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# A systematic review of soft skills interventions within curricula from school to university level

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**Background:** Soft skills are increasingly promoted in curricula, writ large in its scholarly interest over the last decade. Yet systematic literature reviews covering all educational stages are lacking. This review addresses this gap by examining soft skills interventions across all educational levels, evaluating their characteristics, design quality, and outcomes.

**Methods:** A comprehensive search was conducted across ERIC, Scopus, Informit A+ Education, and Google Scholar databases from 2012 to 2022 to identify peer-reviewed studies on soft skills interventions within education curricula at all levels. Study characteristics were extracted, analysed and synthesised to inform conclusion. Quality assessment was performed using The Critical Appraisal Skills Programme (CASP) and the Effective Public Health Practice Project (EPHPP) evaluation tools. This study is registered at PROSPERO (CRD42022309833).

**Results:** The search yielded 5,689 records, and after eligibility assessment, 38 studies were included. These studies employed various interventions that span three categories namely, workshop-based, creative-based, and project-based approaches, to enhance students' soft skills. Reported outcomes encompassed improved soft skills, employability, career planning, social–emotional learning, academic performance, and reduced issues like violence, drug abuse, depression, and bullying. Quality appraisal using CASP and EPHPP tools identified three studies as "best practice" among the 38. The review highlights diverse interventions and positive impacts on students' holistic development through soft skills programs.

**Conclusion:** The analysis of 38 studies underscores the shortage of literature on soft skills in primary and secondary schools compared to universities, a lack of high-quality "best practice" resources for soft skills development, and a tendency for control group participants to miss vital soft skills training. While randomised controlled trials (RCTs), considered as gold standard, informed 'best practice' studies, RCTs may not fully capture the nuances of complex social interventions like soft skills programs. Therefore, there is need for alternative approaches, such as continuous quality improvement studies using mixed methods. Consequently, we recommended that future research consider these aspects to enhance the effectiveness of soft skills development in curricula.

**Systematic review registration:** https://www.crd.york.ac.uk/prospero/display_record.php?ID=CRD42022309833, identifier CRD42022309833.

KEYWORDS

**soft skills, wellbeing, interventions, curricula, primary students, secondary students, university students, systematic review**

## Background

Soft skills such as communication, teamwork, and problem-solving are increasingly in demand in workplaces as essential skills needed for one to flourish in their professional life (Rego, 2017). "It is rightly said that people rise in organisations because of their hard skills and fall due to a shortage of soft skills" (Deepa and Seth, 2013, p. 8). According to Macqual et al. (2021), "If technical skills earn a job, soft skills facilitate success on the job, thereby creating more opportunities" (p. 2). Sadly, soft skills have been noted to be missing among graduates as greater emphasis is placed on the development of hard skills and procedural knowledge (Kaittyn et al., 2018; Macqual et al., 2021; Noah and Aziz, 2020; Taylor, 2016). This is evident in Australia's "Job-ready Graduates Higher Education Reform Package," which directs funding towards job-ready courses like teaching, nursing, and STEM (Science, Technology, Engineering and Mathematics), deemed crucial in national priorities, to fulfil workforce needs (Department of Education and Employment, 2020).

With the apparent lack of soft skills among graduates, there is growing pressure on education providers and educators to equip students with the skills that enable them to face the demands of the real world after graduating from institutions of learning. Even though studies have shown that universities are best placed to embed soft skills in their curriculum to enhance a grounded development of a student (Deepa and Seth, 2013; Macqual et al., 2021; Noah and Aziz, 2020), this practice is not widespread yet. A study by Robles (2012) identified the top 10 soft skills perceived as essential by business executives as communication, responsibility, positive attitude, teamwork, courtesy, flexibility, social skills, work ethic, integrity, and professionalism. This supports the demand for a greater emphasis on the development of such skills.

## What are soft skills?

Soft skills are, broadly speaking, those competency skills that dynamically elevate one's inter/intra-personal skills/attributes and emotional intelligence to wisely navigate their professional and personal life. However, there is an overtone of ambiguity surrounding the definition of soft skills. As Matteson et al. (2016) remark, "[t]he phrase *soft skills* is catchy but ambiguous, and authors use it extensively with little agreement on meaning" (p. 75). This overarching "ambiguous" undertone has warranted disagreement on what are classified as soft skills. In other words, there is no formally agreed upon set of universal soft skills (Cinque, 2021; Matteson et al., 2016; McIlvenny, 2019a). Many have defined soft skills, but with varying degrees of detail on what they entail. According to Matturro et al. (2019), attempts at defining soft skills have been made in three ways: explicit definitions of soft skills, definitions by giving examples of soft skills, and definitions by comparison to hard skills. For example, Carblis (2000) suggests that soft skills denote those ranges of capabilities that involve simple skills of interaction and listening to the complex skills of conflict resolution and the inspiring skills of leadership. Macqual et al. (2021) define soft skills as those skills that embraces lifelong learning, creativity, communication, conscientiousness, and teamwork, which are vital for one's success in life and work. Noah and Aziz (2020) assert that soft skills complement one's hard skills in order to improve one's interactions and performance as well as one's professional development.

Viewing soft skills in relation to employability, Devadason et al. (2010) maintain that they are skills, abilities, and attributes that supplement graduates' performance in their field of specialisation. In the same vein, Rogers (2021) leans on the understanding of soft skills as "core skills" that enhance the effectiveness and wellbeing of people in their careers. For Gonzalez et al. (2013), "[s]oft or social skills are those personal values and interpersonal skills that determine a person's ability to fit in a particular structure such as a project team or a company" (p. 74). Taylor (2016) defines soft skills as intra and inter-personal skills necessary for one's personal development, social participation, and functioning in a specific work environment.

In contrast to hard skills, which are specifically tailored to the essential performance of the technical specifications of a given job (Tsey et al., 2018), soft skills involve "…a mind-set, underpinned by essential human qualities such as intuition, creativity, passion, responsibility and kindness, courage, and self-awareness" (Tsey et al., 2018, p. 3). For Matturro et al. (2019), soft skills involve "…the combination of the abilities, attitudes, habits, and personality traits that allow people to perform better in the workplace, complementing the technical skills required to do their jobs and influencing the way they behave and interact with others" (p. 19).

There are debates whether soft skills can be taught in a formal setting and implemented in curricula based on the ambiguity in defining them (Kyllonen, 2013; McIlvenny, 2019b; Rego, 2017; Touloumakos, 2020; Yan et al., 2019). According to Touloumakos (2020), the definitions of soft skills have become stretched to the point that their limits have become somewhat vague. Consequently, their development and inclusion in education curricula have been affected (Touloumakos, 2020). Experts even suggest abandoning the term "soft skills" and instead focusing on core competencies or critical skills, treating them with the same training emphasis as technical skills (Galloway, 2022). As the discourse regarding whether soft skills can be acquired through teaching and learning has spurred considerable disagreement within academic and professional circles, this systematic literature review addresses this debate by synthesising a wide range of empirical studies that investigate the effectiveness of soft skills learning interventions. Systematic reviews offer a critical synthesis by gathering, evaluating, and organising existing evidence (Munro et al., 2021; Young et al., 2014). By critically assessing and synthesising existing research, this systematic review provides valuable insights into the design and implementation of effective soft skills learning programs while fostering a nuanced comprehension of the overarching impact of soft skills within diverse spheres of human endeavour.

## Soft skills and curricula

Over the years, there have been attempts to embed soft skills in curricula from school to university levels in many countries around the world (McIlvenny, 2019a). Regarding early childhood education, Whyte (2019) examines the impact of soft skills in improving a child's reading capabilities at home and in an early childhood centre in New Zealand. She maintains that parents and teachers can initiate the development of a child's literary skills through collaborative reading, and in doing so, develop the child's soft skills like that of curiosity, imagination, creativity, resiliency, and meta-cognitive skills. These

skills, therefore, become essential building blocks in preparing the child for school (Whyte, 2019). In Australian schools, there is evidence that soft skills are embedded in curricula through the General Capabilities, as noted by McIlvenny (2019a) while quoting UNESCO's (2015, p.1) statement, thus, "the Australian Curriculum implicitly and explicitly includes transversal competencies in every educational activity. To this end, the Australian curriculum provides detailed information on each capability and how it can be adopted across each subject" (p. 43). This presupposition is paramount for teachers to note. Soft skills are already deeply embedded in the Australian Curriculum, even though their identification may not be clearly stated (McIlvenny, 2019a).

At the university level, literature shows that attempts to embed soft skills in the curriculum have been particularised in disciplines. In the law discipline, Rogers (2021) acknowledges the agreement on the significance of teaching soft skills within a law degree, but recognises that existing scholarship is insufficient in doing so. She lists a growing range of scholarship on how to do so, but points to the pushbacks on embedding soft skills in curricula by those who favour a more traditional approach to teaching law and maintain that curricula reform would prove difficult. These traditionalists cite the understanding that embedding soft skills in law curricula would be a risky business and a deviation from the status quo. Rogers (2021) goes on to propose methods for embedding soft skills in the teaching of law, including online teaching, by integrating and diffusing soft skills teaching in the early stages of courses. She emphasises that this could be done both in the abstract and intellectual way through critical thinking with a touch of emotional, practical, and personal approaches, a position that Galloway and Jones (2014) share. Rogers (2021), therefore, suggests that a holistic approach to teaching soft skills would complement the "core skills" of law as a required component of the degree. In that light, Galloway and Jones (2014) posit that a shift in focus from the traditional law degree would enhance transformation in law students through embracing the soft skills of dispute resolution, students' emotional intelligence, and resilience to face the challenges of the real world. This approach would involve strategies to evolve the curriculum in order to tackle the psychological stressors encountered by law students and lawyers (Galloway and Jones, 2014).

