

## HOW IS GENDER RESEARCHED IN THE CONTEXT OF STUDENT ENGAGEMENT? A SCOPING REVIEW AT THE SECONDARY LEVEL

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### ABSTRACT

Gender is almost consistently included in student engagement research, yet the way gender is studied is rarely systematic. This scoping review maps how gender is researched in the context of student engagement at the secondary school level between 2023 and 2026, focusing on research practice rather than on what is found about gender differences. The review followed the Arksey and O'Malley framework and the PRISMA-ScR guidelines, used a Population-Concept-Context search strategy across six databases, and produced a final corpus of fifteen studies charted across four dimensions, namely the conceptualization and operationalization of gender, paradigm and design, the analytical role of gender, and the engagement framework used. The mapping shows that gender is most often placed as a moderator or interaction term (47%) and as an untheorized covariate (33%), while only 20% of studies make it the analytical focus. Across these categories, gender tends to be controlled statistically rather than examined meaningfully: non-significant interactions are frequently dropped, while significant main effects are left uninterpreted. Gender is almost always operationalized as a self-reported binary category, all studies rest on a positivist paradigm with no qualitative or critical approaches, and identities beyond the binary are barely represented. The review offers a reflective map of research practice and underscores the urgency of moving from gender as controlled variable toward examining how gender operates within specific school and cultural contexts.

**Keywords:** gender, student engagement, scoping review, secondary education, research practice

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### 1. INTRODUCTION

Student engagement is one of the central constructs in education research for understanding the extent to which students are present and fully involved in learning. It is most commonly

divided into three dimensions, namely behavioral, cognitive, and emotional, although the number and boundaries of these dimensions remain debated (Fredricks et al., 2004). Interest in this construct has grown alongside warnings about the phenomenon of schooling without learning, a condition in which students attend school but do not truly learn. The World Bank identifies this as a global learning crisis that not only wastes opportunity but also erodes the quality of human resources and a nation's economic prospects (World Bank, 2024). In this light, understanding what makes students engage, or instead withdraw from learning, becomes an urgent question.

Engagement is not understood as an innate attribute but as a condition that forms through students' interaction with their social environment (Reschly & Christenson, 2022). Among the various social determinants, gender is one of the most consistently included. One reason is that gender sits at the center of a global policy concern, namely the phenomenon of boys' underachievement, which has long caused worry across countries (Welmond & Gregory, 2021). Studies explain the link between gender and engagement mainly through the internalization of gender values and roles, which are thought to shape students' academic behavior (Heyder & Kessels, 2015; Yu et al., 2021).

However, the empirical evidence is far from uniform. Girls are not always more engaged (King, 2016a). In certain subjects such as science and mathematics, the pattern can even reverse (Datu et al., 2023; Fredricks et al., 2018). This fragmented and inconsistent picture offers an important clue. The issue may lie not in gender differences themselves, but in how gender is studied, because the way research is carried out helps determine what knowledge is ultimately produced (Chen, 2026; Hare-Mustin & Marecek, 1988).

There are already large number of reviews on the student engagement literature. A number of narrative and conceptual reviews map how engagement is defined, its dimensions, and how it is measured (Christenson, Reschly, & Wylie, 2012; Wang & Degol, 2014; Sinatra, Heddy, & Lombardi, 2015; Upadyaya & Salmela-Aro, 2013), while Salmela-Aro et al. (2021) used a scoping review to map 104 longitudinal studies. That review found that most studies focus on the antecedents and trajectories of engagement, while stressing the need for reviews using other designs. Even so, the object these reviews map is engagement, not gender.

No review has yet turned its lens onto gender, whether on how gender is conceptualized, operationalized, or analytically positioned. Gender can be understood beyond the binary category, for example as an identity or as a relational social construction. Yet, several studies

suggest that engagement research tends to simplify gender into a binary control variable, reporting significant differences between genders while rarely explaining the mechanisms behind them (King, 2016b; Söderholm et al., 2025). However, we did not find any systematic mapping on this yet.

This gap deserves attention because many gender narrative is widely used to inform educational policy. For example, the boys' underachievement narrative has influenced education policy across countries (Arnesen et al., 2007). Thus, it is crucial to examine how gender operates in educational practices and how the dynamic of gender influences learning. Conceptual and methodological choices in studying gender help determine the validity and depth of the knowledge produced about gender and engagement. Therefore, a scoping review is the most suitable framework to map how gender is studied in the context of student engagement rather than what is found. This methodology is designed to identify key concepts, clarify definitions, and map research practice in a field that has not been thoroughly examined (Arksey & O'Malley, 2005; Munn et al., 2018).

This study focuses on the secondary school level because adolescence is the period when student engagement declines the most (Wang & Eccles, 2012) and when gendered identities and academic patterns become most prominent (Klaczynski et al., 2020). It is also limited to literature published in 2023–2026 to capture the most recent research practice. Within this scope, the study aims to map systematically how gender is studied in the context of student engagement, which is explored with guidance from these following questions: (1) how is gender conceptualized and operationalized, for example as a binary category, a spectrum, or a social construction; (2) what paradigms and research designs are used to study gender in relation to engagement; (3) what analytical role is given to gender, whether as a demographic control variable, the main analytical focus, or a factor interacted with other variables; and (4) what student engagement frameworks are used in studies that examine gender. By mapping this conceptual and methodological landscape, the review provides a reflective map for researchers who use gender in their analyses, while also arguing for the urgency of moving from merely treating gender as a demographic variable toward examining how gender operates within specific school and cultural contexts.

