Review article

Promising Approaches to Comprehensive Sex Education: Evidence From Three Decades of Research

Eva S. Goldfarb, Ph.D. *, Lisa D. Lieberman, Ph.D., and Kurt Conklin, M.P.H.

Department of Public Health, Montclair State University, Montclair, New Jersey

A B S T R A C T

Despite strong evidence that comprehensive sex education (CSE) has a range of important outcomes beyond pregnancy and disease prevention, limited research has explored the most promising approaches to achieving those outcomes. To identify evidence for approaches and strategies associated with effective CSE, we conducted a systematic literature review using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines. We searched ERIC, PsycINFO, and MEDLINE for studies evaluating CSE outcomes of school-based K-12 educational efforts, meeting inclusion criteria (n = 80). We then identified those studies that described approaches or strategies associated with reported CSE outcomes beyond pregnancy and disease prevention. After updating the search to 2024, we used an inductive iterative process to group studies based on common approaches and strategies (n = 79). Pedagogical, curricular, classroom, and school-wide approaches associated with effective CSE include: critical theory-based pedagogies; sex education across the curriculum; beginning in early grades; LGBTQ+ -inclusive curricula; media literacy; and gender-integrated classrooms. Positive outcomes were also associated with presence of Gender and Sexuality Alliances, School-based health centers, whole school approaches, parent involvement and teacher preparation. Over three decades of research provides support for approaches and strategies associated with CSE that achieves a range of beneficial outcomes beyond pregnancy and disease prevention.

© 2025 Society for Adolescent Health and Medicine. All rights are reserved, including those for text and data mining, AI training, and similar technologies.

IMPLICATIONS AND CONTRIBUTION

Improving young people's sexual health and overall well-being requires a CSE paradigm shift to critical theory-based, gender-transformative pedagogies. Attributes of effective CSE include LGBTQ+ -inclusivity; gender integration; CSE across K-12 curricula; blended learning; media literacy; whole school approaches; and consideration of CSE in all education policies, preparation of all teachers, and parental support.

A systematic literature review (SLR) of 3 decades of research [1] demonstrated that comprehensive sex education (CSE) has led to a broad range of important outcomes for young people beyond pregnancy and sexually transmitted infection (STI) prevention.

Despite strong evidence for the effectiveness of CSE, however, there has been limited research on the approaches and strategies that characterize effective CSE. This paper reviews the most promising approaches and strategies that emerged from the 30-year SLR.

Research support for a range of outcomes of CSE

An abundance of research has demonstrated the success of sex education that teaches specifically about sexual and reproductive health (SRH)—generally contraception and safer sex—in delaying and reducing sexual activity and sexual risk behaviors, and reducing unintended pregnancies and STIs among

adolescents. Less studied are outcomes of teaching other content in CSE, as delineated in the National Sex Education Standards (NSES), second edition [2] and recommended by a wide range of sexual health and CSE organizations around the world [3–7]. These content areas include consent and healthy relationships; anatomy and physiology; puberty and adolescent sexual development; gender identity and expression; sexual orientation and identity; interpersonal violence; and related topics that provide a more expanded, holistic conceptualization of healthy sexuality, and gender identity [8]. The researchers' SLR of 30 years of published, peer-reviewed, non-SRH sex education evaluation studies found that education based on the NSES can increase appreciation of sexual diversity; reduce homophobia and homophobic bullying and harassment; reduce dating and intimate partner violence; support healthy relationships; aid in prevention of child sex abuse; improve life skills (effective communication, empathy, managing feelings, positive self-image including body image, respect for others, and sense of self-control and safety); and increase media literacy [1].

Research-based critiques among proponents of sex education

Although unsubstantiated and disproven criticism of sex education from opponents is not new [6,9], more recently, proponents of CSE have raised valid research-based concerns about the way in which sex education is often taught. For example, some scholars contend that CSE, as generally conceived, teaches ideologies of inequality that reinforce systems of race, class, gender, and sexual privilege [10] and also reinforces, rather than challenges, heteronormativity [11–16]. Likewise, it has been argued that it gives students "individualistic messages (e.g., about being personally responsible for protection) that ignore the complexity of their lives and the structural inequalities (especially in terms of race, class, gender) that complicate their abilities to take on this personal responsibility" [17](pg. 616). In essence, these scholars argue that harm is done by teaching sex education that does NOT consider issues such as sexual orientation and gender, as well as race, class, and other intersecting identities.

In 2020, the Future of Sex Education, a partnership among 3 leading American sex education organizations, Advocates for Youth, Answer, and SIECUS, released updated NSES. The goal of those standards is to provide school districts with "clear, consistent, and straightforward guidance on the essential, minimum, core content, and skills needed for sex education that is age-appropriate for students in Grades K-12 to be effective" [2] (pg. 7). The NSES second edition posits that effective CSE is research-based and theory driven. Like standards for other school-based subject areas, however, it offers limited recommendations for specific theoretical and pedagogical approaches to teaching that content. Likewise, state and regional education standards for sex education in the United States and around the world provide little guidance in these areas [18–20]. This omission reflects, in part, lack of focus in the research literature on the pedagogical approaches and other strategies associated with effective CSE.

A seminal meta-analysis reported in the publications No Easy Answers [21] and Emerging Answers [22], identified the most effective pedagogical approaches to evidence-based school sexual health interventions that were focused on pregnancy and STI prevention. Twenty years later, this research team published the findings of an SLR analysis showing a wide range of CSE outcomes beyond pregnancy and STI prevention [1]. This paper identifies the most promising pedagogical approaches and other strategies of school-based programs to achieve these outcomes, reviewing and updating the evidence from that 30-year study.

Methods

The SLR cast a wide net to assure that all aspects of CSE identified in the NSES were incorporated. Inclusion criteria were evaluation studies from around the world of school-based sex education interventions, both within and outside formal sex education classrooms. (Inclusion was based on demonstration of CSE outcomes, regardless of whether an intervention was identified specifically as CSE) (published in peer-reviewed journals; English language publications). Studies that reported on SRH pregnancy and STI prevention-related outcomes were only included if they also reported other CSE outcomes as delineated in the NSES second edition [2]. Described in detail elsewhere [1], investigators utilized a computerized systematic review of 3 databases (ERIC, PsycINFO, and MEDLINE), in December 2017, and then a hand-search of literature published from 2018 to 2019. The final analysis of CSE-related outcomes beyond pregnancy and STI prevention, published in 2021, was based on findings from 80 quantitative and qualitative evaluation studies.

For this analysis, researchers re-reviewed those 80 outcome studies to identify those that included explicit descriptions of strategies or approaches that were tied to the reported outcomes. They also conducted an additional hand-search of the CSE evaluation literature through June 2024, for any CSE outcome studies published since the initial SLR, that linked specific approaches to a positive program outcome. This resulted in 79 studies, which researchers regrouped based on common approaches rather than common outcomes. The search results are summarized in the Prisma diagram (see Figure 1). Studies fell into 2 main categories: common approaches within effective CSE and common school-based strategies that enhanced positive CSE outcomes. The latter group included oft-cited school-based strategies that would not be considered sex education per se, but rather wraparound components that support the goals of CSE. These included school-based health centers (SBHCs), Gender and Sexuality Alliances (GSAs), safe school or whole school environments, parent involvement, and teacher preparation. Within these 2 broad categories, using an iterative inductive process, studies were then sorted into 8 subcategories, some of which included subgroups of their own (see Table 1) based on specific common strategies. Some studies fit into more than one category.

Among the identified approaches to CSE, only one, "technology-assisted and blended learning" was not found among studies from the original search, reflecting the recency of this teaching strategy and the lag time to publication of any study. Regarding "parent involvement," only interventions that included parents in connection to their child(ren)'s school-based program were reviewed for this paper. This paper summarizes the evidence for both approaches associated with effective CSE and promising supporting strategies to enhance CSE outcomes.
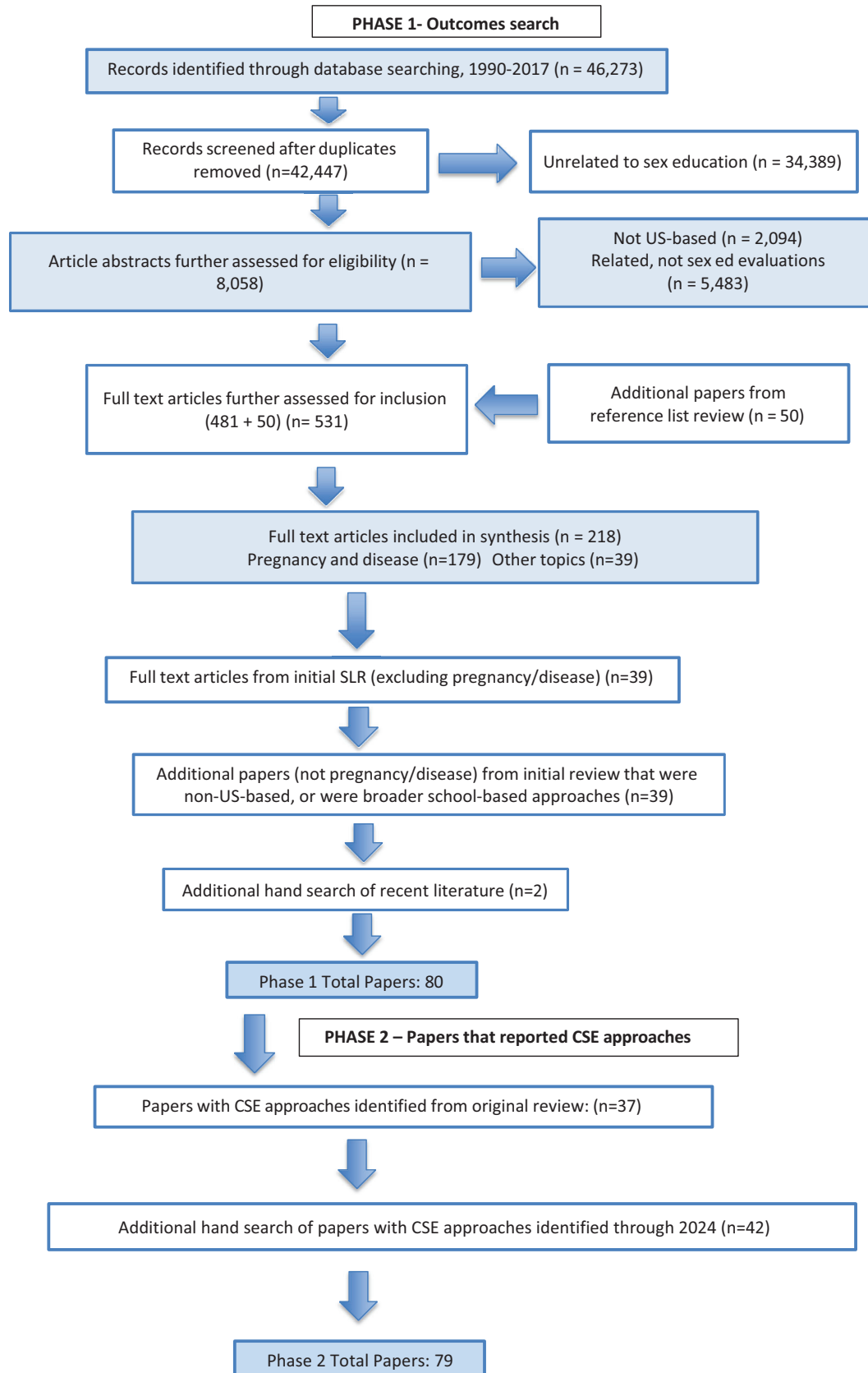
PHASE 1- Outcomes search

Records identified through database searching, 1990-2017 (n = 46,273)

Records screened after duplicates removed (n=42,447) → Unrelated to sex education (n = 34,389)

Article abstracts further assessed for eligibility (n = 8,058) → Not US-based (n = 2,094) Related, not sex ed evaluations (n = 5,483)

Full text articles further assessed for inclusion (481 + 50) (n= 531) ← Additional papers from reference list review (n = 50)

Full text articles included in synthesis (n = 218) Pregnancy and disease (n=179)   Other topics (n=39)

Full text articles from initial SLR (excluding pregnancy/disease) (n=39)

Additional papers (not pregnancy/disease) from initial review that were non-US-based, or were broader school-based approaches (n=39)

Additional hand search of recent literature (n=2)

Phase 1 Total Papers: 80

PHASE 2 – Papers that reported CSE approaches

Papers with CSE approaches identified from original review: (n=37)

Additional hand search of papers with CSE approaches identified through 2024 (n=42)

Phase 2 Total Papers: 79

Figure 1. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram of the literature search and CSE approaches.