In other disciplines, soft skills have gained some traction and attention in curricula of sales and marketing, management, and psychology degrees (Carblis, 2000). In dentistry, Gonzalez et al. (2013) acknowledge the benefit of possessing good soft skills in dental practice but recognise how it is still a challenge in dental schools. They consider the different soft skills used, how they are taught and assessed, and the issues that ensue from doing so, especially in relation to the Faculty of Dentistry at the University of Malaya in Malaysia. In nursing, Bajjaly and Saunders (2021) report how a top-ranked United States nursing faculty prepared their students for success by including soft skills training in their courses. In management, Ritter et al. (2018) describe a curriculum redesign that incorporates a backward design approach to focus on developing soft skills for the students in the area of teamwork skills. In engineering, Matturro et al. (2019) undertook a systematic mapping study to identify existing research on soft skills and how some of them are relevant in software engineering. They inform how this will help in designing a curriculum for software engineering and development. In teaching, Macqual et al. (2021) assess the effectiveness of implementing soft skills curriculum and instruction in teacher education as it relates to pre-service teachers. In hospitality, Wilks and Hemsworth (2011) evaluate the level of soft skills competency in an undergraduate hospitality management program in Portugal, and assess the lack thereof among students. They accentuate the importance of soft skills development in hospitality and propose the adoption of soft skills in the curriculum in a balanced way. They, therefore, suggest the tutelage of students by industry managers as the way forward to improve soft skills development in hospitality, and they refer to this as "adopting a student." In human nutrition, a scoping review by Murray et al. (2020) examines the employability programs embedded within the course curriculum of a human nutrition degree for undergraduate students. They assert that this degree should incorporate the implementation of soft skills and project-based skills in order to expose the students to the reality of the diversity of workplaces in the industry (Murray et al., 2020). And in Information Technology (IT), Taylor (2016) compiles a list of soft skills that are considered most important according to literature, lecturers, students, and industry reports. She proposes further research into the incorporation of soft skills in the curriculum for IT students.

In addition to the published literature, we found a systematic review of soft skills protocol registered at PROSPERO on the 15th of March 2021 (CRD42021236944) by Vlemincx et al. (2021). The aim of their study is to assess the efficacy of soft skills interventions in improving students' employability, mental health, and wellbeing within higher education. Their focus is on soft skills interventions targeting specific outcomes and includes only experimental designs. Their review questions include the effectiveness of soft skills in improving students' employability, the interventions that are most effective, the outcomes that produced the largest effect size, and the interventions and soft skills that have been studied most. Their participants are higher education students, including college, vocational and university students—this extends to graduate students, students with disabilities, students in specific programs like nursing, dentistry, and students in specific countries.

While there is an abundance of published literature on soft skills development and systematic reviews of intervention focusing on a particular stage of education or discipline, as showcased above, there is a dearth of systematic literature reviews on soft skills interventions embedded in the curriculum across *all* stages of the education system from primary to secondary and tertiary level. This paucity of literature makes it impractical for policy makers and educators to make informed decisions and implementations based on evidenced-based research on best practice strategies for promoting soft skills in curricula across *all* stages of education. This inadvertently results in students missing out on soft skills development, which is tantamount to being unprepared to compete in the globalised workforce. This review, therefore, intends to bridge this gap in the literature.

Soft skills are universally relevant at all levels of educational systems. The more educators understand soft skills that are appropriate to each level of the education system, the more they can scaffold approaches that will consolidate students' soft skills development as they progress through their studies. This approach will ensure that constant improvement is undertaken at a systemic level to build soft skills learning as an integral part of a student's educational development journey. As emphasised by Churchill et al. (2016), learning is both a "process" and a "product," and as such, a "developmental" and "multifarious" adventure. Operationalising soft skills development in

the education system across all levels of learning could potentially enhance a student's grounded development and capacity to navigate the numerous challenges involved in the learning journey, from school to university level. From this perspective, embedding soft skills in the curriculum becomes a positive step in improving a student's wellbeing in their academic endeavours. Enhancing student wellbeing and soft skills not only adds to the process of learning but also to the mature development of a person in the grand scheme of responsible citizenship that education fosters. Our search in this direction begins with probing the following research questions.

## Research questions

1. What are the characteristics of soft skills interventions at each level of the education system?
2. What are the reported outcomes?
3. What is the design quality of the included interventions?

## Aim

The aim of this review is to assess soft skills interventions across all levels of education.

## Objectives

- To examine the characteristics of soft skills interventions in curricula across primary, secondary, and tertiary institution levels.
- To determine the extent of interventions and outcomes at each level of the education system.
- To evaluate the design quality of the included interventions and make recommendations to inform practice.

# Methods

This review aimed to explore and evaluate soft skills interventions embedded in curricula across all levels of education. It followed the current guidelines for the Preferred Reporting Items for Systematic Reviews and Meta-Analysis (Page et al., 2021a). In line with recommendation for best practice in systematic reviews (Editors, 2011), the protocol was registered at PROSPERO (CRD42022309833). In conducting the review, we examined the nature of soft skills that were embedded in curricula, the extent of interventions and outcomes involved, and the design quality of the studies.

## Eligibility criteria

The inclusion criteria for this review involved studies that assessed soft skills interventions and outcomes embedded in curricula across all levels of the education system. These studies must be primary research papers with quantitative, qualitative, or mixed method design approaches. They have to be written in English to enable in-depth assessment by the reviewers, and they must be published in peer-reviewed journals. We restricted our search to studies published in the last 10 years, 2012–2022, based on the rationale to focus more on current evidence. We excluded papers that failed to meet the inclusion criteria, including papers that were conceptual, descriptive, theoretical, or non-evaluative in nature, as well as study protocols, review papers, narrative comments and grey literature (Table 1). The rationale for this is to focus only on original studies that are peer-reviewed rather than study reviews.

## Search strategy

Our search strategy was developed with the help of an experienced librarian in the field of education and agreed upon by all the authors. The following databases were therefore searched: ERIC, Scopus, Informit A+ Education, and Google Scholar. The search strings and the Boolean operators "OR" and "AND" were used to narrow and expand the search. The PICO model helped us to organise the concepts underlying our search strategy (Table 2). The search was carried out with some or all of the following search combinations depending on the specific requirement of each database or search engine: "soft skills" OR "life skills" OR "transversal skills" OR "transferable skills" OR "21ist century skills" OR "non-cognitive skills" AND curricul* AND "university student*" OR "tertiary student*" OR "college student*" OR "primary student*" OR "elementary student*" OR "high school student*" OR "secondary student*" OR "middle school student*."

TABLE 1 Eligibility criteria.

| Categories | Inclusion criteria | Exclusion criteria |
|---|---|---|
| Years | 2012–2022 | |
| Focus | Soft skills (and related terms) interventions and outcomes in curricula | |
| Research setting | All levels of education | |
| Sample characteristics | Students (primary, secondary, tertiary) | |
| Research design | Quantitative design<br>Qualitative design<br>Mixed method design | |
| Literature | Primary research peer-reviewed articles | Conceptual, descriptive, theoretical, or non-evaluative papers.<br>Study protocols, review papers, narrative comments and grey literature. |
| Language | Published only in English | |

TABLE 2 Overview of PICO.

| P (population) | I (interventions) | C (context) | O (outcome) |
|---|---|---|---|
| "University student*" "Tertiary student*" "College student*" "Primary student*" "Elementary student*" "High school student*" "Secondary student*" "Middle school student*" | "Soft skills" "Life skills" "Transversal skills" "Transferable skills" "21st century skills" "non-cognitive skills" | (Curriculum embedded) curriculum* | Outcome concepts were not included in the search strategy to incorporate all students' level results. |

*Represents flexible keyword search where *matches any unknown characters.

## Selection of papers and data management

The first author (DO) screened the selected papers' titles and followed this with an in-depth reading of the abstract. Reading of abstract indicated whether an article will be read in full and judged to be included or not, using the criteria for inclusion. Another author (MH) cross-checked at least 20% of randomly selected papers, and author (KT) adjudicated any difference that ensued. The current Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) flow diagram (Page et al., 2021a) illustrates the inclusion and exclusion process of studies (Figure 1). The citation management program "Endnote 20" was used by author one (DO) to store digital copies of the studies included, with their bibliographic information.

## Extraction of data and analysis

A charting form was used to extract data, and this laid credence to the inclusion of a study. This charting form illustrated the following variables of a paper: author (1st author), year of publication, location, study aim, population/sample, study design/method, intervention/timeframe, intervention setting, data collection, outcomes, and co-design. The characteristics of included studies are presented in a tabular form (Supplementary material). Included studies were examined to assess the level of intervention and outcomes that were evident in embedding soft skills in the curriculum of a school or a university. Outcomes and interventions were thematically delineated to provide information on integration, barriers, enablers, and reported success. The review of included studies involved an iterative process to provide the best outcomes for the review's objectives. The whole process was adopted and documented using the PRISMA checklist (Page et al., 2021a).

