Gender Equality Training for Students in Higher Education: A Scoping Review

Claire Condron, Mide Power, Midhun Mathew, Siobhan Lucey, Patrick Henn, Tayna Dean, Michelle Kirrane-Scott,, Walter Eppich., Siobhan M. Lucey

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Abstract

Despite recent improvements, gender inequality persists within the higher education sector, as evidenced by the proportionally greater number of student and academic leadership positions occupied by male students and staff. Gender equality training for students will build capacity to address biases and accelerate culture change in higher education institutes (HEIs). This scoping review maps the literature related to current best practice in gender equality training for students in higher education. Systematic database searches of peer-reviewed and grey literature were carried out and 3140 titles, 33 abstracts, and 52 full-text articles were screened for eligibility with 14 articles selected for inclusion. The selected studies detail a range of pedagogical approaches, including didactic lectures, participatory and co-design workshops, reflective writing, and service learning, with durations ranging from a single interaction to one year. Most articles reviewed do not explicitly state their study aims or research question, and the theoretical underpinnings are generally vaguely described. The longer term impact of most interventions is unclear, as evaluation metrics seldom go beyond the level of adoption. This scoping review shows that the literature base for gender equality training for third level students lacks coherence, highlighting the need for further work to evaluate its impact.

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Abstract

Despite recent improvements, gender inequality persists within the higher education sector, as evidenced by the proportionally greater number of student and academic leadership positions occupied by male students and staff. Gender equality training for students will build capacity to address biases and accelerate culture change in higher education institutes (HEIs). This scoping review maps the literature related to current best practice in gender equality training for students in higher education. Systematic database searches of peer-reviewed and grey literature were carried out and 3140 titles, 33 abstracts, and 52 full-text articles were screened for eligibility with 14 articles selected for inclusion. The selected studies detail a range of pedagogical approaches, including didactic lectures, participatory and co-design workshops, reflective writing, and service learning, with durations ranging from a single interaction to one year. Most articles reviewed do not explicitly state their study aims or research question, and the theoretical underpinnings are generally vaguely described. The longer term impact of most interventions is unclear, as evaluation metrics seldom go beyond the level of adoption. This scoping review shows that the literature base for gender equality training for third level students lacks coherence, highlighting the need for further work to evaluate its impact.

Key words: gender equality, third level students, training, higher education institutes

1   Introduction

Institutions of higher education (HEIs) can be effective allies in the fight for diversity, inclusion, and gender equality in the education context and in society as a whole. The leadership, academic and administrative staff, and students of HEIs, are increasingly mobilised by the United Nations Agenda 2030 Agenda for Sustainable Development Goals (SDGs) (UNESCO, (2017).   HEIS, (2021), recommends that all formal education curricula should feature education for sustainable development. The principles of gender equality are integral to the goals, targets, and indicators of all SDGs and goal five, 'Achieve gender equality and empower all women and girls,' is of particular importance.   Regrettably, HEIs continue to be organizations that are both gendered and gendering (Rosa et al, 2020). Gender equality at HEIs is persistently hindered by structural, institutional, and cultural barriers, (GEAR, 2017). Acai argues that change must start early in a student's academic career to address and combat gender inequality in the higher education setting (Acai et al, 2019)

Recent statistical reports on gender equality data in the European Union (EU) show that female students make up the majority of the undergraduate population in HEIs, yet several published reports highlight ongoing cultural, institutional and structural barriers inhibiting gender equality from true realisation in this sector (Advance HE, 2021). Male students remain a majority among postgraduates (Advance HE, 2021). Additionally, research highlights that gender inequality that exists in student leadership, demonstrating that although females made up 55% of the student body, they represented only 33% of the leadership in student organisation (Handayani and Widodo, 2019).

In Ireland, the undergraduate student population is comprised of approximately equal numbers of women and men. However, in 2016, the Higher Education Authority (HEA, 2016) reported that most of the country's student unions' officers tended to be young, white, and male, an   inequality also evident internationally. This gender imbalance has been replicated in senior leadership in third level institutions (HEA, 2016). While much has been achieved since 2016, the recently published subsequent report maintains the recommendation to embed gender equality, and equality more

broadly, into teaching, learning, research, and quality assurance processes (HEA, 2020). To this end student leaders require training that increases awareness and nurtures competencies to actively address gender inequality during their academic experience. Such training for current student leaders has the potential to bring about sustainable change and future-proof gender equality in HEI leadership. A preliminary literature review suggests that gender equality-based training is happening in second and third level education settings including didactic teaching, face-to-face collaboration project, site visits, case studies and coaching (Toraman & Ozen, 2019), (Dür & Keller, 2018), (Segovia-Pérez et al, 2019). To date, a comprehensive review collating and synthesising the available evidence on gender equality training for third level students has not yet been carried out. Educators have a responsibility to deliver appropriate and effective opportunities for skills training and practice. This review is a component of a detailed needs assessment following the Kern's 6-step framework for curriculum development and implementation (Thomas et al., 2016).

The scoping review approach allows identification and synthesis of all relevant literature regardless of study design and is useful in clarifying key concepts and definitions in the literature. Our work aims to support gender equality in HEIs by working with the leaders of the future (men, women, non-binary) to address biases and accelerate culture change. Understanding the nature of interventions and approaches currently being used to improve the knowledge, skills, and attitudes (KSAs) of students is an integral step in the design of an effective training programme. The findings of this scoping review will inform education researchers, faculty, and academic administrators on the application of gender equality training, pinpoint gaps in the literature, and help identify opportunities for instructional designers and subject matter experts to improve course content.

