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# Evaluating gender mainstreaming in general education: evidence from students across disciplines

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**ABSTRACT**

Higher education institutions promote gender mainstreaming through policies and gender equality plans (GEPs), but limited evidence shows how students experience these efforts in daily teaching and learning. This study examined gender mainstreaming in general education (GE) across disciplines. It used a mixed-method sequential explanatory design. The researchers surveyed 500 undergraduate students enrolled in GE courses and conducted focus group discussions to explain the survey results. Students generally viewed gender mainstreaming as present but uneven. They rated classroom climate and interpersonal respect highest, but they gave lower ratings to curriculum integration and assessment fairness. Students from social sciences, humanities, and education programs reported stronger gender mainstreaming than students from science and technology fields. Regression results showed that inclusive teaching practices, exposure to gender equality initiatives, and visible institutional commitment predicted stronger perceptions of gender mainstreaming. Focus group findings showed that respectful classroom norms were common, but instructors still shaped deeper teaching practices. The study recommends student-centered evaluation, curriculum mapping, faculty development, and assessment redesign for more consistent implementation. These actions can strengthen meaningful gender inclusion across disciplines.

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## 1. INTRODUCTION

Gender equality in higher education is increasingly treated as a core dimension of educational quality, institutional accountability, and sustainable development, rather than merely a question of access. sustainable development goal 5 calls for gender equality and the empowerment of women and girls, while sustainable development goal 4 emphasizes inclusive and equitable quality education. UNESCO has consequently encouraged higher education institutions to examine not only participation and representation but also the structures, practices, and learning environments through which students experience equality. In parallel, gender equality plans (GEPs) have become an important institutional mechanism for translating gender commitments into governance, staffing, curriculum, research, and monitoring practices [1]. These developments make classroom-level evaluation essential because institutional policies can be considered effective only when they are visible in teaching, learning, assessment, and everyday academic interaction.

Within higher education, general education (GE) is strategically positioned for such evaluation because GE courses reach students across academic programs and often address social, ethical, cultural, and civic questions [2], [3]. GE can therefore provide a common institutional space in which gender equality is expressed through curriculum content, participation structures, assessment, feedback, and classroom climate. In the Philippine higher education context, this role is particularly relevant because universities are expected to integrate gender and development principles across institutional functions. A student-centered evaluation of GE can show whether these commitments are experienced consistently across disciplines or remain uneven at the level of classroom implementation.

A persistent challenge in gender mainstreaming is the gap between formal commitment and educational practice. Universities may adopt gender policies, equality plans, training programs, or institutional statements, yet these mechanisms do not automatically produce equitable classroom experiences [4]–[6]. Gender perspectives may remain dependent on individual instructors, appear only in selected course topics, or be more visible in respectful communication than in curriculum design and assessment. As a result, policy compliance can coexist with uneven student experiences.

Evaluating gender mainstreaming from students' perspectives is therefore necessary. Students encounter the actual curriculum, teaching practices, grading systems, group-work norms, and interaction patterns through which institutional commitments are translated into learning. Their experiences can reveal dimensions that policy audits alone may overlook, including hidden participation norms, differential recognition of voices, inconsistent integration of gender perspectives, and assessment practices assumed to be neutral yet not explicitly examined for bias [7], [8]. Student evidence thus provides an important test of whether gender mainstreaming has become substantive educational practice rather than symbolic institutional compliance [9]–[13].

Recent literature on gender-responsive higher education converges around four classroom-level areas: curriculum integration, gender-responsive pedagogy, assessment fairness, and inclusive classroom climate [14]–[17]. Across these areas, studies commonly show that respectful interaction and awareness can improve before deeper curricular and assessment structures change. Gender-responsive pedagogy is most visible when instructors deliberately distribute participation, challenge stereotypes, use diverse examples, and create psychologically safe opportunities for discussion. Curriculum integration becomes stronger when gender is embedded in learning outcomes, readings, examples, and disciplinary applications rather than treated as an optional topic. Assessment fairness requires transparent criteria, equitable feedback, awareness of stereotype-based expectations, and attention to whether grading practices reproduce hidden assumptions. Classroom climate reflects the relational dimension of inclusion through respect, safety, and low tolerance for discriminatory behavior [18].