## Quality appraisal

The methodological quality of included studies was appraised using the Critical Appraisal Skills Programme (CASP, 2018) for the qualitatively designed studies, and Effective Public Health Practice Project (EPHPP, 2010) Quality Assessment Tool for Quantitative Studies for the quantitatively designed studies. Mixed methods studies were assessed using both EPHPP and CASP. The assessment and inter-rater cross-checking followed the same procedure as data screening and extraction. Following the "Canadian Hierarchy of Promising Practices Evidence," included studies were categorised into three areas: best practice soft skills interventions (RCTs with high EPHPP scores), promising practice (all other study designs that scored "moderate" to "strong" across both tools), and emerging practice for those with weak scores (Heyeres et al., 2021).

# Results

Our search in the four databases of ERIC, Scopus, Informit A+, and Google Scholar returned a total of 5,689 records. After duplicates ($n = 129$) were removed, we had a total of 5,560 records. After title screening, a total of 5,047 records were further excluded as irrelevant. A total of 513 reports were sought for retrieval, and after the abstract reading of these reports, a total of 372 reports were not retrieved due to lack of relevance to the focus of this review. Consequently, the full text of 141 reports was retrieved and assessed for eligibility. However, additional studies ($n = 2$) were recently published and, through an email notification from Informit A+ database platform, the study was retrieved for eligibility assessment, making the total number of reports retrieved in this study review 143. Of these 143 reports, a total of 107 were further excluded based on the following reasons: wrong study type ($n = 92$), not peer-reviewed ($n = 9$), wrong target population ($n = 4$), and duplicate data ($n = 2$). After a manual searching of reference lists of relevant papers, two studies ($n = 2$) were further included, making the total number of peer-reviewed studies included in this review 38 (Figure 1).

## Characteristics of soft skills interventions/outcomes in included studies

Of the 38 reports included in this study, 15 studies were published between 2012 and 2017, and 23 studies were published between 2018 and 2022. The majority of the studies originated from the USA ($n = 10$), with four countries in Asia and Europe having three studies originating from each of them, *to wit*, the UK ($n = 3$), Malaysia ($n = 3$), Spain ($n = 3$), and Iran ($n = 3$). Taiwan ($n = 2$), China ($n = 2$), and South Korea ($n = 2$) each had two studies originating from them, and one each ($n = 1$) from Australia, New Zealand, Portugal, UAE, Canada, Poland, Lebanon, India, Algeria, and Indonesia (Figure 2).

The majority of these studies were conducted among students in universities ($n = 24$), followed by students in secondary schools ($n = 8$) and students in primary schools ($n = 6$). Of the 24 studies conducted among university students, USA ($n = 6$) had the majority, followed by the UK ($n = 2$), Spain ($n = 2$), China ($n = 2$), and Malaysia ($n = 2$); and one each ($n = 1$) from Australia, Poland, Canada, Iran, Lebanon, Taiwan, Algeria, South Korea, Indonesia, and Portugal. Of the eight studies conducted among secondary school students, USA ($n = 2$) had the majority, with Malaysia, India, Spain, UAE, Iran, and the UK having one study each ($n = 1$). Among the six studies conducted among primary school students, USA had two ($n = 2$) studies, with Iran, Taiwan, South Korea, and New Zealand having one study each ($n = 1$) (Figure 3).

There are a range of designs in the included studies. These include four ($n = 4$) randomised controlled trials (RCTs), five ($n = 5$) controlled clinical trials (CCTs), nine ($n = 9$) case studies, two ($n = 2$) interrupted

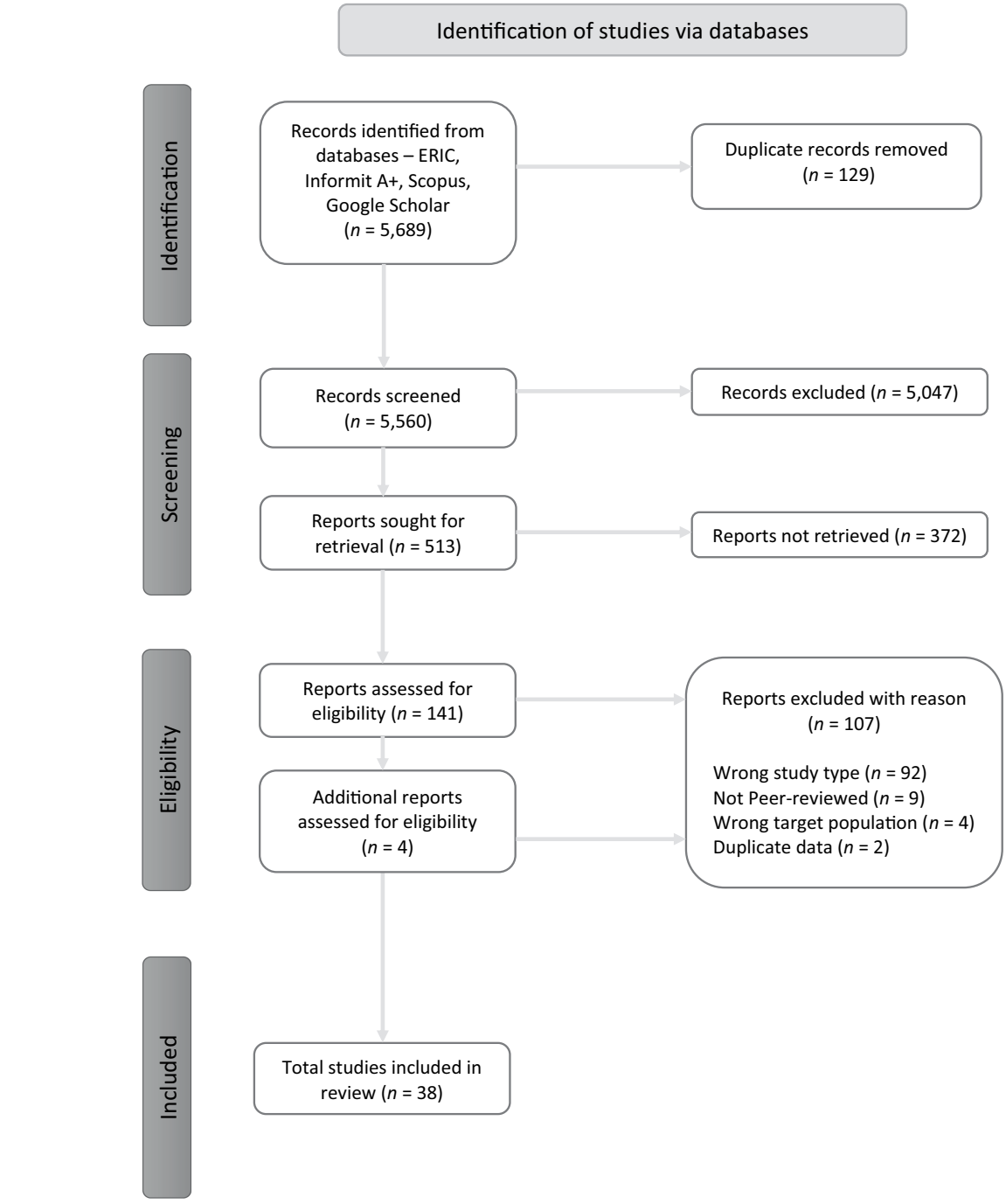


FIGURE 1
PRISMA flow diagram. From: Page et al. (2021b). For more information, visit www.prisma-statement.org/.

time series studies, 10 ($n = 10$) cohort studies, six ($n = 6$) cohort-analytic studies, and two ($n = 2$) case–control studies. The intervention setting of included studies ranges from the platform of face-to-face ($n = 25$), online ($n = 5$), and mixed mode delivery ($n = 8$). Data were collected using questionnaires ($n = 22$), interviews ($n = 2$), questionnaires and interviews ($n = 3$), and surveys, focus groups, and special instruments customised for certain study conditions ($n = 11$). Control groups were utilised in the study to assess the effectiveness of an intervention. Of the 38 included studies, 18 ($n = 18$) utilised control groups, while 20 ($n = 20$) were single group studies. Only one study ($n = 1$) from the USA out of the 38 included studies was a co-design study where students collaborated to design interventions that would improve their soft skills development.