The primary objectives of this scoping review is to produce a descriptive overview of gender equality training and interventions for students in higher education / post-secondary education which will inform curriculum development for skills training in the domain of gender equity. The secondary objectives are;

1. To determine the methodology and content of gender equality training delivered to students;

2. To establish the skills and competences which are required by students to promote gender equality;

3. To ascertain how gender equality training is evaluated;

4. To review the extent to which the concept of leadership is included in gender equality interventions;

5. To establish how gender equality leadership skills are fostered among students.

2   Methods.

The review is structured using Arksey & O'Malley's (2005) six -stage framework as follows;

 (1) identifying the research question; (2) identifying relevant studies; (3) study selection; (4) charting the data; (5) collating, summarizing, and reporting the results and (6) expert consultation. This approach was chosen due to its well-established rigour and effectiveness (Peterson, 2017). Our review protocol has been peer reviewed to ensure the appropriateness and effectiveness of our methods (Condron et al, 2023).

This review involved the analysis of publicly available empirical research and the production of secondary data; therefore, ethical approval was not required.

2.1   Identifying the Research Question.

Using the Population Concept Context (PCC) framework (Peters *et al,* 2020), the primary and secondary research questions were developed in alignment with the previously stated objectives (Table 1). The population includes students in higher education; the concept, gender equality training; and the context encompass all higher education institutions.

2.2   Identifying Relevant Studies.

Following a preliminary search to identify key terms, the search strategy was designed in consultation with an experienced research librarian. The search terms are comprised of three thematic combinations, including: (1) gender equality training, (2) higher education institutions and (3) students, each separated with the Boolean operator AND. Within each thematic combination, search terms were separated with the Boolean operator OR. Wildcards were used to ensure the inclusion of plurals and variation in spelling across the search terms. The search was limited to studies and other sources published between January 2011 and November 2021.

An example of the search strategy used in two of the key databases is shown in Table 2.

Systematic searches were carried out by the librarian in six databases of peer-reviewed research, including APA PsycInfo, CINAHL, EMBASE, MEDLINE (Ovid), Scopus and Web of Science and three further databases, MedEdPortal, MedEdPublish and Open Grey, to identify any grey literature that could further inform the review. The search was limited to titles, abstracts, and key words, to optimise the return of articles and sources of evidence with an appropriate focus on the topic in hand. All identified citations were collated in EndNote 20.2.1 (Clarivate Analytics, Philadelphia, PA, USA), and duplicates were removed. This EndNote library was exported to Rayyan, (Ouzzani et al, 2016) to facilitate collaborative evidence screening.

2.3   Study Selection.

In line with recommendations from Peters *et al* (2020), evidence selection was based exclusively on agreed eligibility criteria. These inclusion and exclusion criteria were developed in accordance with the previously stated research questions, building on the elements of the PCC framework (Table 3). A reflexive approach was used throughout the selection process to adapt and develop the eligibility criteria in an iterative fashion through discussion within the research team throughout the course of the screening process.

Using Rayyan, CC and MP screened the titles of all sources independently and disagreements were resolved through discussion. The included abstracts were then screened by CC and MP in a similar fashion. The full-text studies were retrieved and CC, AH, MP, SL, SL, PH and TD collectively reviewed the first ten texts to pilot the eligibility criteria framework. Group discussion was used to further clarify and develop the criteria. The remaining texts were then reviewed by two reviewers independently, again with any disagreements between these reviewers resolved by discussion. CC and MP acted as third reviewers if a consensus could not be reached.

The reference lists of the included texts were back searched by MM and CC for further relevant studies and sources. Title and abstract screening by MM and CC of articles from all issues of two key journals, Gender, Work and Organization, and the Journal of Gender Studies between January 2011 and November 2021 did not yield any additional studies which met our inclusion criteria.

2.4   Charting The Data.

A standardised data charting tool, (Table 4), was developed to extract data. This tool was adapted by the research team from the JBI template data extraction instrument to align with the review objectives and questions (Peters *et al.,* 2020).

The charting form was expanded and refined in an iterative fashion by all authors during the full text screening process. Data extraction was carried out by two reviewers working independently, with a single finalised form for each study agreed through collaborative discussion and communication.
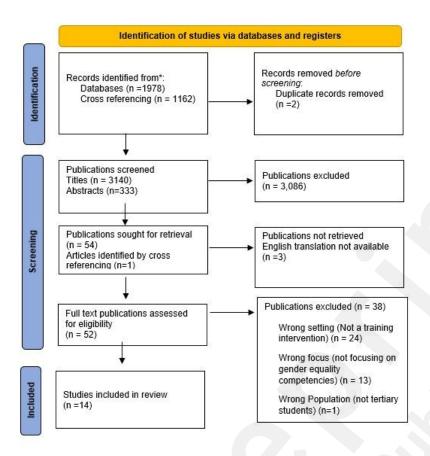
3   Results.

3.1   Collating, Summarising and Reporting the Results.

The study selection process is presented in a flow diagram (Figure 1) as per the Preferred Reporting

Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR)

(Tricco et al., 2018). Based on the database searches, and the subsequent hand search of other

sources as described above, 2958 titles were screened. This yielded 175 abstracts for further

screening. Fourteen full text articles were selected for inclusion in the review.

Figure 3.1

PRISMA 2020 Flow Diagram For The LIBRA Scoping Review.

