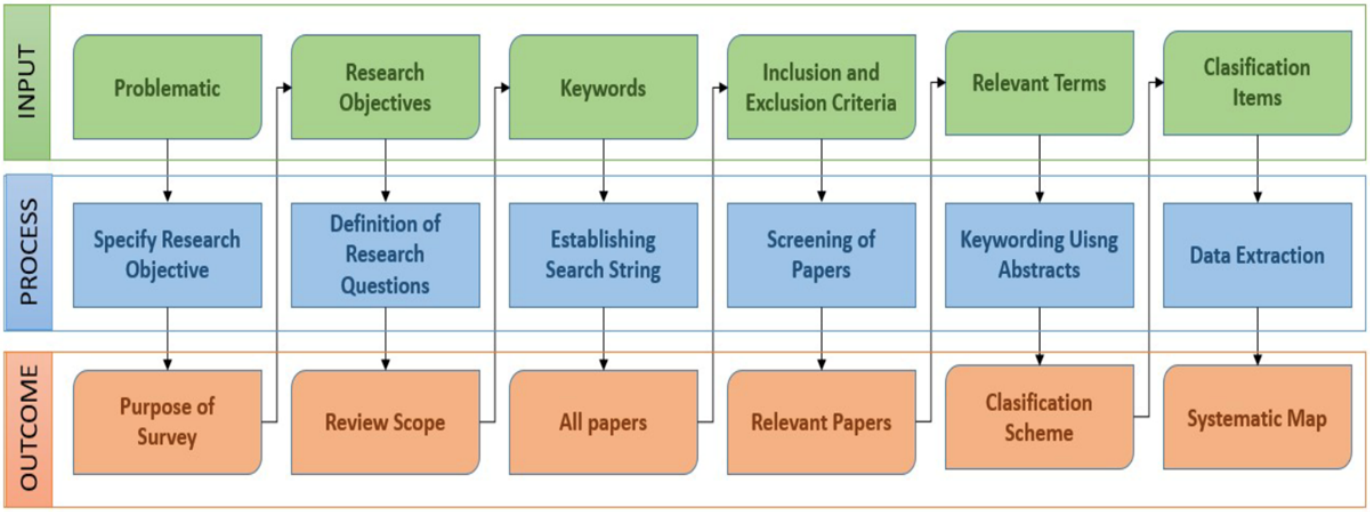

Figure 1. Stages of the systematic mapping process, adapted from [22].

3.1. Goal and Research Questions

This systematic mapping sought to examine and categorize the strategies and policies predominantly utilized over the past five years to diminish the gender gap (since 2017). It also aimed to document how these practices can be implemented in higher education classrooms to advance sustainable education as proposed by the 2030 SDGs. These initiatives will specifically target the gender gap in policies and strategies within higher education, particularly in STEM fields, taking into account both pedagogical and research aspects.

According to the Methodology of a systematic mapping, the research questions were first developed, which constitute the central foundation of the mapping by providing an overview of the specific area [21].

Table 1 presents the research questions and their rationale. These questions guided the selection and classification of the information found.

Table 1. Research questions.

Question	Objective
RQ1: Is it possible to generally identify initiatives and strategies to reduce the gender gap that contributes to sustainable development?	Recognize and generically identify current initiatives and strategies to reduce the gender gap or inequality.
RQ2: Is it possible to identify policies and strategies to reduce the gender gap in higher or tertiary education that contribute to sustainable development?	Recognize and identify policies and strategies focused on higher education to reduce the gender gap.
RQ3: Is it possible to identify good practices in pedagogy or teaching with a gender perspective to achieve Objectives 4 and 5 of the 2030 Agenda?	Recognize and identify pedagogical or teaching practices to achieve Objectives 4 and 5 of the 2030 Agenda.

3.2. Data Sources and Keywords

The search for the most comprehensive literature on the research topic was systematically conducted in the following databases: WoS, Scopus, IEEE, and ACM. The review encompassed studies published in about five years, covering from 2017 to 2023. A combination of keywords related to "Higher Education", "Tertiary Education", "Policies", "Strategies", "Projects", "Initiatives", "STEM", "Gender Gap", "Gender Equality", "Gender Inequality", "Gender-sensitive Pedagogy", "Gender-sensitive Teaching", "Gender-sensitive Research", "Goal 5", and "SDG 5" was used. Keywords were searched for in the follow-

ing order: abstract, title, and then the keywords in the selected articles as long as they were available.

3.3. Search String

To create a search string, keywords were extracted from the research questions and objectives and connected using logical operators. This search string was utilized in the search engines and verified by the researchers. The final string was the following:

("Gender Gap" OR "Gender Equality" OR "Gender Inequality") AND ("Policies" OR "Strategies" OR "Projects" OR "Initiatives") AND ("Tertiary Education" OR "Higher Education") AND ("STEM" OR "Gender-sensitive Pedagogy" OR "Gender-sensitive Teaching" OR "Gender-sensitive Research" OR "Goal 5" OR "SDG 5").

3.4. Data Extraction

Searching and extracting data included using databases and websites that provide access to digital libraries. These platforms were selected for their ability to perform searches using tailored search strings, allowing for the retrieval of many pertinent papers. The selected data sources included WoS, Scopus, IEEE, and ACM.

3.5. Inclusion and Exclusion Criteria

The studies found through the academic search engines mentioned earlier were selected based on the following inclusion/exclusion criteria.

The inclusion criteria included the following:

- Papers in English.
- Journals and conferences.
- Full papers.

The exclusion criteria included the following:

- Technical reports, abstracts, editors' comments, state-of-the-art reviews.
- Studies before 2017.
- Documents that do not reflect higher education environments.

3.6. Search Execution

The sources were chosen utilizing the search string, resulting in an initial collection of 341 papers (refer to Table 2). The data were gathered using the export functionalities provided by each digital library. After a search to eliminate the papers that were doubly indexed, it was found that it was possible to reduce the number because there was duplicity, and 252 papers were retained; after filters 1 and 2, 183 articles were selected for analysis.

Table 2. Electronic data sources considered.

Electronic Data Sources	URL	Resources
Web of Sciences	www.webofknowledge.com (accessed on 25 March 2024)	34
SCOPUS	www.scopus.com (accessed on 25 March 2024)	94
IEEE	ieeexplore.ieee.org (accessed on 25 March 2024)	28
ACM	www.acm.org (accessed on 25 March 2024)	185

Initially, duplicates were eliminated from the 341 papers, reducing the count to 252. Subsequently, reviewing the titles based on the inclusion/exclusion criteria narrowed the number to 183 papers. These papers were then reviewed based on their abstracts, confirming the selection of the same 183 papers, as the process was complete. (Refer to the

summary in Figure 2). The complete list of selected articles is available in Appendix A, Table A1.

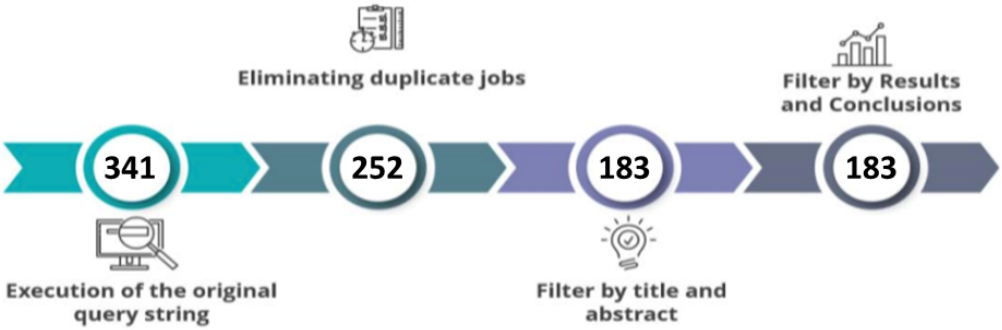

Figure 2. Consolidation of selected publications.

3.7. Classification Scheme

Publications were categorized across three dimensions: temporal, database type, and content (keywords). The temporal dimension organized the papers based on their publication year, focusing primarily on the past five years, covering from 2017 to 2023. This also included a selection of articles from preceding years, identified through a snowballing process applied to the items selected in earlier steps.

The database type dimension pertains to the publication's origin or source. Regarding the content dimension, the focus is primarily on categorizing topics relevant to the gender gap. This includes policies and strategies implemented to reduce the gap, as well as projects and initiatives connected to higher education in STEM fields ans aspects related to gender-sensitive pedagogy and research. Additionally, this dimension aligns with Goal 5 of the 2030 Agenda.

3.8. Map Development

The outcome of the systematic mapping phase was the creation of a map designed to aid in representation and analysis. Subsequent sections will detail and analyze each of the graphs derived from this study.

4. Results

This section is structured with subheadings for clarity, aiming to provide a concise and precise representation of the experimental results along with their interpretation. Additionally, it will delineate the experimental conclusions drawn from these findings.

Figure 3 displays the classification of papers based on pertinent keywords or items. The right side of the figure presents the categorization of publications by year range. It is important to note that some articles address multiple topics illustrated in the graph, resulting in them being counted more than once. Table 3 shows in more detail how the topics are distributed in the articles.

It should be noted that articles before 2017 were grouped into a single classification to facilitate visualization. If individual years of publication were considered, the graph would expand too much. In addition, this graph seeks to show the evolution of the topics considered in the most recent years.

In this context, a considerable increase in the number of articles published from 2019 onward can be seen. The topics that presented the most significant increases in publications are gender gap or gender equality, associated policies or initiatives, and STEM and tertiary education or higher education.

On the other hand, the topics associated with gender sensitivity in the context of pedagogy, teaching, or research, as well as proposals that consider SDG 5, do not present a significant variation concerning previous years.

Table 3. Papers encompassing multiple categories.

Cases	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Total
One thematic area	✓	-	-	-	-	-	-	-	3
	-	-	-	✓	-	-	-	-	5
	-	-	-	-	✓	-	-	-	4
	-	-	-	-	-	-	✓	-	1
Two thematic areas	✓	-	✓	-	-	-	-	-	2
	✓	-	-	✓	-	-	-	-	5
	✓	-	-	-	✓	-	-	-	13
	✓	-	-	-	-	✓	-	-	1
	-	✓	-	-	✓	-	-	-	6
	-	-	✓	-	✓	-	-	-	4
	-	-	-	✓	✓	-	-	-	5
	-	-	-	✓	-	-	-	✓	1
Three thematic areas	✓	✓	-	✓	-	-	-	-	5
	✓	✓	-	-	✓	-	-	-	2
	✓	-	✓	✓	-	-	-	-	2
	✓	-	✓	-	✓	-	-	-	5
	✓	-	-	✓	✓	-	-	-	8
	✓	-	-	-	✓	✓	-	-	1
	✓	-	-	-	✓	-	✓	-	3
	✓	-	-	-	-	✓	✓	-	1
	-	✓	✓	-	✓	-	-	-	1
	-	✓	-	✓	✓	-	-	-	8
	-	✓	-	✓	-	-	-	✓	1
	-	✓	-	-	✓	✓	-	-	1
	-	-	✓	✓	✓	-	-	-	8
	-	-	✓	✓	-	-	✓	-	1
	-	-	-	✓	-	✓	✓	-	1
	-	-	-	-	✓	✓	✓	-	3
Four thematic areas	✓	✓	✓	✓	-	-	-	-	1
	✓	✓	✓	-	-	-	-	✓	1
	✓	✓	-	✓	✓	-	-	-	26
	✓	✓	-	✓	-	-	-	✓	6
	✓	✓	-	-	✓	-	-	✓	1
	✓	-	✓	✓	✓	-	-	-	11
	✓	-	✓	✓	-	-	-	✓	2
	✓	-	-	✓	✓	-	-	✓	1
	✓	-	-	-	✓	✓	✓	-	3
	-	✓	✓	✓	✓	-	-	-	2
	-	✓	✓	✓	-	-	✓	-	1
	-	✓	✓	✓	-	-	-	✓	1
	-	✓	-	✓	-	✓	✓	-	1
	-	-	✓	-	✓	✓	✓	-	1
	-	-	-	✓	✓	✓	✓	-	1
Five thematic areas	✓	✓	✓	✓	✓	-	-	-	15
	✓	-	-	✓	✓	✓	✓	-	3
	-	✓	✓	✓	✓	-	✓	-	1
Six thematic areas	✓	✓	✓	✓	-	✓	✓	-	1
	✓	-	✓	✓	✓	✓	✓	-	3
Total	125	81	63	126	140	21	25	14	

(1) Gender Gap or Gender Equality. (2) Policies or Strategies. (3) Projects or Initiatives. (4) Tertiary Education or Higher Education. (5) STEM. (6) Gender-Sensitive Pedagogy or Gender-Sensitive Teaching. (7) Gender-Sensitive Research. (8) Goal 5 or SDG 5.

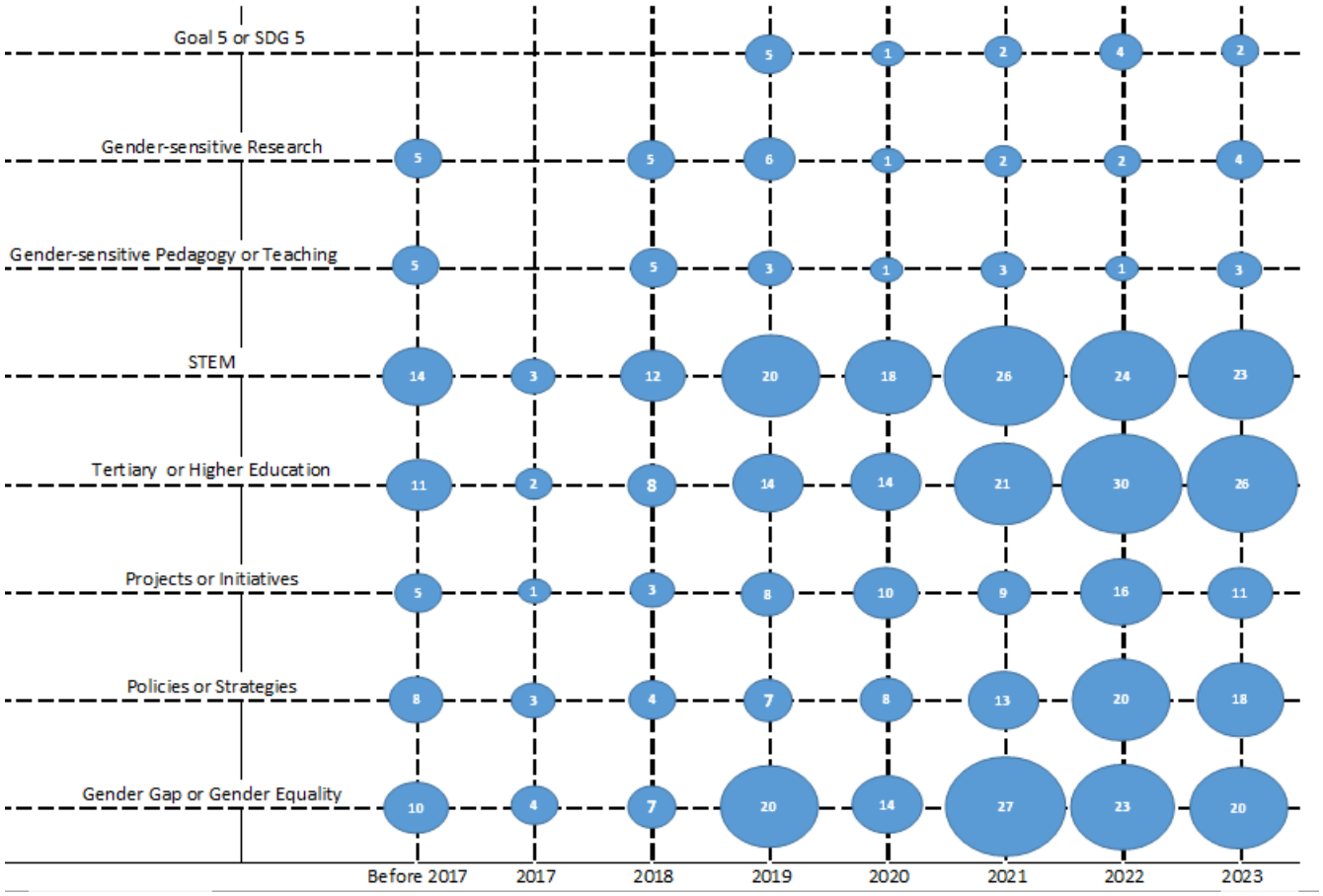

Figure 3. Bubble map.

The table illustrates that the majority of the analyzed works encompass more than one thematic area. The highest concentrations of works are observed in three and four thematic areas, with 52 and 58 works, respectively. Moreover, the thematic areas most frequently addressed in the works are STEM (140 papers), tertiary education or higher education (126 papers), and gender gap or gender equality (125 papers). Conversely, the least addressed topics include gender-sensitive research (25 papers) and Goal 5 or SDG 5 (14 papers).

Out of the total (each concept relative to the 183 selected articles), when analyzed concerning the topics covered in this study, the following findings were observed: 125 for gender gap or gender equality, 81 for policies or strategies, 63 for projects or initiatives, 126 for tertiary education or higher education, 140 for STEM, 21 for gender-sensitive pedagogy or gender-sensitive, 25 for teaching gender-sensitive research, and 14 for Goal 5 or SDG 5.

The classification is not one-to-one, as some of the works encompass multiple of the analyzed concepts. Consequently, the total sum of these classifications surpasses the overall count of 183 publications.

4.1. Overall Results

Regarding categorizing the 183 publications, the number of publications per year can be identified, as illustrated in Figure 4.