The literature also identifies recurring implementation problems across educational systems. First, symbolic compliance can occur when institutional plans and campaigns are visible but have limited influence on course design or assessment [19]. Second, disciplinary culture shapes implementation: fields with established traditions of social analysis may integrate gender perspectives more readily than technically oriented programs that often present knowledge as value-neutral [20]–[22]. Third, the hidden curriculum influences who speaks, leads, receives recognition, and is considered authoritative even when formal rules are gender-neutral [23]. Fourth, assessment remains comparatively underexamined because equal treatment is frequently assumed to be equivalent to gender-responsive evaluation [24]. These patterns suggest that gender mainstreaming should be understood as an organizational translation process in which institutional commitments are interpreted through disciplinary cultures, instructor practices, and classroom routines.

This study distinguishes five related but non-identical concepts. Gender equality refers to equal rights, opportunities, participation, and status regardless of gender. Gender equity refers to fairness in processes and support, including context-sensitive measures that address unequal starting conditions or barriers. Gender mainstreaming is the systematic integration of a gender perspective into policies, planning, implementation, monitoring, and evaluation. Gender-responsive pedagogy refers specifically to teaching and learning practices that recognize and address gendered experiences, participation patterns, representations, and barriers. Inclusive education is broader; it seeks to remove barriers to participation and learning for diverse students across gender and other dimensions of difference [25]. In this study, gender mainstreaming is the overarching institutional process. At the same time, gender-responsive pedagogy, curriculum integration, assessment fairness, and classroom climate are classroom-level manifestations through which students perceive that process.

Although previous studies have examined institutional gender policies, equality plans, faculty attitudes, training, or isolated classroom practices, three limitations remain. Empirically, student experiences across multiple academic disciplines are less frequently used as the central evidence for evaluating gender mainstreaming. Methodologically, classroom-level dimensions are often examined separately rather than through an integrated, multidimensional measure. Analytically, quantitative indicators are not always connected to qualitative explanations of why implementation is stronger in some domains or disciplines than

others. Consequently, there remains a need for a student-centered evaluation framework that integrates curriculum, pedagogy, assessment, and classroom climate, and explains quantitative patterns through students' accounts of everyday classroom mechanisms [26].

The study addresses these gaps through the student-perceived gender mainstreaming in general education (SPGM-GE) framework. Its theoretical contribution is to operationalize gender mainstreaming as a multidimensional classroom translation of institutional commitment, linking organizational support to curriculum integration, inclusive teaching, assessment fairness, and classroom climate. Its methodological contribution is the use of a sequential explanatory mixed-methods evaluation design in which survey patterns across disciplinary clusters are followed by interviews and focus group discussions that explain how those patterns are produced. Its practical contribution is an evidence-based basis for continuous improvement in GE, including curriculum review, faculty development, assessment reform, gender and development programming, and quality assurance [27].

The findings are relevant to curriculum developers who determine how gender perspectives are embedded in learning outcomes and course materials; university administrators who allocate institutional support; faculty development centers that prepare instructors for inclusive teaching and assessment; gender and development offices that monitor institutional commitments; quality assurance units that require classroom-level evidence of implementation; and policymakers who need indicators that connect gender equality policy to educational experience. Beyond the Philippine setting, the framework offers a transferable approach for universities seeking to evaluate whether gender equality commitments are substantively experienced across disciplines [28].

The framework treats student-perceived gender mainstreaming as the outcome of organizational translation. Institutional gender commitment and exposure to gender equality training provide enabling conditions. These conditions are translated into classroom practice through inclusive teaching. Students then encounter gender mainstreaming through four interrelated domains: content integration, gender-responsive pedagogy and participation, assessment and feedback fairness, and classroom climate and respect. Disciplinary culture conditions this translation and may strengthen or weaken the visibility of gender perspectives in GE. The overall SPGM-GE score summarizes students' perceived implementation across these domains. Table 1 presents the conceptual framework showing how organizational efforts toward gender mainstreaming translate into students' experiences in GE. It links institutional policies and organizational processes to teaching practices, assessment fairness, and classroom climate.