Table 1
Categorization of effective CSE characteristics

Effective approaches in CSE	School-based strategies that enhance CSE outcomes
Emerging critical theory-based pedagogiesCritical pedagogy (CP) - Gender transformative (GT) - Queer pedagogy (QP) Curricular strategies Sex ed across the curriculum (AC) Beginning in early grades (PK-6) LGBTQ+ -inclusive curricula (LGBTQ+) Media literacy (ML) Teaching and classroom strategies Gender-integrated classrooms (GIC) Technology-assisted and blended learning (BL)	School-based health center (SBHC) Gender and Sexuality Alliance (GSA) Whole school approach (WS) Parent involvement (PI) Teacher preparation (TP)

CSE = comprehensive sex education.

Results

Approaches and strategies associated with effective comprehensive sex education

Table 2 provides details for the outcome studies reviewed here that identified approaches or strategies associated with effective CSE.

Studies in both the original and expanded search varied in size, rigor, and generalizability. These included quasi-experimental or experimental designs, meta-analyses, and SLRs. They also included studies with less rigorous designs, smaller samples, and/or more qualitative approaches that, when taken together, led to strong evidence of positive outcomes. From these, we identified associated teaching methodologies and program approaches and strategies.

Emerging critical theory-based pedagogies. Critical theories, including Critical Literacy Theory, Queer Theory, Feminist Pedagogy Theory, and Social Justice/Anti-Oppression Education Theory, have been hypothesized and tested for their effectiveness in achieving certain outcomes associated with CSE [102–105]. What these critical theories have in common, when applied to sex education, is their focus on structural, rather than individual and behavioral, approaches to sexual health.

Growing from a critical theory paradigm, critical pedagogy was first described in Paulo Freire's Pedagogy of the Oppressed in 1970 [106]. Within a social justice, rights-based framework, students consider a variety of perspectives that challenge cultural norms and status quo and give thought to structural explanations for existing social inequities and disparities, typically seen as the result of individual choices [17,107]. It relies on students being actively engaged in their own learning and developing their own opinions and positions [102]. Critical Literacy pedagogy that is focused on sexual diversity and social justice, and Gender Complex Education [108], which specifically challenges gender oppression and gender-transgression oppression, fall under the umbrella of queer pedagogy, a critical pedagogy focused on oppression and marginalization within hetero- and cis-normative structures of inequality [109].

Such an approach was used in numerous successful efforts in this review. Specifically, programs using queer pedagogy, ranging

from Pre-K through high school, resulted in: reduced homophobia; disruption of heteronormative assumptions and harmful stereotypes about gays and lesbians; greater awareness of discrimination and oppression based on gender and sexual orientation; broader acceptance of and empathy for gay, lesbian transgender, and gender nonconforming people; expanded understanding of gender and gender norms; and increased knowledge, awareness, and support for equality, justice, and rights for the LGBTQ+ community [23–29].

A gender transformative approach seeks to disrupt gender norms and promote more equitable relationships between genders. It centers gender in the context of power and promotes gender equality and the empowerment of women and people with diverse sexual orientation, gender identity, gender expression, and/or sex characteristics [110]. Several efforts using this approach reported positive outcomes related to gender norms and power, as well as overall sexual health and personal safety [30–40]. Three studies in the Democratic Republic of the Congo and Indonesia found this approach to be effective with very young adolescents (ages 10–14) in shifting gender norm perceptions and attitudes, increasing SRH knowledge, self-efficacy to prevent pregnancy, and communication about SRH and rights [36,38,39].

A curriculum using a gender transformative approach emphasizing power dynamics in adolescent relationships, sexual rights, gender roles/norms, and sexual ethics, and justice increased positive attitudes regarding sexual relationship rights among US Latinx adolescents [34,35]. Compared to a traditional curriculum, it also had significantly better immediate and 1-year outcomes on knowledge of sexual health and sexual health services, communication about sex and relationships with parents, self-efficacy to manage risky situations, and, at 1-year follow-up, partner communication. A meta-analysis of sexuality and HIV education comparing 22 curricula across multiple age groups found those that centered gender and power were 5 times more likely to be effective than those curricula that did not address these topics [33].

Curricular strategies

<u>Sex education across the curriculum</u>. Numerous studies showed strong positive CSE outcomes from educational efforts across the curriculum, including those in art, music, math, English Language Arts (ELA), social studies, physical education, and service learning [23–29,31,32,41–47]. A systematic review of body image programs within physical education for students ages 8–18 reported positive impacts, including decreased body dissatisfaction, improved attitudes and perceptions about the body, as well as overall body self-concept [47], important CSE outcomes included in the NSES [2]. Several smaller studies evaluated the effectiveness of teaching about gender roles and LGBTQ+ issues in ELA classrooms from elementary through high school. They demonstrated that the ELA curriculum, and in particular, the use of literature as an entry point to study LGBTQ+ rights and challenge stereotypes, may be especially well-suited to the goals of sex education, with respect to challenging traditional gender roles and norms, LGBTQ+ acceptance, reduction of homophobic bullying and harassment, and development of social justice dispositions in students [23,27, 29, 31, 32, 48, 49].

<u>Beginning in early grades</u>. Positive CSE outcomes resulted from efforts ranging from pre-K through sixth grade

Table 2
Details about outcome studies included in the review

Ref number Authors	Year	Country	Study population and size	Study design	Approach
Athanases [23]	1996	USA	21 10th graders	Qualitative, class discussion, interviews	CP (QP), AC
Schall & Kauffmann [24]	2003	USA	29 4th and 5th graders	Qualitative, class discussion	CP (QP); PK-6, AC
Helmer [25]	2015	USA	24 11th and 12th graders	Qualitative, student questionnaires, interviews	CP (QP), AC
Bentley & Souto- Manning [26]	2016	USA	1 preschool class	Qualitative, class discussion	CP (QP); PK-6, AC
Ryan et al. [27]	2013	USA	1 3rd grade class, 1 teacher	Qualitative, class discussions, informal interviews	CP (QP); PK-6, AC
Hermann-Wilmarth et al. [28]	2017	USA	15 4th and 5th graders	Qualitative, class discussion	LGBTQ+; PK-6; AC
Helmer [29]	2016	USA	24 11th and 12th graders	Qualitative, ethnographic student and teacher interviews, observations, and artifacts	CP (QP), AC
Matthews et al. [30]	1998	USA	22 5th graders	Qualitative, class discussion	CP (GT); PK-6
Rice [31]	2002	USA	24 3rd graders	Qualitative, class discussion	CP (GT); PK-6, AC
Dutro [32]	2002	USA	24 5th graders	Qualitative, class discussion	CP (GT); PK-6, AC
Haberland [33]	2015	USA	Varied	Systematic literature review of 22 evaluation studies	CP (GT)
Constantine et al. [34]	2015	USA	1,750 9th graders from 10 high schools	Experimental, pretest and post-test	CP (GT)
Rohrbach et al. [35]	2015	USA	1,447 9th graders from 10 high schools	Experimental, pre, post, and 1-year follow-up	CP (GT)
Pinandari et al. [36]	2023	Indonesia	3,335 students ages 10−14 across 18 schools	Quasi-experimental pretest and post-test	BL; GL, CP (GT)
Ullman et al. [37]	2022	Australia	2,376 students ages 13-28	Non-experimental nationwide survey	CP (GT), WS
Beckwith et al. [38]	2023	Indonesia; DRC	5,494 students ages 10−14, across 91 schools	Quasi-experimental impact study; pretest; post-test 12 −24 months after intervention	CP (GT)
Hunersen et al. [39]	2023	Indonesia; DRC	5,494 students ages 10−14	Quasi-experimental; pretest and post-test	CP (GT)
Sell et al. [40]	2023	USA	27 studies	Systematic literature review	CP (GT)
Lys et al. [41]	2024	Canada	344 Northern and Indigenous students ages 13−18 in 24 communities	Single-group pretest and post-test	AC
Knotts & Gregorio [42]	2011	USA	101 9th − 12th graders	Nonexperimental, paired pretest and post-test; class discussion.	AC
Miller et al. [43]	2012	USA	1,798 9th −12th grade boys, 16 high schools	Experimental, pre and 3-month follow-up post-test	AC; TP
Miller et al. [44]	2013	USA	1,513, 9th −11th grade males	Experimental, pre, post, 1-year follow-up	AC; TP
Kervin & Obinna [45]	2010	USA	49 high school students	Nonexperimental, pretest and post-tests	AC
Cofre et al. [46]	2018	Brazil	255 elementary students ages 11−12 in math classes across 15 schools	Cross-sectional quantitative; pretest and post-test	AC
Kerner et al. [47]	2022	USA, UK, Brazil, Denmark, Australia, Canada, Iran, Spain, Ireland, Slovakia, Sweden	Varied: ages 8−18	Systematic literature review of 19 studies	AC
Dallacqua [48]	2019	USA	1 7th grade class	Qualitative ethnographic	AC
Wasserberg [49]	2013	USA	33 African-American and Latinx 4th grade students	Qualitative, preintervention and postintervention surveys and focus groups.	AC; PK-6, TP
Hong et al. [50]	2022	China	150 6th grade students	Quasi-experimental, follow-up of K-5 intervention	PK-6
Baiocchi et al. [51]	2017	Kenya	6,356 girls ages 10−16 from 30 primary schools	Experimental, pretest, and post-test	PK-6
De La Rue et al. [52]	2014	USA	Grades 4−12	Systematic literature review-	PK-6, SBHC
Pick et al. [53]	2007	Mexico	1,581 4th graders from 45 elementary schools	Experimental pretest and post-test	PK-6
Davis & Gidycz [54]	2000	USA	27 studies, ages 3−13	Meta-analysis of experimental and quasi-experimental studies,	PK-6
Brown [55]	2017	USA	1,169 K students across 54 classrooms in 4 school districts	Nonexperimental, unpaired and paired pretest and post-test	PK-6