Included studies reported primary, secondary, and university-based interventions aimed at improving students' soft skills/life skills development, career planning, employability, and social and emotional learning. The intervention timeframe of included studies varied. We have catalogued them into four categories: short-term period, medium-term period, long-term period, and no recorded timeframe. Of the 38 included studies, seven ($n = 7$) were catalogued "short-term

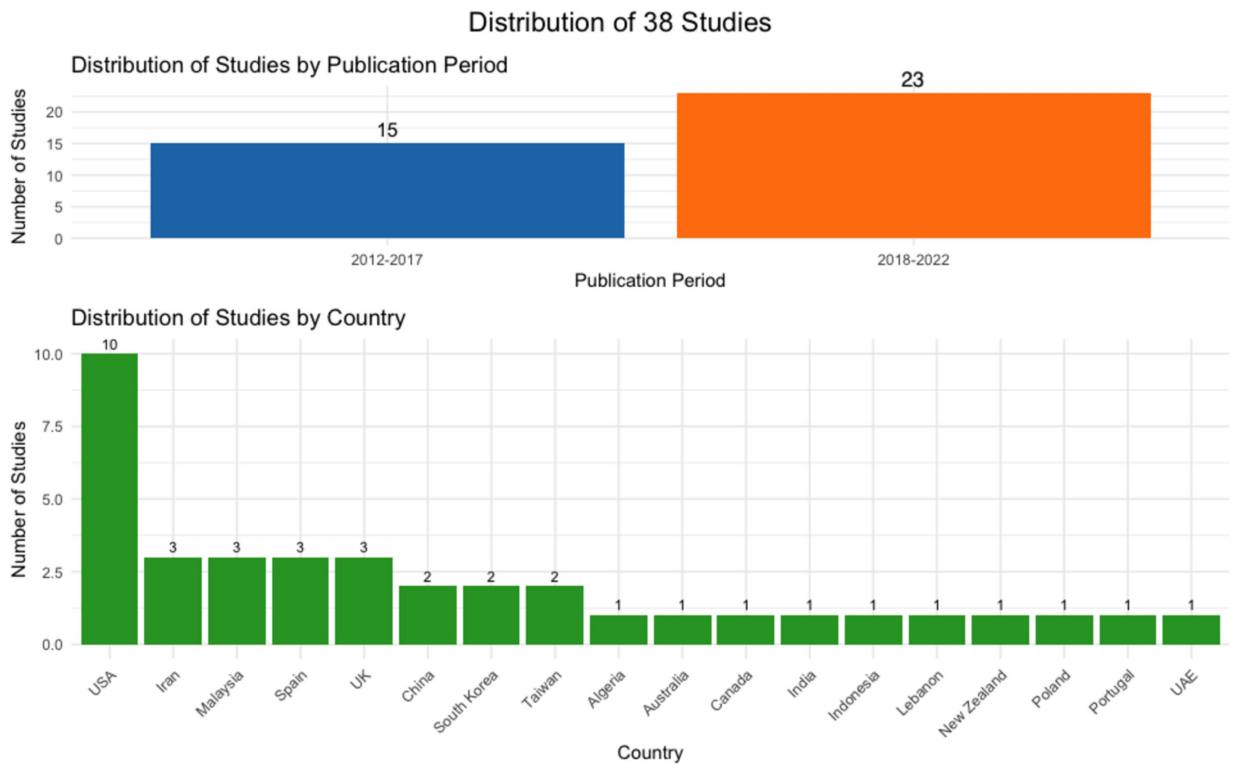


FIGURE 2
Distribution of studies.

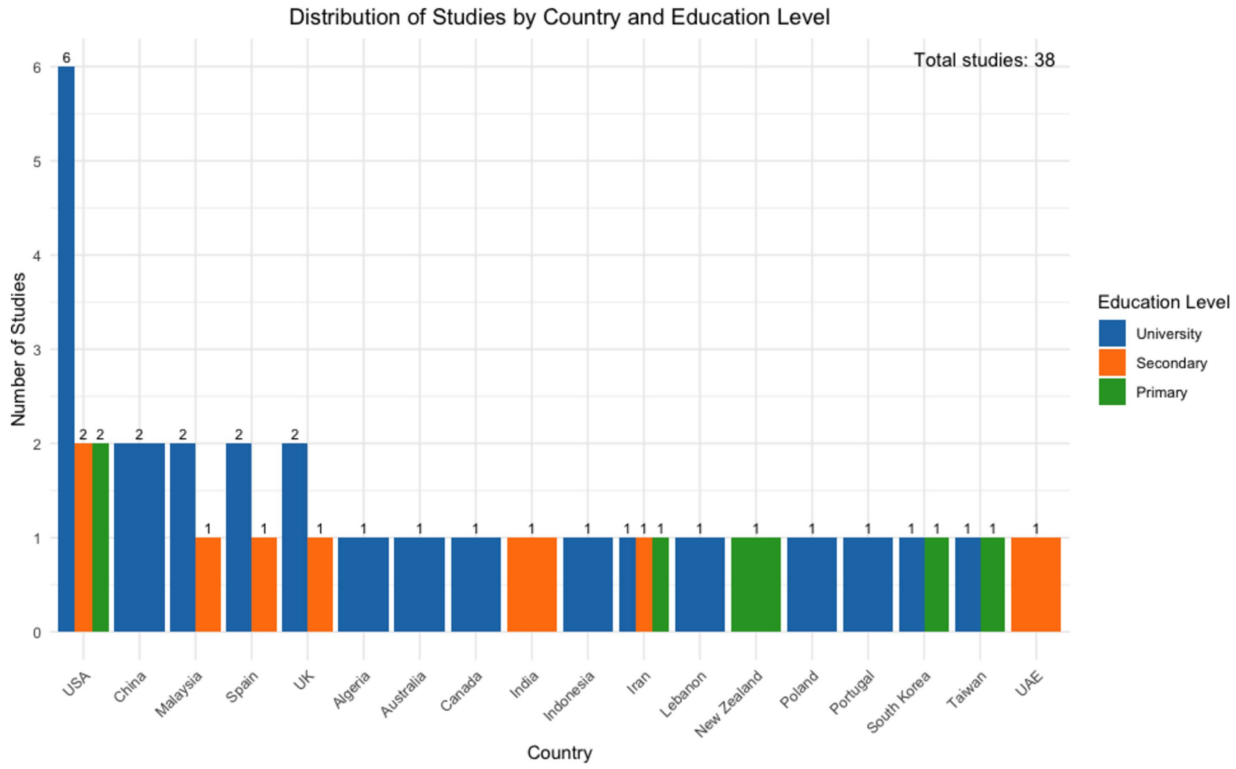


FIGURE 3
Studies by country and educational level.

period" because their interventions were administered for not more than 10 h (Bekki et al., 2014; Bradley et al., 2021; Clark et al., 2018; Jamali et al., 2016; Mardiah et al., 2022; Sohrabi, 2019; Wan Husin et al., 2016). Thirteen ($n = 13$) studies were catalogued "medium-term period" because their interventions were operationalised for not more than 11 months (Chang et al., 2021; Cronin et al., 2020; Deep et al., 2019; Escudeiro and Escudeiro, 2012; Healey Malinin, 2018; Horrillo et al., 2021; Klegeris, 2021; Lee J. Y. et al., 2020; Maddah et al., 2021; Sorensen et al., 2012; Whiteside et al., 2017; Wurdinger and Qureshi, 2015; Yan et al., 2019). Thirteen ($n = 13$) studies were catalogued "long-term period" because their interventions went for at least 12 months or more (Benson and Chau, 2017; Choudhury and Gouldsborough, 2012; Dyson et al., 2021; Espelage et al., 2015; Hernández-Fernaud et al., 2017; Jagannathan et al., 2019; Kuk et al., 2015; Lee M. J. et al., 2020; Mendo-Lázaro et al., 2018; Moshki et al., 2014; Rhee et al., 2020; Stawiski et al., 2017; Wang and Sugiyama, 2014). Other remaining studies ($n = 5$) were catalogued "no recorded timeframe" because there was no indication of how long interventions were carried out (Choi et al., 2021; Diez-Ojeda et al., 2021; Jarrah, 2019; Tadjer et al., 2020; Tan et al., 2021); even though Choi et al. (2021) indicated that survey responses were collected over three semesters.

## Study outcomes and approaches

Reported outcomes in the included studies involve improving students' soft skills or life/transferable skills development, employability skills, teamwork competency, leadership and communication skills, social and emotional learning skills, resiliency skills, wellbeing, mental health and dietary habits, academic outcomes, and also reductions in the perpetration of bullying, violence, and drug addiction. These outcomes were realised using different approaches ranging from online to face-to-face interactive activities involving workshops, trainings, programs, assessments, presentations, discussions, courses, lectures; films, dramas, role-plays, games, reflections, and feedback; and undertaking projects. These approaches have been divided into three categories: category 1, category 2, and category 3, respectively. The categorisation of the interventions into three broad groups was a pragmatic attempt to capture the nuanced characteristics of a highly diverse yet overlapping soft skills interventions of included studies, aligning with the first research question. Given the considerable overlaps between the interventions, a decision was taken to categorise them according to the dominant way the authors of the included studies described the intervention. For instance, if an intervention had elements of both a "workshop" and "creativity," but the authors primarily described it as a workshop, it was categorised under the workshop category. This pragmatic approach to categorisation has its limitations, which were appropriately addressed in the relevant sections of the paper.

## Category 1—workshop-based interventions (online and/or face-to-face activities involving workshops, trainings, programs, assessments, presentations, discussions, courses, and lectures)

Within this category, there are 26 studies that used activities either through online and/or face-to-face mediums in workshops, programs, trainings, courses, modules, assessments, presentations, discussions, and lectures, to improve students' skills development. Among these studies, two ($n = 2$) focused on improving students' problem-solving skills. In one instance, a scenario-based assessment was used for at least 5 h in online interactive problem-solving learning activities among female doctoral students in the United States who were divided into a treatment group and control group. Participants in the treatment group had better knowledge of interpersonal problem-solving skills and the application of these skills in relevant scenarios than the control group (Bekki et al., 2014). A similar result was achieved in Canada through a problem-based learning approach, where students in small teams engaged in two 80-min in-class sessions per week for 13 weeks and were evaluated at the end of the semester through generic problem-solving skills (PSS) scores, a peer evaluation, and examinations. Results indicated a statistically significant improvement in PSS scores. Paired *t*-test scores revealed 11.4% change out of 13 in 2018, 11.8% change in 2019, and 11.4% change in 2018 and 2019 combined. The scores in 2020 were significantly low in percentage change (13.0%) due to the Covid-19 pandemic. Overall, results indicated that students' problem-solving skills were improved (Klegeris, 2021).