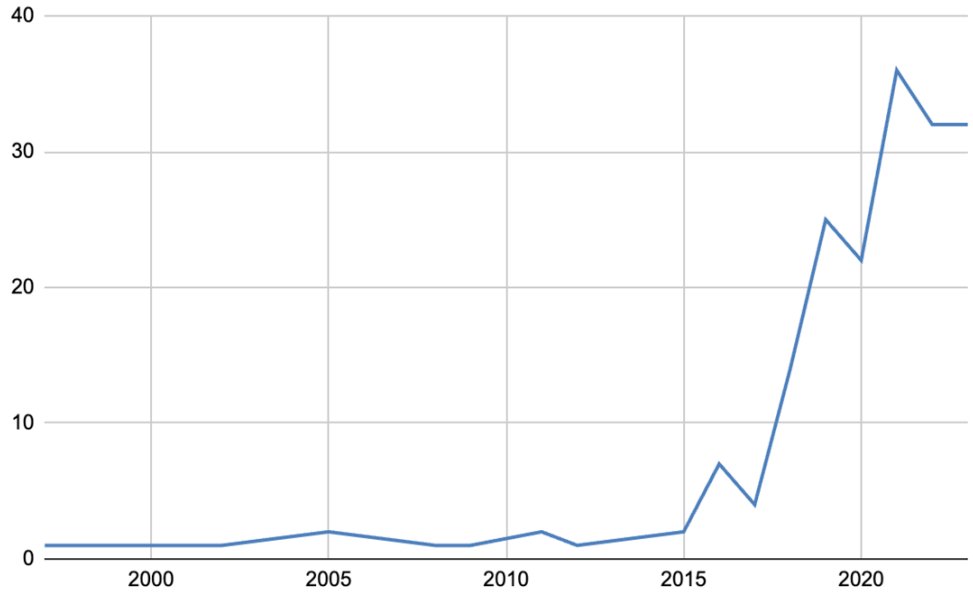

Figure 4. Number of articles per year of publication.

Concerning the classifications of the 183 publications, the distribution by publication category, in terms of percentage, can be seen as depicted in Figure 5.

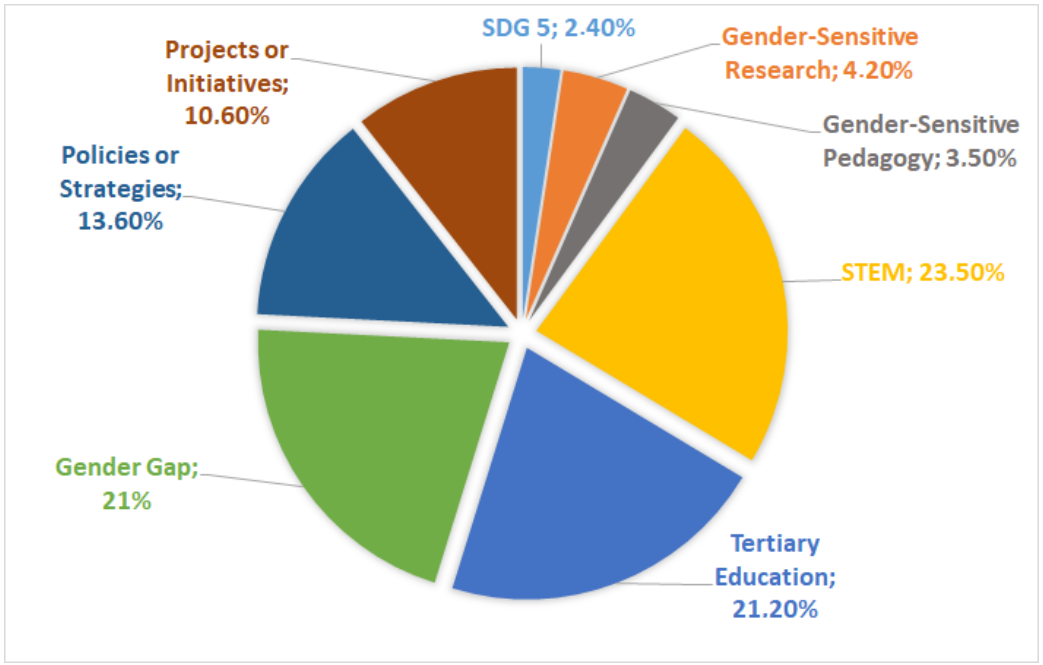

Figure 5. Number of publications by category.

The graphs indicate that the subject matter of this study has become increasingly relevant and has gained significant momentum since 2018. This research aimed to showcase various initiatives. Ultimately, it will emphasize noteworthy initiatives, strategies, and projects in higher education. This includes considering policies, laws, teaching, and research focusing on gender.

4.2. Results Aligned with the Research Questions

Results for RQ1: Is it possible to generally identify initiatives and strategies to reduce the gender gap that contributes to sustainable development?

Three keywords of the papers on the topic were analyzed to answer this research question (policies or strategies, projects or initiatives, gender gap or gender equality). This yielded a total of 269 hits for each. Table 4 shows the articles dealing with the topics analyzed under this research question.

Table 4. Articles by topic for RQ1.

Topics	References
Gender Gap or Gender Equality	[23–29], [2,3,6,7,9,11,30–127], [128–130], [131–141]
Policies or Strategies	[2,3,6–9,11,23–25,27–42,45,46,49–52,54–57,59,61–63,65,69, 70,72,73,76–78,81,83,102,104,133–136,138,139,141–163]
Projects or Initiatives	[2,6–9,11,25–28,35,38,43,44,48,53,58,60,61,66,69,71,74,77, 79,83,86–88,90,93,96,104,109,112,114,116,119,120,133,135, 137,139,140,147,150,157,158,163–177]

Regarding sustainable development for education and equality, the gender gap implies unequal access between women and men to resources, well-being, power, and benefits, manifested in every one of the objectives of sustainable development. Progress in eliminating it works as a catalyst for sustainability, and all goals must include gender indicators, which is far from reality [178]. We provide below a list of the most notable cases along with descriptions of the publications that characterize the initiatives that contribute to this research:

1. Studies in Kenya, Rwanda, and Uganda show a disconnect between stated policy objectives and actual student outcomes, which limits institutional success and economic development. Despite having policies, they need to be more consistent [38]. A study for a Latin American university indicates that creating more scientific and academic spaces and projects involving women in science is necessary; countries should emphasize this to improve their scientific competence [9].
2. The selected articles mention the W-STEM project, which works to reduce the gender gap in STEM fields in Latin America. This project works based on possible actions, policies, and strategies that universities could develop to reduce the mentioned gap in higher education [25]. It has been shown that female participation in STEM is decreasing at all educational stages. In Ireland, the focus is on initiatives for addressing the gender gap in the early years through to the end of secondary education (18/19 years). However, this strategy in higher education is limited, and gender equality policies are mainly directed at staff and the institution in general [28]. On the other hand, it can be recommended that the capability approach (CA) helps analyze gender inequalities in higher education, and it has also been used to examine the impact of the crisis on specific groups and situations [35].
3. Among the studies examined, they highlight significant initiatives designed to address key actions, such as establishing centers of excellence for gender equality and implementing affirmative measures to correct the gender imbalance in the upper echelons of Ireland's higher education system [69]. Another chapter in the study provides an in-depth review of the gender equality strategies and policies of Ireland's foremost research funding organizations, Science Foundation Ireland (SFI) and the Irish Research Council (IRC) [69].
4. The W-STEM (Women in STEM) project, a collaborative effort between Europe and Latin America, was initiated to address gender disparities in STEM fields. This project has led to developing a model aimed at modernizing the governance, management, and functioning of higher education institutions in Latin America. The primary goal is to enhance women's attraction, access, and retention in STEM programs. This model has been rigorously implemented in eleven institutions across Chile, Colombia, Costa Rica, Ecuador, and Mexico, encompassing both public and private institutions with varying levels of gender equality [9].

5. Finally, it is worth mentioning the Make a Lab project, which aims to address the significant gender gap in STEM subjects. A key target of this project is to ensure that at least 70% of the participants in its activities are women. The project seeks to foster interest in science and technology among high school students by employing creative, experimental, and exploratory methods [11].

Figure 6 presents a word cloud for RQ1. This illustrates the initiatives linked to the results of the research question. The form is random and only aims to show a consolidated concept that resulted from the analysis of the associated research question.

Figure 6. Word cloud linked to the outcomes related to RQ1.

Results for RQ2: Is it possible to identify policies and strategies to reduce the gender gap in higher or tertiary education that contribute to sustainable development?

Two keywords in the papers on the topic were analyzed to answer this research question (higher education or tertiary education; STEM). This yielded a total of 266 hits for each. Table 5 shows the articles dealing with the topics analyzed under this research question.

Table 5. Articles by topic for RQ2.

Topics	References
Tertiary Education or Higher Education	[2,3,6–9,11,23–25,28–45,47–63,65,66,68–70,72–75,77–81,83,85,86,88,92–94,96,98,99,102–104,106,108–110,115–117,119–121,126,133–136,138–140,142–147,149,150,152,158–161,163,164,166–169,173–175,177,179–191]
STEM	[2,6–11,25,26,28,29,31,33–43,45–58,61–69,71,72,74–80,82–99,101,104,105,111,114,117–128,131,132,134–136,140–145,148–157,160–176,179,180,186,188,189,191–197]

We present a compilation of the most significant cases, accompanied by descriptions of publications that illustrate the initiatives contributing to this research:

1. In a policy study about the research question, one study indicates that the findings confirm a disconnect between stated policy goals and actual student outcomes, which limits institutional success and economic development [38]. One of the studies on higher education indicates that social and cultural elements influence the perception of achievements that men and women develop in thinking and problem solving [9], which is of utmost importance for designing gender-sensitive curricula.

2. The Agency for the Quality of the University System of Catalonia (AQU Catalunya) initiated a mandate for the integration of the gender perspective in all tertiary education and master's programs in Catalonia by 2021 [2]. To adhere to this mandate and foster a culture of equity and equal opportunities for women, the Universitat Politècnica de Catalunya (UPC) implemented various projects within its community. One notable project, led by the Gender Equality Commission of the Barcelona School of Nautical Studies, involves creating a web platform that provides resources for faculty to integrate this cross-cutting gender perspective competence into the nautical, marine, and naval engineering syllabi [2]. Additionally, the previously mentioned W-STEM project notably includes a self-evaluation tool for gender equality in higher education institutions in Latin America, a protocol for interviewing female role models, and a mobile application to showcase these role models [7].
3. Gonzalez highlighted that developing and applying various tools, such as questionnaires, canvas models, and rubrics, is feasible. These instruments can be used for self-assessment and restructuring curricula, content, practices, specific learning outcomes, and methods. They also aid in creating balanced learning environments regarding gender and sex, promoting equity within the sphere of higher education [8]. Similarly, initiatives like developing guides by the University Network "Vives" for university teaching in Spain focus on various aspects such as objectives, content, evaluation, learning environments, organizational methods, teaching techniques, and didactic resources. They aim to bring visibility to women scientists within the discipline and counteract the androcentric perspective prevalent in sciences and engineering [150].
4. The University of Basque Country stands out for its defined objectives to address sustainability [198], which include the following: (1) train expert teachers in sustainability, as well as in conceptual and methodological approaches; (2) offer basic training on sustainable development to undergraduate and postgraduate students, with the possibility of expanding it to other actors external to the university, such as managers, among others; (3) develop teaching material on sustainable development aimed specifically at the university environment, including publications and interactive online programs; (4) produce teaching material on sustainable development aimed at dissemination in society in general, through publications and interactive online programs. Regarding the learning methodology, the importance of practice being a fundamental part of the educational process is emphasized. The aim is for learning to be based on experiences and actions closely related to reality, both at a global and local level.
5. Finally, it should be noted that despite having policies in place at universities, these policies apply primarily to staff hired by the university. One of the studies indicates that, before entering university, participants had a high self-concept and interest in STEM; however, the research found that unconscious gender bias in the university made female students feel undervalued by their male peers [28].

Figure 7, displaying the Word Cloud for RQ2, illustrates the initiatives linked to the results of the research question. The form is random and only aims to show a consolidated concept that resulted from the analysis of the associated research question.

Results for RQ3: Is it possible to identify good practices in pedagogy or teaching with a gender perspective to achieve Objectives 4 and 5 of the 2030 Agenda?

Three keywords of the papers on the topic were analyzed to answer this research question (Goal 5 or SDG 5; gender-sensitive pedagogy or gender-sensitive teaching; gender-sensitive research). This yielded a total of 60 hits for each. Table 6 shows the articles dealing with the topics analyzed under this research question.

Figure 7. Word cloud linked to outcomes related to RQ2.

Table 6. Articles by topic for RQ3.

Topics	References
Gender-sensitive Pedagogy or Gender-sensitive Teaching	[10,117–123,126,129,130,132,139,140,159,162,176,187,191,192,195]
Gender-sensitive Research	[10,117–127,129,139,140,158,159,163,176,177,187,191,192,195,199]
Goal 5 or SDG 5	[3,27,32,44,47,59,60,70,73,76,81,146,147,190]

We provide a detailed list of the most exemplary cases, along with descriptions of the publications that highlight the initiatives contributing to this research, as follows:

1. This analysis evaluated selected articles related to the Sustainable Development Goals (SDGs) of the 2030 Agenda, focusing on a content analysis of the sustainability reports from the top 50 global business schools. A study generated a Code Frequency Report emphasizing Goal 4: quality education (concerning scholarships and grant allocation) and Goal 5: gender equality. It explored correlations with the schools' ranking positions, the cost of MBA programs, the percentage of MBA students, and the number of female faculty and board members across various geographical regions, including Europe, the United States, and Asia. The findings indicate that gender equality issues contribute positively to the reputation and legitimacy of top business schools [27]. The study also focused on SDG 5 in developing countries, specifically Vietnam. Despite the introduction of the Gender Equality Law in 2006 by the Vietnamese government, aimed at promoting equal opportunities for women and reducing the 70% Gender Gap Index score in Vietnam, the representation of women in leadership roles across various sectors, including higher education, remains low. The research identified the main obstacles to women's professional advancement: work–life imbalance, perceptions of women leaders by subordinates, social networks, and personal factors. These findings could catalyze achieving the United Nations' Sustainable Development Goal 5 on gender equality in Vietnam, one of the fastest-growing economies in the world [32].
2. Another article investigated, in terms of the development of various activities by academics, the relationship between (1) the target age group, (2) the gender of the participants in activities, and (3) the gender of the leading experts of the activity (the content and the main objective of the activity). The results show that the gender and age of the participants and the gender of the activity-leading experts are associated with the underlined content and the activity goal. The findings show that all these

items are part of patterns and that it is possible to measure implications and their value for informal and non-formal learning communities [195].

3. Similarly, in a study in the field of Artificial Intelligence (AI), where the majority of professionals are men, their experiences shape and dominate the creation of algorithms. As a result, this indicates that to recognize the existence of discriminatory gender biases in algorithms and limit their consequences in the offline world, it is necessary to introduce the gender perspective in these studies. The study focused on analyzing the degree of introducing a gender perspective in AI degrees from the faculty and how to improve the gender competencies of the student body [10].
4. A recent study in the field of computer science examined the outcomes of an intervention involving an innovative interdisciplinary online course on data science. This course was designed to engage girls in computer science and programming, contributing to the broader objective of addressing colony collapse disorder in biology and geoecology. The findings highlight the effectiveness of such programs in generating interest among girls in programming. Additionally, the study revealed significant insights regarding the learning environment. Interestingly, it was found that girls in single-gender classes (SGCs) exhibited a noticeably greater openness to computer-related subjects. Moreover, the intervention elicited more positive responses from girls in SGCs than those in mixed-gender classes (MGCs) [122].
5. Maritime education (MET) also reflects a gender disparity. Data from MET programs, specifically in navigation at the University of Trinidad and Tobago (UTT), show a female-to-male ratio of 1:5 at the tertiary level. This trend is also observed in other Caribbean regions. Consequently, the low enrollment rates of females lead to a similarly low number of female graduates entering the navigation field. This situation calls for considering policies, laws, relevant international instruments, human development reports, and the extent to which the Sustainable Development Goals (SDGs 4 and 5) are implemented. Given the various challenges that the shipping industry faces, excluding women from opportunities in this sector is not viable. Therefore, fostering inclusive education is seen as a vital strategy to promote gender equality and enhance the maritime sector's performance [9].
6. A fascinating study focused on actions for gendered research to determine factors related to the assignment of author order in collaborative publications. The results, after applying interviews, reported metrics of interest for a bibliometric analysis of gender and collaboration in research articles published between 1996 and 2016 in three major HCI and ML conferences: based on the findings, it is recommended to take special care in the allocation of credits in multi-author articles and the interpretation of author order, particularly on how this area affects women [140].
7. The results of a survey aimed at assessing the awareness, attitudes and actions of Thai teachers regarding sustainable education and gender, revealed that the overall average percentages of attitudes (90%) and actions (91%) were higher compared to awareness (69%). It should be noted that the aspects with the lowest scores in the attitude and action categories corresponded to SDG 5 of the 2030 agenda, which focuses on gender equality. The survey also found that pre-service teachers in their second year showed significantly higher levels of awareness than their counterparts in the first, third, fourth, or fifth year of the program. Without a doubt, these aspects are key to achieving SDGs 4 and 5. Curiously, no marked differences were observed between the different types of programs [60].

Figure 8, displaying the Word Cloud for RQ3, illustrates the visual representation of the initiatives linked to the results of the research question. The form is random and only aims to show a consolidated concept resulting from the associated research question analysis.

Figure 8. Word cloud linked to the outcomes related to RQ3.

5. Reflections on the Findings

Based on the information presented in the previous section, the main challenges of the research are discussed, and explaining every detail is not easy since it is impossible to generalize arbitrarily. The cultural aspects of each country mean that each environment has its characteristics of how to promote and implement measures aimed at improving the gender aspect of sustainable education at all levels.