Note: The PRIMSA diagram details our process for the identification and selection of included articles. The original database search identified 1978 records. An additional 1162 records were screened by title. These articles were identified by citation cross referencing, hand searching the table of contents of The Journals of Gender Studies and Gender Work and Organisation from 2011-2021 and from the references of three pertinent reviews. (Newman et al., (2016), Fisher et al., (2020), Denson et al., (2021)). After duplicates were removed, there were 3140 unique citations eligible for title screening and 333 for abstract screening by two independent reviewers. Fifty-two articles were full screened by 2 or more independent reviewers and fourteen articles were included in the review synthesis.

3.2   Study Characteristics.

Basic descriptive analysis is the most suitable approach to data analysis given the exploratory nature of a scoping review (Peters et al., 2020). Thirteen of the publications included in the final sample were peer-reviewed academic articles and one was a conference paper. The details of each article, including the country in which the study took place, the participants, aims, methodology, evaluation, and outcomes, are summarised in Table 5. Much of the work in this field has been conducted in the

United States of America (USA) (5/14) and in Europe, with Spain (3/14), (1/14) contributing. A further 3 studies were conducted in Turkey, with a single study located in each of Taiwan and South Africa. In keeping with the agreed search strategy for this review, the included studies date from 2011 to 2021. The published studies demonstrate a growing interest in the topic, as 8 of the final 14 studies were published in the latter 3 years of the selected period (2019-2021).

3.3   Settings.

All these educational programs (n=14) took place at individual third level academic institutions. One involved collaboration with secondary schools within the same country requiring participants to present to school students, two programs incorporated workplace visits and one employed an online e-discussion forum. Most studies did not provide information on how the program was financially supported. Some of the training interventions were undertaken as official curricula to which the participants were enrolled as part of their required studies. Most studies recruited volunteers, one via a competitive recruitment process and another accepted nominations from teachers. One study reported that learners were incentivized to participate in the training experience with a €300 book token per term

3.4   Participants.

All studies provided some demographic information on participants and the number of participants in the studies ranged from 9 to 546, with an average of 134 participants. With respect to gender of the participants, some of the interventions specifically targeted either females (Segovia-Pérez *et al*, 2019) or males (Abrams et al., 2016) (Locke et al., 2021) (de Villiers et al., 2021). In the remainder of the studies which reported participant gender, the majority were female. When reported, the age range of participants was typical of most in higher education since most were in their early twenties. Most studies involved participants from single faculties. There was a slight predilection for interventions involving students in education and the social science programmes (Kennedy et al., 2011), (Bosch et al., 2021), (Altınova et al., 2019), (Naskali and Kari 2020). There

was also representation from health sciences, including medicine (Liao & Wang, 2020), nursing (de Villiers et al., 2021) psychology (Shields et al., 2011), (Case &Lewis, 2012) and occupational therapy, (Falk et al., 2012) in addition to engineering faculties (Abrams et al., 2016), (Locke et al., 2021). In two studies, the participants were from a variety of academic programmes: Business, Social Sciences, Law, Engineering, and Architecture (Segovia-Pérez et al., 2019), (de Villiers et al., 2021). Freedman, et al, (2018) recruited participants from student accommodation. One study did not provide information on participant specialty.

3.5   Content.

The works reviewed are from countries with significant variation in political-cultural contexts, civil liberties, and personal freedoms and thus the content of the courses is widely varied reflecting local needs. The language used to describe content themes is also disparate. The main content areas covered in the training programmes are listed in Table 6. Five of the studies from this heterogeneous group explored the impact of courses, modules or programmes which directly aimed to increase awareness of gender and gender-based issues or enhance gender equality knowledge (Falk et al., 2012), (Altinova et al., 2019) (Toraman & Ozen, 2019) (Gorrotxategi et al., 2020) (de Villiers et al., 2021). Another group of studies sought to enhance knowledge and skills indirectly through another medium, such as movies (Kennedy et al., 2011), testimonial videos (Case et al., 2014), games (Shields et al., 2011) (Freedman et al., 2018), and literature studies (Liao and Wang, 2020). Two studies reported on the same initiative, an allyship programme in a college of engineering which encompassed gender equity issues (Abrams et al., 2016). A subsequent paper described the extension of the initial project (Locke et al, 2021). A single study was identified which related specifically to a leadership programme for women (Segovia Perez et al., 2019). The final study related to a service-learning project on gender and technology (Bosch et al., 2021).

3.5.1 Gender Equality Leadership Skills.

The concept of leadership featured explicitly in two of the included articles (Segovia Perez et al., 2019; Locke et al., 2021). Both publications detailed how gender equality leadership skills were fostered amongst the participants. The concepts of social identity, privilege, micro-aggressions, and implicit bias were explored by Locke and colleagues (2021) in a leadership program for male student allies. In contrast, Segovia Perez *et al* (2019) ran a leadership program for female students which covered topics such as personal branding, communication, networking, public speaking, negotiation, leadership techniques and business management.

3.6   Study Design.

The most common (n=4) study type was an interventional mixed methods pre-post design, wherein a single group of participants completed self-assessments of confidence, ability and/or knowledge prior to the intervention and then participated in a module or workshops. The learners completed the same assessments after the intervention in addition to participating in focus groups or interviews. Interventional studies using pre and post intervention questionnaires were the next most common (n=3) study design. Two studies employed a quasi-experimental design, and one employed a randomised control trial design. The final pool of articles comprised five qualitative studies employing post event analysis only ranging from educators' reflections (n=2) to analysis of student diaries or essays (n=2) and a post event questionnaire (n=1).