Five ($n = 5$) studies within this category focused on improving students' employability. A curriculum-based module, "careers corners," was used among undergraduate students studying either Criminology or Sociology with Psychology, or Childhood and Youth Studies with Psychology, in the United Kingdom. This involved a 5–10-min presentation at the end of each lecture over 11 lecture periods, focusing on career and students' employability. Participants had an increased sense of career planning and higher confidence to get relevant work experience (Bradley et al., 2021). In the same vein, another study used an industry-oriented capstone course to prepare electrical engineering and computer science (EECS) students for employability in Taiwan. Participants reported an increased sense of general ability, behaviour, and attitude towards employability (Chang et al., 2021). An employment training program called "ITINERA" was utilised over 31-h tutorials in one academic year to improve students' employment skills and personalised career orientation in Spain. Participants perceived improvements in the areas of employability, openness to learn, knowledge and self-efficacy for labour market, teamwork, and program satisfaction (Hernández-Fernaud et al., 2017). Another program called "Pathways to Your Future" was used in the United States among secondary school students to prepare them for college and upgrade their career readiness. The same program was also used to support their parents in preparing their children for college and future careers. Participating students engaged in 5 modules of this program over 40 h in a 10-week period, and parents engaged in pre-program orientation and take-home materials to support their child. There was a perceived improvement in students' skills to plan and manage their education and career goals, as well as parents' involvement in their children's college and career aspirations (Horrillo et al., 2021). A self-evaluative program called "UPGRADE Your Performance" was used among 4 secondary school students with disability in the United States to improve their employability soft skills. Participants learnt a strategy for self-evaluation, self-monitoring, self-graphing, and goal setting, while completing some tasks and evaluating the task on Job Performance Rubric (JPR) for 30–45 min daily, as well as evaluating soft skills developed for the day. Participants reported

perceived soft skills improvements in both targeted and non-targeted areas and were able to apply the skills in a new job setting within the school (Clark et al., 2018).

Ten ($n = 10$) studies within this category focused broadly on developing different sets of soft skills competencies. A self-determination theory (SDT) was used among physical education students in England. Participants' perceived autonomy, competence, and relatedness were assessed, and these were noted to influence their life skill development in physical education (Cronin et al., 2020). A 12-week "Effective Communication course" aimed at improving students' soft skills, conflict resolution, and group learning in a Malaysian university reported significant improvement in students' conflict resolution skills, communication skills, problem-solving skills, general knowledge, and research skills. Overall, this indicated perceived improvement in soft skills development, group learning, and overcoming communication difficulties (Deep et al., 2019). An intervention program called "Nurture thru Nature" (NtN) in a disadvantaged public elementary school in the United States included activities to improve students' academic outcomes, soft skills, pro-social behaviour, higher order thinking, and conscientiousness within an 8-year period. Results showed that participants performed significantly better in the areas of cognitive skills, pro-social skills, higher order thinking, problem solving, and conscientiousness after participating in the program (Jagannathan et al., 2019). A life skill training (LST) program was administered to elementary school students in Taiwan over 27 class sessions in 3 semesters through workshops, an online discussion forum—LINE, and photo assessment activity. Students in the experimental group showed significantly higher scores on cognitive reappraisals ($M = 30.47$, $SD = 7.64$) compared to students in the control group ($M = 29.64$, $SD = 7.77$) who undertook education as usual (EAU). Authors also suggest that LST reduced depressive symptoms in males ($M = 2.14$, $SD = 3.43$), but not in females (Lee M. J. et al., 2020). Another intervention program called "Competencies for the Fourth Industrial Revolution" (CFIR) in South Korea was used among engineering students in flipped class activities through online videos, peer-led discussions, and problem-solving tasks over 6 semesters in 3 years. There was perceived improvement in leadership skills, analytical thinking, interpersonal competency, professional attitude, and global mindedness among participants. In some of the semesters, there was improved creative attitudes among participants. However, there was no significant improvements in self-directed learning attitude, autonomy, and teamwork in the study (Rhee et al., 2020).

An integrated classroom practice in 12 private tertiary institutions in Malaysia involving students working in groups to develop soft skills through written assignments, discussions, presentations, and tests/exams, showed a perceived increase in the integration of teamwork, communication, problem-solving, and critical thinking skills (Tan et al., 2021). Also, in Malaysia, another study used a STEM integrated program called "BITARA-STEM" to impact 21st century skills, higher order thinking, and research skills in secondary school students over 6 days through Project Oriented Problem Based Learning (POPBL) activities. Participants improved in digital literacy skills, inventive thinking, and effective communication. However, there was no improvement in spiritual values (Wan Husin et al., 2016). In China, a new physical education (PE) program was used among female undergraduate students. Students in the experimental group engaged in unique PE program activities each week for 14 months, while members of the control group received traditional lessons. The experimental group improved their social skills of companionship, self-disclosure, and adaptation (Wang and Sugiyama, 2014). A study in the United Kingdom used online activities over 18 lectures and four practicums in 1 year to develop transferable skills of undergraduate students. Participants perceived improvement in their communication, teamwork, and critical analysis skills (Choudhury and Gouldsborough, 2012). A cooperative learning approach was utilised among students enrolled in Infant Education (IE) and Primary Education (PE) in Spain. Teachers received training in cooperative learning, and students in the experimental group engaged in cooperative learning techniques. Participating students indicated improvement in social skills and efficacy, interpersonal and teamwork competencies, and professional competencies (Mendo-Lázaro et al., 2018).

Five ($n = 5$) studies within this category utilised life skills training to reduce drug addiction, violence and promote students' mental health and wellbeing. A drug abuse preventative life skill training was used among university students in Iran where participants engaged in 2 one-day life skills training workshops weekly in one semester. Results indicated that life skills training significantly improved drug abuse preventative behaviours among participants (Moshki et al., 2014). Another drug abuse preventative intervention used a school-based life skills program to create awareness about the hazards of tobacco among secondary school students in India. Participants engaged in 10 1-h classroom sessions and three out-of-classroom sessions per week. Results showed that students in the intervention group had significant knowledge about tobacco and related legislation, indicated efforts to prevent tobacco use among others, and improved self-efficacy. After 30 days of intervention, self-reported use of tobacco in the control group was twice as high as in the intervention group (Sorensen et al., 2012).

A life skill training involving empathy, critical thinking, problem-solving skills, coping skills, self-regulation, and assertion skills, was utilised for middle school students in Iran over 8 sessions for a month through lecture-style presentations, group activities, role-plays, and discussions. Participants improved their mental health, and reduced stress, sensation seeking, drug addiction and violence (Jamali et al., 2016). A similar result was achieved among primary school students in South Korea. Participants undertook a life skills program involving social skills training activities, violence prevention skills, conflict resolution, and positive interpersonal relationships for 45 min weekly over 12 weeks. Results indicated improved peer competency and attitudes toward school violence, and decreased school violence experience among participants (Lee J. Y. et al., 2020). The "KHOTWA (STEP)" program was used among students in a private university in Lebanon to improve their wellbeing. The intervention group undertook "Life Skills for Youth" as an elective academic course. Participants' behaviours, attitudes, knowledge, interaction with peers, decision making, weight gain, and mental health, were evaluated within 20 online sessions for 3 h per week over 10 weeks. The control group only undertook a self-administered survey twice with a 3-month difference. Results indicated significant improvements in life skills, dietary habits, and mental health scores at the 3-month follow-up within the intervention group (Maddah et al., 2021).

Two ($n = 2$) studies in this category focused purely on social and emotional learning (SEL) skills. A study involving a series of psychological workshops included video interaction and interpersonal training to improve SEL for both undergraduate and postgraduate

students in Poland for 8 h over 4 sessions in 15 months. Participants perceived significantly higher indicators of social competence and emotional intelligence to cope with intimate situations, social exposures, and with assertive demanding situations (Kuk et al., 2015). Another study used SEL to reduce bullying among primary school students in the United States. The intervention group engaged in "Second Step: Student Success Through Prevention" (SS-SSTP) program to improve the SEL skills of communication, emotion regulation, and empathy over 28 lessons in 3 years. The control group received the "Stories of Us—Bullying" program while waiting 3 years to receive the SS-SSTP. The intervention group demonstrated a significantly higher reduction in bullying perpetration compared to the control group (Espelage et al., 2015).

Two ($n = 2$) studies within this category utilised an Australian Aboriginal empowerment education program, known as Family wellbeing (FWB) program, to promote students' soft skills competencies. A study involving first-year social work undergraduate students in Australia used the foundational topics of the FWB integrated into a core social work subject to promote 21st century skills within 10 two-hour weekly workshops. Participants reported significant improvement in their social competency skills and the relevance of the FWB in promoting students' wellbeing (Whiteside et al., 2017). Another study adopted the Australian FWB program in China to promote soft skills among second-year Chinese undergraduate students within a 2-h weekly workshops for 10 weeks. Results showed statistically significant improvement in soft skills development and the relevance and acceptability of the FWB among Chinese students (Yan et al., 2019).