The results of the articles suggest a significant influence on the collective capabilities of change agents within institutions. This impact is mainly due to factors such as insufficient institutional commitment to the SDGs and gender issues and limitations on mobility and restricted social interactions. However, the findings are not lapidary and also highlight positive aspects, particularly the remarkable ability of teams to adapt to challenging future situations such as sustainability [35].

6. Study Limitations

Our aim with this study was to conduct a comprehensive literature review and present a practical case study addressing sustainability aspects in higher education, with a specific focus on devising future strategies related to gender gap issues, policies aimed at reducing the gap, and initiatives within STEM fields of higher education. These initiatives encompass pedagogy, teaching, and research with gender awareness, while also aligning with Goal 4, but primarily Goal 5 of the 2030 Agenda. It is crucial to acknowledge potential limitations of our study, such as the manual selection of scientific articles from databases using search engines. Relying on specific keywords for literature filtering could introduce certain extraction risks, necessitating careful consideration to ensure the reliability of our conclusions. Our methodology focused predominantly on academic publications in English as of 2018, excluding potentially valuable contributions in other languages. This approach led us to obtain articles primarily from academic journals and conferences, emphasizing recent years to maintain the relevance of the information.

However, this method of selecting studies based on their publication date and language might result in biases related to time and geography [200].

7. Case Study: Universidad de La Frontera

In order to complement this bibliographic review study, a real practical case is presented, where you can visualize how several of the measures analyzed are applied in the results of the bibliographic review. In addition, real data are provided on how it is possible to apply and promote the SDGs for the 2030 Agenda. Since 2018, the University of La Frontera—UFRO, has joined 18 other state universities in Chile to form the "Commitment to Sustainable Development" network of the Consortium of State Universities of Chile (CUECH). The main purposes of this network are to promote sustainable development in all areas of institutional management and operation and to become agents of transformation both locally and globally. By signing this commitment, participants reaffirmed their

understanding of the importance of current challenges and are convinced that public higher education must play a fundamental role in building an equitable, inclusive, prosperous, and environmentally regenerative society. On this path toward 2030, the University of La Frontera is committed to being an example and leader in promoting sustainability in all its aspects. The "Declaration of Commitment to the Sustainability of State Universities" presents six priority areas. The first focuses on "Education for Sustainability", with the objective of educating conscious, critical, and committed individuals, who can act as agents of change and lead innovation to transform production and consumption patterns toward sustainable practices. The priority areas are: (1) Education for Sustainability, (2) Research and Innovation with a Sustainable Approach, (3) Sustainable Campus Management, (4) Contribution to Global Sustainable Development, (5) Commitment to Carbon Neutrality, and (6) Networking for Sustainability. Sustainability is part of the university Strategic Development Plan 2030.

7.1. Creation of the Sustainability Policy

Starting from 2017, the University of La Frontera initiated the formulation of strategic directives related to sustainability. The institution understands sustainability as the collective construction through which the community, gradually and consciously, aspires to the possibility that people and their environment prosper in a balanced, inclusive, and efficient manner, considering and safeguarding the availability of resources and the preservation of the environment for future generations [201].

Since 2022, the University of La Frontera has had a Sustainability Policy that provides strategic guidelines on sustainability and the environment for the institution, and is part of interuniversity networks such as the Commitment to Sustainable Development Network, the Sustainable Campus Network, and the MetaRed, Exempt Resolution 2706/2022. The objectives of this policy are three: (1) generate institutional guidelines, strategic orientations, and guidelines to promote sustainability in the work of the university; (2) incorporate the principles of sustainability in the areas of action of the university; (3) promote a sustainable culture in the university community and its territory [201].

Once the Sustainability Policy was approved, the phase of developing corresponding plans, procedures, and instruments began, in collaboration with the relevant academic and administrative units, as well as with the Sustainability Committee, which has triestamental representation and will play a technical role, consultative to guiding decision making in this area. During the first year, a body will be established in charge of defining priorities, responsibilities, deadlines, and resources for the implementation and monitoring of the policy. To obtain feedback during this initial period, a prior analysis was carried out through a voluntary survey directed at the different university levels, composed of 16 questions related to sustainability in various university aspects, which was answered by 642 participants (Citizen Consultation Results). The operation of the policy will be evaluated and updated in a participatory manner every three years, in line with the relevant public policies, institutional policies, and the strategic planning of the university. Management tools will be used to establish a baseline of indicators that allow measuring and evaluating progress in institutional sustainability. This policy is complemented by good practices, laws, and projects associated with the case study in relation to the particular policy to reduce the gender gap within the university at all levels.

In Chile, Law N° 21.369, governing sexual harassment, violence, and gender discrimination in higher education [202], has been enacted. This law mandates that higher education institutions implement comprehensive policies for preventing, investigating, punishing, and eradicating sexual harassment, violence, and gender discrimination. The objective is to establish safe and inclusive environments, ensuring the safety and respect of all individuals, regardless of their sex, gender, sexual identity, and orientation.

According to article 3 of this law, higher education institutions mentioned in article 1 must implement a comprehensive policy to address sexual harassment, violence, and gender discrimination. This policy will include both a prevention model and a sanction

model for such behaviors. This approach has been developed at the University of La Frontera through tri-state commissions and public and participatory processes that involve all sectors of the university community. On 12 August 2021, members were appointed to the commission in charge of preparing the gender policy proposal of the University of La Frontera, and specialized units and specific procedures have also been established in this area. The Gender Equality Directorate at the University of La Frontera was established through Exempt Resolution No. 0813, dated 3 April 2019, which includes an approved organic regulation. Article 7 of this regulation acknowledges the presence of the Advisory Council as an advisory body, outlining its composition and responsibilities. Each appointed member of this council is required to uphold confidentiality by signing an agreement to this effect as a fundamental requirement for their role. In alignment with the above, the university delegated to the institutional Gender Equality Department the task of developing and formulating a proposal for a gender equality and equity policy, as per its functions delineated in article 2, letter a, of Exempt Resolution No. 0813 of 2019. These functions encompass suggesting to the relevant authorities and organizations policies, plans, regulations, and measures aimed at fortifying the institution's efforts to achieve gender equality at the University of La Frontera.

7.2. Creation of the Directorate of Gender Equity (DEG)

The Gender Equality Directorate (DEG), a unit attached to the Rectorate of the University of La Frontera, has the purposes of proposing and managing the application and the execution, monitoring, and constant improvement of the gender approach in the institution. This is carried out in accordance with the guidelines of the Institutional Strategic Plan and current policies and protocols aimed at preventing violence, eliminating arbitrary discrimination and promoting good practices to achieve gender equality in all areas of university activity [203].

The work of the DEG is based on suggesting policies, plans, regulations, and measures to the corresponding authorities and organizations to strengthen the institutional framework and achieve gender equality at the University of La Frontera. In addition, it is responsible for implementing, monitoring and evaluating compliance with the Gender Equality Policy in university activities to guarantee continuous improvement.

In collaboration with the relevant macro-units, it promotes the training, education, and awareness of all members of the university community so that they respect the principles of equality, as well as the dignity and right to privacy and equitable treatment of all people, regardless of their sexual orientation or gender identity and expression. In addition, the management teams of each faculty agree to create gender units to facilitate the coordination and implementation of protocols and actions aimed at raising the awareness, training, education, extension, and continuous development of activities related to gender—this matters. Likewise, through the coordination of studies and the observation, development, and continuous improvement of gender equality, in collaboration with the corresponding institutional units, the generation of knowledge and the implementation of activities and academic content in teaching are promoted, as well as undergraduate and graduate research, linkage, and extension from a gender equity perspective.

The DEG is responsible for carrying out evaluations and reports to design action plans aimed at promoting gender equality in various aspects of university life, such as human and personal resources, undergraduate and graduate teaching, research, and community participation, through its coordination of studies and the observation, development, and continuous improvement of gender equality.

Ultimately, the Gender Equality Directorate (DEG) advocates for policies and actions promoting social responsibility, facilitating the balance between family obligations and the academic and work performances of university community members. This effort aims to diminish gender gaps and foster cultural transformation. Additionally, as part of its responsibilities, the DEG is tasked with representing the University of La Frontera in official institutional contexts, both internally and externally, concerning gender equity matters. It

also works to establish networks and collaboration agreements, both within and outside the institution, to reinforce its gender-focused initiatives.

7.3. Gender Equity Diagnosis

In 2020, the study 'Gender Situation and Relations Diagnosis at the Universidad de La Frontera' began [204]. This study aimed to provide a reference base that will contribute to formulating a gender policy at the university to achieve substantive gender equality within the institution. The study's general objective was to analyze, at a triestamental level, the situation and gender relations present at the university, identifying the gaps, inequalities, and discrimination between men and women in the work, academic, and relational spheres.

The study focused on several thematic areas, including (a) the gender perspective and university management; (b) differences in academic and labor access to resources; (c) hierarchy, leadership, and relational power; (d) widespread discrimination and exclusion; and (e) gender violence. The main findings of the study were the following:

- The institution faces invisible barriers (a glass ceiling) in career paths and authority structures, which is attributed to a combination of individual, organizational, and social factors. However, feminist movements have highlighted gender issues, promoting their inclusion in the institutional agenda.
- There is no institutionalized and agreed-upon vision of gender perspective within the university community. Instead, the concept of gender is perceived as a constitutive element of relationships based on sexual differences, highlighting the need for an institutional gender policy that integrates a gender perspective in all social interaction spaces.
- There is no consensus on how to address the gender perspective in the university community. Instead, the concept of gender is understood primarily as an inherent component of relationships between the sexes, highlighting the urgency of an institutional gender policy that incorporates a gender perspective in all areas of social interaction.
- The study identified cases of sexual, psychological, and symbolic violence within the university. However, the concern lies in the normalization and lack of visibility of these violent situations, which leads to a reluctance to report due to the feeling of impunity or the fear of reprisals that could affect the academic or professional progress of the complainants.
- The conclusions of the diagnosis point out the gaps, inequalities, and gender discrimination present in the UFRO, which have been accepted and transmitted without criticism under patriarchal and androcentric visions. It was observed that, although merit criteria exist, they tend to ignore the unequal conditions faced by women and men.

In summary, the study highlighted the importance of establishing a gender policy at the institutional level that promotes a culture of gender equality and equity at the University of La Frontera.

7.4. Gender Equality and Equity Policy

The main purpose of the policy is to establish strategic guidelines and guidelines to promote a culture of equality and gender equity in all areas of university management and activity. This aligns with article 3 of Law 21,369, which requires the university to implement a comprehensive policy against sexual harassment, violence, and gender discrimination [205].

Based on the established framework, the university commits to the following:

1. Integrate the principles of gender equality and equity transversally in the institutional practices and structures that organize university life.
2. Develop research, undergraduate and postgraduate teaching, community engagement, and knowledge transfer, incorporating a gender perspective and/or gender criteria.

3. Include the co-responsibility and reconciliation of personal, family, work, student, and academic life in the institutional structure. This determination must not affect the respect for the fundamental rights of the university community members, especially their right to privacy, private life, and honor.
4. Incorporate gender criteria in the academic and work conditions for access, permanence, and graduation from the university.
5. Promote balanced gender representation in academic and administrative structures and the university's decision-making unipersonal and collegial bodies.
6. Develop an intercultural gender perspective at the university, particularly considering the Mapuche People.
7. Prevent, eradicate, and sanction the different forms of violence and gender discrimination at the university, including sexual harassment, violence, and gender discrimination.
8. Develop training actions for university community members on gender issues and the repercussions of gender-biased behaviors.

The foundations of the gender equality and equity policy cover the following aspects: gender equity; gender equality; the integration of the gender perspective; the recognition of diverse gender identities, sexual orientations and gender expressions; co-responsibility and the conciliation of personal, family, academic, student, work, and other aspects of people's lives; equitable and protected participation with a gender perspective; and the non-discrimination and prevention of gender violence. All of these principles are based on human rights, interculturality, and inclusion.

7.5. South Austral Macrozone Gender STEM Network Project

In October 2022, four universities in the South Austral Macrozone began a STEM Project aimed at promoting the education and participation of women in scientific careers. The project arose from a pilot plan with the purpose of promoting the education and participation of women in areas of science, technology, engineering and mathematics. This initiative focuses on regional development and technological innovation in the South Austral Macrozone, which covers La Araucanía, Los Lagos, Aysén, and Magallanes (https://deg.ufro.cl/proyecto-stem-genero/ (accessed on 5 June 2024)).

This thematic network proposal seeks to establish a collaboration program between four universities located in the South Austral Macrozone of the country. The objective is to execute an action plan focused on closing the gender gaps identified in areas such as access, education, knowledge generation, and job placement in the STEM field within the region.

This project includes four state universities in the southern part of the country. It collectively encompasses nearly 2 million inhabitants, with variations in the human development index, demographic density, and per capita income. These regions share challenges in strategic regional development guidelines and areas of technological innovation, such as food production (livestock, agriculture, fishing), forestry, energy industry, and emerging mining in the Austral Region. The Regional Development Strategies highlight the challenge of explicitly incorporating the transition of the region toward a knowledge-based society and economy, in addition to strengthening the attraction and retention of advanced human capital, along with the need for stronger articulation between educational institutions, research entities, the public sector, and the private sector.

The project focuses on the articulation of three levels of action in this thematic network proposal. Increasing access opportunities for women in STEM careers by intervening in secondary education (second and fourth year), supporting the educational process through various awareness and promotion initiatives in high schools, and providing tutoring or mentoring.

In the university context, the project aims to support the educational process of female students and strengthen and promote the participation of women in STEM areas through recruitment, promotion, positioning, and productivity, addressing gender barriers. This includes a system of support, inter-university internships, competitive funding,

and affirmative actions to reduce gaps and ultimately contribute to regional development and technological innovation (employability) and the R&D+i+e (research, development, innovation, and entrepreneurship) system, defining areas of technological insertion and innovation and identifying challenges presented by each priority productive sector for STEM professionals and researchers.

7.6. InES Gender Project

In September 2023, the University of La Frontera was awarded the InES Project for Gender Equality in the scientific and technological field. This achievement is another example of the university's commitment to major global issues. The recently awarded project, titled "Gender in Scientific and Technological Culture: Mainstreaming the Gender Perspective in the R&D+i+e Ecosystem of the University of La Frontera," is expected to promote gender equality in this area significantly (https://www.ufro.cl/index.php/noticias/12-destacadas/6695-ufro-se-adjudico-proyecto-ines-para-la-igualdad-de-genero-en-el-ambito-cientifico-tecnologico (accessed on 5 June 2024)).

The plan encompasses three major objectives. The first is the creation of institutional strategies to ensure women's access, development, and leadership in the R&D+i+e ecosystem at the Universidad de La Frontera. The second is to promote the generation of knowledge integrating a gender perspective to strengthen this ecosystem. Thirdly, institutional capacities will be developed to execute and monitor the mainstreaming of the gender perspective from a procedural and normative standpoint.

According to the authorities of this educational institution, this institutional initiative will ensure the continuous promotion of female participation and leadership in R&D+i+e, as well as foster an entrepreneurial culture among postgraduate students. Additionally, and importantly, it will involve setting up an observatory for institutional data in R&D+i+e with a gender perspective, which will aid in making evidence-based decisions for the future.

This project was awarded through the Higher Education Innovation Competition (INES), a competition for projects aimed at developing institutional capacities for innovation based on research and development in higher education. The Ines de Género project has recently implemented affirmative measures, interim actions designed to reduce gender disparity. These measures seek to benefit women as a way to counteract the discrimination they have faced in the past and still face today. Through strategic collaboration, actions will be promoted that cover both institutional policies and individual experiences to mitigate the gender gap in the field of research and scientific culture. This project aims to strengthen institutional capacities at the University of La Frontera to implement and supervise actions to integrate the gender perspective from a procedural and regulatory approach. One of the achievements of this project will be the implementation of a Gender and Science Observatory and the contribution to the strengthening of institutional capacities by supervising initiatives to integrate the gender approach in the research, development, and scientific-technological innovation processes in the institution, from both a procedural and normative perspective.

The Ines Género Team, in collaboration with the Vice-Rector for Research and Postgraduate Studies, has extended an invitation to the inaugural event of the Network of Academics. The network's focus areas include research groups, seminars and workshops, mentoring programs, joint publications, and innovation projects. All project efforts will directly aim to achieve SDGs 4 and 5 of the 2030 Agenda.

7.7. First Congress of Universities and Gender

In 2023, the Gender Equity Directorate of the University of La Frontera, along with the Gender STEM Thematic Network Project and in collaboration with the Gender Equality Commission of the "Council of Rectors of Chilean Universities" (CRUCH, by its acronym in Spanish), organized and conducted the First Gender and Universities Congress on 24–26 October 2023, at the Universidad de La Frontera, Temuco, Chile (https://deg.ufro.cl/wp-content/uploads/2023/06/congreso-genero-universidades.pdf (accessed on 5 June 2024)).

The call was directed to faculty members, researchers, graduates, undergraduate and postgraduate students, members and staff of public and private institutions, civil society organizations, and national and international foundations.

The rationale for this initiative stems from the context in which the country is globally developing and promoting reducing the gender gap in public universities. Universities are not exempt from relationships of domination and hegemonic social models. Thus, it is argued that universities are masculinized, meaning that a patriarchal logic prevails in them, permeating their functions, organizations, and routines. Universities have their own "gender regime," as they express differences between men and women regarding remuneration, recognition, scientific productivity, significant decision making, or access to resources, to name a few. Also, forms of violence toward women, sexual diversities and dissents, and other socially excluded groups are present.

The denunciation of these acts of discrimination and violence was captured under the well-known "feminist tide" that has shaken several university spaces, both inside and outside the Chilean campuses and classrooms. In this particular context, articulations have been produced between these spaces, public and private institutions, and civil society organizations, which deserve and need theoretical and practical reflections to contribute to a more democratic and inclusive society, thereby reinforcing and validating that universities are transformative engines and have a positive impact on their communities and territories.