## **2. LITERATURE REVIEW**

### **Student Engagement: Construct, Dimensions, and Context**

Student engagement is a broad construct that has been defined through various theoretical perspectives. Christenson, Reschly, and Wylie (2022) emphasize that there is no single, universally agreed definition; instead, there are diverse models with different dimensions and emphases. Some models identify two main dimensions, namely the behavioral and the emotional. Others extend this framework into three dimensions by adding a cognitive component that covers learning strategies and self-regulation. Reeve and Tseng (2011) even propose a four-dimension model by adding agentic engagement, that is, students' proactive contribution to enriching their own learning (Reschly & Christenson, 2022). This diversity shows that student engagement is a broad umbrella covering different ways of understanding how students connect with school and learning.

Despite differences in the type and number of dimensions, there is a shared pattern in positioning student engagement as an attribute that cannot be separated from the context of students' lives. Wang et al. (2013) explicitly place engagement not as a static internal characteristic but as a condition that emerges from the dynamic interaction between the individual and the environment. This context is multilevel, covering micro environments such as family and the classroom, meso environments such as school and community, and macro environments such as education policy and cultural values. Within this framework, families contribute through academic support and parental expectations, schools through learning climate and teacher-student relationships, and peers through group norms and social influence. Student engagement is therefore the result of the fit between students' characteristics and the characteristics of the context in which they learn and grow (Wang et al., 2013). The emphasis on context makes secondary schools an important setting, because studies reported declining student engagement in adolescence (Wang & Eccles, 2012). Examining gender in adolescence is also relevant since adolescents experience significant gender related changes during the pubertal transition (Klaczynski et al., 2020).

### **Gender as a Construct in Educational Research**

Understanding of gender in education and psychology research can historically be traced to two opposing schools of thought. The naturalist or essentialist school sees gender as something naturally attached to the individual, whether as a biological consequence or as a stable psychological disposition; within this framework, gender is operationalized as a fixed binary category that can be measured and compared objectively. The social construction school rejects this view and argues that gender is not an innate attribute but something that is formed,

negotiated, and continually performed in social interaction (West & Zimmerman, 1987). In the constructionist view, gender is contextual, fluid, and relational. A researcher's choice of one school over the other has direct implications for how gender is defined, measured, and interpreted in student engagement research.

The operationalization of gender in education research remains problematic and rarely receives critical scrutiny (Glasser & Smith, 2008). The most fundamental criticism concerns the tendency to reduce gender to a fixed binary category that is treated as unproblematic. Francis and Skelton (2001) show that most education studies treat gender as a direct substitute for biological sex, that is, merely the labels "male" and "female" assumed to be stable and uniform. Glasser and Smith (2008) reinforce this criticism by showing that the meaning of gender in education research is very vague and is often used interchangeably with sex without adequate conceptual clarification, which makes findings about gender differences difficult to interpret meaningfully. Binary reduction also carries a consequence that is often overlooked, namely the erasure of identities outside the binary category. Students with non-binary or transgender identities become invisible in research designs that provide only two categories (Hyde et al., 2019).

One of the dominant theoretical frameworks for explaining gender differences is sex-role socialisation theory (Oakley, 1972). This approach assumes that male and female students are socialized into different gender roles through family, school, and the media, and that the internalization of these roles shapes academic behavior (Francis & Skelton, 2001). The approach has produced many valuable findings, but it has serious limitations because it treats gender roles as static and uniform, leaves little room for individual agency to resist or negotiate gender expectations, and indirectly reinforces the very gender dichotomy that should be questioned. Another limitation is the lack of attention to intersectionality, gender research in education rarely considers how the experiences of girls and boys are mediated by other intersecting factors such as race, class, and institutional context (Keddie et al., 2022). Archer and Francis (2007) stress that gender cannot be understood separately from race and class. Neglecting intersectionality means that observed differences risk being attributed to gender alone, when they are in fact shaped by a more complex configuration of identities (Francis & Skelton, 2001). These criticisms imply the urgency of conceptual scrutiny of gender in research, because different conceptual approaches produce different analyses. They also point to the need

for methodological reflexivity about how research design choices help shape findings about gender and engagement.

### **Paradigm and the Analytical Position of Gender in Student Engagement Research**

The way gender is studied can be described along two distinct but related axes, namely the research paradigm adopted and the analytical position given to gender within the design. It is important to stress from the outset that these two axes differ, in the sense that a study's paradigm does not automatically determine the analytical position of its gender variable, so the two need to be mapped separately.