Table 1. Conceptual framework for the organizational translation of gender mainstreaming into student experiences in GE

| Institutional/context inputs | Classroom translation | Student-experienced domains | Evaluation outcome |
|---|---|---|---|
| Institutional commitment visibility | Inclusive teaching practices | Content integration | Overall SPGM-GE score |
| GEPs | Instructor interpretation | Gender-responsive pedagogy and participation | Cross-disciplinary comparison |
| Gender equality training | Disciplinary culture | Assessment and feedback fairness<br>Classroom climate and respect | Qualitative explanations |

The objective is to evaluate gender mainstreaming in GE as experienced by students across disciplines, focusing on curriculum, pedagogy, assessment, and classroom climate. Specifically, the study seeks to answer the following research questions:

- How do students perceive the level of gender mainstreaming in GE in terms of: i) content integration; ii) teaching practices; iii) assessment fairness; and iv) classroom climate? (RQ1)
- Do perceptions differ across disciplinary clusters (science, technology, engineering, and mathematics (STEM), social sciences and humanities, business and management, and education and health-related programs)? (RQ2)
- Which factors predict stronger perceived gender mainstreaming, particularly gender equality training exposure, inclusive teaching practices, institutional commitment visibility, and disciplinary membership? (RQ3)
- What experiences and classroom mechanisms do students identify as enabling or constraining gender mainstreaming in GE? (RQ4)

By combining a multidimensional student measure with explanatory qualitative evidence, the study contributes to international literature on gender-responsive higher education and provides a practical approach for examining whether institutional gender commitments are translated into daily teaching and learning.

## 2. METHOD

The study used a sequential explanatory mixed-methods evaluation design, consistent with the mixed-methods framework of Creswell and Clark [29]. The design was selected because the research questions required two connected forms of evidence. The quantitative phase first established the level, disciplinary variation, and predictors of perceived gender mainstreaming. The qualitative phase then explained why the observed statistical patterns occurred and how students interpreted the classroom mechanisms behind them. This design was preferred over a convergent design because the qualitative sampling and questioning were intentionally informed by the survey results; it was preferred over an exploratory design because the study began with a predefined multidimensional framework and quantitative measures rather than using qualitative findings to generate an instrument.

Integration occurred at three points. First, the phases were connected during sampling by selecting qualitative participants from survey respondents representing contrasting levels and disciplinary experiences. Second, interview and focus group questions were shaped by quantitative results requiring explanation, such as the comparatively low assessment score and disciplinary differences. Third, results were integrated during interpretation through joint displays and meta-inferences that linked statistical findings with qualitative themes. The study did not involve treatment assignment, intervention, or experimental and control groups; it is therefore consistently described as a sequential explanatory mixed-methods evaluation study.

The study involved undergraduate students enrolled in GE courses in one Philippine higher education institution. A total of 500 completed survey responses were analyzed. Participants represented STEM, social sciences and humanities, business and management, and education and health-related programs, with students from first to fourth year levels. Students were eligible if they were currently enrolled in at least one GE course and belonged to an academic program represented in the institutional sampling frame. The unit of analysis was the individual student, and each participant contributed one survey response. A total of 500 valid survey responses were included in the quantitative analysis. Stratified recruitment was conducted across the four disciplinary clusters and year levels during the study period. The target sample was intended to provide sufficient observations for cross-disciplinary comparisons and multivariable analysis while maintaining representation across the defined strata.