Table 2
Continued

Ref number Authors	Year	Country	Study population and size	Study design	Approach
Kenny et al. [56]	2012	USA	123 Pre-K students ages 3—5	Quasi-experimental unpaired pre, post, and 3-month follow-up	PK-6
Kenny et al. [57]	2008	USA and Canada	Ages 3—12	Systematic literature review	PK-6
MacIntyre & Carr [58]	1999	Ireland	727 2nd and 5th graders across 5 schools	Experimental, randomized by school, pre, post, follow-up	PK-6
Walsh et al. [59]	2018	USA, Canada, China, Germany, Spain, Taiwan, Turkey	5,802 K-5 students across 24 studies	Systematic literature review	PK-6
Topping & Barron [60]	2009	USA, Canada, UK, Ireland, Holland	Varied, K-6	Systematic literature review	PK-6
Pulido et al. [61]	2015	USA	492 2nd and 3rd graders across 6 schools	Experimental, pretest, and post-test	PK-6
Hazzard et al. [62]	1991	USA	399 3rd and 4th graders across 6 schools	Experimental, randomized by school	PK-6
Snapp et al. [63]	2015	USA	1,232 middle school and high school students ages 12—18	Qualitative survey	LGBTQ+
Baams et al. [64]	2017	Netherlands	601: 10th to 12th graders	Quasi-experimental longitudinal	LGBTQ+
Blake et al. [65]	2001	USA	3,647 9th—12th graders from 63 schools	Multistage cluster sample	LGBTQ+
Proulx et al. [66]	2019	USA	47,000 9th—12th graders from 11 states	Multilevel modeling	LGBTQ+
Snapp et al. [67]	2015	USA	1,232 middle school and high school students ages 12-18	Multilevel modeling	LGBTQ+
Berman & White [68]	2013	Australia	48 8th graders across 3 schools	Nonexperimental, pretest, and post-test	ML
Yager et al. [69]	2013	UK, Australia, Italy	Varied: ages 12—16	Systematic literature review of 15 studies	ML
Scull et al. [70]	2018	USA	926 across 9 middle schools	Randomized control trial	ML
Scull et al. [71]	2021	USA	331 students in 1 high school	Randomized control trial; pre-post-test	ML
Clinton-Sherrod, et al. [72]	2009	USA	1,182 6th —12th graders across 20 middle schools and high schools in single gender and mixed gender groups	Pre-post-test comparing 4 intervention conditions.	GIC
Pacifici et al. [73]	2001	USA	457 9th — 12th graders, 2 high schools	Experimental, pre and 10-day follow-up post-test	GIC
Dunstan et al. [74]	2017	Australia	200 7th grade girls	Experimental	GIC
Levy et al. [75]	2020	Africa, Asia, North America	Varied	Systematic literature review of 61 studies.	CP (GT); GIC
Coyle et al. [76]	2019	USA, UK, Europe	Varied	Narrative literature review of 9 studies.	BL
Peskin et al. [77]	2019	USA	709 6th graders from 10 middle schools	Randomized control trial	BL
Widman et al. [78]	2018	USA	222 10th grade girls	Randomized control trial	BL
Minguez et al. [79]	2015	USA	2,076 9th —12th graders	Quasi-experimental	SBHC
Guttmacher et al. [80]	1997	USA	7,119 high school students in New York City and 5,738 high school students in Chicago	Cross-sectional survey comparing 2 cities	SBHC
Berglas et al. [81]	2016	USA	9th graders at 10 urban public charter schools	Matched pairs of schools, randomized at school level	SBHC
Baams & Russell [82]	2021	USA	895,218 students aged 10 —18 years old	California Healthy Kids survey	GSA
Poteat et al. [83]	2024	USA	627 LGBTQ+ in 51 GSAs	Cross-sectional survey	GSA
Porta et al. [84]	2017	USA	58 LGBTQ youth, 14—19	Qualitative interviews	GSA
Lapointe [85]	2014	Canada	9 GSAs and 5 interviews	Observations and semistructured interviews	GSA
Ioverno et al. [86]	2016	USA	327 LGBTQ students	2-year longitudinal panel study	GSA
Toomey et al. [87]	2012	USA	1,415 students in 28 high schools	Multilevel modeling at individual and school level	GSA; LGBTQ+
Day et al. [88]	2020	USA	1061 LGBTQ students	Multivariate regression	GSA
Marx et al. [89]	2016	USA	62,923 high school students from 15 studies	Meta-analysis	GSA
Johns et al. [90]	2018	USA	Transgender and gender-variant youth ages 10-24 across 21 studies	Systematic literature review	GSA
Greytak et al. [91]	2013	Canada	409 transgender and 6,444 LGB cisgender students ages 13 —18	Cross-sectional survey comparing 2 groups	GSA; WS

Table 2
Continued

Ref number Authors	Year	Country	Study population and size	Study design	Approach
Poteat et al. [92]	2013	USA	15,926 students in 54 high schools	Logistic regression using cross-sectional survey data	GSA
Poteat et al. [93]	2021	USA	5776 LGBTQ youth, ages 13–17	Logistic regression using cross-sectional survey data	GSA
Taylor et al. [94]	2013	USA	2,500 6th and 7th graders, 30 schools	Random assignment by school	WS
Shackleton et al. [95]	2016	USA	22 literature reviews	Review of reviews	WS
Timmerman et al. [96]	2004	Netherlands	2,808 secondary students, 22 schools	Cross-sectional survey	WS
Sosa-Rubi et al. [97]	2017	Mexico	885 9th–12th graders, 2 high schools	Quasi-experimental, matched pairs, pretests and post-tests	CP (GT); WS;
Dinaj-Koci et al. [98]	2015	Caribbean	1833 parent-youth dyads	Randomized control trial	PI
Katahoire et al. [99]	2019	Uganda	22 secondary schools	Cluster randomized trial at the school level	PI
Kamala et al. [100]	2017	Tanzania	658 parent-adolescent pairs	Pre-post evaluation of both parent and youth	PI
Liu & Su [101]	2014	China	K-5 students and parents in one school	Pre-post student and parent interviews	PI; PK-6; TP

AC = across the curriculum; BL = blended learning; CP = critical pedagogy; GIC = gender-integrated classroom; GSA = Gay-Straight Alliance/Gender and Sexuality Alliance; GT = gender transformative; LGBTQ+ = LGBTQ+ -inclusive curriculum; ML = media literacy; PI = parent involvement; PK-6 = early grades; QP = queer pedagogy; RCT = randomized controlled trial; SBHC = school-based health center/services; TP = teacher preparation; WS = whole school.

[27,28,30–32,49–62]. Most studies in the earliest grades focus on sexual abuse prevention, reflecting the vast majority of programming at that grade level [54–62]. They demonstrate that even very young children can learn skills, increase their likelihood of reporting and knowledge of how to respond in dangerous situations, and do so without raising their anxiety [62].

Many studies at the elementary school level also demonstrated that young children are quite capable of understanding and discussing issues related to gender diversity, including gender expectations, gender nonconformity, and gender-based oppression [23–27,29,31,32,48,49]. They underscore that topics such as gender identity and expression; social justice related to sexual orientation, gender identity, gender expression, and/or sex characteristics; bodily autonomy, and more, are developmentally appropriate and can provide the foundation for more in-depth discussions later [111–113].

LGBTQ+ -inclusive curricula. In her influential 1988 essay "Curriculum as Window and Mirror," education scholar Emily Style wrote:

All students deserve a curriculum which mirrors their own experience back to them, upon occasion—thus validating it in the public world of the school. But curriculum must also insist upon the fresh air of windows into the experience of others—who also need and deserve the public validation of the school curriculum. [114](pg.11).

The importance of curricula that both reflect the experiences of students and provide them with insights into the experiences of others has been supported by research across subject areas [63,115,116]. Education on sexual orientation and gender identity/expression, however, has often been focused on prevention of bullying, violence, and discrimination, with more limited focus on promotion of sexual health and well-being overall [117]. Several studies, however, demonstrate the benefits of explicitly integrating LGBTQ+ -inclusive information and representation into sex education curricula, finding that it leads to strong, positive, sexual, and other health outcomes for all students, and in particular for LGBTQ+ students [63–67]. These include lower levels of homophobia across grades; reduction in homophobic bullying and harassment; expanded understanding of gender norms; higher feelings of safety (from inclusive efforts across the curriculum, and especially from within sex education); fewer adverse mental health outcomes (including suicidal thoughts, suicide plans); and an overall improved school climate; all of which benefit heterosexual and cisgender, as well as, LGBTQ+ students.

Media literacy. The National Association for Media Literacy Education defines media literacy as "ability to encode and decode the symbols transmitted via media and synthesize, analyze, and produce mediated messages" [118]. The evidence suggests that critical thinking skills applied to media content (e.g., critically examining how violence and sexuality are depicted and connected in media messages) can serve as both an effective approach as well as an important outcome of CSE, serving what proponents identify as both a "protectionist" and "empowerment" function [119]. For example, a media literacy skills program for eighth graders in Australia, which aimed to help students decode negative gender imagery and gender stereotypes, demonstrated increased ability to critically analyze and deconstruct media messages and understanding of how media affects perceptions of both self and teen norms [68]. A SLR of secondary school body image programs [69] found media literacy education to be the most effective approach to improving body image and body satisfaction.

Studies of Media Aware Sexual Health [70,71] used randomized designs among eighth graders in 9 schools, and among 17 different classes in one high school. In both studies, students in the intervention groups enhanced media deconstruction skills, increased media skepticism, and reported more realistic perceptions of risk and sexual norms. In the high school study, students in the media literacy program decreased acceptance of dating violence and strict gender roles (both variables that have been associated with levels of sexual violence later on [120,121]); and increased intentions for bystander intervention, communication, and contraceptive use.

Teaching and classroom strategies

Gender-integrated classrooms. While research in certain specific areas of the curriculum, such as the sciences, has suggested some value for single-gender classrooms [122,123], a growing body of evidence raises concerns about educational policies that encourage gender-segregated classrooms [124]. In fact, single-gender classrooms have not led to better student performance [125] when controlling for students' prior performance and other individual characteristics [126,127], and some research suggests that, for boys, single-gender education may have a negative impact on academic achievement [124,128].

As well, learning in gender-segregated classes has been related to greater gender-stereotypic beliefs [129] and may continue what is called the "gender segregation cycle" [124]: spending time in same-gender peer groups contributes to: poorer communication skills toward other-gender peers; more gender-stereotypic thinking, attitudes, and behavior; decreased feelings of being able to relate to another gender; and more negative attitudes and fewer positive attitudes toward those of a different gender. These outcomes, in turn, give rise to further gender segregation, perpetuating a cycle that becomes more magnified over time—the antithesis of CSE goals.

Separating students by gender for some, or all, of their sex education is a commonly used approach, with the rationale that it creates a conducive learning environment by minimizing discomfort and embarrassment inherent in discussing sexuality-related topics in mixed-gender groups. Research specifically focused on sex education, however, has shown gender-integrated classrooms to be as, or more, effective than gender-segregated groupings. Two large studies, in grades 6—12, demonstrated the same or significantly better outcomes (particularly among boys) in mixed-gender classrooms, than those in single-gender groups [72,73]. Evaluation of a body image program found it to be equally effective in mixed-gender as single-gender classes [74]. A systematic review of programs targeting gender norms, including preschoolers to young adults in 61 school- and community-based programs worldwide, concluded that when boys and girls engaged in the same activity, at the same time, a range of positive outcomes was demonstrated [75], even in the earliest grades. Specifically, learners were able to explore, discuss, and reframe gender roles, assumptions, and decision-making together in a safe, structured setting, promoting gender equality, reducing restrictive gender norms, and challenging attitudes and behaviors related to gender.