On the paradigm axis, Creswell and Creswell (2018) describe a paradigm as the philosophical framework underlying the entire research process, covering ontological, epistemological, and methodological assumptions. In the positivist paradigm, gender is commonly operationalized as a categorical variable entered into a statistical model; this approach allows hypothesis testing with numerical precision, but it tends to produce knowledge about whether engagement differences exist by gender, and is less able to explain why and how those differences form in social interaction (Francis & Skelton, 2001). The interpretivist or constructivist paradigm sees reality as socially constructed and, through qualitative approaches, can explore how gender is negotiated and performed in specific contexts, for example how norms of masculinity and femininity in a school shape students' expressions of engagement (Francis, 2010). The transformative or critical paradigm places social justice as the goal of research and questions the power structures that marginalize certain gender groups.

On the analytical-position axis, prior literature indicates three possibilities. The most common position places gender as a demographic control variable whose effect is statistically held constant alongside age, grade level, or socioeconomic status. The second position places gender as a moderator (interaction), that is, when researchers test whether the relationship between a given determinant and engagement differs between gender groups, for example whether the effect of teacher support differs for male and female students. The third and rarest position makes gender the main analytical focus, that is, when the research question is specifically directed at understanding how gender as a social construct shapes and is shaped by students' engagement experiences (Lam et al., 2012).

These two axes are distinct and operate independently. A positivist study can still make gender its main analytical focus, just as a study can place gender merely as a control variable

even while adopting a richer framework. For this reason, paradigm and analytical position cannot be inferred from one another, and each combination opens up or limits the particular kind of knowledge that can be produced about gender and engagement.

Mapping how these paradigmatic and analytical choices are distributed across the recent secondary-level student engagement literature is an important step, not to judge findings about gender differences, but to understand how knowledge about gender is produced through research practice.

### 3. METHODS

This study uses a scoping review as its method to map systematically how gender is studied in the context of student engagement at the secondary level. A scoping review was chosen because it fits the study's aim, namely to identify key concepts, clarify the definitions used, and map research practice in a field that has not been comprehensively examined (Munn et al., 2018). The methodological framework follows Arksey and O'Malley (2005), which comprises five stages: identifying the research question, identifying relevant studies, selecting studies, charting the data, and collating, summarizing, and reporting the results. The conduct and reporting of this scoping review follow the PRISMA-ScR guidelines developed by Tricco et al. (2018).

The search strategy was built using the Population–Concept–Context (PCC) framework recommended for scoping reviews (Peters et al., 2020). The Population in this review is secondary school students, both lower and upper secondary, in the age range of about twelve to eighteen years. The Concept refers to gender as studied in the context of student engagement, consisting of two main blocks, namely gender and student engagement. The Context covers secondary education settings in a broad sense, without restriction to a particular school type or geographic region.

The search was carried out across six electronic databases, namely ScienceDirect, Sage, Taylor and Francis, Springer, Wiley Online Library, and Garuda. The search was limited to studies published in the 2023 to 2026 range.

**Table 1. Search Terms**

| Block      | Search terms                                                                                                                                                 |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Population | “secondary school*” OR “high school*” OR “middle school*” OR “junior high*” OR “senior high*” OR “secondary student*” OR “secondary education” OR adolescen* |