The main objective of the congress was to promote the exchange of knowledge and practices among university spaces, public and private institutions, and civil society organizations to articulate a more democratic and inclusive society. It aimed to motivate the dissemination of research with theoretical and practical reflections on gender in university spaces and their territory.

The congress focused on the following axes or lines of work:

1. Policies for gender equality in the educational system;
2. Gender and territory;
3. Intersectional violence and trajectories of resistance in the educational context;
4. Care, co-responsibility, and conciliation;
5. Sex and gender diversities and dissidence;
6. Gendered curricula and non-sexist education;
7. Women in STEM and masculinities in educational institutions.

8. Conclusions

The authors for this study analyzed recent publications (since 2007, but mainly from the last five years) that evaluate measures, policies, laws, initiatives, and projects in the case study applied to sustainability in higher education with a focus on the gender gap. This study highlights significant initiatives and a practical case study that demonstrates that it is possible to make consistent and effective progress in promoting and adopting actions for sustainability in higher education, along with reducing the gender gap from various perspectives (students, academics, and university culture). This work makes a significant contribution to the field of research and application of the Sustainable Development Goals, focusing on university education with inclusion, policies, strategies, and a gender approach. This work also looked at how these strategies could be linked to SDGs 4 and 5 of the 2030 Agenda.

The main conclusion drawn from the results obtained through the research questions of this research is the vital importance of active university participation in the treatment of these issues by national and local authorities and the entire university community. Education for sustainability is an evolving concept that implies a new educational perspective. Its objective is to empower individuals of all ages to take responsibility for creating a sustainable future, promoting changes in values, behaviors, and lifestyles [198].

As indicated by UNESCO [18], in response to the results, it is necessary for countries to develop and expand educational activities focused on sustainability issues such as climate change, biodiversity, disaster risk reduction, water, oceans, sustainable urbanization,

and sustainable livelihoods through ESD. UNESCO promotes Global Citizenship Education (GCE) in all areas of study and all aspects of life to equip people with knowledge, skills, and attitudes that foster tolerance, respect, and a sense of belonging to a global community. The ultimate goal is to ensure human rights and promote peace, SDG 4 [206].

According to the results, and if we focus on SDG 5, projects such as the European initiative "Building the future of Latin America: involving women in STEM" (W-STEM) have been fundamental. W-STEM has created a model to update the governance, management, and operational processes of higher education institutions in Latin America. This model was designed to improve the attractiveness, accessibility, and retention of women in STEM programs [61].

As a result, regarding the gender gap, it is important to note that it is not limited to Latin American countries; it is a global challenge. Consequently, the outcomes and strategies developed in the W-STEM project have worldwide applicability, albeit with some minor modifications. This approach is relevant to both public and private institutions, each facing varying conditions in terms of gender equality.

One of the key conclusions drawn from the study results is the identification of statistically significant evidence showing differences in the perceived mastery of complex reasoning competencies between men and women. Specifically, the results indicate that women generally have a higher average perception of attaining systemic and critical thinking skills, while men perceive themselves as better at scientific thinking [9]. This finding is particularly significant for curriculum and subject design, highlighting the potential for incorporating gender-focused approaches in classroom settings.

Unfortunately, one of the conclusions of this study is that, despite the national and international efforts shown by the results, there is a noticeable gap between the stated political goals and the actual achievements of students, which hampers both institutional success and economic development. Furthermore, the analysis of this study highlighted various degrees of commitment to gender equality in political mandates. This discrepancy is a crucial issue that warrants more focused attention and further research [38]. It is necessary to point out that the gender gap continues to be very high in STEM, and according to the analyses, special attention should be paid to technology careers, since the highest gap is in them.

In addition to the results presented in the bibliographic review, this article presents, as an example of good practices, the case of the University of La Frontera as a practical and real case. It is shown that it is possible to promote, within its organizational structure, the development and promotion of policies and initiatives for sustainability and reductions in the gender and inclusion gaps in the university context of a state higher education institution. Thanks to these formal policies and initiatives, it is evident that the university has made significant progress in making the issue visible and promoting a set of activities to advance sustainable education and overcome gender gaps in accordance with SDGs 4 and 5 of the 2030 Agenda.

An instance of this effort is the establishment of collaborative work environments for crafting and assessing policies, alongside fostering their endorsement, thereby encouraging engagement and involvement in significant nationally funded projects. Moreover, initiatives have been undertaken to foster networking and organize events addressing sustainability in higher education and the gender gap, exemplified by the inaugural university conference on gender.

Based on the aforementioned, the University of La Frontera serves as a practical example, showcasing its commitment to spearheading a transition toward a more sustainable future. Recognizing the magnitude of this endeavor, the university underscores its belief that public higher education plays a pivotal role in forging a fair, inclusive, prosperous, and environmentally regenerative society. In this pursuit, the university is dedicated to setting an example and assuming leadership in advancing sustainability across all dimensions, thereby contributing to the realization of the Sustainable Development Goals outlined in the 2030 Agenda. In conclusion and as a recommendation from the results of this study, it

is clear that greater efforts must be made to promote sustainability with a focus on gender diversity: addressing it as a human resources issue to promote dialogue among broader audiences, such as national engineering societies [6]. This action makes a lot of sense since putting these issues on the table of managers and in the general consciousness of an institution provides "visibility" and, in some way, creates a collective awareness of their importance.

Author Contributions: A.B.-M. contributed to structuring and directing the systematic mapping, involving themselves in the study, analysis, and presentation of the case study, and contributing to the article's writing. M.D.-R. collaborated in planning the systematic mapping and the writing and formatting of the text. Meanwhile, Y.H., Y.V. and E.V. enhanced the work with their methodological support, expert perspectives, and the creation of graphics and tables. All authors have read and agreed to the published version of the manuscript.

Funding: Universidad de La Frontera, Project PEG23-0007, funded this research.

Data Availability Statement: Data are contained within the article.

Acknowledgments: The authors express their gratitude to all those involved in this study, especially to the Research Department of the University of La Frontera, which supported the development of this article through Project PEG23-0007. The authors' gratitude is also extended to the American University of Europe and its PhD program in computer science.

Conflicts of Interest: The authors state that there are no conflicts of interest.

Appendix A

Table A1. Articles used to Analysis and Results of systematic mapping.

Num.	Title	Cite	Year
1	A structured review of reasons for the underrepresentation of women in computing	[131]	1996
2	Parents' and students' satisfaction with the use of information technology in government schools in Queensland, Australia	[196]	2002
3	Successful international initiatives promoting gender equity in engineering	[6]	2005
4	Women, ICT and the information society: global perspectives and initiatives	[176]	2005
5	ADDRESSING THE GENDER GAP: A TEACHING AND LEARNING STRATEGY IN UNDERGRADUATE SCIENCE COURSES	[85]	2008
6	University Leaders and the Public Agenda: Talking About Women and Diversity in STEM Fields	[67]	2009
7	The STARS Alliance: Viable Strategies for Broadening Participation in Computing	[194]	2011
8	Engaging Women in Computer Science and Engineering: Promising Practices for Promoting Gender Equity in Undergraduate Research Experiences	[135]	2011
9	Underrepresented groups in gender and STEM: the case of black males in CISE	[121]	2012
10	Mentoring for women starting a PhD: a "free zone" into academic identity	[56]	2015
11	Encouraging Women to Become CS Teachers	[159]	2015
12	The leadership role of college deans and department chairs in academic culture change	[39]	2016
13	Women planning to major in computer science: Who are they and what makes them unique?	[84]	2016
14	The Internet of Women sm Accelerating Culture Change	[154]	2016
15	Gender and Performance in Computer Science	[106]	2016
16	Investigating Factors Influencing Students' Intention to Dropout Computer Science Studies	[183]	2016
17	Advancing Diversity and Inclusivity in STEM Education	[156]	2016
18	Gender Equity in Computing: International Faculty Perceptions and Current Practices	[120]	2016
19	Organizational Patterns for Increasing Gender Diversity in Computer Science Education	[161]	2016
20	Organized Advocacy for Professional Women in Computing: Comparing Histories of the AWC and ACM–W	[137]	2016

Table A1. *Cont.*

Num.	Title	Cite	Year
21	Solving a Career Equation: The First Doctoral Women in Computer Science	[163]	2016
22	Latin American Perspectives to Internationalize Undergraduate Information Technology Education	[139]	2016
23	Towards Equal Opportunities in MOOCs: Affirmation Reduces Gender & Social-Class Achievement Gaps in China	[133]	2017
24	FollowBias: supporting behavior change toward gender equality by networked gatekeepers on social media	[141]	2017
25	Looking Beyond Academic Performance: The Influence of Instructor Gender on Student Motivation in STEM Fields	[64]	2018
26	Patterns of gender parity in the humanities and STEM programs: The trajectory under the expanded higher education system	[68]	2018
27	Attraction and retention of women in engineering	[153]	2018
28	Towards gender equality in software engineering: The NSA approach	[92]	2018
29	Gender gap in the STEM sector in pre and university studies of Europe associated with ethnic factors	[99]	2018
30	Reinforcing gender equality by analysing female teenagers' performances in coding activities: A l esson learned	[155]	2018
31	How do Gender, Learning Goals, and Forum Participation Predict Persistence in a Computer Science MOOC?	[110]	2018
32	Barriers to gender diversity in software development education: actionable insights from a danish case study	[117]	2018
33	The Role of Historically Black Colleges and Universities in American STEM Education	[188]	2018
34	The Unexpected Entry and Exodus of Women in Computing and HCI in India	[192]	2018
35	Challenges and lessons learned by applying living labs in gender and IT contexts	[191]	2018
36	Using Social Cognitive Career Theory to Understand Why Students Choose to Study Computer Science	[162]	2018
37	Understanding Gender Equity in Author Order Assignment	[140]	2018
38	Acciones, políticas y estrategias para el balance de género en el ámbito STEM: Resultados de una dinámica World Café	[25]	2019
39	Gender Equality and UN Sustainable Development Goals: Priorities and Correlations in the Top Business Schools' Communication and Legitimation Strategies	[27]	2019
40	Forging ahead: leveraging inclusive and equitable education to bridge the gender gap in the Caribbean	[3]	2019
41	Sustainability awareness, attitudes and actions: A survey of pre-service teachers	[44]	2019
42	Sustainable development goals in mining	[47]	2019
43	World-Class Universities and Female Leadership in the Academic Profession: Case Studies of East Asian Higher Education	[51]	2019
44	Gender and Education at Makerere University, Uganda	[76]	2019
45	Higher education and science: problems of gender equality	[80]	2019
46	Engaging women into STEM in Latin America: W-STEM project	[7]	2019
47	Trends in studies developed in Europe focused on the gender gap in STEM	[93]	2019
48	Analysis of instruments focused on gender gap in STEM education	[95]	2019
49	Bridging the diversity gap in STEM	[104]	2019
50	Gender balance in computer science and engineering in Italian universities	[109]	2019
51	The Underrepresentation of Women in the Software Industry: Thoughts from Career-Changing Women	[113]	2019
52	Increasing gender diversity in STEM: A tool for raising awareness of the engineering profession	[186]	2019
53	Investigating the Role Choice of Female Students in a Software Engineering Team Project	[174]	2019
54	Multiplatform MOOC Analytics: Comparing Global and Regional Patterns in edX and Edraak	[189]	2019
55	The role of age and gender on implementing informal and non-formal science learning activities for children	[195]	2019
56	Psychologically Inclusive Design: Cues Impact Women's Participation in STEM Education	[123]	2019
57	Implicit Gender Biases in Professional Software Development: An Empirical Study	[124]	2019
58	Countering the negative image of women in computing	[125]	2019
59	Factors influencing women entering the software development field through coding bootcamps vs. computer science bachelor's degrees	[126]	2019
60	An Investigation of Gender Differences in Computer Science Using Physiological, Psychological and Behavioural Metrics	[127]	2019
61	RoboSTEAM—A Challenge Based Learning Approach for integrating STEAM and develop Computational Thinking	[197]	2019
62	A Case Study About Gender Issues in a Game Jam	[128]	2019
63	European Proposals to Work in the Gender Gap in STEM: A Systematic Analysis	[26]	2020

Table A1. *Cont.*

Num.	Title	Cite	Year
64	Women leadership in Vietnamese higher education institutions: An exploratory study on barriers and enablers for career enhancement	[32]	2020
65	Gender, achievement, and subject choice in English education	[37]	2020
66	STEM: A help or a hinderance in attracting more girls to engineering?	[165]	2020
67	Gender equality and ICT in the context of formal education: A systematic review	[50]	2020
68	Gender equality in STEM programs: A proposal to analyse the situation of a university about the gender gap	[63]	2020
69	Looking into the Educational Mirror: Why Computation Is Hardly Being Taught in the Social Sciences, and What to Do About It	[170]	2020
70	Interviews of Spanish women in STEM: A multimedia analysis about their experiences	[65]	2020
71	Towards increasing of STEM-women professionals by implementing projects that reduce the gender gap: a study case in Universidad de Guadalajara	[71]	2020
72	Facilitating Access to the Role Models of Women in STEM: W-STEM Mobile App	[171]	2020
73	Participation of Women in STEM Higher Education Programs in Latin America: The Issue of Inequality	[77]	2020
74	Strategies to introduce gender perspective in Engineering studies: A proposal based on self-diagnosis	[8]	2020
75	Female Computer Scientists Needed: Approaches For Closing The Gender Gap	[86]	2020
76	Initiative to Increment the number of Women in STEM Degrees: Women, Science and Technology Chair of the Public University of Navarre	[87]	2020
77	A Comparative Study on the Support in Engineering Courses: A Case Study in Brazil and Spain	[91]	2020
78	Work-in-Progress: Encouraging Girls in Science, Engineering and Information Technology	[180]	2020
79	E-learning Material on Gender Equality in Information System Professions	[94]	2020
80	The Gender Gap broad the path for Women in STEM	[97]	2020
81	Pilot study on university students' opinion about STEM studies at higher education	[98]	2020
82	SAperI: Approaching gender gap using Spatial Ability training week in high-school context	[100]	2020
83	Is helping to bridge the gender gap in STEM considered as transfer of knowledge?: Transfer of Knowledge in STEM	[101]	2020
84	Bridging the diversity gap: Actions and experiences fostering diversity in STEM	[105]	2020
85	Sense of Belonging: The Intersectionality of Self-Identified Minority Status and Gender in Undergraduate Computer Science Students	[185]	2020
86	What prevents finnish women from applying to software engineering roles?: A preliminary analysis of survey data	[115]	2020
87	Political-pedagogical contributions to participatory design from Paulo Freire	[187]	2020
88	The ATHENA European University model for Sustainable Education: Mainstreaming good practices for all-inclusive life-long sustainable learning in the digital era	[175]	2020
89	Gender perspective in Artificial Intelligence (AI)	[10]	2020
90	Promoting Diversity-Inclusive Computer Science Pedagogies: A Multidimensional Perspective	[157]	2020
91	Tenacity of gender inequality in south africa: A higher education perspective.	[24]	2021
92	Introducing and Evaluating the Effective Inclusion of Gender Dimension in STEM Higher Education	[29]	2021
93	Two Perspectives on the Gender Gap in Computer Engineering: From Secondary School to Higher Education	[31]	2021
94	How culture, institutions, and individuals shape the evolving gender gap in science and mathematics: An equity provocation for the scientific community	[40]	2021
95	Institutional betrayal and sexual harassment in STEM institutions: Evidence from science and technology universities of Ethiopia	[41]	2021
96	'I don't Study Physics Anymore': A Cross-Institutional Australian Study on Factors Impacting the Persistence of Undergraduate Science Students	[166]	2021
97	Halloween Educational Robotics	[167]	2021
98	Analyzing Enrollment in Information & Communication Technology Programs and Use of Social Networks Based on Gender.	[46]	2021
99	Centro De Pensamiento Para El Fortalecimiento Del Liderazgo Y Empoderamiento De La Mujer Colombiana En STEM	[54]	2021
100	Women in Engineering: Developing Entrepreneurial Intention through Learning by Doing Approach	[55]	2021
101	Higher Education For Sustainability: A Global Perspective	[59]	2021
102	Competency assessment and learning results in tourism internships: is gender a relevant factor?	[60]	2021
103	Educational initiatives for bridging the diversity gap in STEM	[169]	2021
104	Reflections on women in internationalization	[146]	2021
105	Women's Motivation to Mentor Young Women Students in STEM Areas: A Study Case in Mexico	[66]	2021