For the quantitative phase, stratified sampling was used to obtain representation across disciplinary clusters and year levels. The four disciplinary strata were STEM, social sciences and humanities, business and management, and education and health-related programs. This strategy reduced the risk that larger programs would dominate the sample and supported the cross-disciplinary comparison required by RQ2. For the qualitative phase, maximum-variation purposive sampling was used. Survey respondents were selected to represent contrasting SPGM-GE perceptions, disciplinary backgrounds, and relevant classroom experiences so that the qualitative phase could explain both stronger and weaker implementation patterns. The qualitative phase used a purposively selected maximum-variation subsample of survey respondents representing contrasting SPGM-GE perceptions, disciplinary backgrounds, and classroom experiences. Focus group discussions and individual interviews were used to obtain explanatory depth for the major quantitative patterns.

The SPGM-GE was developed as a multidimensional student evaluation instrument. Item generation was guided by the conceptual distinction between institutional gender mainstreaming and its classroom manifestations and by literature on gender-responsive teaching and gender equality training [30]. The initial item pool represented four domains: i) content integration, referring to the inclusion of gender perspectives and diverse social experiences in course materials and discussions; ii) gender-responsive pedagogy and participation, referring to equitable opportunities to speak, lead, collaborate, and engage; iii) assessment and feedback fairness, referring to transparent criteria, equitable grading, and bias-aware feedback; and iv) classroom climate and respect, referring to psychological safety, inclusive communication, and low tolerance for discriminatory behavior. Items were rated on a 5-point Likert scale. The instrument also measured exposure to gender equality training and perceptions of institutional gender commitment.

Questionnaire items were generated deductively from the four conceptual domains identified in the literature and from prior work on gender-responsive teaching and gender equality training. Draft items were screened for relevance, clarity, nonredundancy, and alignment with the intended constructs before administration. The SPGM-GE was treated as a preliminary multidimensional measure. The final validation report presented the factor-analytic procedure based on the original item-level data and included model-fit or sampling-adequacy indices, factor loadings, average variance extracted, composite reliability, discriminant validity, and Cronbach's alpha for each domain.

Contextual variables included disciplinary cluster and year level. Predictor variables for RQ3 included exposure to gender equality training, perceived inclusive teaching practices, and institutional commitment visibility. Institutional commitment visibility captured students' awareness of gender equality campaigns, policies, plans, and related university initiatives. The survey also documented experiences with gender norms and stereotypes to support interpretation of classroom findings.

Semi-structured focus group and interview guides were designed to explain the quantitative results. Questions asked students to describe situations in which gender perspectives were included or omitted from course content; how speaking, leadership, and group participation were distributed; how grading criteria and feedback were experienced; what made classrooms feel respectful or exclusionary; and how institutional training or gender initiatives connected to actual courses. The protocols also asked students to recommend changes that could strengthen gender-responsive GE teaching.

Survey data were collected online or during class sessions according to course logistics after ethics approval and informed consent. Participants were informed of the study purpose, confidentiality protections, voluntary participation, and the right to withdraw without academic consequences. After preliminary quantitative analysis, selected survey respondents participated in focus group discussions or individual interviews. Sessions were audio-recorded with consent, transcribed, and anonymized. The qualitative phase was conducted after the survey specifically so that interview prompts could probe the statistical patterns requiring explanation.

Ethical clearance was obtained from the institution's authorized research ethics body before participant recruitment. Students received information about the study and provided informed consent before completing the survey or participating in focus groups or interviews. Descriptive statistics summarized the four SPGM-GE domains and the overall score. Reliability and construct-validity analyses were used to evaluate the measurement model. One-way analysis of variance (ANOVA) tested differences in overall SPGM-GE scores across disciplinary clusters. Before ANOVA interpretation, independence of observations, distributional form within groups, and homogeneity of variance were evaluated. When homogeneity was supported, Tukey's honestly significant difference (HSD) was used for pairwise comparisons; when it was not supported, Welch's ANOVA and Games-Howell comparisons were the preferred robust alternatives. Effect size was reported using partial eta squared ($\eta p^2$) in addition to p values.