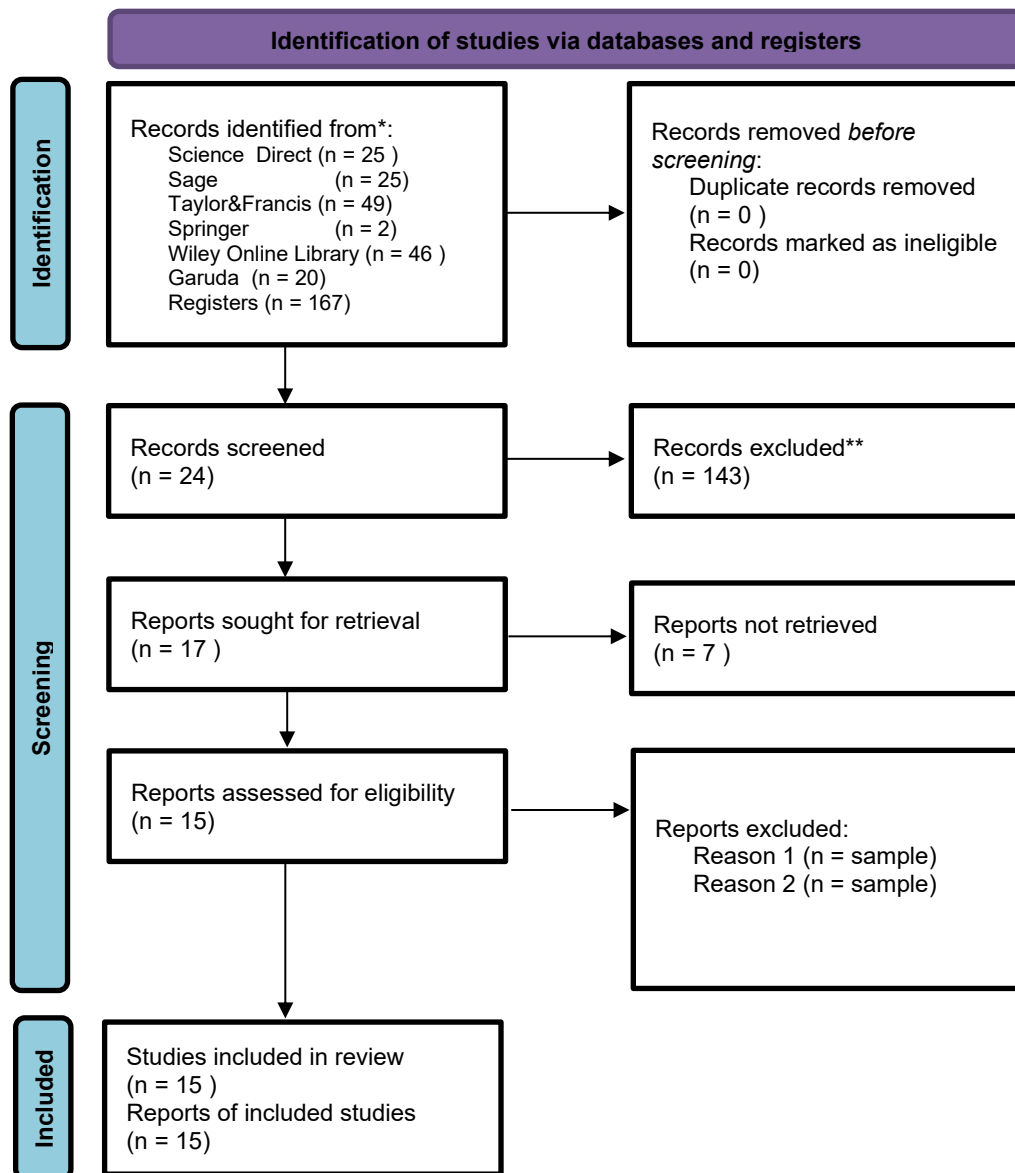
| Block      | Search terms                                                                                                                                                                                                                                                                |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Gender     | gender OR “gender difference*” OR “sex difference*” OR boys OR girls OR masculin* OR feminin*                                                                                                                                                                               |
| Engagement | “student engagement” OR “school engagement” OR “academic engagement” OR “learning engagement” OR “classroom engagement” OR “cognitive engagement” OR “emotional engagement” OR “behavioural engagement” OR “behavioral engagement” OR “agentic engagement” OR disengagement |

### Selection Criteria and Process

The literature search was conducted on 1 June 2026. The eligibility criteria were set before the search and applied strictly at every selection stage. A study was considered eligible if it was written in English and published in a journal indexed in Scopus or Web of Science, quartiles one to four for global sources, or indexed in Sinta one to three for Indonesian sources. This restriction was applied as a source-eligibility criterion, not as a quality appraisal of each individual study. Only empirical studies that explicitly examined gender in relation to student engagement in a secondary school population were included in the final corpus.

The selection process was carried out in two stages. Title and abstract screening was performed by the first author and verified by the second author. Disagreements were resolved through discussion until consensus was reached. The first stage was title and abstract screening of the 167 articles identified across all databases. No duplication was found across databases, which indicates that each database made a unique contribution to the search results. Articles that did not meet the PCC criteria or other eligibility criteria were excluded at this stage. The second stage was full-text assessment of the articles that passed the initial screening. Of the 24 articles whose full texts were sought, seven could not be accessed due to paywall barriers or because they could not be located. Seventeen articles were fully assessed for eligibility, and two were excluded for the following reasons: one used a sample outside the secondary school age range, and one did not explicitly examine student engagement as its main construct. The final corpus of this scoping review consists of fifteen studies. The PRISMA flow diagram is presented in Figure 1 to illustrate the selection process transparently.

*Figure 1. Selection Criteria Process*



## Data Charting

The charting, or data-mapping, process used an extraction instrument developed specifically to answer the research questions of this scoping review. The information extracted from each study included bibliographic characteristics such as author, year, and country of origin, as well as substantive information directly related to the focus of the review. This

substantive information covered the definition of gender used by the authors, the paradigm and research design applied, the analytical position of gender in the study, the student engagement framework referred to, and the engagement dimensions measured or explored. The first author assigned specific labels for the research paradigm and the analytical position of gender, agreed upon by the other authors, in order to ease the synthesis of findings, with the following details.

*Table 2. Charting Tag*

| Unit of Analysis              | Tag/Label                                                                                                                                                                                                                                                                                                                                   |
|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Research Paradigm             | Positivist; Interpretivist; Critical; Pragmatic                                                                                                                                                                                                                                                                                             |
| Analytical Position of Gender | Control: gender entered only as a covariate/adjustment/demographic variable; not theorised. Interaction: gender modelled as a moderator/interaction term in any focal relationship; not the central lens. Focus: gender is the primary analytical lens, named in the aims/RQs and driving the analysis (with or without interaction terms). |

The charting instrument was piloted on two initial studies and revised before being applied to the whole corpus, in order to ensure consistency and completeness of data extraction. Category assignment was carried out by the first author and verified by the second author, with disagreements resolved through discussion until consensus was reached.