3.7   Delivery Methods.

Methods of delivery varied widely. Most studies (n =11) were described as longitudinal events that occurred over multiple sessions, ranging from several months to a year. One study consisted of fifteen European Credit Transfer and Accumulation System (ECTS) where 1 ECTS is equal to between 25 to 30 hours. Two studies described single event game base interventions. The format of teaching was also wide-ranging and included lectures and workshops, guest speakers, small group discussions, workplace visits, role play, videos, movies and literature analysis, student presentations and online discussion.

3.8   Assessment And Evaluation.

Most studies reported no assessments of learner competency post training. Most studies (n=8) measured learner outcomes via survey instruments examining perceptions, sympathies, or confidence. Two studies measured learning by thematically analyzing reflection writing or diaries. No study reported on transfer of learning

3.9   Theoretical And Conceptual Foundations.

The array of theoretical and conceptual foundations cited by the authors are displayed in Table 6. Most studies introduced and discussed theoretical underpinnings as a reason to provide training (12/14) and less so for instructional design and program content. Furthermore, there was little or no reference to educational learning theories or pedagogical approaches when designing learning objectives, delivery methods, or evaluation and assessment of the programs. Exceptions include the use of Broido's (2005) Model of Allyship by Abrams and colleagues (2016) and Kolb's (1984) Experiential Learning Model by Shields *et al* (2011).

4   Discussion.

This scoping review explores and maps the evidence related to gender equality training and interventions for university students. This evidence base will inform the development of the LIBRA project, a gender equality training program for student leaders in Irish HEIs using simulation-based learning. We describe content areas, delivery modes, participants, settings, evaluation methods and frameworks used in previous initiatives in higher education internationally. Overall, our review shows that participants are satisfied with gender equality-enhancing training activities for third-level students with a positive change in self-reported attitudes, knowledge, and willingness to change behaviors following training. Improvement or impact on skills to support gender equality is less frequently observed or demonstrated, as is any change at the organization level.

We performed a detailed analysis to map the key features across the studies included in our review.

The European Institute for Gender Equality understands developing competence in gender equality as being able to identify and change gender stereotypes and gendered roles (EIGE n.d). Thus, gender equality training should enable and empower participants to (1) define and understand gender equality principles, (2) identify gender inequalities in their field, (3) incorporate gender in their planning and policy implementation, (4) monitor progress and (5) review and assess their work from a gender perspective (EIGE n.d.). We have incorporated these concepts with developments from the wider gender equality training literature below. Combined with our own experience as educators and consultation with experts in gender equality we offer insights beyond those in literature to provide a lens through which we can consider and synthesize our findings. From this synthesis, we have created recommendations for both practice and future research to help close the gap between the current practice and desired outcomes.

4.1   Instructional Design.

Pedagogical frameworks should guide the design and implementation of educational activities. These frameworks are based on established principles of teaching and learning and provide a structured approach to designing effective and engaging learning experiences. Without a solid theoretical foundation, it can be challenging to determine the best instructional strategies to use, how to sequence and structure the content, and how to assess whether learners have achieved the desired learning outcomes. A lack of underpinning theory in the instructional design of training can lead to an inconsistent approach and potentially ineffective training. By grounding an approach in theory, educators aiming to upskill university students in gender equality skills can design training that is more likely to be effective in achieving the EIGE five categories of learning outcomes. Interventions to combat biases are particularly effective when they involve active participation rather than passive learning (Shields et al., 2011), (Freedman, et al., 2018).

4.2   Diversity Of Content.

Ensuring diversity of content to cover knowledge, skills, and attitudes is critical for designing effective learning experiences. Not only must learners develop a deeper understanding of the subject matter and its various dimensions, they must also develop the skills and attitudes to bring about change in behaviours. Communication skills, team working, and leadership skills training can support learners to become more adaptable, and better equipped to promote a gender equality agenda.

4.3   Leadership.

Within the body of evidence included in this scoping review, the concept of leadership appears underrepresented in most gender equality training initiatives. One notable exception is the Women's Leadership Program for female university students described by Segovia Perez *et al*, (2019). The authors demonstrated that leadership training enhanced learner self-confidence and their view of their own capacities, providing tools and guidelines for professional communication and personal branding. Enhancing leadership skills are also considered by Locke et al (2021), who describe a course that focuses on gender equity and the practice of inclusive leadership for male allies in the STEM fields. The authors state that this course will continue to be offered, with plans to explore changes in student behaviours, in addition to investigating potential trends or differences in students in varying engineering majors and academic careers stages. Furthermore, a similar workshop for new engineering staff at a prominent state company has also been offered, thereby demonstrating the potential of gender equality training initiatives to promote linkages between higher education and industry, and indeed society more widely.

4.4   Intersectionality.

Case *et al,* (2014 p. 737) recommends an intersectional approach for future work '*Future*

research considering several forms of privilege within the same intervention would provide information about the learning process". They conclude that "teaching and learning about LGBT psychology through an intersectional lens allows students from a variety of backgrounds to connect seemingly irrelevant systems of oppression and privilege to their own social identities and social locations." These authors suggest that training which addresses intersections of identity to allow further understanding of sexism, heterosexual privilege and male privilege will further raise awareness of not only privilege but also the complexities of identity and the matrix of oppression (Case et al., 2014). (Gorrotxategi et al., 2020) demonstrates that interactive training in gender education that employs the Creative Factory methodology creates a context of reflection and knowledge generation and promotes a significant improvement in knowledge about transgender and slight improvements in transphobia. Bosch *et al* report on a Service-Learning intervention, employing community engagement pedagogies that facilitate learners to volunteer with an agency and engage in reflection activities to deepen understanding. After the experience in schools with a great diversity of social backgrounds, learners were motivated to reflect on intersectionalities, such as origin or class (Bosch et al., 2021).