Table A1. *Cont.*

Num.	Title	Cite	Year
106	Women's Empowerment as a Tool for Sustainable Development of Higher Education and Research in the Digital Age	[70]	2021
107	Mentoring program: women supporting women	[74]	2021
108	Multimedia Analysis of Spanish Female Role Models in Science, Technology, Engineering and Mathematics	[75]	2021
109	Gender Distribution in Academic Leadership: An Exploratory Study of Top Universities of Bangladesh	[151]	2021
110	The experience of women students in engineering and mathematics careers: A focus group study	[83]	2021
111	STEM & Gender equity: empowering women in vulnerable environments	[88]	2021
112	Gender Gap in STEM: A Cross-Sectional Study of Primary School Students' Self-Perception and Test Anxiety in Mathematics	[89]	2021
113	Initial performance analysis in the evaluation of computational thinking from a gender perspective in higher education	[182]	2021
114	Strategies to gender mainstreaming in Engineering studies: A workshop with teachers	[102]	2021
115	A pilot study about the perception of experts in engineering education	[103]	2021
116	Using Facebook Ads Data to Assess Gender Balance in STEM: Evidence from Brazil	[111]	2021
117	CreaSTEAM. Towards the improvement of diversity gaps through the compilation of projects, best practices and STEAM-Lab spaces	[112]	2021
118	A Model for the Development of Programming Courses to Promote the Participation of Young Women in STEM	[114]	2021
119	A Survey on the Current Situation and Influencing Factors of Selection of Subjects in Stem Field in China	[193]	2021
120	Computer Science Communities: Who is Speaking, and Who is Listening to the Women? Using an Ethics of Care to Promote Diverse Voices	[199]	2021
121	Dynamics of gender bias in computing	[130]	2021
122	Breaking one barrier at a time: how women developers cope in a men-dominated industry	[132]	2021
123	"It's a Bit Weird, but it's OK"? How Female Computer Science Students Navigate being a Minority	[136]	2021
124	Gender Stereotypes and Women Strategies in STEM: A Multidisciplinary Review	[33]	2022
125	Mathematics Anxiety and Self-Efficacy of Mexican Engineering Students: Is There Gender Gap?	[34]	2022
126	Hack4women: un paso hacia la equidad de género	[36]	2022
127	La opinión de mujeres en STEM sobre lo que impulsa su inclusión.	[164]	2022
128	On the Design and Validation of Assessing Tools for Measuring the Impact of Programs Promoting STEM Vocations	[43]	2022
129	Interpersonal and academic self-efficacy and its relationship with employment of food industry engineering students: A gender perspective	[143]	2022
130	Equality for all? Support for equal opportunity among professors in Europe	[144]	2022
131	Engaging Women in Engineering-Training Mentors to Make a Difference (iTEST 1849735): Transforming Curriculum and Mentor Training in a Highly Successful Natural Science Program	[48]	2022
132	Diversity for a Sustainable Space Future-Opportunities and Challenges for promoting diversity in the space sector	[49]	2022
133	Women in Engineering: Myths, Measures and Policies	[52]	2022
134	Women Retention in STEM Higher Education: Systematic Mapping of Gender Issues	[57]	2022
135	A Model for Bridging the Gender Gap in STEM in Higher Education Institutions	[61]	2022
136	The role of universities in the inclusion of refugees in higher education and in society from the perspective of the SDGS	[147]	2022
137	New challenges for women workers in Brazil facing the wave of Industry 4.0 technologies	[148]	2022
138	A Review of Irish National Strategy for Gender Equality in Higher Education 2010–2021	[69]	2022
139	Towards Inclusive Higher Education: A Multivariate Analysis of Social and Gender Inequalities	[73]	2022
140	Making and Taking Leadership in the Promotion of Gender Desegregation in STEM	[149]	2022
141	Preparing Early Years Practitioners in Mauritius	[78]	2022
142	Reflections on Selected Gender Equality in STEM Initiatives in an Irish University	[79]	2022
143	Gender Perspective in STEM Disciplines in Spain Universities	[150]	2022
144	Women's Empowerment as a Tool for Sustainable Development of Higher Education and Research in the Digital Age	[81]	2022
145	Pragmatic, Persistent, and Precarious: The Pathways of Three Minority Ethnic Women in STEM Higher Education	[152]	2022
146	A UPC innovation teaching project for the incorporation of the gender perspective in nautical, marine and naval engineering	[2]	2022

Table A1. *Cont.*

Num.	Title	Cite	Year
147	Make a Lab—A Project Focused on the Gender Gap in STEM Fields	[11]	2022
148	Bridging the Gender Gap through Problem-Based Learning in STEM Labs: What can we learn from Biotechnology?	[90]	2022
149	Role Modeling as a Computing Educator in Higher Education: A Focus on Care, Emotions and Professional Competencies	[181]	2022
150	Challenges and opportunities when deploying a gender STEM intervention during a pandemic	[173]	2022
151	Retaining women in computer science: The good, the bad and the ugly sides	[108]	2022
152	Gender parity in peer assessment of team software development projects	[116]	2022
153	An Early Measure of Women-Focused Initiatives in Gender-Imbalanced Computing Programs	[119]	2022
154	Women's Participation in Open Source Software: A Survey of the Literature	[158]	2022
155	The World is in My Hand Now: Smartphones for Empowering Rural Women in Developing Countries: Smartphones for Empowering Rural Women in Developing Countries	[177]	2022
156	The Integration of Gender Equality (SDG 5) into University Teaching: The View from the Frontline	[23]	2023
157	Navigating a male dominated domain: experiences of female STEM students in higher education in Ireland	[28]	2023
158	Gender gap in STEM pathways: the role of secondary curricula in a highly differentiated school system—the case of Chile	[30]	2023
159	The impact of the COVID-19 pandemic on institutional change processes and the collective capabilities of higher education and research institutions	[35]	2023
160	Gender and higher education in African universities: A critical discourse analysis of key policy mandates in Kenya, Rwanda, and Uganda	[38]	2023
161	Gender gap in the perceived mastery of reasoning-for-complexity competency: An approach in Latin America	[9]	2023
162	The underrepresentation of women in STEM disciplines in India: A secondary analysis	[142]	2023
163	Student Perception of the Level of Development of Complex Thinking: An Approach Involving University Women in Mexico	[42]	2023
164	Professional development for STEM educators: A bibliometric analysis of the recent progress	[45]	2023
165	Scratch4All Project—Educate for an All-inclusive Digital Society	[168]	2023
166	Gender Diversity, Sustainable Development Goals and Human Resource Management Practices in Higher Education	[145]	2023
167	A 360° perspective of women in soil science focused on the U.S	[53]	2023
168	Male perspective in relation to the gender gap in STEM careers	[58]	2023
169	Higher education expansion and women's access to higher education and the labor market: quasi-experimental evidence from Turkey	[62]	2023
170	Indigenous Women in Higher Education in STEM: A Case Study in Oaxaca	[179]	2023
171	Green transition and gender bias: An analysis of renewable energy generation companies in Latin America	[72]	2023
172	Inclusion of the gender equality sustainable development goal in engineering teaching and research	[82]	2023
173	On Designing A 3d Imaging Summer Project For Ontario's High School Students During COVID-19 Pandemic	[172]	2023
174	Understanding the Gender Gap in Digital Technologies Education	[96]	2023
175	Monitoring Gender Gaps via LinkedIn Advertising Estimates: The case study of Italy	[107]	2023
176	Student Sense of Belonging: The Role of Gender Identity and Minoritisation in Computing and Other Sciences	[184]	2023
177	Cross-Country Variation in (Binary) Gender Differences in Secondary School Students' CS Attitudes: Re-Validating and Generalizing a CS Attitudes Scale	[118]	2023
178	Engaging Girls in Computer Science: Do Single-Gender Interdisciplinary Classes Help?	[122]	2023
179	SDGs Like You Have Never Seen Before!: Co-designing Data Visualization Tools with and for University Students	[190]	2023
180	What do women in IT want?: Women in IT Networking and their experience working from home during the COVID-19 pandemic.	[129]	2023
181	Characterizing Women's Alternative Pathways to a Computing Career Using Content Analysis	[160]	2023
182	"I Can Do That Too": Factors Influencing a Sense of Belonging for Females in Computer Science Classrooms	[134]	2023
183	Crossing the Threshold: Pathways into Makerspaces for Women at the Intersectional Margins	[138]	2023

References

1. Alam, G.M. Has Secondary Science Education Become an Elite Product in Emerging Nations?—A Perspective of Sustainable Education in the Era of MDGs and SDGs. *Sustainability* **2023**, *15*, 1596. [CrossRef]
2. Barahona Fuentes, C.; Castells Sanabra, M.; Ruiz Robles, Á.; Codina Costa, M.; Fernández Canti, R.M.; Vela del Olmo, M.M.; Ordás Jiménez, S.; Isalgué Buxeda, A.; Martin Llopis, Á. A UPC innovation teaching project for the incorporation of the gender perspective in nautical, marine and naval engineering. In Proceedings of the towards a New Future in Engineering Education, New Scenarios That European Alliances of Tech Universities Open up, Barcelona, Spain, 19–22 September 2022; Universitat Politècnica de Catalunya: Barcelona, Spain, 2022. [CrossRef]
3. Mahabir-Lee, S.; Rambarath-Parasram, V. Forging ahead: Leveraging inclusive and equitable education to bridge the gender gap in the Caribbean. *WMU J. Marit. Aff.* **2019**, *18*, 617–637. [CrossRef]
4. Carro, C.B. Integrando formación e investigación sobre la transversalidad de los ODS: Género y salud, dimensiones esenciales de la sostenibilidad. *Cienc. Técnica Y Mainstreaming Soc.* **2019**, *3*, 1. [CrossRef]
5. Kestin, T.; van den Belt, M.; Denby, L.; Ross, K.; Thwaites, J.; Hawkes, M. *Getting Started with the Sdgs in Universities: A Guide for Universities, Higher Education Institutions, and the Academic Sector*; Sustainable Development Solutions Network (SDSN) Australia/Pacific: Melbourne, Australia, 2017.
6. Mody, P.N.; Brainard, S.G. Successful international initiatives promoting gender equity in engineering. In Proceedings of the International Symposium on Women and ICT Creating Global Transformation—CWIT '05, Baltimore, MD, USA, 12–14 June 2005; ACM Press: New York, NY, USA, 2005. [CrossRef]
7. García-Holgado, A.; Díaz, A.C.; García-Peñalvo, F.J. Engaging women into STEM in Latin America: W-STEM project. In Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'19), León Spain, 16–18 October 2019; ACM: New York, NY, USA, 2019. [CrossRef]
8. Gonzalez-Gonzalez, C.S.; Garcia-Holgado, A.; Garcia-Penalvo, F.J. Strategies to introduce gender perspective in Engineering studies: A proposal based on self-diagnosis. In Proceedings of the 2020 IEEE Global Engineering Education Conference (EDUCON), Porto, Portugal, 27–30 April 2020; IEEE: Piscataway, NJ, USA, 2020. [CrossRef]
9. Vázquez-Parra, J.C.; Castillo-Martínez, I.M.; Ramírez-Montoya, M.S.; Amézquita-Zamora, J.A.; Cruz-Sandoval, M. Gender gap in the perceived mastery of reasoning-for-complexity competency: An approach in Latin America. *J. Appl. Res. High. Educ.* **2023**, *16*, 182–194. [CrossRef]
10. Cernadas, E.; Calvo-Iglesias, E. Gender perspective in Artificial Intelligence (AI). In Proceedings of the Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'20), Salamanca, Spain, 21–23 October 2020; ACM: New York, NY, USA, 2020. [CrossRef]
11. Vasconcelos, V.; Bigotte, E.; Marques, L.; Almeida, R. Make a Lab—A Project Focused on the Gender Gap in STEM Fields. In Proceedings of the 2022 31st Annual Conference of the European Association for Education in Electrical and Information Engineering (EAEEIE), Coimbra, Portugal, 29 June–1 July 2022; IEEE: Piscataway, NJ, USA, 2022. [CrossRef]
12. ONU Mujeres Web Page. 2023. Available online: https://lac.unwomen.org/es (accessed on 19 December 2023).
13. Olavarría, J. La participación y del liderazgo de las mujeres dentro de las instituciones de educación superior (IES) en las Américas. In *Red Interamericana de Formación en Mujeres, Género y Desarrollo con Equidad (RIF-GED)*; 2011 ; pp. 1–34. Available online: http://bvirtual.ucol.mx/equidadgenero/documentos/51_Informe_COLAM_Mujeres_y_liderazgo.pdf (accessed on 5 December 2023).
14. Sirvent, M.L.T.; Coutiño, G.L.; Pérez, H.C. El enfoque de género en la educación. *Atenas* **2015**, *4*, 49–61.
15. Schneider, C.G. Step Up & Lead for Equity: What Higher Education Can Do to Reverse Our Deepening Divides. Association of American Colleges and Universities, 2015. Disponible en la Association of American Colleges and Universities. Descargado de. Available online: https://www.mtsac.edu/president/board-reports/LAForumStepUpLeadEquity.pdf (accessed on 15 January 2024).
16. Rieckmann, M. *Education for Sustainable Development Goals: Learning Objectives*; UNESCO Publishing: Paris, France, 2017.
17. Do You Know All 17 SDGs? 2015. Available online: https://sdgs.un.org/goals#:~:text=Transforming%20our%20world%3A%20the%202030,Paris (accessed on 14 December 2023).
18. UNESCO. *Educación Para el Desarrollo Sostenible*; UNESCO: Paris, France, 2024.
19. Dirección de Equidad de Género, Universidad de La Frontera. Glosario para la Igualdad y Equidad de Género. 2022. Available online: https://deg.ufro.cl/wp-content/uploads/2023/03/Glosario-para-la-igualdad-y-equidad-genero-1.pdf (accessed on 19 December 2023).
20. Directorate for STEM Education. 2023. Available online: https://new.nsf.gov/edu (accessed on 19 December 2023).
21. Petersen, K.; Vakkalanka, S.; Kuzniarz, L. Guidelines for conducting systematic mapping studies in software engineering: An update. *Inf. Softw. Technol.* **2015**, *64*, 1–18. [CrossRef]
22. Vásquez, F.; Cravero, A.; Castro, M.; Acevedo, P. Decision Support System Development of Wildland Fire: A Systematic Mapping. *Forests* **2021**, *12*, 943. [CrossRef]
23. Merma-Molina, G.; Urrea-Solano, M.; Hernández-Amorós, M.J. The Integration of Gender Equality (SDG 5) into University Teaching: the View from the Frontline. *Innov. High. Educ.* **2024** , *49*, 419–452. [CrossRef]
24. Mdleleni, L.; Mandyoli, L.; Frantz, J. Tenacity of gender inequality in south africa: A higher education perspective. *Policy Pract. Dev. Educ. Rev.* **2021**, *33*, 119–134.

25. García-Peñalvo, F.J.; Bello, A.; Domínguez, Á.; Romero Chacón, R.M. Acciones, políticas y estrategias para el balance de género en el ámbito STEM: Resultados de una dinámica World Café. *Educ. Knowl. Soc. (EKS)* **2019**, *20*, 15. [CrossRef]
26. Garcia-Holgado, A.; Verdugo-Castro, S.; Gonzalez, C.; Sanchez-Gomez, M.C.; Garcia-Penalvo, F.J. European Proposals to Work in the Gender Gap in STEM: A Systematic Analysis. *IEEE Rev. Iberoam. Tecnol. Aprendiz.* **2020**, *15*, 215–224. [CrossRef]
27. Miotto, G.; Polo López, M.; Rom Rodríguez, J. Gender Equality and UN Sustainable Development Goals: Priorities and Correlations in the Top Business Schools' Communication and Legitimation Strategies. *Sustainability* **2019**, *11*, 302. [CrossRef]
28. Slattery, O.; Prendergast, M.; Riordáin, M.N. Navigating a male dominated domain: Experiences of female STEM students in higher education in Ireland. *Ir. Educ. Stud.* **2023**, *42*, 861–880. [CrossRef]
29. Peña, M.; Olmedo-Torre, N.; Mas de les Valls, E.; Lusa, A. Introducing and Evaluating the Effective Inclusion of Gender Dimension in STEM Higher Education. *Sustainability* **2021**, *13*, 4994. [CrossRef]
30. Sevilla, M.P.; Luengo-Aravena, D.; Farías, M. Gender gap in STEM pathways: The role of secondary curricula in a highly differentiated school system—The case of Chile. *Int. J. STEM Educ.* **2023**, *10*, 58. [CrossRef]
31. Alonso, M.T.; Barba-Sánchez, V.; López Bonal, M.T.; Macià, H. Two Perspectives on the Gender Gap in Computer Engineering: From Secondary School to Higher Education. *Sustainability* **2021**, *13*, 10445. [CrossRef]
32. Maheshwari, G.; Nayak, R. Women leadership in Vietnamese higher education institutions: An exploratory study on barriers and enablers for career enhancement. *Educ. Manag. Adm. Leadersh.* **2020**, *50*, 758–775. [CrossRef]
33. Olga Savinskaya, N.L. Gender Stereotypes and Women Strategies in STEM: A Multidisciplinary Review. *J. Soc. Policy Stud.* **2022**, *20*, 505–520. [CrossRef]
34. Morán-Soto, G.; González-Peña, O.I. Mathematics Anxiety and Self-Efficacy of Mexican Engineering Students: Is There Gender Gap? *Educ. Sci.* **2022**, *12*, 391. [CrossRef]
35. Campanini Vilhena, F.; López Belloso, M.; Mergaert, L. The impact of the COVID-19 pandemic on institutional change processes and the collective capabilities of higher education and research institutions. *Papers. Rev. De Sociol.* **2023**, *108*, e3166. [CrossRef]
36. Costa-Lizama, G.; San Martín, L.; Pinto, O.; Gatica, G. Hack4women: Un paso hacia la equidad de género. *Texto Livre* **2022**, *15*, e39348. [CrossRef]
37. Cavaglia, C.; Machin, S.; McNally, S.; Ruiz-Valenzuela, J. Gender, achievement, and subject choice in English education. *Oxf. Rev. Econ. Policy* **2020**, *36*, 816–835. [CrossRef]
38. Hailu, M.F.; Lee, E.E.; Halkiyo, A.; Tsotniashvili, K.; Tewari, N.R. Gender and higher education in African universities: A critical discourse analysis of key policy mandates in Kenya, Rwanda, and Uganda. *Educ. Policy Anal. Arch.* **2023**, *31*, 23. [CrossRef]
39. Bystydzienski, J.; Thomas, N.; Howe, S.; Desai, A. The leadership role of college deans and department chairs in academic culture change. *Stud. High. Educ.* **2016**, *42*, 2301–2315. [CrossRef]
40. Lozano, G.I. How culture, institutions, and individuals shape the evolving gender gap in science and mathematics: An equity provocation for the scientific community. *Pure Appl. Chem.* **2021**, *93*, 927–935. [CrossRef]
41. Sidelil, L.T.; Cuthbert, D.; Spark, C. Institutional betrayal and sexual harassment in STEM institutions: Evidence from science and technology universities of Ethiopia. *Gend. Educ.* **2021**, *34*, 231–246. [CrossRef]
42. Cruz-Sandoval, M.; Vázquez-Parra, J.C.; Carlos-Arroyo, M.; Amézquita-Zamora, J.A. Student Perception of the Level of Development of Complex Thinking: An Approach Involving University Women in Mexico. *J. Latinos Educ.* **2024**, *23*, 768–780. [CrossRef]
43. Herce-Palomares, M.P.; Botella-Mascarell, C.; de Ves, E.; López-Iñesta, E.; Forte, A.; Benavent, X.; Rueda, S. On the Design and Validation of Assessing Tools for Measuring the Impact of Programs Promoting STEM Vocations. *Front. Psychol.* **2022**, *13*, 937058. [CrossRef] [PubMed]
44. Sunthonkanokpong, W.; Murphy, E. Sustainability awareness, attitudes and actions: A survey of pre-service teachers. *Issues Educ. Res.* **2019**, *29*, 562–582.
45. Ahmed, S.A.M.; Zhang, W.; Ma, H.; Feng, Z. Professional development for STEM educators: A bibliometric analysis of the recent progress. *Rev. Educ.* **2023**, *11*, e3392. [CrossRef]
46. Mouronte López, M.L.; Savall Ceres, J. Analyzing Enrollment in Information & Communication Technology Programs and Use of Social Networks Based on Gender. 2021. *Int. J. Eng. Educ.* **2021**, *37*, 1215–1230.
47. Monteiro, N.B.R.; da Silva, E.A.; Moita Neto, J.M. Sustainable development goals in mining. *J. Clean. Prod.* **2019**, *228*, 509–520. [CrossRef]
48. Genovesi, J.; Marcus, I.; Sterin, K.; Thomas, D. Engaging Women in Engineering-Training Mentors to Make a Difference (iTEST 1849735): Transforming Curriculum and Mentor Training in a Highly Successful Natural Science Program. In Proceedings of the 2022 ASEE Annual Conference & Exposition, Minneapolis, MN, USA, 26–29 June 2022.
49. Chiu, S. Diversity for a Sustainable Space Future-Opportunities and Challenges for promoting diversity in the space sector. In Proceedings of the 73rd International Astronautical Congress (IAC), Paris, France, 18-22 September, 2022. Available online: https://ore.exeter.ac.uk/repository/handle/10871/132251 (accessed on 20 January 2024).
50. Prendes-Espinosa, M.P.; García-Tudela, P.A.; Solano-Fernández, I.M. Gender equality and ICT in the context of formal education: A systematic review. *Comunicar* **2020**, *28*, 9–20. [CrossRef]
51. Tang, H.H.H., World-Class Universities and Female Leadership in the Academic Profession: Case Studies of East Asian Higher Education. In *International and Development Education*; Springer International Publishing: Berlin/Heidelberg, Germany, 2019; pp. 41–56. [CrossRef]