### Data Synthesis

The extracted data were synthesized using a descriptive-narrative approach by organizing the data according to the four research questions, namely how gender is conceptualized and operationalized, in what paradigm and design gender is studied, what analytical role is given to gender, and what student engagement framework is used in the study. The findings are presented in narrative form, supported by tables and figures to facilitate visual mapping of the research landscape under review.

## 4. RESULTS AND DISCUSSION

This section reports the results of charting the final corpus of 15 articles that met the inclusion criteria. The presentation follows the two layers of reporting common in scoping reviews (Arksey & O'Malley, 2005). First, a descriptive-numerical summary of the corpus characteristics. Second, a mapping narrative organized around the four research questions. The narrative is led by the analytical role of gender as the main finding, followed by the conceptualization and operationalization of gender, the paradigm and design, and the student engagement framework.

### General Characteristics

The fifteen studies were published within the 2023–2026 range in line with the criteria set, with three in 2023, five in 2024, four in 2025, and three in 2026. This decision was made in order to capture the most recent research trends.

Geographically, the corpus spans four continents but is unevenly distributed. The United States is the most dominant, with four studies, followed by China and one cross-cultural US–China study; Finland and Ghana contribute two studies each, while Portugal, England, South Korea, and the Philippines contribute one each.

Sample sizes vary widely, from  $N = 235$  to a national census of  $N = 155,299$ . Several studies drew on large secondary datasets (e.g., NSCH 2021, the School Health Promotion Study, The Engagement Platform). In terms of design, the corpus is dominated by ten cross-sectional studies, with five using longitudinal or multi-wave designs. The analytical tools are almost entirely based on variance/covariance structural equation modeling, regression (hierarchical, OLS, PLS), MANOVA, and latent profile/class analysis.

All 15 studies are positivist or post-positivist. Not one is qualitative, interpretivist, or critical/feminist. Two studies touch on equity or intersectional framing, but their epistemology and methods remain objectivist-quantitative.

*Table 3. Characteristics of the included studies (N = 15)*

| Author (Year)                                              | Country/Context | Main design & analysis                                      | N      | Gender role |
|------------------------------------------------------------|-----------------|-------------------------------------------------------------|--------|-------------|
| de Carvalho et al.<br>(2025)(2025)(2025)(2025)(2025)(2025) | Portugal        | Cross-sectional; two-way MANOVA (2×2 factorial)             | 235    | Focus       |
| Jerrim (2026)                                              | England         | Pooled cross-sectional + short longitudinal; OLS regression | 89,640 | Control     |
| Britwum et al. (2025)                                      | Ghana           | Cross-sectional; mediation–moderation (Hayes PROCESS)       | 438    | Interaction |
| Bong et al. (2024)                                         | South Korea     | Cross-sectional; SEM (female-only sample)                   | 235    | Control     |
| Datu & Noltemeyer (2024)                                   | Philippines     | Cross-sectional; hierarchical regression                    | 438    | Control     |

| Author (Year)                  | Country/Context | Main design & analysis                                               | N         | Gender role |
|--------------------------------|-----------------|----------------------------------------------------------------------|-----------|-------------|
| Cavins et al. (2025)           | USA             | Cross-sectional (NSCH secondary data); LCA + hierarchical regression | 14,946    | Focus       |
| Tang et al. (2026)             | USA             | Cross-sectional (post-SEL program); hierarchical regression          | 981       | Interaction |
| Bennet et al. (2025)           | USA & China     | Two-wave longitudinal; SEM/multilevel + mediation                    | 947 + 710 | Focus       |
| Jiang & Zhang (2023)           | China           | Cross-sectional; Latent Profile Analysis                             | 1,521     | Control     |
| Huttunen et al. (2024)         | Finland         | Two-wave longitudinal; multigroup SEM                                | 1,021     | Interaction |
| Wang et al. (2024)             | USA             | Four-wave longitudinal (2 yrs); SEM mediation–moderation             | 790       | Interaction |
| Yidana & Arthur (2024)         | Ghana           | Cross-sectional; PLS-SEM + Multi-Group Analysis                      | 422       | Interaction |
| Xia et al.(2025)               | China           | Two-wave longitudinal; multigroup SEM                                | 1,217     | Interaction |
| Armstrong-Carter et al. (2023) | USA             | Cross-sectional; regression + interaction term                       | 48,508    | Interaction |
| Mielityinen et al. (2023)      | Finland         | Cross-sectional census; PCA + linear regression                      | 155,299   | Control     |

*Note: “Gender role” refers to the analytical tag (see Table 2). The N for Bennet et al. (2025) is reported separately for the US and China sub-samples.*

## The Analytical Role of Gender

The core mapping question is summarized in Table 2. The most frequent role is Interaction (seven studies, 47%), in which gender is placed as a moderator or interaction term of a relationship rather than as the main analytical lens. Next is Control (five studies, 33%), where gender functions only as a covariate or background variable that is not theorized. Only three studies (20%) make gender a Focus, that is, the central analytical lens that drives the aims, questions, and hypotheses of the research.