4.5   Delivery, Implementation And Evaluation.

The nature of gender equality training interventions identified for this review are heterogeneous. This can be seen in terms of the format of interventions, and whether gender equality knowledge and skills were directly seen in terms of the population, concepts, and contexts. Delivery, implementation, and evaluation are critical components of any effective learning program, and standardization of these components can help ensure that training is effective, efficient, and consistent and will allow evaluation of its impact. The Irish National Forum for the Enhancement of Teaching and Learning in Higher Education (2019) have suggested that "impact is best identified through a range of evidence broad enough to provide robust verification for enhanced knowledge,

behaviors and practices". Furthermore, researchers are advised to consider both quantitative and qualitative forms of evidence. A longitudinal approach to evaluation is recommended in preference to singular events to ensure that the full value of an intervention can be captured over time. Program designers may also wish to consider evaluation at both participant and institutional level.

4.6   Faculty Development.

Verge et al, (2018) state that it is crucial to enhance the teaching staff's required qualifications, account for institutional opposition to gender-related change, and implement monitoring and evaluation systems. These steps are important to ensure that training outcomes are regularly assessed and improved when integrating gender equality training into higher education programs.

4.7   Compulsory Training.

UNESCO (2015) recommends that gender equality should be integrated into the whole program of faculties of education, rather than being included as a course. Toraman and Ozen (2019) found that the gender equality training offered as a compulsory-elective course in the faculty of education did not produce the expected results for their students. de Villers *et al*, (2021) note that student leaders who volunteer may have leadership value systems and may not reflect the student body. Abrams *et al, (*2016) indicate plans to embed their programme in the engineering curriculum and participants will be recruited as future teaching assistants to enhancing sustainability. It has been demonstrated that the elective courses in general receive more favorable responses than the required courses using both scaled response evaluation formats and open-ended response evaluation forms. Care should be taken to ensure that the course's status as elective or required is considered for evaluation purposes (Darby, 2006). Significant research is required to bring gender mainstreaming to higher education. The Swedish Secretariat for Gender Research (2016), distinguish between gender-

mainstreamed teaching as a pedagogical practice and how knowledge about gender and gender equality is integrated into the subject content. They call for resources for research-based pedagogical development for the implementation of teaching activities.

5   Strengths And Limitations.

To the authors' knowledge, this is the first review of the literature focusing on gender equality training and interventions for third level students. The search strategy was comprehensively developed by all authors with the support of an experienced librarian, to facilitate a thorough and extensive database search. The searches carried out were limited to the nine databases available to the authors. However, following consultation with the librarian, the process of hand-searching the reference lists of the included articles to identify important studies and grey literature may be considered a strength of this review. It is also important to note the lack of relevant literature available, highlighting a significant gap in the evidence base for this area and this should encourage further research.   Considering the accelerating interest in equality diversity and inclusion issues in most recent years, relevant work may have been missed in the months since the main literature search was conducted. Excluding studies which focused on mentorship programmes, gender equality in healthcare delivery and gender studies modules may have excluded potentially useful information. However, following the preliminary database searching and screening, we concluded that these studies did not fully align with the research objectives for this review.

6   Implication For Practice.

This reviews aims to map the depth and breadth of gender equality training for student leaders in HEI to support curriculum development for training.   Our findings suggest room for improvement in the conduct and reporting of research on training interventions with particular attention to theoretically informed decisions about the development of learning activities, the choice of instructional methods and tools and resources to implement the interventions. In addition a more

effective approach to evaluation that goes beyond the immediate reaction of learners and assess behaviour change is required to allow continuous improvements in this field.

7   Conclusion.

Initiatives like the Athena Swan Charter, a framework to support gender equality within higher education and research, seek to advance equal opportunities for all genders in HEIs across the globe. However, significant gender inequality remains, and encouraging positive leadership amongst students can promote the leap to equality. Appropriate sustainable and effective skills training is needed to increase awareness and nurture competencies for male, female and non-binary student leaders to actively address gender inequality and such training will have an impact on the HEIs and wider community.

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Table 1:

Primary And Secondary Research Questions

Primary	What is the current nature and scope of gender equality training and interventions delivered to students in higher education?
Secondary	How is gender equality training delivered to students, and what are the key topics included in the intervention?
	What specific skills and competences are taught to students to enable them to promote gender equality?
	How is gender equality training evaluated?
	To what extent is the concept of leadership included in gender equality interventions?
	How are gender equality leadership skills fostered among students?

Notes: The research questions that guide our scoping review

Table 2:

Search Strategy

1	TI (gender N2 training OR bias N2 training OR discrimination N2 training OR diversity N2 training OR equali N2 training OR inclusion N2 training OR sexuality N2 training) OR AB (gender N2 training OR bias N2 trainin OR discrimination N2 training OR diversity N2 training OR equality N2 training OR inclusion N2 training O sexuality N2 training)
2	TI (gender N2 course$ OR bias N2 course$ OR discrimination N2 course$ OR diversity N2 course$ OR equali N2 course$ OR inclusion N2 course$ OR sexuality N2 course$) OR AB (gender N2 course$ OR bias N2 course OR discrimination N2 course$ OR diversity N2 course$ OR equality N2 course$ OR inclusion N2 course$ O sexuality N2 course$)
3	TI (gender N1 program* or bias N1 program* or discrimination N1 program* OR diversity N1 program* equality N1 program* OR inclusion N1 program* OR sexuality N1 program*) OR AB (gender N1 program* O bias N1 program* OR discrimination N1 program* OR diversity N1 program* OR equality N1 program* O inclusion N1 program* OR sexuality N1 program*)
4	TI (gender N1 awareness* or gender N1 bias or gender N1 equality OR gender N1 inclusion OR gender N1 equi OR sex N1 bias) OR AB (gender N1 awareness* or gender N1 bias or gender N1 equality OR gender N1 inclusi OR gender N1 equity OR sex N1 bias)
5	1 OR 2 OR 3 OR 4
6	TI ("higher education" OR "third level education" OR "tertiary education" OR university* OR college$) OR A ("higher education" OR "third level education" OR "tertiary education" OR university* OR college$)
7	TI (Undergraduate$ OR postgraduate$ OR student$) OR AB (Undergraduate$ OR postgraduate$ OR student$)
8	1 AND 2 AND 3
9	LIMIT 8 to 2010-2021

Notes: An example of our search strategy showing the search string for the APA Psycinfo and CINAHL data bases.

Table 3:

Eligibility Criteria For Evidence Selection

Include	Exclude
Population: Undergraduate or postgraduate students in higher education.	**Population**: Primary or secondary students; higher education staff; general public.
Concept: • Interventions (e.g., campaign/workshop) promoting gender equality awareness or gender equality competences. • Intervention which includes a specific goal or objective to educate/raise awareness of gender equality or to foster competences in gender equality. • Interventions inside or outside of the academic curriculum e.g., project within a module/exercise within a module, or course/programme external to course of study. • Articles/sources focusing on the experience of participation in an intervention. • Interventions can also focus on other aspects of Equality Diversity Inclusion (EDI) training provided gender equality is included. • Interventions involving gender equality in terms of gender diversity (transgender, non-binary, and gender diverse students). • Training in gender equality for student teachers.	• Measuring gender balance in higher education courses. • Strategies to promote equality among applicants to courses. • Experiences of gender/gender inequality among students. • Impact of gender on subject-specific competences, e.g., programming/spatial awareness, etc. • Recruitment/retention of female students in academic courses. • Gender equality in healthcare • Mentorship programmes • Diversity / EDI programmes that do not include a gender aspect. • Gender studies modules in which the goal is to inform on a variety of gender-related theory. • Articles focusing on a whole-of-campus institutional change. • Research on students' attitudes to gender equality unless these form part of a specified intervention. • Exploring the perceptions or experiences of people delivering the intervention.
Context: Higher education institutions	**Context:** Primary/secondary schools; youth services; community services
Publication Dates: Between January 2011 and November 2021	**Publication Date:** Prior to January 2011
Sources: • Peer-reviewed literature and grey literature (dissertations, websites, conference papers, corporate documents, government reports, preprints, proceedings, research reports, periodicals) • Secondary research i.e., literature, systematic or scoping reviews	**Sources:** Books; book and film reviews
Language: Studies in English	**Language:** Studies for which no English translation is available

Notes: The inclusion and exclusion criteria applied to paper selection.

Table 4:

Data Charting Form

Heading	
Study details (Authors; Year, Title, Citation)	
Location	
Context	
Type of source	
Study aims/intervention aims	
Participant details and sample size	
Research question(s) addressed	
Study design	
Intervention style and duration	
Intervention content	
Intervention methods	
Outcome evaluation measures	
Key findings	
Miscellaneous	
Interesting observations	
Gender equality theories employed	
Incorporation of gender equality and leadership	
Incorporation of intersectionality	
Incorporation of transgender and gender diverse inclusivity	

Notes: The form used to extra data and chart data for each paper

Table 5:

SUMMARY OF INCLUDED STUDIES

Study	Country	Population	Aim(s)	Methodology	Evaluation	
Shields *et al* (2011)	USA	n=118 62 female; 53 male; 3 non-responders Mean age: 19 yrs.	To evaluate game-like simulation in teaching the nature and consequences of unconscious biases and stereotyping, which underlie gender inequity.	Experimental group divided into 2 teams, who participated in WAGES–Academic, a game which simulates academic career progression with and without	Neo-sexism scale at pre-test. Knowledge of Gender Equity (KGE) scale at all three stages. Single open-ended question in final evaluation, 'Since you	No d amon partic No di baseli KGE (both KGE interv

				advantages. Separate control group played Chutes & Ladders. Three phase study; pre-test evaluations, immediate and delayed post-test evaluations. Kolb's experiential learning model employed.	played the game, have you thought about issues or made observations that you might not have before? If so, what are they?'	evalu... 24 p... they l... obser... raised... 15 no... to lea...
Kennedy *at el* (2011)	Turkey	n=546 students taking 2 introductory courses in Sociology and Psychology Gender not reported Age not reported	To assess the merit of showing movies as critical pedagogy; to develop student interest in serious social issues including gender equality, and encourage critical agency in society.	Three cohorts of students watched 3 different movies over 3 successive academic terms. No comparator / control group. Post-movie discussion undertaken.	Post-event analysis of 3 student essays completed after watching the movies. 14-item survey completed by 112 students.	Stude... devel... in 3 ... death... equal... rated... movi... Concl... studer... persp... throu... sociol... 105 devel... critica... persp... 7 stu... had persp...
Falk *et al* (2012)	Sweden	n=9 students participated in a gender module Gender not reported Age not reported	To evaluate Euro-Education: Employability for all (EEE4all), a multi-centre project in which 4 course modules relating to different aspects of employability were developed; gender, age, disability, and ethnicity.	The module consisted of tutorial groups, lectures, tasks, and seminars. Students used a variety of e-learning applications. Activities included a critical review of the labour market, an 'exchange' in a university Occupational Therapy Department, and development of a 'course' to address gender impact as the final	Continuous evaluation by students and teachers as part of feedback process throughout. Post-course oral feedback. Questionnaire Overall assessment by EU Commission (method not stated).	Stude... positi... aware... gende... emplo... of ne... was c... Teach... cours... applic... The score... Comm...