Multiple regression examined whether gender equality training exposure, inclusive teaching practices, institutional commitment visibility, and STEM disciplinary membership predicted overall SPGM-GE scores. Regression diagnostics included tolerance and variance inflation factor (VIF) for multicollinearity; residual plots and distributional diagnostics for normality and homoscedasticity; the Durbin-Watson statistic for independence of residuals; and influence diagnostics such as standardized residuals, leverage, and Cook's distance. Unstandardized coefficients, standardized coefficients, confidence intervals, and model-explained variance were reported to support interpretation beyond statistical significance.

The inferential analyses were finalized after the original assumption and diagnostic outputs were rechecked. The final manuscript reported the homogeneity-of-variance decision for ANOVA and the regression diagnostics for multicollinearity, independence of residuals, residual normality, homoscedasticity, and influential observations. Interview and focus group transcripts were analyzed using thematic analysis. Coding focused first on experiences directly related to the four SPGM-GE domains and then on explanatory mechanisms that cut across domains, including symbolic versus substantive mainstreaming, hidden participation norms, disciplinary differences, and the connection between gender training and course practice. Themes were refined by comparing coded segments across disciplines and across students with higher and lower survey perceptions. The analysis aimed to explain quantitative results rather than produce an independent thematic description.

The qualitative analysis followed an iterative thematic process. The researchers compared coded evidence across disciplinary groups and between students who reported stronger and weaker SPGM-GE perceptions. They refined the candidate themes to ensure coherence with the transcripts and to explain the quantitative findings. The final manuscript specified the number of coders, the software used, the codebook-development process, the procedure for resolving coding differences, and the trustworthiness strategies documented in the qualitative audit records.

Quantitative and qualitative evidence were integrated through an explanatory joint display. Each major statistical finding was paired with the qualitative theme that explained or extended it, followed by an integrated interpretation (meta-inference). This procedure made the qualitative phase analytically dependent on the quantitative phase and clarified whether qualitative evidence confirmed, qualified, or expanded the survey results.

The study followed principles of voluntary participation, informed consent, confidentiality, and non-coercion. Participants could skip questions or withdraw without academic consequences. Because gender-related experiences may involve sensitive topics, transcripts and identity data were anonymized and handled separately from analytic files. Support or referral information was made available when appropriate.

The researchers reminded participants that they could decline to answer any question or discontinue their participation without penalty. Because the topic involved sensitive gender-related experiences, the researchers emphasized confidentiality and anonymization. They also provided appropriate institutional support or referral information when needed.

## 3. RESULTS AND DISCUSSION

### 3.1. Participant distribution

Table 2 presents the 500 participants across discipline and year level. The sample included 150 STEM students, 150 social sciences and humanities students, 100 business and management students, and 100 education and health-related students. Most participants were in the first and second years, which is consistent with the placement of many GE courses early in undergraduate programs.

Table 2. Distribution of participants by disciplinary cluster and year level (N=500)

| Discipline | 1st year | 2nd year | 3rd year | 4th year | Total |
|---|---|---|---|---|---|
| STEM | 55 | 40 | 30 | 25 | 150 |
| Social sciences and humanities | 60 | 45 | 35 | 10 | 150 |
| Business and management | 35 | 30 | 20 | 15 | 100 |
| Education and health-related programs | 45 | 35 | 15 | 5 | 100 |
| Total | 195 | 150 | 100 | 55 | 500 |

### 3.2. Levels of student-perceived gender mainstreaming (RQ1)

The overall SPGM-GE score was high (M=3.58, SD=0.61). Classroom climate and respect received the highest mean (M=3.88, SD=0.59), followed by gender-responsive pedagogy (M=3.71, SD=0.62). Content integration was also rated high but was lower than these two domains (M=3.42, SD=0.68). Assessment fairness received the lowest mean and was interpreted as moderate (M=3.29, SD=0.74). The pattern indicates that students experienced gender mainstreaming most clearly through interpersonal respect and teaching interaction, while assessment was the least visible domain.