*Table 3. Distribution of the analytical role of gender in the corpus*

| Analytical role    | Operational definition (decision rule: Focus > Interaction > Control)                                              | n         | %           | Studies                                                                                                                                                          |
|--------------------|--------------------------------------------------------------------------------------------------------------------|-----------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Interaction</b> | Gender is modeled as a moderator/interaction term of a focal relationship, but is not the central analytical lens. | 7         | 47%         | Britwum et al. (2026); Tang et al. (2026); Huttunen et al. (2024); Wang et al. (2024); Yidana & Arthur (2024); Xia et al. (2025); Armstrong-Carter et al. (2023) |
| <b>Control</b>     | Gender is entered only as a covariate/adjustment/demographic variable and is not theorized.                        | 5         | 33%         | Jerrim (2026); Bong et al. (2024); Datu & Noltemeyer (2024); Jiang & Zhang (2023); Mielityinen et al. (2023)                                                     |
| <b>Focus</b>       | Gender is the focal variable/central analytical lens that drives the study's aims, questions, and hypotheses.      | 3         | 20%         | de Carvalho et al. (2025); Cavins et al. (2025); Bennet et al. (2025)                                                                                            |
| <b>Total</b>       |                                                                                                                    | <b>15</b> | <b>100%</b> |                                                                                                                                                                  |

Two cross-study patterns appear consistently in the matrix. First, in many Interaction-tagged studies, the gender interaction term is formally tested but turns out to be non-significant and is then dropped or only briefly reported: the gender  $\times$  engagement moderation was non-significant in Tang et al. (2026), the multigroup moderation was null in Huttunen et al. (2024), all paths were non-significant in Yidana & Arthur (2024), five of six paths were non-significant in Britwum et al. (2025), and the binary gender moderation was null in both countries in Bennet et al. (2025). Second, in some Control-tagged studies, gender in fact produces a significant main effect that is not explored further, such as the finding that girls are more engaged in Datu & Noltemeyer (2024), which is only mentioned in the discussion, and that girls are less engaged

in Mielityinen et al. (2023), a result that the authors themselves flag as surprising and contrary to the literature, yet still leave as a control variable.

The three Focus-tagged studies are also not uniform. Only one study (de Carvalho et al., 2025) places gender as a classic binary comparative factor (one of the two main factors in a MANOVA design). The other two Focus studies use less conventional conceptualizations: Bennet et al. (2025) study gender as a norm/ideology (hegemonic masculinity, measured continuously for girls and boys), while Cavins et al. (2025) use an intersectionality lens (gender crossed with race/ethnicity).

### **Conceptualization and Operationalization of Gender**

At the conceptual level, gender is almost always understood as a binary female/male category. Some studies treat it as merely a demographic marker, while others give light theorization through gender-role socialization and cultural stereotypes (e.g., de Carvalho et al., 2025; Britwum et al., 2026; Jiang & Zhang, 2023; Xia et al., 2025; Armstrong-Carter et al., 2023), yet still within a binary frame; one study even equates gender with biological sex (de Carvalho et al., 2025). A stronger conceptualization appears in Bennet et al. (2025), which treats gender as a socio-structural norm (hegemonic masculinity) rather than a category, while Cavins et al. (2025) and Wang et al. (2024) place it within an intersectional framework alongside race/ethnicity.

At the operational level, binary dominance is even clearer (Table 3). Most studies measure gender through a single two-category self-report item. Only one study (Tang et al., 2026) actually measures and analyzes gender-diverse identity (female/male/non-binary/unsure-questioning). Two studies provide a third option but do not analyze it. One study (Huttunen et al., 2024) codes an “other” category but uses only two groups in its multigroup analysis, and another (Armstrong-Carter et al., 2023) places “prefer not to answer” as a residual reference group. One study uses “official/registry” gender without self-identification (Mielityinen et al., 2023), and one does not operationalize gender as a variable at all because its sample is female-only (Bong et al., 2024). No study measures gender identity or expression as a spectrum; non-binary and transgender categories are generally excluded, in one case even acknowledged explicitly as a limitation (de Carvalho et al., 2025).

*Table 4. Operationalization of gender in the corpus*

| Approach to operationalizing gender                    | n | Studies                                                                                                                                                                                                 |
|--------------------------------------------------------|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Self-reported binary (female/male)                     | 9 | de Carvalho et al. (2025); Jerrim (2026); Britwum et al. (2026); Datu & Noltemeyer (2024); Cavins et al. (2025); Bennet et al. (2025); Jiang & Zhang (2023); Wang et al. (2024); Yidana & Arthur (2024) |
| Registry/“official” binary (no self-identification)    | 1 | Mielityinen et al. (2023)                                                                                                                                                                               |
| Provides a third option but does not analyze it        | 2 | Huttunen et al. (2024); Armstrong-Carter et al. (2023)                                                                                                                                                  |
| Multi-category beyond the binary & analyzed            | 1 | Tang et al. (2026)                                                                                                                                                                                      |
| Not operationalized as a variable (female-only sample) | 1 | Bong et al. (2024)                                                                                                                                                                                      |

### Paradigm and Research Design

All studies rest on a positivist/post-positivist paradigm, shown by deductive hypothesis testing, standardized Likert instruments, model fit indices, and inference aimed at generalization. No study adopts a qualitative approach or a critical/feminist lens as its methodology. In terms of design, cross-sectional designs dominate with 10 studies, and five use longitudinal/multi-wave designs. This finding reflects that the way gender is studied almost always takes the form of quantitative group comparison or the addition of a variable to a model, consistent with the dominance of binary operationalization in the Interaction/Control roles.