52. Sharma, J.; Yarlagadda, P.K.D.V. Women in Engineering: Myths, Measures and Policies. In *Lecture Notes in Networks and Systems*; Springer International Publishing: Berlin/Heidelberg, Germany, 2022; pp. 757–765. [CrossRef]
53. Grunwald, S.; Daroub, S. A 360° perspective of women in soil science focused on the U.S. *Front. Soil Sci.* **2023**, *3*, 1072758. [CrossRef]
54. Herrera, L.K.; Botero, V.; Guzmán, M.A. Centro De Pensamiento Para El Fortalecimiento Del Liderazgo Y Empoderamiento De La Mujer Colombiana En STEM. In Proceedings of the 19th LACCEI International Multi-Conference for Engineering, Education, and Technology: "Prospective and Trends in Technology and Skills for Sustainable Social Development" "Leveraging Emerging Technologies to Construct the Future", LACCEI2021, Virtual, 19–23 July 2021; Latin American and Caribbean Consortium of Engineering Institutions: Bogota, Colombia, 2021. [CrossRef]
55. Almeida, J.; Daniel, A.D. Women in Engineering: Developing Entrepreneurial Intention through Learning by Doing Approach. In Proceedings of the 2021 IEEE Global Engineering Education Conference (EDUCON), Vienna, Austria, 21–23 April 2021; IEEE: Piscataway, NJ, USA, 2021. [CrossRef]
56. Stroude, A.; Bellier-Teichmann, T.; Cantero, O.; Dasoki, N.; Kaeser, L.; Ronca, M.; Morin, D. Mentoring for women starting a PhD: A "free zone" into academic identity. *Int. J. Mentor. Coach. Educ.* **2015**, *4*, 37–52. [CrossRef]
57. Campos, E.; Garay-Rondero, C.L.; Caratozzolo, P.; Dominguez, A.; Zavala, G., Women Retention in STEM Higher Education: Systematic Mapping of Gender Issues. In *Lecture Notes in Educational Technology*; Springer Nature: Singapore, 2022; pp. 127–142. [CrossRef]
58. Burgos-Lopez, M.Y.; Cantisani, M.I.R.; Forte-Celaya, M.R.; Franco-Alvarez, K.Y.; García-Hernández, S.E.; Gutiérrez-Franco, D. Male perspective in relation to the gender gap in STEM careers. In Proceedings of the 2023 IEEE Global Engineering Education Conference (EDUCON), Salmiya, Kuwait, 1–4 May 2023; IEEE: Piscataway, NJ, USA, 2023. [CrossRef]
59. Žalėnienė, I.; Pereira, P. Higher Education For Sustainability: A Global Perspective. *Geogr. Sustain.* **2021**, *2*, 99–106. [CrossRef]
60. Ferreras-Garcia, R.; Sales-Zaguirre, J.; Serradell-López, E. Competency assessment and learning results in tourism internships: Is gender a relevant factor? *High. Educ. Skills Work-Based Learn.* **2021**, *12*, 162–177. [CrossRef]
61. García-Holgado, A.; García-Peñalvo, F.J., A Model for Bridging the Gender Gap in STEM in Higher Education Institutions. In *Lecture Notes in Educational Technology*; Springer Nature: Singapore, 2022; pp. 1–19. [CrossRef]
62. Öztürk, A.; Dayıoğlu, M. Higher education expansion and women's access to higher education and the labor market: Quasi-experimental evidence from Turkey. *High. Educ.* **2023**. [CrossRef]
63. Garcia-Holgado, A.; Mena, J.; Garcia-Penalvo, F.J.; Pascual, J.; Heikkinen, M.; Harmoinen, S.; Garcia-Ramos, L.; Penabaena-Niebles, R.; Amores, L. Gender equality in STEM programs: A proposal to analyse the situation of a university about the gender gap. In Proceedings of the 2020 IEEE Global Engineering Education Conference (EDUCON), Porto, Portugal, 27–30 April 2020; IEEE: Piscataway, NJ, USA, 2020. [CrossRef]
64. Solanki, S.M.; Xu, D. Looking Beyond Academic Performance: The Influence of Instructor Gender on Student Motivation in STEM Fields. *Am. Educ. Res. J.* **2018**, *55*, 801–835. [CrossRef]
65. Verdugo-Castro, S.; García-Holgado, A.; Sánchez-Gómez, M.C. Interviews of Spanish women in STEM: A multimedia analysis about their experiences. In Proceedings of the Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'20, Salamanca Spain, 21–23 October 2020; ACM: New York, NY, USA, 2020. [CrossRef]
66. Ruiz-Cantisani, M.I.; Lara-Prieto, V.; Rodriguez-Gallegos, R.; Burgos-Lopez, M.Y.; Turcios-Esquivel, A.M.; Garcia-Castelan, R.M.G.; Ramirez-Jimenez, A.K.; Velazquez-Sanchez, L.M. Women's Motivation to Mentor Young Women Students in STEM Areas: A Study Case in Mexico. In Proceedings of the 2021 World Engineering Education Forum/Global Engineering Deans Council (WEEF/GEDC), Madrid, Spain, 15–18 November 2021; IEEE: Piscataway, NJ, USA, 2021. [CrossRef]
67. Hopewell, L.; McNeely, C.L.; Kuiler, E.W.; Hahm, J. University Leaders and the Public Agenda: Talking About Women and Diversity in STEM Fields. *Rev. Policy Res.* **2009**, *26*, 589–607. [CrossRef]
68. Chang, D.F.; ChangTzeng, H.C. Patterns of gender parity in the humanities and STEM programs: The trajectory under the expanded higher education system. *Stud. High. Educ.* **2018**, *45*, 1108–1120. [CrossRef]
69. Dunne, J.; O'Reilly, A.; O'Donoghue, A.; Kinahan, M. A Review of Irish National Strategy for Gender Equality in Higher Education 2010–2021. In *Lecture Notes in Educational Technology*; Springer Nature: Singapore, 2022; pp. 21–49. [CrossRef]
70. Kurchenko, L.; Kolomiyets-Ludwig, E.; Ilnytskyy, D. Women's Empowerment as a Tool for Sustainable Development of Higher Education and Research in the Digital Age. In *Advances in Educational Technologies and Instructional Design*; IGI Global: Hershey, PA, USA, 2021; pp. 141–172. [CrossRef]
71. Torres-Ramos, S.; Retamoza-Vega, P.d.R.; Fajardo-Robledo, N.S.; Neri-Cortés, C.; Rodríguez-Betancourtt, V.M.; Pérez-Carrillo, L.A. Towards increasing of STEM-women professionals by implementing projects that reduce the gender gap: A study case in Universidad de Guadalajara. In Proceedings of the Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'20, Salamanca Spain, 21–23 October 2020; ACM: New York, NY, USA, 2020. [CrossRef]
72. Arias, K.; López, D.; Camino-Mogro, S.; Weiss, M.; Walsh, D.; Gomes, L.G.; Hallack, M.C.M. Green transition and gender bias: An analysis of renewable energy generation companies in Latin America. *Energy Res. Soc. Sci.* **2023**, *101*, 103151. [CrossRef]
73. Gómez Marcos, M.; Ruiz Toledo, M.; Ruff Escobar, C. Towards Inclusive Higher Education: A Multivariate Analysis of Social and Gender Inequalities. *Societies* **2022**, *12*, 184. [CrossRef]

74. RuizCantisani, M.I.; Lara-Prieto, V.; Garcia-Garcia, R.M.; Ortiz, M.G.; Flores, E.G.R.; Romero-Robles, L.E. Mentoring program: Women supporting women. In Proceedings of the 2021 IEEE Global Engineering Education Conference (EDUCON), Vienna, Austria, 21–23 April 2021; IEEE: Piscataway, NJ, USA, 2021. [CrossRef]
75. Verdugo-Castro, S.; García-Holgado, A.; Sánchez-Gómez, M.C.; García-Peñalvo, F.J. Multimedia Analysis of Spanish Female Role Models in Science, Technology, Engineering and Mathematics. *Sustainability* **2021**, *13*, 12612. [CrossRef]
76. Kagoda, A.M. Gender and Education at Makerere University, Uganda. In *Advances in Gender Research*; Emerald Publishing Limited: Leeds, UK, 2019; pp. 23–37. [CrossRef]
77. Contreras Ortiz, S.; Ojeda Caicedo, V.V.; Osorio del Valle, C.; Villa Ramirez, J.L. Participation of Women in STEM Higher Education Programs in Latin America: The Issue of Inequality. In Proceedings of the 18th LACCEI International Multi-Conference for Engineering, Education, and Technology: Engineering, Integration, And Alliances for A Sustainable Development" "Hemispheric Cooperation for Competitiveness and Prosperity on A Knowledge-Based Economy", LACCEI2020, Virtual, 27–31 July 2020; Latin American and Caribbean Consortium of Engineering Institutions: Bogota, Colombia, 2020 [CrossRef]
78. Bholah, R.; Nenduradu, R.; Thaunoo, J. Preparing Early Years Practitioners in Mauritius. In *Play and STEM Education in the Early Years*; Springer International Publishing: Berlin/Heidelberg, Germany, 2022; pp. 251–272. [CrossRef]
79. Devereux, M.; Heffernan, E.; McKeever, S.; Dunne, J.; Shoemaker, L.; O'Leary, C. Reflections on Selected Gender Equality in STEM Initiatives in an Irish University. In *Lecture Notes in Educational Technology*; Springer Nature: Singapore, 2022; pp. 69–83. [CrossRef]
80. Shvedova, N. Higher education and science: Problems of gender equality. *Woman Russ. Soc.* **2019**, *3*, 40–54. [CrossRef]
81. Kurchenko, L.; Kolomiyets-Ludwig, E.; Ilnytskyy, D. Women's Empowerment as a Tool for Sustainable Development of Higher Education and Research in the Digital Age. In *Research Anthology on Feminist Studies and Gender Perceptions*; IGI Global: Hershey, PA, USA, 2022; pp. 144–169. [CrossRef]
82. Peña, M.; de les Valls, E.M. Inclusion of the gender equality sustainable development goal in engineering teaching and research. *Environ. Dev. Sustain.* **2023** . [CrossRef]
83. Garcia-Holgado, A.; Verdugo-Castro, S.; Dominguez, A.; Hernandez-Armenta, I.; Garcia-Penalvo, F.J.; Vazquez-Ingelmo, A.; Sanchez-Gomez, M.C. The experience of women students in engineering and mathematics careers: A focus group study. In Proceedings of the 2021 IEEE Global Engineering Education Conference (EDUCON), Vienna, Austria, 21–23 April 2021; IEEE: Piscataway, NJ, USA, 2021. [CrossRef]
84. Lehman, K.J.; Sax, L.J.; Zimmerman, H.B. Women planning to major in computer science: Who are they and what makes them unique? *Comput. Sci. Educ.* **2016**, *26*, 277–298. [CrossRef]
85. Myers, C.B.; Myers, S.M. Addressing the gender gap: A teaching and learning strategy in undergraduate science courses. *J. Women Minor. Sci. Eng.* **2008**, *14*, 361–376. [CrossRef]
86. Krohn, C.; Groher, I.; Sabitzer, B.; Kuka, L. Female Computer Scientists Needed: Approaches For Closing The Gender Gap. In Proceedings of the 2020 IEEE Frontiers in Education Conference (FIE), Uppsala, Sweden, 21–24 October 2020; IEEE: Piscataway, NJ, USA, 2020. [CrossRef]
87. Aranguren, P.; Martin, I.S.; Catalan, L.; Martinez, A.; Jurio, A.; Diaz, S.; Perez, G.; Gomez, M.; Barrenechea, E. Initiative to Increment the number of Women in STEM Degrees: Women, Science and Technology Chair of the Public University of Navarre. In Proceedings of the 2020 IEEE Global Engineering Education Conference (EDUCON), Porto, Portugal, 27–30 April 2020; IEEE: Piscataway, NJ, USA, 2020. [CrossRef]
88. Ruiz-Cantisani, M.I.; Lopez-Ruiz, D.I.; Suarez-Cavazos, N.; Novelo-Villegas, J.; Rincon-Flores, E.G.; Burgos-Lopez, M.Y. STEM & Gender equity: Empowering women in vulnerable environments. In Proceedings of the 2021 IEEE Global Engineering Education Conference (EDUCON), Vienna, Austria, 21–23 April 2021; IEEE: Piscataway, NJ, USA, 2021. [CrossRef]
89. Ayuso, N.; Fillola, E.; Masia, B.; Murillo, A.C.; Trillo-Lado, R.; Baldassarri, S.; Cerezo, E.; Ruberte, L.; Mariscal, M.D.; Villarroya-Gaudo, M. Gender Gap in STEM: A Cross-Sectional Study of Primary School Students' Self-Perception and Test Anxiety in Mathematics. *IEEE Trans. Educ.* **2021**, *64*, 40–49. [CrossRef]
90. Bertel, L.B.; Moller Jeppesen, M.; Henriksen, L.B.; Hansen, S.; Dahl, B. Bridging the Gender Gap through Problem-Based Learning in STEM Labs: What can we learn from Biotechnology? In Proceedings of the 2022 IEEE Frontiers in Education Conference (FIE), Uppsala, Sweden, 8–11 October 2022; IEEE: Piscataway, NJ, USA, 2022. [CrossRef]
91. Garcia-Holgado, A.; Gonzalez-Gonzalez, C.S.; Peixoto, A. A Comparative Study on the Support in Engineering Courses: A Case Study in Brazil and Spain. *IEEE Access* **2020**, *8*, 125179–125190. [CrossRef]
92. de Ribaupierre, H.; Jones, K.; Loizides, F.; Cherdantseva, Y. Towards gender equality in software engineering: The NSA approach. In Proceedings of the 1st International Workshop on Gender Equality in Software Engineering, ICSE '18, Gothenburg, Sweden, 28 May 2018; ACM: New York, NY, USA, 2018. [CrossRef]
93. García-Holgado, A.; Verdugo-Castro, S.; Sánchez-Gómez, M.C.; García-Peñalvo, F.J. Trends in studies developed in Europe focused on the gender gap in STEM. In Proceedings of the XX International Conference on Human Computer Interaction, Interacción 2019, Donostia Gipuzkoa, Spain, 25–28 June 2019; ACM: New York, NY, USA, 2019. [CrossRef]
94. Somerkoski, B.; Suomi, R. E-learning Material on Gender Equality in Information System Professions. In Proceedings of the 2020 11th International Conference on E-Education, E-Business, E-Management, and E-Learning, IC4E 2020, Osaka Japan, 10–12 January 2020; ACM: New York, NY, USA, 2020. [CrossRef]