Regarding student preferences, the research is mixed, with young people's preferences varying, for example, depending on grade level or topic [130]. In a study of over 3,000 young people in England [131], 66% of girls and 85% of boys preferred mixed gender or a combination approach, while 34% of girls and 15% of boys preferred only single gender classrooms.

Technology-assisted and blending learning. Reflecting technology's growing influence within education, and young people's increasing use of, and connection to it, research on blended learning [68,76], particularly important in the context of COVID-19 [36], has demonstrated the potential value of teaching methods that use some combination of in-person, and technology-based learning within sex education. Analysis of 5 sexual health programs in US and European middle and high schools found blended learning strategies were associated with positive outcomes for sexual coercion and dating violence,

emotional and physical skills for appraising sexually coercive situations, and confidence to resist coercive behaviors by a sexual partner [76]. Notably, students in this study stated their preference for blended learning over more traditional approaches to sex education.

In addition, blended learning models may enhance classroom instruction by providing more privacy and safety, than in-person instruction alone. In a randomized study of Me & You, an adolescent dating violence intervention, among sixth graders from 10 urban middle schools in Texas, an online platform enabled students to customize lessons (e.g., selecting their partner's gender for a given scenario), thereby improving relevance for each individual. At post-test, intervention students held less favorable attitudes toward gender-based violence and sexting and increased constructive conflict-resolution skills. At 1-year follow-up, odds of dating violence perpetration were significantly lower in the intervention group (among those who reported having dated) [77]. A study among girls in a 10th-grade sex education program delivered online, while in the classroom, found that, compared to an "attention-matched" group (online program that was not sex education, but in the same classroom), students reported greater gains in assertiveness, communication intentions, and condom intentions, at both post-test and 4-month follow-up [78].

School-based strategies that enhance CSE outcomes

The review of evidence shows that strategies to address the broader school environment beyond the classroom, and other efforts to support CSE, can reinforce and enhance classroom-based sex education. These include school-based health centers (SBHCs); Gay-Straight Alliances/Gender and Sexuality Alliances (GSAs); safe school or whole school approaches to promoting a culture free of bullying and harassment; parent interventions; and teacher training. Such approaches have been associated with a range of positive CSE outcomes including: communication skills; relationships with peers and parents; SRH (including and beyond pregnancy/STI risk reduction); sexual orientation and gender-related acceptance; and dating violence.

Outcomes of specific school-level interventions alone are often difficult to assess because most studies compare classroom-only interventions with classroom interventions enhanced by one or more other strategies. Furthermore, school-level interventions often include a combination of strategies within one school, making it difficult to separate the effects of one particular intervention from another [132,133]. Despite these challenges, strong research about school-wide support suggests many benefits.

School-based clinics or health centers (SBHCs). SBHCs have primarily been considered a cost-effective model of healthcare delivery for young people, particularly in reducing sexual risk by: increasing STI testing, contraceptive provision, and sexual health counseling; and demonstrating increased contraceptive use and lower pregnancy rates [134,135]. Beyond these findings, however, studies demonstrate the broader impact of school-based clinical services. These include reduced healthcare disparities among groups of students, more timely treatment, and increased school attendance [136]. In addition, research shows an association between clinic availability in schools and broader health outcomes that include healthy sexual behaviors, reduced substance abuse and improved mental health [137—139], decreased

intimate partner violence (IPV) victimization [52], and students' awareness of, and expectations for high-quality, effective sex education [140]. A US study comparing students at urban high schools with and without SBHCs found that, in SBHC schools, students were more likely to report receiving clinical counseling and were also more likely to report that they had received classroom education about reproductive health (RH) [79]. In several studies, [80,81,141] presence of SBHCs was associated with increased communication about sex and sexuality in general. Together these studies provide evidence for a broader school-wide impact of the presence of school-based health services, which has been associated with increased use of health services in general (i.e., both in and outside of school), addressing broader physical and mental health needs, increasing communication about sex and sexuality, and greater investment in sex education classes.

Gender and sexuality alliances (GSAs). Originally known as "Gay-Straight Alliances," these school groups, which generally seek to engage students of all sexual orientations, gender identities, gender expressions, and/or sex characteristics, can improve the broader school culture [82], increase sense of belonging for all students [83], and increase sense of emotional connection and support [84]. In one study, non-heterosexual GSA members at 3 Canadian high schools helped straight ally students engage in advocacy and other activities that improved their schools for all students, including confronting heteronormative thinking, dispelling myths related to HIV, and using their heterosexual privilege to educate the rest of the school community [85]. A longitudinal study in 3 US cities found that LGBTQ+ students in schools with GSAs, and/or who were members of GSAs, reported less homophobic bullying and a greater perception of safety at school than those in schools without GSAs [86]. A study of 1,415 students in 28 high schools found that, in schools with both LGBTQ+ -inclusive curricula and a GSA, students perceived a safer environment for their gender-nonconforming male peers [87].

Similarly, LGBTQ+ youth in schools with GSAs report lower bullying and higher perceived teacher and classmate support [91]. A meta-analysis of 15 studies totaling over 60,000 youth demonstrated that homophobic victimization, hearing homophobic remarks, and fears for their safety were significantly lower among all students in schools with GSAs [89]. Other studies of students in middle and high schools with GSAs found that they had lower odds of recent risky alcohol use, harms from alcohol or drug use and reported less truancy, smoking, drinking, suicide attempts, and sex with casual partners, than those in schools without GSAs. While all students experienced positive outcomes, there were particularly pronounced benefits among LGBTQ+ youth [90–93,142].

Safe school or whole school approaches. Several large studies provide evidence that strategies aimed at improving the broader school environment, known as "safe school" or "whole school" approaches, help improve a range of CSE outcomes for young people, including reduced sexual violence, as well as pregnancy, smoking, and bullying [142]. A study of the Shifting Boundaries program found strong support for several whole school approaches, including school building-based "respecting boundaries" agreements, and faculty presence in student-identified "hot spots." The stratified, randomized study of 2,500 sixth and seventh graders in 30 New York City public middle schools compared a six-session classroom intervention, with the same program enhanced by building-level interventions. Students in the enhanced condition reported significantly lower perpetration of sexual harassment and victimization than those in curriculum-only schools [94].

Other classroom programs, combined with overall improved school conditions, have also resulted in better outcomes for both dating violence and sense of belonging [95–97]. Students in 22 Dutch high schools rated sex education classes better when their schools also had safer school environments, which they described as "fair rules, a caring atmosphere, and social connectedness." The study's author noted that reporting unwanted sexual behavior in secondary school is "easier for students who perceive their school environment as an open school regarding discussion of sexuality issues in general," [96](p.125), and that sex education makes it easier for students to talk about unwanted sexual experiences, both in and out of school.

As well, comprehensive anti-bullying/anti-harassment policies in schools were related to lower levels of victimization for all LGBTQ+ students, and particularly strong for transgender youth [91]. In a national survey, 685 trans/gender-diverse high schoolers in Australia reported that a school environment that was accepting and supportive of gender and sexuality diversity greatly increased their sense of belonging and connectedness to school. In particular, they noted as critical factors, the importance of teachers in their school being concerned for their well-being and looking out for them [37].

Parent involvement. Evidence of the link between strong parent-child communication about sex and a variety of sexual health outcomes for young people highlights the importance of efforts to improve parent/child communication about sexuality, including for children in the earliest grades [143,144]. Specifically, there is a body of evidence that supports schools engaging parents as a component of a school-based program in which their children participate. A randomized controlled trial evaluation of Caribbean Informed Parents and Children Together (CImPACT) in the Bahamas, with 1,833 parent-student dyads, demonstrated significant improvements in parent/adolescent communication, increased parent confidence in discussing sex-related issues with their children, and, among students, increased knowledge and self-efficacy for condom use [98]. Research on parent workshops in support of classroom instruction in Uganda studied 1,400 parent/student dyads in 22 secondary schools. Researchers found increased frequency and quality of sexuality communication for both parents and students and improved attitudes about sex-related communication, concluding that mobilization and training of parents contributed to the effectiveness of the school-based sex education program [99]. A study of 800 parent-student dyads in Tanzania found significant increases in 9–12-year-olds' attitudes and knowledge about communicating with parents about sexual topics; positive attitudes about sexuality education among both parents and students; and increased frequency of parent-child conversations about sexuality [100]. An important finding in this study was an increase in parents' affirmation that talking with their preteen children about sexuality would not be misinterpreted as encouragement to engage in sexual activity.

Finally, a study in China of a multifaceted CSE program in grades 1–6, featured multiple parent components including regular telephone and face-to-face conversations, as well as participatory training on talking with their children about sexuality-related topics. Researchers reported several important

outcomes for students, including improved social skills, greater empathy, and appreciation of gender and sexual equality, as well as for parents, such as an increase in parents' attention to their children's physical development, psychological health, and social lives and more effective communication and interactions within families [101].

Teacher preparation. An abundance of research has supported the need for teacher training related to CSE [101,145,146] while documenting the lack of teacher preparation in this subject area [147]. One study showed that nearly one third of all US teachers responsible for teaching sex education reported no pre- or in-service training in this area [148]. Another found that when teachers received insufficient pre-service training, they avoided teaching subjects within CSE that they considered to be controversial, despite believing these topics important to teach [149]. Conversely, studies from around the world, with both pre-service and seasoned classroom teachers have shown that training increases: teacher comfort with, and confidence in, teaching sex education; their belief in the value of, and willingness to teach CSE; the likelihood that they will teach it; the amount of content taught; and their capacity to be responsive to student needs [19,145,150–153]. A study of school-based Relationship and Sexuality Education programs in Australia identified teacher preparation as one of the key structural factors related to the successful implementation of Relationship and Sexuality Education programs in primary schools [154].

A Chicago public school study of over 19,000 teachers and school staff (including administrators, security staff, social workers, and nurses) who participated in a professional development program found significant increases in knowledge, skills, and identifying actions they could take to improve the school environment and change culture regarding the needs of LGBTQ+ students [155]. The evaluation also found that this training was critical to the students' receiving the sex education curriculum [156]. Although the research strongly suggests an important connection between teacher preparation and the quality of CSE, [37,43,44,49,50] there is a critical need for studies that directly assess the impact of CSE-trained teachers on student CSE outcomes.

Discussion

Our SLR of 30 years of evaluation research in sex education identified and documented important outcomes related to the goals of CSE that extend beyond pregnancy and STI prevention [1]. CSE was found to: "lower homophobia and homophobic-related bullying, increase understanding of gender and gender norms; improve skills that support healthy relationships; build child sex abuse prevention skills, and reduce dating and intimate partner violence" [1](p.22).

The current review identifies and describes the approaches and strategies associated with these outcomes. Some, such as critical theory-based pedagogies, represent major shifts in thinking about CSE. Much of what is reported here, however, is not new. Arguments in favor of the approaches described in this paper have been made—some for a very long time—by leading scholars, educators, and policymakers from across a multitude of disciplines [157,158]. This study reports on the accumulated evidence that bolsters these arguments. While researchers found substantially more evidence for many of these approaches connected to sexual risk behavior-change interventions, this analysis

focused on effectiveness in relation to the broader outcomes found in the review.