### Student Engagement Framework

The corpus does not use one uniform definition of engagement (Table 4). The most frequent reference is the three-dimension model of Fredricks, Blumenfeld, and Paris (2004), with behavioral, emotional, and cognitive dimensions, which underpins four studies and is loosely adapted by many others. Beyond that, a range of variants appears: four-dimension models that add agentic engagement (SES-4DS; de Carvalho et al., 2025) or social engagement (science engagement; Datu & Nelmeyer, 2024), the UWES-S work-engagement framework with vigor/dedication/absorption dimensions (Huttunen et al., 2024; Xia et al., 2025), two-dimension versions (Bennet et al., 2025; Jiang & Zhang, 2023), a one-dimension cognitive reduction (Wang et al., 2024), an engagement-and-disengagement pairing (Bong et al., 2024),

engagement as SEL-program participation (Tang et al., 2026), and a composite of liking for school (Armstrong-Carter et al., 2023).

This heterogeneity also appears in scope and measurement. Three studies measure subject-specific engagement, namely science (Datu & Noltemeyer, 2024), mathematics and English (Jiang & Zhang, 2023), and mathematics (Wang et al., 2024), while the rest measure general school engagement across subjects. One study even derives its engagement dimensions through Principal Component Analysis of non-standard items, because its secondary dataset contained no validated scale (Mielitynen et al., 2023). This variety of frameworks, dimensions, and scope is a mapping note in its own right, because it makes direct comparison across studies of how gender relates to engagement difficult.

*Table 4. Engagement frameworks used in the corpus*

| Engagement framework                                                 | n | Studies                                                                                |
|----------------------------------------------------------------------|---|----------------------------------------------------------------------------------------|
| Three-dimension Fredricks/Skinner (behavioral, emotional, cognitive) | 4 | Jerrim (2026); Britwum et al. (2026); Yidana & Arthur (2024); Mielitynen et al. (2023) |
| Four-dimension (+ agentic or + social)                               | 2 | de Carvalho et al. (2025); Datu & Noltemeyer (2024)                                    |
| UWES-S work-engagement (vigor, dedication, absorption)               | 2 | Huttunen et al. (2024); Xia et al. (2025)                                              |
| Two-dimension (behavioral + emotional)                               | 2 | Bennet et al. (2025); Jiang & Zhang (2023)                                             |
| One-dimension cognitive                                              | 1 | Wang et al. (2024)                                                                     |
| Engagement–disengagement dual (cognitive)                            | 1 | Bong et al. (2024)                                                                     |
| Behavioral only (secondary-data constraint)                          | 1 | Cavins et al. (2025)                                                                   |
| Engagement as program participation (SEL)                            | 1 | Tang et al. (2026)                                                                     |
| Composite of liking/enjoyment of school                              | 1 | Armstrong-Carter et al. (2023)                                                         |

## Discussion

Mapping the four dimensions above reveals one common thread: in the secondary-level student engagement literature of 2023–2026, gender is far more often treated as a statistically

managed variable than as a conceptually examined construct. This section interprets that finding by connecting it to the conceptual and methodological debates outlined in the literature review.

### **Gender as a controlled variable, not an examined one**

The distribution of analytical roles shows that 80% of the corpus places gender as a moderator (Interaction, 47%) or a covariate (Control, 33%), and only 20% makes it a focus. What matters more than the distribution itself are the two patterns that accompany it. In Interaction-tagged studies, the gender interaction term is repeatedly tested, found non-significant, and dropped (Britwum et al., 2026; Tang et al., 2026; Bennet et al., 2025; Huttunen et al., 2024; Yidana & Arthur, 2024); in Control-tagged studies, significant main effects of gender are left without elaboration (Datu & Noltemeyer, 2024; Mielityinen et al., 2023). These two seemingly opposite patterns in fact stem from one and the same epistemic stance: whether the result is null or significant, gender is not interpreted. It is treated as something to be controlled or tested for differences, not as a construct to be understood.

This reading is relevant to a classic critique in the psychology of gender. Hare-Mustin and Marecek (1988) warn of the danger of both alpha bias (exaggerating differences) and beta bias (ignoring differences that exist), while Hyde (2005), through the gender similarities hypothesis, shows that on most psychological variables the difference between males and females is very small. Within that framework, the repeatedly null-gender interactions in this corpus could actually be a substantive finding, that is, an indication of cross-gender similarity worth interpreting, rather than a dead end to be deleted from the model. Conversely, a significant but unexplored main effect, such as the finding that girls are less engaged (Mielityinen et al., 2023), which the authors themselves regard as surprising, is exactly the kind of finding that calls for theorization. The fact that both types of result are left unworked shows that the root of the problem lies not in the statistical result, but in the absence of gender theorization from the outset. In this way, the mapping provides up-to-date evidence that the conceptual vagueness warned of by Glasser and Smith (2008) still persists in the recent literature.