95. Verdugo-Castro, S.; García-Holgado, A.; Sánchez-Gómez, M.C. Analysis of instruments focused on gender gap in STEM education. . In Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'19, León Spain, 16–18 October 2019; ACM: New York, NY, USA, 2019. [CrossRef]
96. Varoy, E.; Luxton-Reilly, A.; Lee, K.; Giacaman, N. Understanding the Gender Gap in Digital Technologies Education. In Proceedings of the 25th Australasian Computing Education Conference, ACE '23, Melbourne, VIC, Australia, 30 January–3 February 2023; ACM: New York, NY, USA, 2023. [CrossRef]
97. Tobar Subía Contento, L.M.; Nohemi Gamez Aparicio, B. The Gender Gap broad the path for Women in STEM. In Proceedings of the Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'20, Salamanca, Spain, 21–23 October 2020; ACM: New York, NY, USA, 2020. [CrossRef]
98. Verdugo-Castro, S.; Sánchez-Gómez, M.C.; García-Holgado, A.; Bakieva, M. Pilot study on university students' opinion about STEM studies at higher education. In Proceedings of the Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'20, Salamanca, Spain, 21–23 October 2020; ACM: New York, NY, USA, 2020. [CrossRef]
99. Verdugo-Castro, S.; Sánchez-Gómez, M.C.; García-Holgado, A. Gender gap in the STEM sector in pre and university studies of Europe associated with ethnic factors. In Proceedings of the Sixth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'18, Salamanca, Spain, 24–26 October 2018; ACM: New York, NY, USA, 2018. [CrossRef]
100. Ballatore, M.G.; Duffy, G.; Sorby, S.; Tabacco, A. SAperI: Approaching gender gap using Spatial Ability training week in high-school context. In Proceedings of the Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'20, Salamanca, Spain, 21–23 October 2020; ACM: New York, NY, USA, 2020. [CrossRef]
101. Pereira, D.; López, A.J. Is helping to bridge the gender gap in STEM considered as transfer of knowledge?: Transfer of Knowledge in STEM. In Proceedings of the Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'20, Salamanca, Spain, 21–23 October 2020; ACM: New York, NY, USA, 2020. [CrossRef]
102. González-González, C.S.; García-Holgado, A. Strategies to gender mainstreaming in Engineering studies: A workshop with teachers. In Proceedings of the XXI International Conference on Human Computer Interaction, , Interacción '21, Málaga, Spain, 22–24 September 2021; ACM: New York, NY, USA, 2021. [CrossRef]
103. García-Holgado, A.; Gonzalez-González, C. A pilot study about the perception of experts in engineering education. In Proceedings of the Ninth International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'21), Barcelona, Spain, 26–29 October 2021; ACM: New York, NY, USA, 2021. [CrossRef]
104. García-Holgado, A.; González, C.; Peixoto, A. Bridging the diversity gap in STEM. In Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'19, León, Spain, 16–18 October 2019; ACM: New York, NY, USA, 2019. [CrossRef]
105. García-Holgado, A.; Gonzalez-González, C.S.; Peixoto, A.; Caballero-Gil, P.; Plaza-Merino, P. Bridging the diversity gap: Actions and experiences fostering diversity in STEM. In Proceedings of the Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'20, Salamanca, Spain, 21–23 October 2020; ACM: New York, NY, USA, 2020. [CrossRef]
106. Wagner, I. Gender and Performance in Computer Science. *ACM Trans. Comput. Educ.* **2016**, *16*, 1–16. [CrossRef]
107. Berte, M.; Kalimeri, K.; Paolotti, D. Monitoring Gender Gaps via LinkedIn Advertising Estimates: The case study of Italy. In Proceedings of the 15th ACM Web Science Conference 2023, WebSci '23, Austin, TX, USA, 30 April–1 May 2023; ACM: New York, NY, USA, 2023. [CrossRef]
108. Motogna, S.; Alboaie, L.; Todericiu, I.A.; Zaharia, C. Retaining women in computer science: The good, the bad and the ugly sides. In Proceedings of the Third Workshop on Gender Equality, Diversity, and Inclusion in Software Engineering, ICSE '22, Pittsburgh, PA, USA, 20 May 2022; ACM: New York, NY, USA, 2022. [CrossRef]
109. Marzolla, M.; Mirandola, R. Gender balance in computer science and engineering in Italian universities. In Proceedings of the 13th European Conference on Software Architecture-Volume 2, ECSA '19, Paris, France, 9–13 September 2019; ACM: New York, NY, USA, 2019. [CrossRef]
110. Crues, R.W.; Henricks, G.M.; Perry, M.; Bhat, S.; Anderson, C.J.; Shaik, N.; Angrave, L. How do Gender, Learning Goals, and Forum Participation Predict Persistence in a Computer Science MOOC? *ACM Trans. Comput. Educ.* **2018**, *18*, 1–14. [CrossRef]
111. Vieira, C.C.; Vasconcelos, M. Using Facebook Ads Data to Assess Gender Balance in STEM: Evidence from Brazil. In Proceedings of the Companion Proceedings of the Web Conference 2021, WWW '21, Ljubljana, Slovenia, 19–23 April 2021; ACM: New York, NY, USA, 2021. [CrossRef]
112. Amo, D.; García-Holgado, A.; Fonseca, D.; García-Peñalvo, F.J.; Jurado, E.; Olivella, R.; Maffeo, G.; Yiðit, Ö.; Hofmann, C.; Quass, K.; et al. CreaSTEAM. Towards the improvement of diversity gaps through the compilation of projects, best practices and STEAM-Lab spaces. In Proceedings of the Ninth International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'21), Barcelona, Spain, 26–29 October 2021; ACM: New York, NY, USA, 2021. [CrossRef]
113. Hyrynsalmi, S.M. The Underrepresentation of Women in the Software Industry: Thoughts from Career-Changing Women. In Proceedings of the 2019 IEEE/ACM 2nd International Workshop on Gender Equality in Software Engineering (GE), Montreal, QC, Canada, 27 May 2019; IEEE: Piscataway, NJ, USA, 2019. [CrossRef]
114. Contreras-Ortiz, S.H.; Ojeda Caicedo, V.V.; Marrugo-Salas, L.M.; Contreras-Ortiz, M.S. A Model for the Development of Programming Courses to Promote the Participation of Young Women in STEM. In Proceedings of the Ninth International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'21), Barcelona, Spain, 26–29 October 2021; ACM: New York, NY, USA, 2021. [CrossRef]

115. Wolff, A.; Knutas, A.; Savolainen, P. What prevents finnish women from applying to software engineering roles?: A preliminary analysis of survey data. In Proceedings of the ACM/IEEE 42nd International Conference on Software Engineering: Software Engineering Education and Training, ICSE '20, Seoul, Republic of Korea, 27 June–19 July 2020 ; ACM: New York, NY, USA, 2020. [CrossRef]
116. Crick, T.; Prickett, T.; Bradnum, J.; Godfrey, A. Gender parity in peer assessment of team software development projects. In Proceedings of the Proceedings of 6th Conference on Computing Education Practice, CEP 2022, Durham , UK, 6 January 2022; ACM: New York, NY, USA, 2022. [CrossRef]
117. Borsotti, V. Barriers to gender diversity in software development education: Actionable insights from a danish case study. In Proceedings of the 40th International Conference on Software Engineering: Software Engineering Education and Training, ICSE '18, Gothenburg, Sweden, 27 May–3 June 2018; ACM: New York, NY, USA, 2018. [CrossRef]
118. Rachmatullah, A.; Vandenberg, J.; Shin, S.; Wiebe, E. Cross-Country Variation in (Binary) Gender Differences in Secondary School Students' CS Attitudes: Re-Validating and Generalizing a CS Attitudes Scale. *ACM Trans. Comput. Educ.* **2023**, *23*, 1–22. [CrossRef]
119. Villani, M.; Aydin, I.; Cullington, L. An Early Measure of Women-Focused Initiatives in Gender-Imbalanced Computing Programs. *J. Comput. Sci. Coll.* **2022**, *38*, 86–97.
120. Hamilton, M.; Luxton-Reilly, A.; Augar, N.; Chiprianov, V.; Gutierrez, E.C.; Duarte, E.V.; Hu, H.H.; Ittyipe, S.; Pearce, J.L.; Oudshoorn, M.; et al. Gender Equity in Computing: International Faculty Perceptions and Current Practices. In Proceedings of the 2016 ITiCSE Working Group Reports, ITiCSE '16, Arequipa, Peru, 9–13 July 2016; ACM: New York, NY, USA, 2016. [CrossRef]
121. Cain, C.C. Underrepresented groups in gender and STEM: The case of black males in CISE. In Proceedings of the 50th annual conference on Computers and People Research, SIGMIS-CPR '12, Milwaukee, WI, USA, 31 May–2 June 2012; ACM: New York, NY, USA, 2012. [CrossRef]
122. Marquardt, K.; Wagner, I.; Happe, L. Engaging Girls in Computer Science: Do Single-Gender Interdisciplinary Classes Help? In Proceedings of the 2023 IEEE/ACM 45th International Conference on Software Engineering: Software Engineering Education and Training (ICSE-SEET), Melbourne, Australia, 14–20 May 2023; IEEE: Piscataway, NJ, USA, 2023. [CrossRef]
123. Kizilcec, R.F.; Saltarelli, A.J. Psychologically Inclusive Design: Cues Impact Women's Participation in STEM Education. In Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems, CHI '19, Glasgow, UK, 4–9 May 2019; ACM: New York, NY, USA, 2019. [CrossRef]
124. Wang, Y.; Redmiles, D. Implicit Gender Biases in Professional Software Development: An Empirical Study. In Proceedings of the 2019 IEEE/ACM 41st International Conference on Software Engineering: Software Engineering in Society (ICSE-SEIS), Montreal, QC, Canada, 25–31 May 2019; IEEE: Piscataway, NJ, USA, 2019. [CrossRef]
125. Payton, F.C.; Berki, E. Countering the negative image of women in computing. *Commun. ACM* **2019**, *62*, 56–63. [CrossRef]
126. Seibel, S.; Veilleux, N. Factors influencing women entering the software development field through coding bootcamps vs. computer science bachelor's degrees. *J. Comput. Sci. Coll.* **2019**, *34*, 84–96.
127. Nolan, K.; Mooney, A.; Bergin, S. An Investigation of Gender Differences in Computer Science Using Physiological, Psychological and Behavioural Metrics. In Proceedings of the Twenty-First Australasian Computing Education Conference, ACE'19, Sydney, NSW, Australia, 29–31 January 2019; ACM: New York, NY, USA, 2019. [CrossRef]
128. Ferraz, C.; Gama, K. A Case Study About Gender Issues in a Game Jam. In Proceedings of the International Conference on Game Jams, Hackathons and Game Creation Events 2019, ICGJ 2019, San Francisco, CA, USA, 17 March 2019; ACM: New York, NY, USA, 2019. [CrossRef]
129. Kalyvaki, M.; Spencer, D. What do women in IT want?: Women in IT Networking and their experience working from home during the COVID-19 pandemic. In Proceedings of the Practice and Experience in Advanced Research Computing, PEARC '23, Portland, OR, USA, 23–27 July 2023; ACM: New York, NY, USA, 2023. [CrossRef]
130. Misa, T.J. Dynamics of gender bias in computing. *Commun. ACM* **2021**, *64*, 76–83. [CrossRef]
131. Teague, J. A structured review of reasons for the underrepresentation of women in computing. In Proceedings of the Second Australasian Conference on Computer Science Education-ACSE '97 ; ACM Press: New York, NY, USA, 1996. [CrossRef]
132. Canedo, E.D.; Mendes, F.; Cerqueira, A.; Okimoto, M.; Pinto, G.; Bonifacio, R. Breaking one barrier at a time: How women developers cope in a men-dominated industry. In Proceedings of the Brazilian Symposium on Software Engineering, SBES '21, Joinville, Brazil, 27 September–1 October 2021; ACM: New York, NY, USA, 2021. [CrossRef]
133. Kizilcec, R.F.; Davis, G.M.; Cohen, G.L. Towards Equal Opportunities in MOOCs: Affirmation Reduces Gender & Social-Class Achievement Gaps in China. In Proceedings of the Fourth (2017) ACM Conference on Learning @ Scale, L@S 2017, Cambridge, MA, USA, 20–21 April 2017; ACM: New York, NY, USA, 2017. [CrossRef]
134. Moya, J.; Flatland, R.; Matthews, J.R.; White, P.; Hansen, S.R.; Egan, M.L. "I Can Do That Too": Factors Influencing a Sense of Belonging for Females in Computer Science Classrooms. In Proceedings of the 54th ACM Technical Symposium on Computer Science Education V. 1, SIGCSE 2023, Toronto, ON, Canada, 15–18 March 2023; ACM: New York, NY, USA, 2023. [CrossRef]
135. Kim, K.A.; Fann, A.J.; Misa-Escalante, K.O. Engaging Women in Computer Science and Engineering: Promising Practices for Promoting Gender Equity in Undergraduate Research Experiences. *ACM Trans. Comput. Educ.* **2011**, *11*, 1–19. [CrossRef]
136. Winter, E.; Thomas, L.; Blair, L. "It's a Bit Weird, but it's OK"? How Female Computer Science Students Navigate being a Minority. In Proceedings of the 26th ACM Conference on Innovation and Technology in Computer Science Education V. 1, ITiCSE 2021, Virtual Event, Germany, 26 June–1 July 2021; ACM: New York, NY, USA, 2021. [CrossRef]

137. Misa, T.J., Organized Advocacy for Professional Women in Computing: Comparing Histories of the AWC and ACM–W. In *Communities of Computing: Computer Science and Society in the ACM*; Association for Computing Machinery and Morgan & Claypool: San Rafael, CA, USA. 2016. [CrossRef]
138. Hedditch, S.; Vyas, D. Crossing the Threshold: Pathways into Makerspaces for Women at the Intersectional Margins. *Proc. ACM Hum.-Comput. Interact.* **2023**, *7*, 1–40. [CrossRef]
139. Sabin, M.; Viola, B.; Impagliazzo, J.; Angles, R.; Curiel, M.; Leger, P.; Murillo, J.; Nina, H.; Pow-Sang, J.A.; Trejos, I. Latin American Perspectives to Internationalize Undergraduate Information Technology Education. In Proceedings of the 2016 ITiCSE Working Group Reports, ITiCSE '16, Arequipa, Peru, 9–13 July 2016; ACM: New York, NY, USA, 2016. [CrossRef]
140. Early, K.; Hammer, J.; Hofmann, M.K.; Rode, J.A.; Wong, A.; Mankoff, J. Understanding Gender Equity in Author Order Assignment. *Proc. ACM Hum.-Comput. Interact.* **2018**, *2*, 1–21. [CrossRef]
141. Matias, J.N.; Szalavitz, S.; Zuckerman, E. FollowBias: Supporting behavior change toward gender equality by networked gatekeepers on social media. In Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing, Portland, OR, USA, 25 February–1 March 2017; pp. 1082–1095.
142. Amirtham S, N.; Kumar, A. The underrepresentation of women in STEM disciplines in India: A secondary analysis. *Int. J. Sci. Educ.* **2023**, *45*, 1008–1031. [CrossRef]
143. Reyes-González, A.M.; Velázquez-Sánchez, L.M.; Rojas-Parra, A.; Chuck-Hernández, C. Interpersonal and academic self-efficacy and its relationship with employment of food industry engineering students: A gender perspective. *Front. Educ.* **2022**, *7*, 860430. [CrossRef]
144. Bourabain, D.; Verhaeghe, P. Equality for all? Support for equal opportunity among professors in Europe. *Sociol. Compass* **2022**, *17*, e13039. [CrossRef]
145. Pandit, J.M.; Paul, B. Gender Diversity, Sustainable Development Goals and Human Resource Management Practices in Higher Education. *Indian J. Hum. Dev.* **2023**, *17*, 111–130. [CrossRef]
146. Tasci, G. Reflections on women in internationalization. *Cypriot J. Educ. Sci.* **2021**, *16*, 703–724. [CrossRef]
147. Finatto, C.P.; Aguiar Dutra, A.R.; Gomes da Silva, C.; Nunes, N.A.; de Andrade Guerra, J.B.S.O. The role of universities in the inclusion of refugees in higher education and in society from the perspective of the SDGS. *Int. J. Sustain. High. Educ.* **2022**, *24*, 742–761. [CrossRef]
148. von Dietrich, P.; Garcia, M.H. New challenges for women workers in Brazil facing the wave of Industry 4.0 technologies. *Gend. Dev.* **2022**, *30*, 459–476. [CrossRef]
149. Heikkinen, M.; Harmoinen, S.; Keiski, R.; Matinmikko-Blue, M.; Pihlajaniemi, T. Making and Taking Leadership in the Promotion of Gender Desegregation in STEM. In *Lecture Notes in Educational Technology*; Springer Nature: Singapore, 2022; pp. 51–68. [CrossRef]
150. Calvo-Iglesias, E.; Epifanio, I.; Estrade, S.; Mas de les Valls, E., Gender Perspective in STEM Disciplines in Spain Universities. In *Lecture Notes in Educational Technology*; Springer Nature: Singapore, 2022; pp. 165–179. [CrossRef]
151. Towni, S.N.; Arisha, A.; Rahman, N.N.; Rasul, I.I.; Hossain, M.; Iftekhar, L. Gender Distribution in Academic Leadership: An Exploratory Study of Top Universities of Bangladesh. In Proceedings of the 2021 World Engineering Education Forum/Global Engineering Deans Council (WEEF/GEDC), Madrid, Spain, 15–18 November 2021; IEEE: Piscataway, NJ, USA, 2021. [CrossRef]
152. Wong, B.; Copsey-Blake, M. Pragmatic, Persistent, and Precarious: The Pathways of Three Minority Ethnic Women in STEM Higher Education. *Int. J. Sci. Math. Educ.* **2022**, *21*, 2123–2142. [CrossRef] [PubMed]
153. Bannikova, L.N.; Baliasov, A.A.; Kemmet, E.V. Attraction and retention of women in engineering. In Proceedings of the 2018 IEEE International Conference "Quality Management, Transport and Information Security, Information Technologies" (IT&QM&IS), St. Petersburg, Russia, 24–28 September 2018; IEEE: Piscataway, NJ, USA, 2018; pp. 824–827.
154. Anid, N. 5 Women in Academia: A Potential STEM Powerhouse. In *The Internet of Women sm Accelerating Culture Change*; River Publishers: Gistrup, Denmark, 2016 ; pp. 119–156.
155. Spieler, B.; Hummel, D.; Herbertz, S.; Mädche, A. Reinforcing gender equality by analysing female teenagers' performances in coding activities: A lesson learned. In Proceedings of the 4th Conference on Gender & IT—GenderIT '18, Heilbronn, Germany, 14–15 May 2018; ACM Press: New York, NY, USA, 2018. [CrossRef]
156. Mason, S.; Bailey, M.; Wadia-Fascetti, S.; Sorcinelli, M.D. Advancing Diversity and Inclusivity in STEM Education. In Proceedings of the 17th Annual Conference on Information Technology Education, SIGITE/RIIT 2016, Boston, MA, USA, 28 September–1 October 2016; ACM: New York, NY, USA, 2016. [CrossRef]
157. Pournaghshband, V.; Medel, P. Promoting Diversity-Inclusive Computer Science Pedagogies: A Multidimensional Perspective. In Proceedings of the 2020 ACM Conference on Innovation and Technology in Computer Science Education, ITiCSE '20, Trondheim, Norway, 15–19 June 2020; ACM: New York, NY, USA, 2020. [CrossRef]
158. Trinkenreich, B.; Wiese, I.; Sarma, A.; Gerosa, M.; Steinmacher, I. Women's Participation in Open Source Software: A Survey of the Literature. *ACM Trans. Softw. Eng. Methodol.* **2022**, *31*, 1–37. [CrossRef]
159. Sadik, O. Encouraging Women to Become CS Teachers. In Proceedings of the Third Conference on GenderIT, GenderIT '15, Philadelphia, PA, USA, 24 April 2015; ACM: New York, NY, USA, 2015. [CrossRef]
160. Zhu, J.; Lunn, S.J.; Ross, M. Characterizing Women's Alternative Pathways to a Computing Career Using Content Analysis. In Proceedings of the 54th ACM Technical Symposium on Computer Science Education V. 1, SIGCSE 2023, Toronto, ON, Canada, 15–18 March 2023; ACM: New York, NY, USA, 2023. [CrossRef]