## Category 2—creative-based interventions (online and/or face-to-face activities involving films, dramas, role-plays, games, reflections, feedback)

There are six ($n = 6$) studies in this category that utilised online and/or face-to-face platform activities through films, dramas, role-plays, games, reflections, feedback, to improve students' skills development. An online film project through a Team-Based Learning (TBL) approach, was used among undergraduate students in the United States to promote interpersonal skills. Participants undertook topics in interpersonal skills and in groups, analysed the films—"The Devil Wears Prada" and "Sully." Through discussions, feedback, group presentation, and a written report, they evaluated each other's work. Results showed that peer evaluation, teamwork performance, and team member collaboration positively impacted students' satisfaction toward TBL, thus, improving their interpersonal skills, particularly among students with <5 years of work experience (Choi et al., 2021). Similarly, a drama-based intervention among male high school students in United Arab Emirates (UAE), included sessions of watching plays to help with students' memory, problem-solving skills, artistic and aesthetic skills, creativity, reading skill, and pronunciation. The impact of drama increased students' life skills, reflective thinking, reading and numeracy skills, knowledge of one's personality strengths and weaknesses, and application of study to real-life situations (Jarrah, 2019).

A cooperative learning approach was employed to develop social and emotional learning (SEL) outcomes among students in physical education (PE) from 4 primary schools in New Zealand. Participants in small groups played different roles to complete a task and played a modified game. They then reflected on the experience using strategies to encourage each other. Results revealed that SEL skills improved during PE lessons as participants reflected the skills of being part of the team, learning how to listen, how to help and encourage each other, and how to make PE fair to everyone (Dyson et al., 2021). Another game-based intervention was used among female primary school students in Iran. It utilised group games for 6 weeks, two 60-min sessions per week, to engage students in an experimental group and improve their communication skills (Sohrabi, 2019).

Inquiry-based activities were used in a compulsory chemistry subject among secondary school students from high to medium socio-economic backgrounds in Spain. Participants, in groups under the supervision of a teacher, played the role of a director, secretary, spokesperson, or time manager; and reportedly developed 21st century skills in the areas of critical thinking, self-confidence, self-direction, disciplinary knowledge, and organisational management (Diez-Ojeda et al., 2021). Another study engaged undergraduate students in the United States in a 9-class negotiation course taught over a period of 5 years, where students engaged in role-plays to negotiate a contract for the supply of a chemical from a distributor. Participants reported improved abilities to think objectively, communicate effectively, and apply negotiation skills in real settings (Benson and Chau, 2017).

## Category 3—project-based interventions (online and/or face-to-face activities involving building a project to develop soft skills)

Six ($n = 6$) studies under this category used the task of building a project to develop soft skills among students. A Project Based Learning course (PBL) was utilised among postgraduate students in the United States. Students developed relevant in-depth projects over a 16-week period for 3 h per week. PBL activities involving discussions, book readings, signing project forms, networking with peers and experts to complete a project, reporting on project progress to a large group, and presenting the project on the final day within 5 min. Results indicated life skills development in the areas of responsibility, problem-solving, self-direction, communication, and creativity (Wurdinger and Qureshi, 2015). In the same United States, an approach involving scrum practices was used among engineering students to develop 21st century skills in the areas of collaboration, self-awareness, and problem-solving skills within two studies. The first study involved first-year students in teams across disciplines designing a prototyped robot and collaborating to problem-solve. This study resulted in increased excitement among participants to pursue a career in engineering and improvement in all leadership skills, assessed in the areas of collaboration, problem-solving, and self-awareness. However, due to the lack of comparative data in the first study, which is a limitation, a second study was conducted. In the second study, students in an experimental group undertook a modified course that included scrum practices to build a project-based and iterative learning design with a periodic reflection. Students in the comparison group undertook the standard course. Participants in the modified

course enjoyed the course more and improved in all assessed individual and team behaviours compared to the students in the standard course (Stawiski et al., 2017).

In a similar approach, another study used a problem-based learning environment in a computer science master's course to impact soft skills and cognitive skills development among students in Algeria. In groups, students developed a software project to promote collaborative skills before a set deadline. Their soft skills were assessed during the design and implementation phases of the project; they presented the project afterwards. There was increased technical skills in software development and increased communication, time management, and initiative skills among students. However, there was no increase in curiosity skill (Tadjer et al., 2020). In Portugal, a cooperative learning course—"Multinational Undergraduate Teamwork"—was used among undergrad students from 9 different European countries at an international level. Students, in one semester, completed a project with some flexibility among partner institutions, and perceived improvement in their teamwork, communication, and academic learning outcomes (Escudeiro and Escudeiro, 2012). Another study utilised a design thinking-STEAM-PjBL model to enhance transferable skills among pre-service chemistry students in Indonesia. Over six online meetings in 2 months, students engaged in five stages of the design thinking process: *empathise, define, ideate, prototype,* and *test*. They reflected on their content knowledge to comprehend the rising temperature issue in Indonesia relating to thermodynamics, as a basic topic in chemistry courses, and created products to solve the associated issues. Results indicated improved communication skills and creativity, informed by integrative thinking and collaborative problem-solving activities. These culminated in students' having a greater sense of empathy and responsibility for the environment and improved adaptability as independent thinkers (Mardiah et al., 2022).

Finally, a 5-year service-learning partnership between undergraduate and middle school students in the United States resulted in participatory-design activities where they designed interventions in a middle school building and grounds. The university students engaged with middle school students weekly for 6–10 weeks each semester. After 2 years, the course became available for third-year undergraduate students. Students reflected weekly through in-class discussions, public blogging, and private writings on their website. They also submitted two papers on the first day of class and on course completion. After these activities, totally 772 artefacts, students improved their sense of empathy, flexibility, relationship building, systems thinking, professional goals, and employability skills in promoting creative resilience, especially in managing complex design practices. Of the 38 included studies, this is the only study that co-designed an intervention with students (Healey Malinin, 2018).

Across the three categories discussed, the interventional approach that rumbles at their base-note, connects, and underpins all of them, is a participatory social learning approach. This approach involves students engaging in a collaborative and shared learning endeavour, fostering active participation among them to problem-solve, irrespective of their backgrounds and experiences (Cunningham, 2009; Hedges and Cullen, 2012). This interventional approach is evident in categories 1, 2, and 3, in the ways students were involved in discussions, reflections, role-plays, dramas, and collaborative projects to share their experiences and knowledge, to improve their soft skills development, and to work in achieving common goals so as to empower each other.

## The methodological quality of included studies

Among the 38 included studies, 29 used quantitative methods, three used qualitative methods, and six used mixed methods approach. As previously ascertained, quantitative studies were assessed using the EPHPP tool, qualitative studies were assessed using the CASP tool, and mixed methods studies were assessed using both tools of EPHPP and CASP (Table 3).

## Quantitative studies

There were 29 quantitative studies assessed using the EPHPP tool. The score resulted in six ($n=6$) studies rated as "strong" (Bekki et al., 2014; Espelage et al., 2015; Lee J. Y. et al., 2020; Lee et al., M. J. 2020; Moshki et al., 2014; Sohrabi, 2019), nine ($n=9$) studies rated as "moderate" (Cronin et al., 2020; Jamali et al., 2016; Jarrah, 2019; Klegeris, 2021; Rhee et al., 2020; Sorensen et al., 2012; Tadjer et al., 2020; Wan Husin et al., 2016; Wang and Sugiyama, 2014), and 14 studies rated as "weak" (Benson and Chau, 2017; Bradley et al., 2021; Chang et al., 2021; Choi et al., 2021; Choudhury and Gouldsborough, 2012; Clark et al., 2018; Diez-Ojeda et al., 2021; Hernández-Fernaud et al., 2017; Horrillo et al., 2021; Jagannathan et al., 2019; Kuk et al., 2015; Mendo-Lázaro et al., 2018; Stawiski et al., 2017; Tan et al., 2021). The evaluation of the scores is according to the EPHPP global rating scale, which stipulates "strong" as having no weak rating, "moderate" as having one weak rating, and "weak" as having two or more weak ratings.

Most of the quantitative studies that were rated as "moderate" ($n=9$) scored "moderate" to "strong" scores in the areas of study design, confounders, and blinding. The majority of these studies described what kind of design they used, whether there were important differences among the study participants and if they were controlled to ensure all participants were in the same baseline before intervention, and whether participants or outcome accessors were blinded in the process of intervention. However, they scored "weak" in the areas of selection bias on how participants did not represent the target population (Cronin et al., 2020; Jarrah, 2019), how withdrawals and dropouts were not reported (Jamali et al., 2016; Rhee et al., 2020; Wan Husin et al., 2016), how validity and reliability of data collection tools were not shown (Klegeris, 2021; Sorensen et al., 2012; Tadjer et al., 2020), and how information about confounders was not indicated (Wang and Sugiyama, 2014). While there were 14 ($n=14$) studies that were rated "weak" as an overall score, one ($n=1$) RCT study (Jagannathan et al., 2019) in the "weak" category scored a "moderate" to "strong" ratings in all areas assessed, except in the areas of blinding and the reporting withdrawals or dropouts in the study. Without these shortcomings, Jagannathan et al. (2019) would have been rated a very strong paper with "best practice" according to the EPHPP recommendations.