### **The persistence of binary reduction and the absence of alternative paradigms**

The findings on conceptualization and operationalization show that gender is almost always operationalized as a self-reported binary category, and that the entire corpus rests on a positivist or post-positivist paradigm, with no qualitative, interpretivist, or critical/feminist study. This configuration empirically confirms the critique of Francis and Skelton (2001) that education research tends to treat gender as a direct substitute for biological sex. The shift toward

understanding gender as a fluid and relational social construction (West & Zimmerman, 1987; Butler, 1990), and toward a transformative paradigm that places justice as the goal of research as outlined in subsection 2.3, is almost entirely absent from the recent secondary-level student engagement literature.

It is worth noting that even the three studies that make gender a focus do not move beyond the positivist framework. One study (de Carvalho et al., 2025) keeps a classic binary comparison; another (Bennet et al., 2025) studies hegemonic masculinity norms but measures them as a continuous scale; and a third (Cavins et al., 2025) adopts intersectionality but operationalizes it as a crossing of categories (gender  $\times$  race) within a statistical model. In other words, making gender the central topic does not automatically mean studying gender as a social process. The field has imported the theme of gender into its quantitative toolkit, but has not yet imported the constructionist epistemology that would allow questions of how and why gender is formed to be answered, a limitation inherent in the positivist paradigm as stated in the introduction.

### **Marginalized intersectionality and gender-identity diversity**

A further consequence of binary dominance is the marginalization of intersectionality and diverse gender identities. Intersectionality, when present, shrinks into a crossing of demographic categories (Cavins et al., 2025; Wang et al., 2024) rather than the relational analysis its originators intended, even though Archer and Francis (2007) stress that gender cannot be understood separately from race and class. At the operational level, only one of the fifteen studies (Tang et al., 2026) actually measures and analyzes identity beyond the binary, and even then with a small subgroup, so its findings are preliminary. Most studies exclude non-binary and transgender categories, in one case explicitly (de Carvalho et al., 2025). The recent literature therefore tends to reproduce the gender dichotomy that ought to be questioned, and closes off space for the experiences of students who are not represented within a binary framework.

### **Implications for future research**

The heterogeneity of engagement frameworks adds a second layer to the problem. When the construct on the other side of the relationship is itself measured with different dimensional models, ranging from general versus subject-specific scope to improvised measurement without a validated scale (Mielityinen et al., 2023), two sources of irregularity, namely under-theorized

gender and non-uniform engagement, compound one another and make it harder for the field to build cumulative and comparable knowledge about gender and engagement.

Several directions for improvement can be drawn from this mapping for researchers who use gender in their analyses. First, gender needs to be defined explicitly, whether it is meant as a biological variable, a social role, or a discursive construction, because this choice determines the meaning of the findings. Second, gender effects should be reported and interpreted even when gender serves only as a control, and null interaction results should be treated as information about similarity rather than as failure. Third, qualitative, critical, and mixed-methods approaches are needed to reach the how and why questions that comparative designs cannot answer. Fourth, designs that are intersectional and inclusive of diverse gender identities will broaden the representation of students' experiences. Overall, these findings underscore the urgency of moving from merely controlling for gender as a demographic variable toward examining how gender operates within specific school and cultural contexts.

## **5. CONCLUSION AND LIMITATION**

This scoping review set out to map how gender is studied in the context of student engagement at the secondary level over the 2023–2026 period, rather than to synthesize what is found about gender differences. Across the fifteen studies mapped, a relatively uniform landscape emerges: gender is mostly operationalized as a binary demographic category and positioned as a statistically managed variable, whether as a covariate or a moderator, rather than examined as a social construct; all studies rest on a positivist paradigm, with no qualitative or critical approaches; intersectionality and diverse gender identities are almost entirely unrepresented; and the engagement frameworks used are highly heterogeneous. These findings show that the field has produced a great deal of knowledge about whether engagement differences exist by gender, but still very little knowledge about how and why gender operates in student engagement. The main contribution of this review is to provide a reflective map of research practice itself, while underscoring the urgency of shifting from controlling for gender as a demographic variable toward studying gender as a social process that unfolds within specific school and cultural contexts.

This study has several limitations. The search was limited to English-language articles published in 2023–2026 and indexed at particular quartiles or accreditation levels, which prioritizes recency over comprehensiveness and may have missed relevant studies outside that time window, language, or set of databases. Seven articles could not be accessed at the full-text

stage, and the final corpus of fifteen studies limits the breadth of the mapping, although this number is common for scoping reviews that aim to map rather than generalize. In addition, assigning the analytical position of gender (Focus, Interaction, and Control) involved interpretive judgment by the authors; although decision rules were set and verified across raters, some decisions still involved judgment. Future research is encouraged to pursue qualitative, critical, and mixed-methods studies that investigate how gender is constructed in engagement experiences, to develop designs that are intersectional and inclusive of diverse gender identities, and to broaden the scope to other contexts and languages, including Indonesian-language literature through databases such as Garuda, so that the map of research practice on gender and engagement becomes more complete.

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