Most sex education around the world continues to be hetero- and cis-normative, biologically based, focused on pregnancy and STI prevention, aimed at middle and high school students [159,160], and steeped in traditional and patriarchal gender norms that promote double standards and expectations for men and women. Intentionally or not, they often socialize children into systems of inequality based on sex, gender, race, and class that largely maintain the status quo through limited or simplistic focus on power, safety, homophobia, sexism, consent, or agency [10,13,16,159–164]. Furthermore, little attention has traditionally been paid to the sexuality education needs of racial and religious minority young people, and to the intersections of race, gender, religion, culture, and intellectual or physical disability that have an impact on one's sexual development. This suggests that, while there is strong evidence for critical pedagogies based on gender transformative, social justice, and human rights principles, thus far, these approaches remain largely untapped, to the likely detriment of CSE outcomes outside of sexual risk behavior change, that are highlighted by the NSES and other international frameworks.

Early, spiraled approaches across the curriculum

One of the most important and easily actionable findings from this review is that CSE should not be limited to the health curriculum, only taught by health teachers and school nurses, in middle and high schools, and with a sole, or even primary focus on pregnancy and HIV prevention. There is substantial evidence that successful efforts often use literature as an entry point, are implemented across the curriculum, and/or take place in the early grades beginning long before puberty. In particular, the evidence for Gender Transformative Approaches aimed at children and very young adolescents (ages 10–14) highlights the importance of addressing gender norms and stereotypes early. Together, these findings amplify the need for school-based sex education that is taught from grades K-12, with a spiraled approach that builds sequentially and developmentally throughout grade levels, the same way math, science, social studies, and other subjects are taught.

Inclusion

Inclusive education has historically referred to the schooling of children, with and without disabilities, together within general education settings. More recently, its meaning has also broadened to include an educational system that supports and welcomes diversity among learners of all types [165]. Scholars, educators, and advocates have long asserted the benefits of "inclusive education" for all students by helping young people understand one another better, supporting their abilities to empathize, connect, and collaborate with a diverse group of peers, encouraging both individuality and greater social connections, creating a more positive school climate with a stronger sense of belonging [166], and increasing students' likelihood of effective participation in society and of reaching their full potential [167–169].

LGBTQ+ -inclusive CSE enjoys many of these same outcomes. Recent research specifically concludes that, in states with a greater proportion of LGBTQ+ -inclusive sex education, students have lower odds of experiencing school-based victimization and

adverse mental health [170]. There continues to be a strong need to study the impact of CSE that is inclusive of nonmajority and marginalized identities and groups related to race, ethnicity, religion, ability, and others, while extensive data from the education field points to its critical importance.

This analysis also considers inclusion with respect to learners in the classroom, concluding that the traditional practice of separating genders for sexuality, puberty, and other topics, is not well-supported. In most cases, gender-integrated learning is as, or more, effective in addressing a wide array of topics, as well as in reducing stereotypes, in part, by reducing gender salience in the classroom. It allows students to hear the perspectives of others, and practice communicating about sensitive topics with different gender peers. As well, this practice aligns with both the theoretical and evidentiary rationales that support LGBTQ+ -inclusive curricula, by improving learning conditions for all young people. Although whether and when to offer sex education in gender-segregated classrooms continues to be debated in the literature and the public press, the findings of this review should tip the scale toward gender integration whenever possible. They suggest that schools can be confident about taking this approach at all grade levels, as it is preferred by students, may be more effective, and confers important benefits that can improve all young people's learning and well-being including those who identify as trans* or gender nonbinary. While local cultural or religious concerns often dictate the practice of separating genders when covering certain topics, there should still be built-in opportunities for gender-integrated learning, given its many apparent benefits.

Addressing technology

Since the 1960s, the National Education Association has recommended "critical viewing curricula" to counteract presumed ill effects of media violence. By the early 1990s, media literacy education was becoming increasingly common [68]. With respect to sexuality, media (particularly social media) have been termed "super peers," from which young people absorb powerful messages about sexual activity, expectations, and perceived peer behavior [171]. In fact, media outrank both parents and schools as the preferred source of information about birth control [172]. Importantly, however, depictions of sex and relationships in the media are most often unhealthy and/or inaccurate [173].

There is strong evidence that media literacy interventions contribute to reduction of risky behaviors. In particular, media literacy education plays an important role, as both a "method" and "outcome" of sex education, and its successful use in violence prevention efforts suggests it may be an effective component of consent education [174,175]. As such, media literacy education in schools has expanded, and porn literacy has surfaced as both an important area for study and a common "culture war" target [176–180]. Exposure to pornography and sexually violent media is associated with accepting attitudes toward dating and sexual violence, actual and anticipated dating violence and sexual violence victimization and perpetration [181], as well as a range of other concerning outcomes [182]. Given pornography's ubiquity and accessibility to young people throughout the world, schools must integrate critical media literacy in addressing this and other topics, in the broader curriculum.

Evidence suggests that media and other emerging technologies can be harnessed to support health and well-being and effective CSE, which may be particularly important for schools in remote areas, districts with limited resources, and during unforeseen disruptions to schooling, such as during the COVID-19 pandemic. Specifically, blended learning approaches can enhance classroom learning with online text, videos, discussion boards, and other virtual resources [76]. Although more research is needed to understand the conditions under which such blended approaches are most successful (e.g., grade levels, topic areas, total teaching time, etc.), technology-supported sex education may also address one of the greatest vulnerabilities in delivery of CSE, that is, teacher comfort and skill.

Broader school initiatives

While most school-based clinic services focus on prevention and treatment, the presence of a clinic, whether or not a student uses it, positively influences other outcomes for students, including communication about sexuality, the likelihood of contraceptive use, and assessment of their sex education experiences. Schools with health services are also more likely to be engaged in CSE. These findings suggest that clinic services that support sexual health as part of the broader school environment, should be included as part of standard school-based services, for example, counseling, guidance, and academic support. In such a model, sexuality is not sequestered to a small instructional corner of the health education curriculum but becomes the concern and responsibility of all school personnel.

The data strongly suggest that a supportive school climate that prioritizes safety, acceptance, and inclusion leads to better outcomes for all students with respect to bullying, acceptance of gender-diverse students, and their reported sense of safety, belonging and connectedness to school. The importance of expanding a focus on inclusion and safety beyond the sex education curriculum to the entire school culture is supported by the growing evidence that school belonging is associated with a range of positive outcomes including psychosocial well-being, prosocial behavior, academic achievement, and healthier transition to adulthood [183]. It is important to note, however, that school-wide strategies and innovations to support safe climates are often possible only with implementation and enforcement of policies and frameworks that prioritize best practices [184]. In Australia, for example, schools plan their curricula in alignment with the federal Student Wellbeing Framework [185], which prioritizes students' sense of inclusion and connection to their schools. Because there are wide variations among countries' educational systems, some places will require federal policies, while others will focus on regional, state, or local dictates.

Parent education and support

Parents and caretakers are critically important partners. The effectiveness of school-based interventions that have included parent education and training, strongly suggest that they are a critically important component of effective CSE. Not surprisingly, parents who are trained and supported feel more confident discussing sexuality with their children and recognize that talking about sex does not promote or increase sexual behavior. CSE programs with a parental support component have demonstrated improved and increased parent/child communication about sex, as indicated by both parents and young people. In addition, informing parents about the school curriculum may allay their fears and misconceptions.

Teacher preparation

Because CSE has the potential to be effective across the curriculum, all teachers must be prepared to incorporate CSE goals into their teaching and interactions with students. This may be especially true at the elementary school level where, research suggests, a great deal of effective sex education takes place. In the United States and in much of the world, however, there are no pre-service or in-service preparation requirements related to sex education for primary grade teachers. A commonly offered rationale for this exclusion is the lack of need, given the supposed sexual innocence of young children and their assumed inability to comprehend sexuality-related concepts. In a study of what he labels "normative teacher education," Vavrus [186] argues that this assertion is made "despite the kind of sexualized talk and playground games that children regularly perform"(pg. 384). This observation, along with an abundance of other research, including studies of young people's reflections on their sex education experiences [18,187], make the case that young people need and want CSE earlier than it is typically offered and that their needs and questions begin early and are not restricted to health classes in middle and high school. A wide range of topics arise naturally in every classroom and throughout the school day, in all grades, for which teachers feel unprepared to respond [188]. This reality reflects normal childhood development and the role that technology and social media play in giving young children access to sexuality-related content. Beyond teaching topics related to CSE, the documented importance of student-teacher relationships in cultivating a sense of school belonging, good psychosocial functioning, and academic outcomes [183] demands that all teachers receive training in LGBTQ+ -inclusion and support, as well as other aspects of CSE.

Limitations

Limitations of the overall study, described in detail elsewhere [1], are summarized here. The conclusions drawn in this paper are based on an investigation of the strategies and approaches associated with positive CSE outcomes identified by the systematic review of the literature. The initial search, however, was based on CSE outcomes, not approaches, therefore some studies may have been missed. Thus, as part of the analysis for the findings presented here, researchers reviewed outcome literature that was specifically related to their identified approaches, by conducting an additional hand-search of literature for additional outcome studies that included the various identified pedagogical approaches and strategies. Many successful efforts took place outside of a formal sex education curriculum. As such, there is likely more research from other disciplines that evaluate educational strategies and approaches that may also lead to positive CSE outcomes, which are not captured in this review. In addition, only English-language papers were included, which may have limited our ability to assess all the existing literature on this topic.

Furthermore, studies examining school-level interventions often identified a combination of supports, comparing classroom-only interventions with those same interventions enhanced by one or more broader school-based efforts (e.g., a teacher development program, along with safe school initiatives). Such research makes it difficult to separate out the effects of one particular type of school-level enhancement from another. This is particularly the case with respect to parent training, which rarely occurred outside the context of other supporting initiatives and has rarely been evaluated on its own.

Finally, this review includes both qualitative and quantitative studies that represent a range of research methodologies, sizes, and generalizability of findings. If a study demonstrated CSE-related outcomes and also reported on approaches or strategies used (classroom or school-level), then it was included in this review. The variety of studies does not allow for direct comparisons of one study to another. Taken together, however, they provide strong evidence as well as important context, detail, and support for the conclusions drawn about approaches and strategies of effective CSE.

Summary and Implications

This study describes evidence for the strategies and approaches associated with CSE that is effective beyond traditional RH outcomes. Where most prevention-focused RH programs take an individual behavior change approach, efforts studied here address structural and systemic barriers to SRH, equity, and rights.

While sex education is typically treated as a classroom-based intervention, separate from the wider school culture or services, this review provides strong support for implementing a comprehensive curriculum as part of a holistic, school-wide approach that promotes inclusion and belonging, and signals a strong commitment to the sexual health and well-being of all students.

These findings lead to several important recommendations: integrating the NSES second edition, and/or other international frameworks across the curriculum; beginning in early grades; using inclusive, gender-integrated approaches that challenge stereotypes and assumptions, while supporting students of all genders and sexualities; enhancing media literacy efforts in response to the increasing influence of digital media on sexual attitudes and behaviors; strategically including teaching methods that combine in-person and digital learning; leveraging SBHCs, GSAs and other services to reinforce CSE curricular efforts, particularly around reducing homophobia and bullying; enhancing preparation of all teachers and school personnel to address sexuality-related topics; and supporting, engaging, and including parents in these efforts.

Most importantly, this review highlights a dramatic paradigm shift for CSE grounded in critical pedagogy, which is student-centered, encourages critical thinking, challenges norms and stereotypes, critically analyzes structural and intersectional causes of sexual health disparities, promotes democratic principles, and fosters empathy, self-reflection, and acceptance for all young people. The range of outcomes associated with the approaches reported here extend beyond outcomes of SRH related to unintended pregnancy and STI prevention. Nonetheless, it is important to note that the 2 sets of outcomes are not mutually exclusive, but rather, reinforce one another. Instead of treating sex education as a health intervention, however, the cumulative and most recent evidence suggests that learning about sexuality needs to be understood as an inherent and integral part of all schooling that, therefore, must be considered in all education policies and in the training and preparation of all teachers and school personnel. Thirty-plus years of accumulated evidence suggests that this comprehensive and holistic approach holds the most promise for cultivating a more informed, empathetic, and sexually healthy citizenry.