## Qualitative studies

There were three ($n=3$) qualitative studies assessed using the CASP tool. The rating of these studies involves having at least 8 out

TABLE 3 Methodological quality appraisal.

| Study | Year | Study design | Quantitative | Qualitative | Mixed | Total score EPHPP | Total score CASP | Recommendation |
|---|---|---|---|---|---|---|---|---|
| Bekki | 2014 | RCT | x | | | Strong | | Best practice |
| Espelage | 2015 | RCT | x | | | Strong | | Best practice |
| Lee, M. J | 2020 | RCT | x | | | Strong | | Best practice |
| Dyson | 2021 | Case | | x | | Strong | | Promising practice |
| Healey-Malinin | 2018 | Case | | x | | Strong | | Promising practice |
| Lee, J. Y | 2020 | CCT | x | | | Strong | | Promising practice |
| Mardiah | 2022 | Case | | x | | Strong | | Promising practice |
| Moshki | 2014 | CCT | x | | | Strong | | Promising practice |
| Sohrabi | 2019 | CCT | x | | | Strong | | Promising practice |
| Yan | 2019 | Cohort | | | x | Strong | Strong | Promising practice |
| Cronin | 2020 | ITS* | x | | | Moderate | | Promising practice |
| Jamali | 2016 | CCT | x | | | Moderate | | Promising practice |
| Jarrah | 2019 | Cohort | x | | | Moderate | | Promising practice |
| Klegeris | 2021 | Cohort | x | | | Moderate | | Promising practice |
| Maddah | 2021 | Cohort analytic | | | x | Moderate | Strong | Promising practice |
| Rhee | 2020 | Cohort | x | | | Moderate | | Promising practice |
| Sorensen | 2012 | Case–control | x | | | Moderate | | Promising practice |
| Tadjer | 2020 | Cohort | x | | | Moderate | | Promising practice |
| Wan-Husin | 2016 | Cohort | x | | | Moderate | | Promising practice |
| Wang | 2014 | CCT | x | | | Moderate | | Promising practice |
| Whiteside | 2017 | Cohort | | | x | Moderate | Strong | Promising practice |
| Wurdinger | 2015 | Cohort | | | x | Moderate | Strong | Promising practice |
| Benson | 2017 | Cohort analytic | x | | | Weak | | Emerging practice |
| Bradley | 2021 | Cohort analytic | x | | | Weak | | Emerging practice |
| Chang | 2021 | Cohort analytic | x | | | Weak | | Emerging practice |
| Choi | 2021 | Case | x | | | Weak | | Emerging practice |
| Choudhury | 2012 | Cohort | x | | | Weak | | Emerging practice |
| Clark | 2018 | Case | x | | | Weak | | Emerging practice |
| Deep | 2019 | Cohort | | | x | Weak | Moderate | Emerging practice |
| Diez-Ojeda | 2021 | Case | x | | | Weak | | Emerging practice |
| Escudeiro | 2012 | Case | | | x | Weak | Moderate | Emerging practice |
| Hernández-Fernaud | 2017 | Cohort analytic | x | | | Weak | | Emerging practice |
| Horrillo | 2021 | Case–control | x | | | Weak | | Emerging practice |
| Jagannathan | 2019 | RCT | x | | | Weak | | Emerging practice |
| Kuk | 2015 | ITS | x | | | Weak | | Emerging practice |
| Mendo-Lázaro | 2018 | Cohort analytic | x | | | Weak | | Emerging practice |
| Stawiski | 2017 | Case–control | x | | | Weak | | Emerging practice |
| Tan | 2021 | Case | x | | | Weak | | Emerging practice |

*ITS, Interrupted Time Series study.

of 10 "yes" scores to rate a study "strong" as *de rigueur* in the CASP stipulations. Among the three studies rated (Dyson et al., 2021; Healey Malinin, 2018; Mardiah et al., 2022), all of them resulted in "strong" scores with an overall 8 "yes" ratings.

## Mixed methods studies

There were six ($n = 6$) mixed methods studies assessed using both the EPHPP tool and the CASP tool. Among these studies, one ($n = 1$)

scored "strong" in both the EPHPP quantitative evaluation and CASP qualitative evaluation (Yan et al., 2019). Three ($n = 3$) scored "moderate" in the quantitative evaluation of EPHPP tool, and "strong" in the qualitative evaluation of CASP tool (Maddah et al., 2021; Whiteside et al., 2017; Wurdinger and Qureshi, 2015). The remaining two ($n = 2$) studies scored "weak" in the quantitative aspect evaluated with the EPHPP tool, and "moderate" in the qualitative aspect evaluated with the CASP tool (Deep et al., 2019; Escudeiro and Escudeiro, 2012).

## Practice recommendation

An overview of our study appraisal results, and recommendation for practice, is provided in Table 3. According to our rating in line with the "Canadian Hierarchy of Promising Practices Evidence," as outlined by Bainbridge et al. (2018) and Heyeres et al. (2021), RCTs with "strong" rating in the EPHPP tool are classified as "best practice." Other study designs with "moderate" to "strong" ratings across both EPHPP and CASP tools, are classified as "promising practice," and studies with "weak" ratings are classified as "emerging practice."

Based on this classification, three ($n = 3$) studies (Bekki et al., 2014; Espelage et al., 2015; Lee M. J. et al., 2020) utilised a RCT study design and scored "moderate" to "strong" scores in all areas assessed. Their studies were identified as "best practice." Their interventions include interactive online problem-solving activities and special life skill training/lessons to improve life skills/SEL skills and to reduce bullying and depressive symptoms. Their reported outcomes show improvement in the intervention group compared to the control group in developing problem-solving skills, life skills/SEL skills, and reducing bullying and depressive symptoms. They articulated in detail how interventions were administered, the methods used, and the reported outcomes. The remaining studies ($n = 35$) utilised interventions such as films, dramas, games, presentations, workshops, trainings, role-plays, reflections, feedback, assessments, and building a project, either face-to-face or online, to develop soft skills. Among these studies, 19 were considered "promising practice," and 16 were considered "emerging practice" (Table 3). Based on the limited number ($n = 3$) of "best practice" studies realised from our review, and the growing recognition that RCTs may not always be feasible for evaluation of complex social interventions (Dopp et al., 2019), we recommend that further implementation of relevant "emerging" and "promising" interventions are underpinned by appropriate evaluation designs, using continuous quality improvement approaches.

# Discussion and recommendations

Embedding soft skills in curricula has been a clarion call for education providers, educators, employers, and policy makers. The importance of soft skills has attracted attention to the point that there is a "need" to practically embed them in curricula, so they are not seen as "add-ons" to the whole educational experience of a student. This systematic review outlines the assessment of published intervention studies on soft skills in curricula. It ascertains the level of scholarship, interventions and outcomes involved in soft skills development within primary, secondary or higher education curricula. The process was adjudicated by subjecting the included studies to quality appraisal using both the EPHPP and CASP tools. The aim is to advance scholarship and inform practice on soft skills development in curricula across *all* levels of the education system.

The interventions employed in the included studies sought to promote soft skills as part of curriculum-based activities. These activities are student-oriented because they create opportunities for students to work as a team, communicate, adapt, and problem-solve, developing transferable or soft skills. Evidence shows that these activities somehow promoted perceived improvements in students' soft skills, employability skills, and SEL skills development. In some cases, they also help reduce drug abuse, bullying and violence, and promote the psychological needs of students. However, the nature of the interventions differs in each level of education.

The majority of the interventions among university and secondary school students were based on hands-on activities, including building a project, giving presentations, and engaging in interactive online forums. Students in primary schools used dramas/plays, games, and role-plays appropriate to their level of understanding and engagement to develop soft/life skills. Their skills development focused on improving their teamwork skills and academic results, managing and regulating their emotions to reduce depressive symptoms, bullying and violence, and promoting pro-social skills behaviours. To be more precise, these interventions span three categories, *to wit*, workshop-based, creative-based, and project-based approaches.

In the first category, workshop-based interventions, the studies revealed significant improvements in problem-solving skills, employability, and a wide range of soft skills. For instance, one study demonstrated how a scenario-based learning activities positively impacted students' problem-solving skills (Bekki et al., 2014), while another emphasised the importance of SEL in enhancing students' communication and reducing bullying (Espelage et al., 2015). These findings highlight the effectiveness of structured workshops, courses, and training programs in nurturing essential life skills.

In the second category, creative-based interventions, the studies used innovative methods such as drama, role-plays, games, and reflections to enhance students' soft skills. These approaches contributed to improvements in interpersonal skills, artistic abilities, conflict resolution, and creative thinking. This category underscores the value of interactive and engaging activities in fostering holistic skill development.

The third category, project-based interventions, emphasised the significance of hands-on experiences and collaborative projects in developing soft skills. Students involved in project-based learning exhibited improvements in problem-solving, communication, and teamwork skills. These findings emphasise the importance of practical, real-world applications in education.

Considering that places of learning have been seen as vital locales to develop emotional and social skills among students (OECD, 2017), most of the interventions in the included studies were focused on university students ($n = 24$ studies). Only eight ($n = 8$) studies focused on secondary school interventions and six ($n = 6$) for primary school students. This begs the questions: *were university students targeted as study participants because of the convenience of administering interventions to their age bracket? Or were soft skills deemed salient for them in order to prepare them for the real world/work experience?* The answer to these questions warrants exploring in future research. Our point of departure is that soft skills development is essential at every level of education. As educators understand the importance of soft skills development in each level of education, they will help develop frameworks that will support students as they advance in their educational endeavours, notwithstanding their level of education. Our recommendation is that educators scaffold ways

of embedding soft skills in the curriculum of primary and secondary school students as well as tertiary to help them develop the life skills needed to flourish in their education and in life. In doing so, policy makers, educators, and education providers will know how best to embed soft skills in curriculum as part and parcel of a student's learning objectives, and therefore contribute to the all-round, grounded development of a student who is ready for work/life experience for tomorrow, and thus contribute to their wellbeing in such wise.