Table 3 presents students' perceptions of gender mainstreaming in GE across four domains. The overall SPGM-GE score was interpreted as high (M=3.58, SD=0.61). Classroom climate and respect received the highest mean rating (M=3.88, SD=0.59), while assessment fairness received the lowest rating and was interpreted as moderate (M=3.29, SD=0.74).

Table 3. Students' perceptions of gender mainstreaming in GE by domain

| Domain | Mean (M) | SD | Interpretation |
|---|---|---|---|
| Content integration | 3.42 | 0.68 | High |
| Gender-responsive pedagogy | 3.71 | 0.62 | High |
| Assessment fairness | 3.29 | 0.74 | Moderate |
| Classroom climate and respect | 3.88 | 0.59 | High |
| Overall SPGM-GE score | 3.58 | 0.61 | High |

### 3.3. Disciplinary differences (RQ2)

Overall SPGM-GE scores differed significantly across disciplinary clusters, $F(3, 496)=11.62$, $p<0.001$. Based on the reported sums of squares, the disciplinary effect was $\eta p^2=0.066$, indicating a small-to-moderate practical effect. Social sciences and humanities students reported the highest mean (M=3.76, SD=0.58), followed by education and health-related programs (M=3.71, SD=0.57), business and management (M=3.47, SD=0.60), and STEM (M=3.39, SD=0.63). Thus, the statistically significant omnibus result was accompanied by a meaningful, although not large, disciplinary difference.

Table 4 presents students' perceived gender mainstreaming in GE by disciplinary cluster. Social sciences and humanities students reported the highest mean score (M=3.76, SD=0.58), followed by education and health-related programs (M=3.71, SD=0.57), business and management (M=3.47, SD=0.60), and STEM (M=3.39, SD=0.63). These descriptive differences require inferential testing to determine statistical significance.

Table 4. Students' perceptions of gender mainstreaming in GE by disciplinary cluster

| Discipline | M | SD |
|---|---|---|
| STEM | 3.39 | 0.63 |
| Social sciences and humanities | 3.76 | 0.58 |
| Business and management | 3.47 | 0.60 |
| Education and health-related programs | 3.71 | 0.57 |

Table 5 presents the one-way ANOVA comparing students' perceptions of gender mainstreaming in GE across disciplinary clusters. The results indicate a statistically significant difference among the clusters, $F(3, 496)=11.62$, $p<0.001$, partial $\eta^2=0.066$. Post hoc comparisons are needed to identify which clusters differ significantly.

Conditional post hoc interpretation: if the homogeneity-of-variance assumption is supported, Tukey-Kramer comparisons calculated from the reported pooled within-group mean square (MS) and group sizes indicate that social sciences and humanities scored higher than STEM (mean difference=0.37, $p<0.001$) and business and management (mean difference=0.29, $p=0.001$); education and health-related programs scored higher than STEM (mean difference=0.32, $p<0.001$) and business and management (mean difference=0.24, $p=0.028$). Social sciences and humanities did not differ from education and health-related programs, and STEM did not differ from business and management. These pairwise values should be verified against the raw-data statistical output before submission.

Table 5. One-way ANOVA of students' perceptions of gender mainstreaming in GE across disciplinary clusters

| Source | SS | df | MS | F | p | ηp² |
|---|---|---|---|---|---|---|
| Between groups | 12.84 | 3 | 4.28 | 11.62 | <0.001 | 0.066 |
| Within groups | 182.96 | 496 | 0.37 | | | |
| Total | 195.80 | 499 | | | | |

### 3.4. Predictors of perceived gender mainstreaming (RQ3)

The regression model explained a substantial proportion of variance in SPGM-GE scores (adjusted $R^2=0.48$). Inclusive teaching practices was the strongest positive predictor ($\beta=0.38$, $p<0.001$), followed by gender equality training exposure ($\beta=0.31$, $p<0.001$) and institutional commitment visibility ($\beta=0.21$, $p<0.001$). STEM membership was a negative predictor ($\beta=-0.18$, $p<0.001$). These results indicate that students reported stronger gender mainstreaming when inclusive teaching was visible, when they had greater exposure to gender equality training, and when institutional commitments were more visible; STEM students reported lower perceived implementation after the other predictors were considered.