Acknowledgments

Funding Sources

References

[1] Goldfarb ES, Lieberman LD. Three decades of research: The case for comprehensive sex education. J Adolesc Health 2021;68:13—27.

[2] Future of Sex Education Initiative, USA. National sex education standards: Core content and skills, K-12 (Second Edition). 2020.

[3] Advocates for Youth. Sexuality education. 2018. Available at: https://www.advocatesforyouth.org/resources/fact-sheets/sexuality-education-2/. Accessed March 3, 2024.

[4] International Planned Parenthood Federation. IPPF framework for comprehensive sexuality education. 2020. Available at: https://www.ippf.org/sites/default/files/ippf_framework_for_comprehensive_sexuality_education.pdf. Accessed August 21, 2024. SIECUS The SIECUS State Profiles 2019/2020.

[5] SIECUS. The SIECUS state Profiles 2019/2020. Available at: https://siecus.org/state-profiles-2020/.

[6] UNESCO. International Technical guidance on sexuality education: An evidence-informed approach. 2018. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000260770. Accessed March 4, 2024.

[7] WHO. Standards for sexuality education in Europe. 2010. Available at: https://efaidnbmnnnibpcajpcglclefindmkaj/https://www.icmec.org/wp-content/uploads/2016/06/WHOStandards-for-Sexuality-Ed-in-Europe.pdf. Accessed August 21, 2024.

[8] Goldfarb ES, Constantine NA. Sexually education. In: Bradford Brown B, Prinstein MJ, eds. Encyclopedia of Adolescence. Cambridge, MA: Elsevier; 2011.

[9] People for the American Way. Teaching fear: The religious Right's Campaign against sexuality education. 1996. Available at: https://www.peoplefor.org/report/teaching-fear. Accessed March 21, 2024.

[10] Connell CE, Elliot S. Beyond the birds and the Bees: Learning inequality through sexuality education. Am J Sex Educ 2009;4:83—102.

[11] de Heer BB, Brown M, Cheney MJ. Sexual consent and communication among the sexual minoritized: The role of heteronormative sex education, trauma, and dual identities. Fem Criminol 2021;16:701—21.

[12] Allen L. Young people and sexuality education: Rethinking key debates. London: Palgrave Macmillan; 2011.

[13] Garcia L. 'Now why do you want to know about that?' Heteronormativity, sexism and racism in the (mis)education of Latina youth. Gend Sex 2009; 23:520—41.

[14] Bay-Cheng L. The trouble of teen sex: The construction of adolescent sexuality through school-based sexuality education. Sex Educ 2003;3:61—74.

[15] Epstein D, O'Flynn S, Telford D. Silenced sexualities in schools and universities. London: Trentham Books; 2003.

[16] Sundaram VS, Sauntson H. Discursive silences: Using critical linguistic and qualitative analysis to explore the continued absence of pleasure in sex and relationships education in England. Sex Educ 2016;16:240—54.

[17] Ashcraft C. But how do we talk about it?: Critical literacy practices for addressing sexuality with youth. Curric Inq 2012;42:597—628.

[18] Goldfarb E, Lieberman L, Bible J. High school sex education in the context of state mandates and policies in New Jersey: A qualitative retrospective study of student experiences. Sex Res Soc Pol 2022;19:1968—78.

[19] Costello A, Maunsell C, Cullen C, Bourke A. A systematic review of the provision of sexuality education to student teachers in initial teacher education. Front Educ 2022;7:787966.

[20] Walker R, Welch R, Leahy D, Boyle J. Teachers' perspectives of sexual and reproductive health education in primary and secondary schools: A systematic review of qualitative studies. Sex Educ 2021;21:627—44.

[21] Kirby D. No easy answers: Research findings on programs to reduce teen pregnancy. Washington, DC: National Campaign to Prevent Teen Pregnancy; 1997.

[22] Kirby D. Emerging answers: Research findings on programs to reduce teen pregnancy (Summary). Am J Health Educ 2001;32:348—55.

[23] Athanases S. A gay∼themed lesson in an ethnic literature curriculum: Tenth graders' responses to "Dear Anita". Harv Educ Rev 1996;66.

[24] Schall J, Kauffmann G. Exploring literature with gay and lesbian characters in the elementary school. J Child Lit 2003;29:36—45.

[25] Helmer K. "Everyone needs a class like this": High school students' perspectives on a gay and lesbian literature course. Educ Forum 2015;79: 408—20.

[26] Bentley DF, Souto-Manning M. Toward inclusive understandings of marriage in an early childhood classroom: Negotiating (un)readiness, community, and vulnerability through a critical reading of 'King and King'. Early Years Int J Res Dev 2016;36:195—206.

[27] Ryan CL, Patraw JM, Bednar M. Discussing princess boys and pregnant men: Teaching about gender diversity and transgender experiences within an elementary school curriculum. J LGBT Youth 2013;10:83—105.

[28] Hermann-Wilmarth JM, Lannen R, Ryan C. Critical literacy and transgender topics in an upper elementary classroom: A portrait of possibility. J Lang Lit Educ 2017;13:15—27.

[29] Helmer K. Gay and lesbian literature disrupting the heteronormative space of the high school English classroom. Sex Educ 2016;16:35—48.

[30] Matthews CE. Challenging gender bias in fifth grade. Educ Leader 1998; 55:54—7.

[31] Rice PS. Creating spaces for boys and girls to expand their definitions of masculinity and femininity through children's literature. J Child Lit 2002; 28:33—42.

[32] Dutro E. "But that's a girls' book!" Exploring gender boundaries in children's reading practices. The Reading Teach 2002;55:376—84.

[33] Haberland NA. The case for addressing gender and power in sexuality and HIV education: A comprehensive review of evaluation studies. Int Perspect Sex Reprod Health 2015;41:31—42.

[34] Constantine NA, Jerman P, Berglas NF, et al. Short-term effects of a rights-based sexuality education curriculum for high-school students: A cluster-randomized trial. BMC Public Health 2015;15:293.

[35] Rohrbach LA, Berglas NJ, Jerman P, et al. A rights-based sexuality education curriculum for adolescents: 1-year outcomes from a cluster-randomized trial. J Adolesc Health 2015;57:399—406.

[36] Pinandari AW, Kagesten AE, Li M, et al. Short-term effects of a school-based comprehensive sexuality education intervention among very young adolescents in three urban Indonesian settings: A quasi-experimental study. J Adolesc Health 2023;73:S21—32.

[37] Ullman J. Trans/Gender-diverse students' perceptions of positive school climate and teacher concern as factors in school belonging: Results from an Australian National Study. Teach Coll Rec 2022;124:145—67.

[38] Beckwith S, Li M, Barker KM, et al. The impacts of two gender-transformative interventions on early adolescent gender norms perceptions: A difference-in-difference analysis. J Adolesc Health 2023;73:S55—64.

[39] Hunersen K, Li M, Pinandari AW, et al. Understanding how gender transformative interventions affect adolescent sexuality: A cross-cultural perspective. J Adolesc Health 2023;73:S65—73.

[40] Sell K, Oliver K, Meiksin R. Comprehensive sex education addressing gender and power: A systematic review to investigate implementation and mechanisms of impact. Sex Res Soc Pol 2023;20:58—74.

[41] Lys CL, Logie CH, Lad A, et al. Human immunodeficiency virus prevention outcomes associated with arts-based sexual health workshop participation among Northern and Indigenous adolescents in the Northwest Territories, Canada. Int J Std Aids 2024;35:438—45.

[42] Knotts G, Gregorio D. Confronting homophobia at school: High school students and the gay men's chorus of Los Angeles. J LGBT Youth 2011;8:66—83.

[43] Miller E, Tancredi DJ, McCauley HL, et al. "Coaching boys into men": A cluster-randomized controlled trial of a dating violence prevention program. J Adolesc Health 2012;51:431—8.

[44] Miller E, Tancredi DJ, McCauley HL, et al. One-year follow-up of a coach-delivered dating violence prevention program: A cluster randomized controlled trial. Am J Prev Med 2013;45:108—12.

[45] Kervin D, Obinna J. Youth action strategies in the primary prevention of teen dating violence. J Fam Soc Work 2010;13:362—74.

[46] Cofre J, Macedo LS, Braga RC, et al. Using mathematics lessons in adolescents' sex education. Open J Social Sci 2018;06:204—30.

[47] Kerner C, Prescott A, Smith R, Owen M. A systematic review exploring body image programmes and interventions in physical education. Eur Phys Educ Rev 2022;28:942—67.

[48] Dallacqua AK. Wondering about Rapunzel: Reading and responding to feminist fairy tales with seventh graders. Children's Lit Educ 2019;50: 261—77.

[49] Wasserberg M. "Being it no matter what anyone else think about it:" Combating gender bias with nontraditional literature in an urban elementary classroom. Netw Online J Teach Res 2013;14.

[50] Hong L, He X, Xue L, et al. (2022). Comprehensive sexuality education improves primary students' explicit and implicit attitudes toward homosexuality. Int J Sex Health 2022;34:503–20.

[51] Baiocchi M, Omondi B, Langat N, et al. A behavior-based intervention that prevents sexual assault: The results of a matched-pairs, cluster-randomized study in Nairobi, Kenya. Prev Sci 2017;18:818–27.

[52] De La Rue L, Polanin JR, Espelage DL, Pigott TD. School-based interventions to reduce dating and sexual violence: A systematic review. Campbell Syst Rev 2014;10:1–110.

[53] Pick S, Givaudan M, Sirkin J, Ortega I. Communication as a protective factor: Evaluation of a life skills HIV/AIDS prevention program for Mexican elementary-school students. AIDS Educ Prev 2007;19:408–21.

[54] Davis MK, Gidycz CA. Child sexual abuse prevention programs: A meta-analysis. J Clin Child Psychol 2000;29:257–65.

[55] Brown DM. Evaluation of safer, smarter kids: Child sexual abuse prevention curriculum for kindergartners. Child Adolesc Social Work J 2017; 34:213–22.

[56] Kenny MC, Wurtele SK, Alonso L. Evaluation of a personal safety program with Latino preschoolers. J Child Sex Abuse 2012;21:368–85.

[57] Kenny MC, Capri V, Ryan EE, Runyon MK. Child sexual abuse: From prevention to self-protection. Child Abuse Rev 2008;17:36–54.

[58] MacIntyre D, Carr A. Evaluation of the effectiveness of the stay safe primary prevention programme for child sexual abuse. Child Abuse Negl 1999;23:1307–25.

[59] Walsh K, Zwi K, Woolfenden S, Shlonsky A. School-based education programs for the prevention of child sexual abuse: A cochrane systematic review and meta-analysis. Res Social Work Pract 2018;28:33–5.

[60] Topping KJ, Barron IG. School-based child sexual abuse prevention programs: A review of effectiveness. Rev Educ Res 2009;79:431–63.

[61] Pulido ML, Dauber S, Tully BA, et al. Knowledge gains following a child sexual abuse prevention program among urban students: A cluster-randomized evaluation. Am J Public Health 2015;105:1344–50.