				assignment.		
Case *et al* (2014)	USA	Study 1: n=177 80% female Study 2: n=131 71% female	To examine the effectiveness of two interventions (privilege list handout and testimonial video), coupled with reflective writing, in raising awareness of heterosexual (Study 1) and male (Study 2) privilege.	Study 1: Participants assigned to control and two comparator groups, who received either a privilege list or watched a video). Study 2: Same method with different content	Study 1: Pre-and post-survey with 3 scales (heterosexual privilege awareness, internal and external motivation to respond without prejudice) and a reflective summary. Study 2: Pre- and post-survey with 5 scales (male privilege awareness, modern sexism, hostile and benevolent sexism, and the motivation scales as above) and reflective summary.	Study had a than indica were learni privil Study increa aware not. T furthe target neithe
Abrams *et al* (2016)	USA	n=13 male undergraduate (n=10) and graduate (n=3) engineering students invited to participate. One withdrew, one deemed not suitable, one went on placement for 2nd semester; 10 students participated in full programme.	To evaluate the Allies for Women Engineers (AWE) programme, which aims to improve women's retention in engineering fields by promoting allyship among student population. Content focused on gender equity, implicit bias, micro aggressions, and sociocultural conversations.	Participants completed the 1-year AWE programme consisting of initial training (workshops, seminars, and speakers) over 4 days; up to 5 hours per week in semester 1 spent on reflection, further training sessions and planning outreach activities, which were then delivered to 447 students and staff on campus. Broido's Model of Allyship used as framework for training design.	Authors intended to assess using a mixed methods approach including qualitative and quantitative techniques; pre- and post-surveys, focus groups and interviews. This paper presents the results of the pre-survey and two free-text response questions.	After most they micro addre and w Partic aware persp trainir Partic chang increa confic more becor peers.
Freedman *et al* (2018)	USA	n=143 college students 65 female; 77 male; 1 non responder Mean age: 20 yrs.	To examine the impact of experiencing an 'aha' moment about assumptions about women in science on subsequent attitudes toward women in	Randomised controlled trial in which participants play a logic-puzzle game that is won by making a realisation about a character. In the control game, the character is a professor; in the	Questionnaire included a monetary allocation task in which participants had to allocate $500 among fourteen college organisations, two of which supported women in STEM. Shortened version of the	Most gende non-g chara Contr interv increa towar decre donat organ

		(A second study involved high school students which is not reported here)	science.	intervention game, the character (a scientist) is a woman. Numbers of participants in each group not reported.	Attitudes Toward Women in Science Scale The Ambivalent Sexism Inventory	
	Turkey	n=65 social work students 39 female; 26 male Age not reported	To examine the impact of the Human Rights Education Programme (HREP) for women on improving the gender perceptions. The HREP aims to raise social consciousness concerning human rights violations that women encounter.	Pre-test post-test design with experimental group (n=32) participating in HREP and control group (n=33) who did not participate. Participants engaged in narration, role-play, case study, and problem-based learning during 12 2-hour training sessions.	25-item Gender Perception Scale	Gend of the increa No c contro Concl effect
Segovia-Pérez *et al* (2019)	Spain	n=50 female students from a variety of academic backgrounds over two consecutive years with 25 students in each cohort. Mean age: 22yrs	To evaluate a Women's Leadership Programme for university students which sought to ensure acquisition of skills, competencies, and tools for leadership by the participants, in addition to increased self-confidence.	The programme involved 24 hours of classes, a case study, visits to companies, and the European Parliament, and a coaching system. Subjects included personal branding, communication, networking, public speaking, negotiation, leadership techniques, and business management. The second cohort also completed a leadership test.	A self-administered survey with 9 questions using a 10-point Likert scale related to the programme, prior knowledge, potential future impact, and a global evaluation. Three focus groups with 8 participants in each group. Four individual informal interviews.	The p highly 10 in other The q an im and s in atti self-c partic
Toraman & Ozen (2019)	Turkey	n=433 students in the Faculty of Education 319 female;	To determine the opinions of the participants regarding gender equality, and to	Students participated in a training course over one semester which included the following topics;	Descriptive study with pre- and post-intervention administration of the Gender Equality Scale, with validation of the	Initia not super Unex partic devel