161. Bartilla, A.; Köppe, C. Organizational Patterns for Increasing Gender Diversity in Computer Science Education. In Proceedings of the 10th Travelling Conference on Pattern Languages of Programs, VikingPLoP '16, Leerdam, The Netherlands, 7–10 April 2016; ACM: New York, NY, USA, 2016. [CrossRef]
162. Alshahrani, A.; Ross, I.; Wood, M.I. Using Social Cognitive Career Theory to Understand Why Students Choose to Study Computer Science. In Proceedings of the 2018 ACM Conference on International Computing Education Research, ICER '18, Espoo, Finland, 13–15 August 2018; ACM: New York, NY, USA, 2018. [CrossRef]
163. Misa, T.J., Solving a Career Equation: The First Doctoral Women in Computer Science. In *Communities of Computing: Computer Science and Society in the ACM*; Association for Computing Machinery and Morgan & Claypool: San Rafael, CA, USA. 2016. [CrossRef]
164. Hernández Herrera, C.A. La opinión de mujeres en STEM sobre lo que impulsa su inclusión. *J. Educ. Innov. Innovación Educ.* **2022**, *22* , 33–56.
165. Naukkarinen, J.K.; Bairoh, S. STEM: A help or a hinderance in attracting more girls to engineering? *J. Eng. Educ.* **2020**, *109*, 177–193. [CrossRef]
166. Fisher, C.R.; Brookes, R.H.; Thompson, C.D. 'I don't Study Physics Anymore': A Cross-Institutional Australian Study on Factors Impacting the Persistence of Undergraduate Science Students. *Res. Sci. Educ.* **2021**, *52*, 1565–1581. [CrossRef]
167. Menacho, A.; Plaza, P.; Sancristobal, E.; Perez-Molina, C.; Blazquez, M.; Castro, M. Halloween Educational Robotics. *IEEE Trans. Educ.* **2021**, *64*, 406–412. [CrossRef]
168. Vasconcelos, V.; Almeida, R.; Marques, L.; Bigotte, E. Scratch4All Project—Educate for an All-inclusive Digital Society. In Proceedings of the 2023 32nd Annual Conference of the European Association for Education in Electrical and Information Engineering (EAEEIE), Eindhoven, The Netherlands, 14–16 June 2023; IEEE: Piscataway, NJ, USA, 2023. [CrossRef]
169. García-Holgado, A.; Gonzalez-González, C.; Peixoto, A. Educational initiatives for bridging the diversity gap in STEM. In Proceedings of the Ninth International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'21), Barcelona, Spain, 26–29 October 2021; ACM: New York, NY, USA, 2021. [CrossRef]
170. Jager, W.; Abramczuk, K.; Komendant-Brodowska, A.; Baczko-Dombi, A.; Fecher, B.; Sokolovska, N.; Spits, T. Looking into the Educational Mirror: Why Computation Is Hardly Being Taught in the Social Sciences, and What to Do About It. In *Advances in Social Simulation*; Springer International Publishing: Berlin/Heidelberg, Germany, 2020; pp. 239–245. [CrossRef]
171. García-Holgado, A.; Verdugo-Castro, S.; Sánchez-Gómez, M.C.; García-Peñalvo, F.J. Facilitating Access to the Role Models of Women in STEM: W-STEM Mobile App. In *Learning and Collaboration Technologies. Designing, Developing and Deploying Learning Experiences*; Springer International Publishing: Berlin/Heidelberg, Germany, 2020; pp. 466–476. [CrossRef]
172. Lan, F.; Cheung, G.; Arora, P.; Richard-Koko, D.; Cole, L. On Designing A 3d Imaging Summer Project For Ontario's High School Students During COVID-19 Pandemic. In Proceedings of the ICASSP 2023—2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP), Rhodes Island, Greece, 4–10 June 2023; IEEE: Piscataway, NJ, USA, 2023. [CrossRef]
173. Travers, M.; Richardson, I.; Higgins, L. Challenges and opportunities when deploying a gender STEM intervention during a pandemic. In Proceedings of the Third Workshop on Gender Equality, Diversity, and Inclusion in Software Engineering, ICSE '22, Pittsburgh, PA, USA, 20 May 2022; ACM: New York, NY, USA, 2022. [CrossRef]
174. Heels, L.; Devlin, M. Investigating the Role Choice of Female Students in a Software Engineering Team Project. In Proceedings of the 3rd Conference on Computing Education Practice, CEP '19, Durham, UK, 9 January 2019; ACM: New York, NY, USA, 2019. [CrossRef]
175. Escudeiro, N.; Escudeiro, P.; Almeida, R.; Matos, P. The ATHENA European University model for Sustainable Education: Mainstreaming good practices for all-inclusive life-long sustainable learning in the digital era. In Proceedings of the Eighth International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'20, Salamanca, Spain, 21–23 October 2020; ACM: New York, NY, USA, 2020. [CrossRef]
176. Huyer, S. Women, ICT and the information society: Global perspectives and initiatives. In Proceedings of the international symposium on Women and ICT creating global transformation—CWIT '05, Baltimore, MD, USA, 12–14 June 2005; ACM Press: New York, NY, USA, 2005. [CrossRef]
177. Biswas, M.; Anwar, M.; Saha, M.; Ahmed, N.; Strengers, Y.; Stillman, L.; Oliver, G. The World is in My Hand Now: Smartphones for Empowering Rural Women in Developing Countries: Smartphones for Empowering Rural Women in Developing Countries. In Proceedings of the International Conference on Information & Communication Technologies and Development 2022, ICTD2022, Seattle, WA ,USA, 27–29 June 2022; ACM: New York, NY, USA, 2022. [CrossRef]
178. UN Women. Gender Equality in the 2030 Agenda for Sustainable Development. 2018. Available online: https://brill.com/view/journals/mpyo/26/1/article-p579_23.xml (accessed on 16 April 2024).
179. García-Silva, E.; García-Holgado, A.; Sánchez-Gómez, M.C. Indigenous Women in Higher Education in STEM: A Case Study in Oaxaca. In *Lecture Notes in Educational Technology*; Springer Nature: Singapore, 2023; pp. 1229–1237. [CrossRef]
180. Sauer, L.Z.; Reis, C.E.R.d.; Dall'Acua, G.; de Lima, I.G.; Giovannini, O.; Villas-Boas, V. Work-in-Progress: Encouraging Girls in Science, Engineering and Information Technology. In Proceedings of the 2020 IEEE Global Engineering Education Conference (EDUCON), Porto, Portugal, 27–30 April 2020; IEEE: Piscataway, NJ, USA, 2020. [CrossRef]

181. Grande, V.; Kinnunen, P.; Peters, A.K.; Barr, M.; Cajander, Å.; Daniels, M.; Lewis, A.N.; Sabin, M.; Sánchez-Peña, M.; Thota, N. Role Modeling as a Computing Educator in Higher Education: A Focus on Care, Emotions and Professional Competencies. In Proceedings of the 2022 Working Group Reports on Innovation and Technology in Computer Science Education, ITiCSE 2022, Dublin, Ireland, 8–13 July 2022; ACM: New York, NY, USA, 2022. [CrossRef]
182. Rojas López, A.; García-Peñalvo, F.J. Initial performance analysis in the evaluation of computational thinking from a gender perspective in higher education. In Proceedings of the Ninth International Conference on Technological Ecosystems for Enhancing Multiculturality (TEEM'21), Barcelona, Spain, 26–29 October 2021; ACM: New York, NY, USA, 2021. [CrossRef]
183. Pappas, I.O.; Giannakos, M.N.; Jaccheri, L. Investigating Factors Influencing Students' Intention to Dropout Computer Science Studies. In Proceedings of the 2016 ACM Conference on Innovation and Technology in Computer Science Education, ITiCSE '16, Arequipa, Peru, 11–13 July 2016; ACM: New York, NY, USA, 2016. [CrossRef]
184. Runa, S.N.; Antoniadi, A.M.; Becker, B.A.; Mooney, C. Student Sense of Belonging: The Role of Gender Identity and Minoritisation in Computing and Other Sciences. In Proceedings of the 25th Australasian Computing Education Conference, ACE '23, Melbourne, VIC, Australia, 30 January–3 February 2023; ACM: New York, NY, USA, 2023. [CrossRef]
185. Mooney, C.; Becker, B.A. Sense of Belonging: The Intersectionality of Self-Identified Minority Status and Gender in Undergraduate Computer Science Students. In Proceedings of the United Kingdom & Ireland Computing Education Research Conference, UKICER '20, Glasgow, UK, 3–4 September 2020; ACM: New York, NY, USA, 2020. [CrossRef]
186. Ballatore, M.G.; Barman, L.; De Borger, J.; Ehlermann, J.; Fryers, R.; Kelly, K.; Misiewicz, J.; Naimi-Akbar, I.; Tabacco, A. Increasing gender diversity in STEM: A tool for raising awareness of the engineering profession. In Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'19, León, Spain, 16–18 October 2019; ACM: New York, NY, USA, 2019. [CrossRef]
187. Serpa, B.; Portela, I.; Costard, M.; Batista, S. Political-pedagogical contributions to participatory design from Paulo Freire. In Proceedings of the 16th Participatory Design Conference 2020—Participation(s) Otherwise—Volume 2, PDC '20, Manizales, Colombia, 15–20 June 2020; ACM: New York, NY, USA, 2020. [CrossRef]
188. Cain, C.C.; Morgan Bryant, A.J.; Buskey, C.D. The Role of Historically Black Colleges and Universities in American STEM Education. In Proceedings of the 2018 ACM SIGMIS Conference on Computers and People Research, SIGMIS-CPR '18, Buffalo-Niagara Falls, NY, USA, 18–20 June 2018; ACM: New York, NY, USA, 2018. [CrossRef]
189. Ruipérez-Valiente, J.A.; Halawa, S.; Reich, J. Multiplatform MOOC Analytics: Comparing Global and Regional Patterns in edX and Edraak. In Proceedings of the Sixth (2019) ACM Conference on Learning @ Scale, L@S '19, Chicago, IL, USA, 24–25 June 2019; ACM: New York, NY, USA, 2019. [CrossRef]
190. Ceccarini, C.; Zambon, T.; De Luigi, N.; Prandi, C. SDGs Like You Have Never Seen Before!: Co-designing Data Visualization Tools with and for University Students. In Proceedings of the 2023 ACM Conference on Information Technology for Social Good, GoodIT '23, Lisbon, Portugal, 6–8 September 2023; ACM: New York, NY, USA, 2023. [CrossRef]
191. Ahmadi, M.; Weibert, A.; Ogonowski, C.; Aal, K.; Gäckle, K.; Marsden, N.; Wulf, V. Challenges and lessons learned by applying living labs in gender and IT contexts. In Proceedings of the 4th Conference on Gender & IT—GenderIT '18, Heilbronn, Germany, 14–15 May 2018; ACM Press: New York, NY, USA, 2018. [CrossRef]
192. Thakkar, D.; Sambasivan, N.; Kulkarni, P.; Kalenahalli Sudarshan, P.; Toyama, K. The Unexpected Entry and Exodus of Women in Computing and HCI in India. In Proceedings of the 2018 CHI Conference on Human Factors in Computing Systems, CHI '18, Montreal, QC, Canada, 21–26 April 2018; ACM: New York, NY, USA, 2018. [CrossRef]
193. Zhang, P. A Survey on the Current Situation and Influencing Factors of Selection of Subjects in Stem Field in China. In Proceedings of the 2021 2nd Asia-Pacific Conference on Image Processing, Electronics and Computers, IPEC 2021, Dalian, China, 14–16 April 2021; ACM: New York, NY, USA, 2021. [CrossRef]
194. Dahlberg, T.; Barnes, T.; Buch, K.; Rorrer, A. The STARS Alliance: Viable Strategies for Broadening Participation in Computing. *ACM Trans. Comput. Educ.* **2011**, *11*, 1–25. [CrossRef]
195. Tisza, G.; Papavlasopoulou, S.; Christidou, D.; Voulgari, I.; Iivari, N.; Giannakos, M.N.; Kinnula, M.; Markopoulos, P. The role of age and gender on implementing informal and non-formal science learning activities for children. In Proceedings of the FabLearn Europe 2019 Conference, FabLearn Europe '19, Oulu, Finland, 28–29 May 2019; ACM: New York, NY, USA, 2019. [CrossRef]
196. King, J.; Bond, T. Parents' and students' satisfaction with the use of information technology in government schools in Queensland, Australia. In Proceedings of the Seventh World Conference on Computers in Education Conference on Computers in Education: Australian Topics, Copenhagen, Denmark, 29 July–3 August 2001; Volume 8, pp. 55–59.
197. Conde, M.Á.; Fernández, C.; Alves, J.; Ramos, M.J.; Celis-Tena, S.; Gonçalves, J.; Lima, J.; Reimann, D.; Jormanainen, I.; Peñalvo, F.J.G. RoboSTEAM—A Challenge Based Learning Approach for integrating STEAM and develop Computational Thinking. In Proceedings of the Seventh International Conference on Technological Ecosystems for Enhancing Multiculturality, TEEM'19, León, Spain, 16–18 October 2019; ACM: New York, NY, USA, 2019. [CrossRef]
198. Onaindia, M., Educación Universitaria para la Sostenibilidad. In *Libro Seminario: Teoría y Práctica de la Sostenibilidad en el Currículum Universitario*; Universidad del País Vasco/Euskal Herriko Unibertsitatea: Leioa, Spain, 2016; pp. 16–19.
199. Cheong, M.; Leins, K.; Coghlan, S. Computer Science Communities: Who is Speaking, and Who is Listening to the Women? Using an Ethics of Care to Promote Diverse Voices. In Proceedings of the 2021 ACM Conference on Fairness, Accountability, and Transparency, FAccT '21, Virtual Event, Canada, 3–10 March 2021; ACM: New York, NY, USA, 2021. [CrossRef]

200. Mongeon, P.; Paul-Hus, A. The journal coverage of Web of Science and Scopus: A comparative analysis. *Scientometrics* **2015**, *106*, 213–228. [CrossRef]
201. Universidad de La Frontera. *Declaración Compromiso por la Sustentabilidad*; Universidad de La Frontera: Temuco, Chile, 2024.
202. Ley N°21.369: Regula el Acoso Sexual, la Violencia y la Discriminación de Género en el Ámbito de la Educación Superior. 2021. Available online: https://www.bcn.cl/leychile/navegar?idNorma=1165023 (accessed on 27 December 2023).
203. Universidad de La Frontera. Memoria Anual 2022, Dirección de Equidad de Género, Universidad de La Frontera. 2022. Available online: https://deg.ufro.cl/wp-content/uploads/2023/11/memoria-2022-DEG.pdf (accessed on 27 December 2023).
204. Universidad de La Frontera. Diagnóstico de Situación y Relaciones de Género en la Universidad de La Frontera. 2020. Available online: https://www.ufro.cl/images/UFRO_AL_DIA/2020/diciembre/24/Diagnostico-Situacion-y-Relaciones-de-Genero-en-UFRO.pdf (accessed on 27 December 2023).
205. Universidad de La Frontera. Política de Igualdad y Equidad de Género de la Univerisdad de La Frontera. 2022. Available online: https://deg.ufro.cl/wp-content/uploads/2022/09/politica-de-igualdad-y-equidad-de-genero.pdf (accessed on 27 December 2023).
206. UNESCO. Educación para la Ciudadanía Global y la Paz. 2024. Available online: https://www.unesco.org/es/global-citizenship-peace-education (accessed on 5 January 2024).