[62] Hazzard A, Webb C, Kleemeier C, Angert L. Child sexual abuse prevention: Evaluation and one-year follow-up. Child Abuse Negl 1991;15:123–38.

[63] Snapp SD, Budge H, Licona AC, et al. Students' perspectives on LGBTQ-inclusive curriculum. Equity Excell Educ 2015;48:249–65.

[64] Baams L, Dubas J, van Aken M. Comprehensive sexuality education as a longitudinal predictor of LGBTQ name-calling and perceived willingness to intervene in school. J Youth Adolesc 2017;46:931–42.

[65] Blake SM, Ledsky R, Lehman T, et al. Preventing sexual risk behaviors among gay, lesbian, and bisexual adolescents: The benefits of gay-sensitive HIV instruction in schools. Am J Public Health 2001;91:940–6.

[66] Proulx CN, Coulter WS, Egan JE, et al. Associations of lesbian, gay, bisexual, transgender, and questioning-inclusive sex education with mental health outcomes and school-based victimization in U.S. high school students. J Adolesc Health 2019;64:608–14.

[67] Snapp SD, McGuire JK, Sinclair KO, et al. LGBTQ-Inclusive curricula: Why supportive curricula matter. Sex Educ 2015;15:580–96.

[68] Berman N, White A. Refusing the stereotype: Decoding negative gender imagery through a school-based digital media literacy program. Youth Stud Aust 2013;32:38–47.

[69] Yager Z, Diedrichs PC, Ricciardelli LA, Halliwell E. What works in secondary schools? A systematic review of classroom-based body image programs. Body Image 2013;10:271–81.

[70] Scull TM, Kupersmidt JB, Malik CV, Morgan-Lopez AA. Using media literacy education for adolescent sexual health promotion in middle school: Randomized control trial of media aware. J Health Commun 2018;23:1051–63.

[71] Scull T, Malik C, Morrison C, Keefe E. Promoting sexual health in high school: A feasibility study of a web-based media literacy education program. J Health Commun 2021;26:147–60.

[72] Clinton-Sherrod AM, Morgan-Lopez AA, Gibbs D, et al. Factors contributing to the effectiveness of four school-based sexual violence interventions. Health Promot Pract 2009;10:19S–28S.

[73] Pacifici C, Stoolmiller M, Nelson C. Evaluating a prevention program for teenagers on sexual coercion: A differential effectiveness approach. J Consult Clin Psychol 2001;69:552–9.

[74] Dunstan CJ, Paxton SJ, McLean SA. An evaluation of a body image intervention in adolescent girls delivered in single-sex versus co-educational classroom settings. Eat Behav 2017;25:23–31.

[75] Levy J, Darmstadt G, Ashby C, Quandt M. Characteristics of successful programmes targeting gender inequality and restrictive gender norms for the health and wellbeing of children, adolescents, and young adults: A systematic review. Lancet Glob Health 2020;8:E225–e236.

[76] Coyle KK, Chambers BD, Anderson PM, et al. Blended learning for sexual health education: Evidence base, promising practices, and potential challenges. J Sch Health 2019;89:847–59.

[77] Peskin MF, Markham CM, Shegog R, et al. Adolescent dating violence prevention program for early adolescents: The me & you randomized controlled trial, 2014-2015. Am J Public Health 2019;109:1419–28.

[78] Widman L, Golin CE, Kamke K, et al. Sexual assertiveness skills and sexual decision-making in adolescent girls: Randomized controlled trial of an online program. Am J Public Health 2018;108:96–102.

[79] Minguez M, Santelli JS, Gibson E, et al. Reproductive health impact of a school health center. J Adolesc Health 2015;56:338–44.

[80] Guttmacher S, Lieberman L, Ward D, et al. Condom availability in the New York City public high schools: Relationships to condom use and sexual behavior. Am J Public Health 1997;87:1427–34.

[81] Berglas NF, Jerman P, Rohrback LA, et al. An implementation and outcome evaluation of a multicomponent sexuality education programme for high school students. Sex Educ 2016;16:549–67.

[82] Baams L, Russell ST. Gay-straight alliances, school functioning, and mental health: Associations for students of color and LGBTQ students. Youth Soc 2021;53:211–29.

[83] Poteat VP, Marx RA, Richburg A, et al. Gender-sexuality alliance experiences and LGBTQ+ inclusive school policies and practices predict youth's school belonging. J Youth Adolesc 2025;54:1–16.

[84] Porta CM, Singer E, Mehus CJ, et al. LGBTQ youth's views on gay-straight alliances: Building community, providing gateways, and representing safety and support. J Sch Health 2017;87:489–97.

[85] Lapointe A. Gay–straight alliance (GSA) members' engagement with sex education in Canadian high schools. Sex Educ 2014;14:707–17.

[86] Ioverno S, Belser AB, Baiocco R, et al. The protective role of gay-straight alliances for lesbian, gay, bisexual, and questioning students: A prospective analysis. Psychol Sex Orientat Gend Divers 2016;3:397–406.

[87] Toomey RB, McGuire JK, Russell ST. Heteronormativity, school climates, and perceived safety for gender nonconforming peers. J Adolesc 2012;35:187–96.

[88] Day JK, Fish JN, Grossman AH, Russell ST. Gay-straight alliances, inclusive policy, and school climate: LGBTQ youths' experiences of social support and bullying. J Res Adolesc 2020;30:418–30.

[89] Marx RA, Kettrey HH. Gay-straight alliances are associated with lower levels of school-based victimization of LGBTQ+ youth: A systematic review and meta-analysis. J Youth Adolesc 2016;45:1269–82.

[90] Johns MM, Beltran O, Armstrong HL, et al. Protective factors among transgender and gender variant youth: A systematic review by socio-ecological level. J Prim Prev 2018;39:263–301.

[91] Greytak EA, Kosciw JG, Boesen MJ. Putting the "T" in "resource": The benefits of LGBT-related school resources for transgender youth. J LGBT Youth 2013;10:45–63.

[92] Poteat VP, Sinclair KO, DiGiovanni CD, et al. Gay-straight alliances are associated with student health: A multi-school comparison of LGBTQ and heterosexual youth. J Res Adolesc 2013;23:319–30.

[93] Poteat VP, Fish FN, Watson RJ. Gender-sexuality alliances as a moderator of the association between victimization, depressive symptoms, and drinking behavior among LGBTQ+ youth. Drug Alcohol Depend 2021;229:109140.

[94] Taylor BG, Stein ND, Mumford EA, Woods D. Shifting boundaries: An experimental evaluation of a dating violence prevention program in middle schools. Prev Sci 2013;14:64–76.

[95] Shackleton N, Jamal F, Viner RM, et al. School-based interventions going beyond health education to promote adolescent health: Systematic review of reviews. J Adol Health 2016;58:382–96.

[96] Timmerman MC. Safe schools and sexual harassment: The relationship between school climate and coping with unwanted sexual behaviour. Health Educ J 2004;63:113–26.

[97] Sosa-Rubi SG, Saavedra-Avendano B, Piras C, et al. True Love: Effectiveness of a school-Based program to reduce dating violence among adolescents in Mexico City. Prev Sci 2017;18:804–17.

[98] Dinaj-Koci V, Deveaux L, Wang B, et al. Adolescent sexual health education: Parents benefit too! Health. Educ Behav 2015;42:648–53.

[99] Katahoire AR, Banura C, Muhwezi WW, et al. Effects of a school-based intervention on frequency and quality of adolescent-parent/Caregiver sexuality communication: Results from a randomized-controlled trial in Uganda. AIDS Behav 2019;23:91–104.

[100] Kamala B, Rosecrans KD, Shoo TA, et al. Evaluation of the families matter! Program in Tanzania: An intervention to promote effective parent-child communication about sex, sexuality, and sexual risk reduction. AIDS Educ Prev 2017;29:105–20.

[101] Liu W, Su Y. School-based primary school sexuality education for migrant children in Beijing, China. Sex Educ 2014;14:568–81.

[102] Freire P. Pedagogy of freedom: Ethics, democracy, and civic courage. London: Rowman and Littlefield Publishers; 2001.

[103] Sanjakdar F, Yip A. Critical pedagogy, sexuality education and young people.Issues about democracy and active citizenry. New York: Peter Lang Publishing, Incorporated; 2018.

[104] Uddin M. Critical pedagogy and its implication in the classroom. J Underrepresent Minor Prog 2019;3:109–19.

[105] Logan SR, Watson DC, Hood Y, Lasswell DA. Multicultural inclusion of lesbian and gay literature themes in elementary classrooms. Equity Excell Educ 2016;49:380–93.