		114 male Age not reported	compare their opinions before and after taking a compulsory gender equality course. Later, described 3rd goal to explore association with participant variables.	the concept of gender, sociology of gender, gender and family, gender and religion, gender and language, gender and media, gender and body images, gender, work life and labour, feminist movements, and social change.' Limited description of learning and teaching activities.	scale for university students included in the methods. Data was also collected on background participant variables. Logistic regression used to assess the extent to which background variables affected participants' opinions.	super there relatir deper Men that t wome Signi regres acade educa readir locati
Gorrotxategi *et al* (2020)	Spain	n= 64 social education students 52 female; 11 male and 1 did not identify themselves as male or female. Mean age: 20 yrs.	To measure the students' knowledge about transgender people, and the attitudes of students toward gender and transgender people, before and After an education programme.	Training was based on the 'Creative Factory' (CF) intervention model and consisted of a weekly training session on gender and transgender learning over a 4-month period. The goal of the CF model is to 'enable students...to analyse social realities to generate discussion and innovate ideas to design successful practices.'	Pre-and post-intervention questionnaires 12-item Short Version of the Gender and Transphobia Scale Transgender knowledge assessed with single item scale.	Level was interv Imp gende dimer statist The c highe attitu transp differ signif
Liao & Wang (2020)	Taiwan	n=82 medical students Gender not reported Age not reported	To investigate whether the integration of the gender perspective into literature studies would create any difference among students in gender awareness and critical thinking.	Intervention entailed twice weekly literature study sessions over 15 weeks, self-study, e-discussion between both groups. Experimental group received gender perspective training and were introduced to gender-related terms to facilitate discussion.	Quasi-experimental study with a control group (n=41) and experimental group (n=41). Both groups completed the Critical Thinking Disposition Assessment (CTDA) and the Chinese version of the Gender Awareness Scale pre- and post-intervention.	With aware that f the literat unive signif scores consc gende Regar also post-t and a skepti

				Through literature, this group were encouraged to consciously reflect on traditional and socially constructed gender norms.		and c
Locke *et al* (2021)	USA	Male undergraduate and graduate STEM students. This paper includes the reflections of a male engineering student ally, and a research advisor.	Update of Adams *et al* (2016) The success of the Allies for Women Engineers (AWE) programme led to the development of a leadership course which has been offered in the College of Engineering every semester since autumn 2016.	14-week course incorporating videos, workshops, case studies, group discussions. Participants engage in: information gathering to develop awareness of gender equity challenges in engineering; meaning making to examine personal biases; and, contextual application of strategies that promote inclusive engineering climates.	Pre- and post-course survey with Likert-type scales.	Increa effica This c to 'de the sk make difficu produ tools variou kinds contri hostil better Creat enviro labora femal
Bosch *et al* (2021)	Spain	n=19 final year students taking a Sociology of Gender course 15 female; 4 male Age not reported	To evaluate a Service Learning (SL) project, in which students deliver workshops in high schools on gender and technology. The optional project within the Sociology of Gender course was intended to enhance student understanding of topics covered in the course.	For each workshop, students created a presentation with interactive activities, and showed a video. Their assessment consisted of an oral presentation to the rest of their university class and a self-reflection. 13 workshops were carried out over four years.	Qualitative analysis of 16 university student Self-Assessment Reports. Quantitative survey data from high school students (n=284) and teachers (n=13) on a range of items, such as usefulness, alignment with student need, evaluation of pedagogical tools, opportunities for participation and a global evaluation. This quantitative data is not relevant for this review but the above description included for completeness.	All st the grade highe The studen curric under dimen gende theme social SL, a such comm empa empo 'profe partic

| de Villiers *et al* (2021) | South Africa | n=15 'student leaders' from various faculties

All male

Age range: 20-25 yrs. | To evaluate the One-Man Can (OMC) intervention for university settings. OMC aims to encourage development of equitable relationships between men and women, thereby preventing gender-based violence and HIV transmission. | A case study design describing the adaptation and implementation OMC, in which 5 participatory workshops were conducted. Content related to personal values, belief systems, societal gender-based norms, rape and consensual sex, courage and bystander intervention and healthy relationships. | Qualitative data collection methods, including pre- and post-intervention focus groups, discussion content and researchers' field notes documented during the intervention workshops, participant reflections after each workshop via open-ended questions and 5 semi-structured interviews conducted 6 months after the intervention. Thematic data analysis was employed. | The 'incre the p leader violen 'critic dialog showr gende and r preve

This devel Cons(hour on OM |
|---|---|---|---|---|---|---|

Notes: This table captures our data extraction process and charts key information for each paper.

Table 6:

Content Themes

Theme	Frequency
Allyship	2
Gender awareness	2
Gender barriers	1
Gender equality	5
Implicit bias	5
Intersectionality	1
LGBT marginalization	2
Male privilege	1
Micro-aggressions	1
Stereotypes	1

Notes. The themes identified and the frequencies of inclusion in the individual curricula from studies we examined.

Table 7: Underpinning Theories

Reference	Gender equality theories employed
Shields, et al (2011).	Work-family balance, salary, mentoring, workplace climate, and token status
Fehim et al (2011).	Critical teaching
Kim A. et al (2012)	Critical consciousness. Intersectional critical liberatory feminist psychology
Lindh et al (2012)	Gender theory, gender as a social construction,
Case, et al (2014).	Privilege, modern sexism, hostile and benevolent sexism, and prejudice
Abrams, et al (2016)	Gender equity, implicit bias, micro aggression, and sociocultural conversations.
Altınova, et al (2019).	Gender equality from a human rights perspective.
Freedman, et al (2018)	Gender stereotypes Implicit and explicit gender bias Social psychology – challenging the assumption of invulnerability to bias
Segovia-Pérez, et al (2019).	Stereotypes and social role theory. Inclusive and equitable quality education, gender equality and empowerment
Toraman, C. & Ozen, F. (2019).	Social Cognitive Theory. Gender and its inequalities originate from learned or taught behaviours,
Gorrotxategi et al (2020)	Gender Bashing, transphobia, and genderism
Liao HC, Wang YH. (2020)	Socially constructed gender norm, Patriarchal system, Gender politics, and ideology
de Villiers et al (2021)	No explicit gender equality theories.

Supplementary Files