The studies included in this review were restricted to the last decade. About 61% of the studies were conducted in developed countries, and yet, only one of the studies was conducted in Australia. Significantly, the outcomes of the Aboriginal Australian FWB study (Whiteside et al., 2017) influenced the subsequent FWB program uptake in China (Yan et al., 2019). Within Australia and internationally, there are calls to embed soft skills/social competencies within university curriculum to promote student wellbeing and complement the traditional hard skills students acquire to function in a rapidly changing world (Whiteside et al., 2017; Yan et al., 2019). This call originates from the need to promote wellbeing by education providers as a way of optimising student experiences (Partridge et al., 2018). As reported by Orygen (2017), there are "…significant gaps in Australian research and data on the prevalence and nature of mental ill-health among university students" (p. 6). In essence, we recommend more evidence-based research on the promotion of soft skills within an Australian context. This will be of upmost importance in curbing the prevalence of mental ill-health among university students. Assessing this makes the conducting of this review salient for the Australian context.

Our review indicated that while all the included studies ($n=38$) reported perceived improvement in the participants based on the competency being measured, only three ($n=3$) RCT studies (Bekki et al., 2014; Espelage et al., 2015; Lee M. J. et al., 2020) with "strong" rating were considered "best practice" based on the "Canadian Hierarchy of Promising Practices Evidence" (Bainbridge et al., 2018; Heyeres et al., 2021). This shows the dearth of "best practice" literature in this field, and the abundance of "promising" and "emerging practice" studies ($n=35$). Although RCTs are considered the "gold standard" for quality research (Dopp et al., 2019; Leir and Parkhurst, 2016; Onnis et al., 2018; Parkhurst and Abeysinghe, 2016), they may not always be appropriate for some interventions involving complex social factors (Dopp et al., 2019). This means that alternative approaches need to be adopted to increase wider implementation and evaluation to strengthen the body of evidence-base literature (Dopp et al., 2019). Consequently, we advise that further implementation of "promising" and "emerging practice" interventions are underpinned by appropriately designed evaluations using, for example, mixed methods continuous quality improvement approaches to strengthen the evidence-base (Dopp et al., 2019).

In terms of collaboration with students to co-design an intervention, only one study (Healey Malinin, 2018) out of the 38 reviewed studies co-designed intervention with students. We recognise that most soft skills programs/trainings have already been developed and hence, factor the point of impracticality for a co-design. However, it is important we put into consideration the input of those whose lives are being affected by an intervention. As Reed et al. (2018) propose, when translating knowledge into practice, three strategic principles have to be considered, namely: (a) to act scientifically and pragmatically, (b) to embrace complexity, and (c) to engage and empower. Our focus in this context is on the last principle—"to engage and empower." This means that translating research into practice should embrace and engage the expertise and knowledge of those involved—stakeholders, staff, and beneficiaries—to empower changes that are uniquely theirs in terms of their concerns and motivations (Reed et al., 2018). It also fosters a collaborative approach to learning, intrinsic in the "Socratic way" where parties involved are open to learn from each other (Orih, 2022).

Finally, this review highlights the role of control groups in determining the effectiveness of an intervention. Among the 38 included studies, 18 studies utilised control groups to ascertain the effectiveness of their intervention. However, only two ($n=2$) studies (Bekki et al., 2014; Espelage et al., 2015) indicated that control groups later received the intervention after treatment groups must have finished with the intervention. The consequential need for soft skills development cannot be overstated, and this means that no student should be left out in acquiring these skills. As Tsey et al. (2018) affirm, soft skills are not only essential in promoting wellbeing, but they also help in nurturing a sense of work/life balance to equip one to flourish in their personal and professional life. We, therefore, recommend that it is paramount that those assigned to control groups get to have the opportunity to receive the soft skills intervention as those in the treatment group at some point in their educational journey. In line with Alain de Botton's advocacy for an education that will prepare students for the complexities of life, this will equip all students to develop the skills needed to flourish in an increasingly challenging world, and therefore contribute to their grounded development as responsible citizens in society (SBS SDF, 2013).

## Strength and limitations

The strength of this review is that it systematically evaluated the heterogenous data retrieved from four databases on soft skills embedded in curricula. This showed the robust nature of knowledge the review provided on the range of interventions used in promoting soft skills development in curricula. The synthesis of data revealed gaps in the areas of primary and secondary schools, where the promotion of soft skills in curriculum needs to be emphasised, as compared to universities. It also identified a gap in that participants in the control group missed out on receiving intervention after those in treatment group finished with the intervention. We ascertain that soft skills development is primarily vital for the optimal development of every student. This establishes the linchpin for the aforementioned future research endeavour, and the necessity for education providers and policy makers to ensure that the promotion of soft skills at every level of education is emphasised on a systemic level.

Notwithstanding the extensive nature of this systematic review, limitations abound. One of the limitations is the possibility that some of the data sources may have been missed. Due to the ambiguous nature of soft skills definitions, and the varied ways of labelling them (Matteson et al., 2016), there is the possibility that some of the soft skills may have been discussed under different terms and/or in relation to wellbeing that may not be identified in our search strings. Our search strategy focused on soft skills embedded in curricula. We tried to include as many terms as possible of how soft skills are referred to in an educational context, under the auspices of an experienced librarian from the field of education. However, there is the possibility that some of the soft skills interventions may have been discussed in a term uncommon to us, and/or in relation to wellbeing, thereby making such studies difficult to identify in our keyword data search. We also acknowledge the scope was limited to peer-reviewed articles as "grey" literature was excluded. But this is only a potential limitation as the number of included papers is

relatively large which allowed the broad categories of workshop-based, creative-based, and project-based approaches to soft skills training to be explored, making our findings reliable. We, therefore, recommend that future reviews incorporate other uncommon terms for soft skills as well as wellbeing to widen the scope of data generated for review.

Another limitation emanating from the heterogenous nature of soft skills interventions is the inability to conduct a meta-analysis, and the difficulty in drawing meaningful conclusions and applying outcomes to other settings. In our included studies ($n = 38$), study settings and the nature of interventions indicate that interventions were applied in different settings, in different countries, and in different contexts with no consistency across studies. There is hardly any generalised tool for measuring outcomes except the tools deemed appropriate in a setting based on the competency being measured. This means that what worked in one country may not work in another when factors such as teaching methods, teaching resources, teaching policies, and cultural differences are considered. We, therefore, recommend that the generalisation of the findings of this review to other educational settings be interpreted with caution.

## Conclusion

Embedding soft skills in curricula is increasingly considered vital in today's world. This systematic review aimed to evaluate the characteristic of soft skills intervention at each educational level, the reported outcomes, and the design quality of included interventions in order to inform practice. The reviewed studies collectively demonstrate the potential for educational interventions to enhance students' soft skills, employability, mental health, and wellbeing. Workshop-based, creative-based, and project-based approaches have proven effective in addressing a diverse range of skills and competencies.

The categorisation of studies into "best practice," "promising practice," and "emerging practice" highlights the need for more robust research methodologies, particularly in the field of soft skills educational interventions. While RCTs provide a gold standard for evidence, they may not always be feasible for complex interventions. Therefore, researchers and educators should consider alternative evaluation approaches, such as continuous quality improvement mixed-methods studies, to capture the multifaceted nature of soft skill development.

The benefits of incorporating soft skills development in curricula have been highlighted in terms of enhanced personal development and wellbeing, increased employability, pro-social behaviours, and improved academic performance. Nonetheless, there are challenges in the nature and definition of soft skills, the scarcity of literature on the primary and secondary schools' levels, the lack of "best practice" literature on soft skills development, and the absence of indications whether participants in control groups later received an intervention.

Overall, the preponderance of soft skills literature over the last decade is an indication of an increased scholarly interest in the development of soft skills among students, especially university students. However, this warrants careful attention in tailoring soft skills development to the needs of the students involved and their educational contexts. To empower students with the skills they need for success in various aspects of life, it is crucial to continue exploring and refining innovative educational interventions while maintaining a strong commitment to rigorous research and evaluation practices. This will ensure that future educational interventions are not only engaging but also evidence-based, leading to positive and lasting outcomes for students. Doing so will help education providers and policy makers integrate soft skills seamlessly into curricula. We hope that future research will take our recommendations into account and systematically embed soft skills into curricula as a core part of students' education journey, and thereby, contribute positively to their career's prospects and life situations.

## Data availability statement

The original contributions presented in the study are included in the article/Supplementary material, further inquiries can be directed to the corresponding author.

## Author contributions

DO: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Validation, Visualization, Writing – original draft, Writing – review & editing. MH: Data curation, Formal analysis, Investigation, Methodology, Writing – review & editing. RM: Supervision, Validation, Writing – review & editing. HU: Supervision, Validation, Writing – review & editing. KT: Conceptualization, Supervision, Validation, Writing – review & editing.

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## Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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## Supplementary material

The Supplementary material for this article can be found online at: https://www.frontiersin.org/articles/10.3389/feduc.2024.1383297/full#supplementary-material

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