[106] Freire P. Pedagogy of the oppressed. New York: Seabury Press; 1970.
[107] Janks H. Critical literacy in teaching and research. Educ Inq 2013;4:225−42.
[108] Rands KE. Considering transgender people in education: A gender-complex approach. J Teach Educ 2009;60:419−31.
[109] Atay A, Pensoneau-Conway SL. Queer communication pedagogy. First Edition. New York: Routledge; 2019.
[110] Barker G, Ricardo C, Nascimento M, et al. Questioning gender norms with men to improve health outcomes: Evidence of impact. Glob Public Health 2010;5:539−53.
[111] Bronstein P. The family environment: Where gender role socialization begins. In: Handbook of girls' and women's psychological health: Gender and well-being across the lifespan. Oxford, UK: Oxford University Press; 2006:262−71.
[112] Blakemore JEO, Berenbaum SA, Liben LS. Gender development. New York: Taylor & Francis; 2009.
[113] Leaper C, Friedman CK. The socialization of gender. In: Grusec J, Hastings P, eds. Handbook of Socialization: Theory and Research. New York: Guildford Press; 2007:561−87.
[114] Style E. Curriculum as window and mirror. In: Listening for All Voices: Gender Balancing the School Curriculum. Summit, NJ: Oak Knoll School of the Holy Child; 1988:11.
[115] Hockings C. Inclusive learning and teaching in higher education: A synthesis of research. York: Higher Education Academy; 2010.
[116] Katz J, Sokal L, Wu A. Academic achievement of diverse K-12 students in inclusive three-block model classrooms. Int J Incl Educ 2021;25:1391−409.
[117] Robinson D, MacLaughlin V, Poole J. Sexual health education outcomes within Canada's elementary health education curricula: A summary and analysis. Can J Hum Sex 2019;28:243−56.
[118] NAMLE. Media literacy defined. Available from: https://namle.org/resources/media-literacy-defined/. Accessed March 4, 2024.
[119] Hobbs R. Media literacy and the K-12 content areas. Teach Coll Rec 2005;107:74−99.
[120] Llano-Suarez A, Lana A, Gasch-Gallén Á, Fernández-Feito A. Gender roles and intimate partner violence among female university students in Spain: A cross-sectional study. PLoS One 2021;16:e0259839.
[121] McCarthy KJ, Mehta R, Haberland NA. Gender, power, and violence: A systematic review of measures and their association with male perpetration of IPV. PLoS One 2018;13:e0207091.
[122] Abraham J, Barker K. Motivation and engagement with physics: A comparative study of females in single-sex and co-educational classrooms. Res Sci Educ 2020;50:2227−42.
[123] U.S. Department of Education, Office of Planning, Evaluation and Policy Development, Policy and Program Studies Service, Single-Sex Versus Secondary Schooling: A Systematic Review, Washington, D.C. 2005.
[124] Fabes RA, Martin CL, Hanish LD, et al. Gender-segregated schooling: A problem disguised as a solution. Educ Pol 2015;29:431−47.
[125] Pahlke E, Hyde JS, Allison CM. The effects of single-sex compared with coeducational schooling on students' performance and attitudes: A meta-analysis. Psychol Bull 2014;140:1042−72.
[126] Halpern D, Eliot L, Bigler RS, et al. The pseudoscience of single-sex schooling. Science 2011;333:1706−7.
[127] Clavel J, Flannery D. Single-sex schooling, gender and educational performance: Evidence using PISA data. Br Educ Res J 2022;49:248−65.
[128] Santos CE, Galligan K, Pahlke E, Fabes RA. Gender-typed behaviors, achievement, and adjustment among racially and ethnically diverse boys during early adolescence. Am J Orthopsychiatry 2013;83:252−64.
[129] Fabes RA, Pahlke E, Martin CL, Hanish LD. Gender-segregated schooling and gender stereotyping. Educ Stud 2013;39:315−9.
[130] Measor L, Miller K, Tiffin C. Young people's views on sex education: Education, attitudes and behaviour. United Kingdom: Taylor & Francis; 2012.
[131] Strange V, Oakley A, Forrest S. Mixed-sex or single-sex sex education: How would young people like their sex education and why? Gend Educ 2003;15:201−14.
[132] Smylie L, Maticka-Tyndale E, Boyd D. Evaluation of a school-based sex education programme delivered to grade nine students in Canada. Sex Educ 2008;8:25−46.
[133] Mathews C, Eggers SM, Townsend L, et al. Effects of PREPARE, a multi-component, school-based HIV and intimate partner violence (IPV) prevention programme on adolescent sexual risk behaviour and IPV: Cluster randomised controlled trial. AIDS Behav 2016;20:1821−40.
[134] Itriyeva K. Improving health equity and outcomes for children and adolescents: The role of school-based health centers (SBHCs). Curr Probl Pediatr Adolesc Health Care 2024;54:101582.
[135] Shaikh N, Grimwood A, Eley B, et al. Delivering an integrated sexual reproductive health and rights and HIV programme to high-school adolescents in a resource-constrained setting. Health Educ Res 2021;36:349−61.
[136] Dunfee MN. School-based health centers in the United States: Roots, reality, and potential. J Sch Health 2020;90:665−70.
[137] Moore S, Timpe Z, Rasberry CN, et al. Disparities in the implementation of school-based mental health supports among K-12 public schools. Psychiatr Serv 2024;75:17−24.
[138] Bersamin M, Paschall MJ, Fisher DA. School-Based health centers and adolescent substance use: Moderating effects of race/ethnicity and socioeconomic status. J Sch Health 2017;87:850−7.
[139] Boonstra H. Meeting the sexual and reproductive health needs of adolescents in school-based health centers. Guttmacher Policy Rev 2015;18:21−6.
[140] Herrman JW, Kelley A, Haigh KM. Teen perceptions of the promotion of safer sexual practices: A focus group study. Am J Sex Educ 2017;12:83−102.
[141] Diamond C, Freudenberg N. Community schools: A public health opportunity to reverse urban cycles of disadvantage. J Urban Health 2016;93:923−39.
[142] Konishi C, Saewyc E, Homma Y, Poon C. Population-level evaluation of school-based interventions to prevent problem substance use among gay, lesbian and bisexual adolescents in Canada. Prev Med 2013;57:929−33.
[143] Coakley TM, Randolph S, Sears J, et al. Parent-youth communication to reduce at-risk sexual behavior: A systematic literature review. J Hum Behav Soc Environ 2017;27:609−24.
[144] Flores D, Barroso J. 21st century parent-child sex communication in the United States: A process review. J Sex Res 2017;54:532−48.
[145] O'Brien H, Hendriks J, Burns S. Teacher training organisations and their preparation of the pre-service teacher to deliver comprehensive sexuality education in the school setting: A systematic literature review. Sex Educ 2020;21:284−303.
[146] Sondag K, Johnson A, Parrish M. School sex education: Teachers' and young adults' perceptions of relevance for LGBT students. J LGBT Youth 2022;19:247−67.
[147] Barr EM, Goldfarb ES, Russell S, et al. Improving sexuality education: The development of teacher-preparation standards. J Sch Health 2014;84:396−415.
[148] Eisenberg ME, Madsen N, Oliphant J, et al. "Am I qualified? How do I know?" A qualitative study of sexuality educators training experiences. Am J Health Educ 2010;41:337−44.
[149] Cohen J, Byers E, Sears H. Factors affecting Canadian teachers' willingness to teach sexual health education. Sex Educ 2011;12:299−316.
[150] Ezer P, Fisher CM, Jones T, et al. Changes in sexuality education teacher training since the release of the Australian curriculum. Sex Res Soc Policy 2022;19:12−21.
[151] Hammig B, Ogletree R, Wycoff-Horn MR. The relationship between professional preparation and class structure on health instruction in the secondary classroom. The J Sch Health 2011;81:513−9.
[152] Woo G, Soon R, Thomas JM. Factors affecting sex education in the school system. J Pediatr Adolesc Gynecol 2011;24:142−6.
[153] Walker J, Green J, Tilford S. An evaluation of school sex education team training. Health Educ 2003;103:320−9.
[154] Alonso RA, Walsh K, van Leent L. School-based relationships and sexuality education programmes in primary schools: Contexts, mechanisms and outcomes. Sex Educ 2024;24:188−207.
[155] Jarpe-Ratner E, Bloedel A, Little D, et al. Evaluation of a mandatory professional development on supporting transgender, nonbinary, and gender-nonconforming students in Chicago public schools. Health Promot Pract 2024;25:1058−69.
[156] Jarpe-Ratner E, Marshall B, Choudry M, et al. Strategies to support LGBTQ+ students in high schools: What did we learn in Chicago public schools? Health Promot Pract 2022;23:686−98.
[157] Vanwesenbeeck I. Comprehensive sexuality education. In: Oxford research encyclopedia of global public health. Oxford, England: Oxford University Press; 2020.
[158] Letts WJ, Sears DO. Queering elementary education: Advancing the dialogue about sexualities and schooling. Lanham: Rowman & Littlefield Publishers; 1999.
[159] Schmidt SC, Wandersman A, Hills KJ. Evidence-based sexuality education programs in schools: Do they align with the National Sexuality Education Standards? Am J Sex Educ 2015;10:177−95.
[160] UNESCO. The journey towards comprehensive sexuality education: Global status report. France: UNESCO: United Nations Educational, Scientific and Cultural Organisation; 2021.
[161] Rabbitte M. Sex education in school, are gender and sexual minority youth included?: A decade in review. Am J Sex Educ 2020;15:530−42.
[162] Caruso I, Valdez ES, Lovell CC, Chan J, Beatriz E, Gubrium A. The need for community-responsive and flexible sex ed for historically marginalized youth. Sex Res Social Policy 2023;20:94−102.
[163] Fields J. Risky lessons: Sex education and social inequality. In: Rutgers Series in childhood studies. New Brunswick: Rutgers University Press; 2008.
[164] Wiley D, Wilson K. Just say don't know: Sexuality education in Texas Schools. Austin: Texas Freedom Network; 2009.
[165] Kugelmass JW. Sustaining cultures of inclusion: The value and limitation of cultural analyses. Eur J Psychol Educ 2006;21:279−92.

[166] Willingham-Jaggers M. Inclusive education benefits all children. In: Learning for Justice, Issue 3. Montgomery: Fall 2022 Southern Poverty Law Center; 2022.

[167] UNESCO. Policy guidelines on inclusion in education. 2009. Available at: https://unesdoc.unesco.org/ark:/48223/pf0000177849. Accessed August 21, 2024.

[168] Jackson KM. When diversity isn't the point: Mirrors, windows, and sliding glass doors in the classroom. Taboo J Cult Educ 2023;22.

[169] GLSEN. Inclusive learning: A synthesis of 20+ years of research on the education and wellbeing impacts of inclusive curriculum, instruction, and school Books. New York: GLSEN; 2024.

[170] Garg N, Volerman A. A national analysis of state policies on lesbian, gay, bisexual, transgender, and questioning/queer inclusive sex education. J Sch Health 2021;91:164–75.

[171] Scull TM, Malik CV, Keefe EM, Schoemann A. Evaluating the short-term impact of media aware parent, a web-based program for parents with the goal of adolescent sexual health promotion. J Youth Adolesc 2019;48:1686–706.

[172] Scull TM, Malik CV, Kupersmidt JB. A media literacy education approach to teaching adolescents comprehensive sexual health education. J Media Lit Educ 2014;6:1–14.

[173] Hust SJT, Brown JD, L'Engle KL. Boys will be boys and girls better be prepared: An analysis of the rare sexual health messages in young adolescents' media. Mass Commun Soc 2008;11:3–23.

[174] Vahedi Z, Sibalis A, Sutherland JE. Are media literacy interventions effective at changing attitudes and intentions towards risky health behaviors in adolescents? A meta-analytic review. J Adolesc 2018;67:140–52.

[175] Moorhouse EA, Brooks H. Critical media literacy approaches to violence prevention: A research note. J Media Lit Educ 2020;12:84–99.

[176] Vandenbosch L, van Oosten JMF. The relationship between online pornography and the sexual objectification of women: The attenuating role of porn literacy education. J Commun 2017;67:1015–36.

[177] Byron P, McKee A, Watson A, et al. Reading for realness: Porn literacies, digital media, and young people. Sex Cult 2021;25:786–805.

[178] Dawson K, Nic Gabhainn S, MacNeela P. Toward a model of porn literacy: Core concepts, rationales, and approaches. J Sex Res 2019;57:1–15.

[179] Dickson EJ. Conservatives are lying about schools teaching 8-year-olds 'Porn Literacy'. In: Rolling Stone. New York, NY: Penske Media Corporation, Wenner Media LLC; 2022.

[180] Murkett K. Don't make sex education a culture war. London: The New Statesman; 2023.

[181] Rodenhizer KAE, Edwards KM. The impacts of sexual media exposure on adolescent and emerging adults' dating and sexual violence attitudes and behaviors: A critical review of the literature. Trauma Violence Abuse 2019;20:439–52. https://doi.org/10.1177/1524838017717745.

[182] Adarsh H, Sahoo S. Pornography and its impact on adolescent/teenage sexuality. J Psychosexual Health 2023;5:35–9. https://doi.org/10.1177/26318318231153984.

[183] Allen KA, Slaten CD, Arslan G, et al. School belonging: The importance of student and teacher relationships. In: Kern ML, Wehmeyer ML, eds. The Palgrave Handbook of Positive Education. Cham: Palgrave Macmillan; 2021.

[184] van Reeuwijk M, Rahmah A, Mmari K. Creating an enabling environment for a comprehensive sexuality education intervention in Indonesia: Findings from an implementation research study. J Adolesc Health 2023;73:S15–20.

[185] Australian Student Wellbeing Framework. Aust Department Educ. Available at: https://www.education.gov.au/student-resilience-and-wellbeing/australian-student-wellbeing-framework. Accessed August 23, 2023.

[186] Vavrus M. Sexuality, schooling, and teacher identity formation: A critical pedagogy for teacher education. Teach Teach Educ 2009;25:383–90.

[187] Astle S, McAllister S, Emanuels S, et al. College students' suggestions for improving sex education in schools beyond 'blah blah blah condoms and STDs. Sex Educ 2020;21:91–105.

[188] Maunsell C, Bourke A, Costello A, et al. TEACH-RSE: Research report teacher professional development and relationships and sexuality education (RSE). Dublin, Ireland: Dublin City University Institute of Education; 2021.