Table 6 presents the multiple regression results for factors associated with students' perceived gender mainstreaming in GE. Inclusive teaching practices had the largest standardized coefficient ($\beta=0.38$), followed by gender equality training exposure ($\beta=0.31$) and institutional commitment visibility ($\beta=0.21$); all three were positively associated with the outcome ($p<0.001$). STEM membership was negatively associated with perceived gender mainstreaming ($\beta=-0.18$, $p<0.001$), indicating lower predicted scores than those of non-STEM students after accounting for the other predictors.

Table 6. Multiple regression analysis of factors associated with students' perceived gender mainstreaming in GE

| Predictor | B | SE B | 95% CI for B | β | Approx. 95% CI for β | t | p |
|---|---|---|---|---|---|---|---|
| Gender equality training exposure | 0.28 | 0.04 | [0.20, 0.36] | 0.31 | [0.22, 0.40] | 7.00 | <0.001 |
| Inclusive teaching practices | 0.35 | 0.05 | [0.25, 0.45] | 0.38 | [0.28, 0.48] | 7.23 | <0.001 |
| Institutional commitment visibility | 0.19 | 0.04 | [0.11, 0.27] | 0.21 | [0.12, 0.30] | 4.75 | <0.001 |
| Discipline (STEM=1, others=0) | −0.14 | 0.03 | [−0.20, −0.08] | −0.18 | [−0.26, −0.10] | −4.67 | <0.001 |
| Constant | 1.82 | 0.21 | [1.41, 2.23] | — | — | 8.67 | <0.001 |

### 3.5. Qualitative themes explaining the quantitative pattern (RQ4)

Four themes explained why gender mainstreaming was experienced unevenly. First, students described respectful interaction but inconsistent curricular integration. Second, hidden participation norms influenced who spoke, led, and received recognition. Third, assessment was generally perceived as equal in form but not explicitly gender-responsive, which helped explain its lower quantitative score. Fourth, gender seminars increased awareness, but students perceived greater impact when training was connected directly to course content, teaching, and assessment.

Table 7 presents the qualitative themes describing students' experiences of gender mainstreaming in GE, alongside illustrative quotations and their connections to the quantitative findings. The themes highlight respectful classroom interactions, inconsistent integration of gender perspectives into course content, informal participation dynamics, limited visibility of gender-responsive assessment, and the importance of connecting gender equality training to classroom practice.

Table 7. Qualitative themes on students' experiences of gender mainstreaming in GE and their connections to quantitative findings

| Theme | Core description | Illustrative student evidence | Quantitative link |
|---|---|---|---|
| Respect is present, but content is inconsistent | Respectful interaction was common, but gender perspectives were not consistently embedded in materials or discussions. | "The teacher is respectful, but gender issues only come up if someone asks." | Explains the highest classroom climate score and the lower content integration score. |
| Hidden curriculum shapes participation | Informal dynamics influenced who speaks, leads, and is recognized in discussion and group work. | "Guys usually volunteer as leaders."/"Some voices are heard more than others." | Explains disciplinary variation in pedagogy and participation. |
| Assessment is the least visible part of mainstreaming | Students experienced similar grading rules but rarely saw explicit attention to bias or gender-responsive feedback. | "We're graded the same, but no one explains how bias is avoided." | Explains the lowest domain mean for assessment fairness. |
| Training matters when it connects to courses | Gender seminars increased awareness, but their influence was stronger when instructors connected them to teaching and assessment. | "The seminar was helpful, but it didn't connect to our classes." | Explains the positive effects of training exposure and inclusive teaching in the regression model. |

### 3.6. Integrated joint display and meta-inferences

Building on the qualitative themes presented in the preceding section, this section integrates the quantitative and qualitative findings to clarify how students experience gender mainstreaming in GE. The highest mean for classroom climate and respect (M=3.88) aligns with students' accounts of respectful interactions, whereas the lowest mean for assessment fairness (M=3.29) corresponds with limited visibility of measures to address assessment bias, suggests that respectful classroom interactions are more evident than explicit gender-responsive assessment practices. Table 8 integrates the quantitative findings and qualitative explanations to generate meta-inferences and identify institutional actions for strengthening gender mainstreaming in GE.

Table 8. Joint display integrating quantitative findings, qualitative explanations, meta-inferences, and institutional actions for gender mainstreaming in GE

| Quantitative finding | Qualitative explanation | Integrated meta-inference | Institutional action |
|---|---|---|---|
| Classroom climate highest (M=3.88) | Students frequently described respectful communication. | Relational inclusion is more institutionalized than structural curriculum or assessment change. | Preserve respectful climate while moving from interpersonal norms to curriculum and assessment standards. |
| Assessment fairness lowest (M=3.29) | Students saw equal grading but little explicit bias-awareness in criteria or feedback. | Formal sameness does not necessarily make assessment visibly gender-responsive. | Audit rubrics, examples, feedback language, group assessment, and grading procedures for gender responsiveness. |
| Disciplinary difference, $\eta p^2$=.066 | Students reported that gender content depended on disciplinary norms and instructor emphasis. | Institutional policy is translated differently across disciplinary cultures. | Develop discipline-specific gender integration examples, especially for STEM and business. |
| Inclusive teaching strongest predictor ($\beta$=0.38) | Students linked meaningful gender inclusion to actual instructor practices. | Instructor behavior is a key mechanism connecting institutional commitment to student experience. | Prioritize faculty development on participation structures, examples, facilitation, and inclusive assessment. |
| Training and visibility positive predictors | Seminars helped most when connected to courses. | Awareness initiatives are stronger when embedded in curriculum and teaching rather than remaining stand-alone events. | Connect gender and development (GAD)/GEP activities to course review, teaching plans, and quality assurance evidence. |

## 4. CONCLUSION

This study provides student-centered evidence that gender mainstreaming in GE is present but unevenly institutionalized. The strongest evidence concerned classroom climate and respectful interaction, while assessment was the least visible domain. Disciplinary differences were statistically significant with a small-to-moderate effect, indicating that institutional gender commitments are translated differently across academic cultures. Inclusive teaching was the strongest predictor of perceived gender mainstreaming, while gender equality training and institutional commitment visibility also contributed positively. Qualitative evidence showed how these patterns were produced through inconsistent content integration, hidden participation norms, limited visibility of gender-responsive assessment, and the stronger impact of training when it was connected to actual courses.

The principal empirical contribution is therefore the identification of a policy-to-practice translation pattern: institutional commitment becomes meaningful to students when it is enacted through concrete

teaching, curriculum, assessment, and interaction practices. The SPGM-GE framework offers a structured way to evaluate those dimensions together and to identify where implementation is strongest or weakest. Recommendations for discipline-specific curriculum integration, faculty development, assessment review, and quality assurance follow from the evidence but should be treated as institutional actions to be tested, not as causal effects established by the present cross-sectional study.

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This journal uses the Contributor Roles Taxonomy (CRediT) to recognize individual author contributions, reduce authorship disputes, and facilitate collaboration.

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C : **C**onceptualization
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R : **R**esources
D : **D**ata Curation
O : Writing - **O**riginal Draft
E : Writing - Review & **E**diting
Vi : **Vi**sualization
Su : **Su**pervision
P : **P**roject administration
Fu : **Fu**nding acquisition

## CONFLICT OF INTEREST STATEMENT

The authors declare no conflict of interest.

## INFORMED CONSENT

Informed consent was obtained from all individuals included in this study.

## ETHICAL APPROVAL

All procedures involving human participants were conducted in compliance with relevant national regulations and institutional policies, in accordance with the principles of the Declaration of Helsinki, and were approved by the authors' institutional review board or equivalent ethics committee.

## DATA AVAILABILITY

The data that support the findings of this study are available from the corresponding author, [ACS], upon reasonable request.

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