Gender-Responsiveness with English Language Instruction in STEM

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ABSTRACT

Gender-responsive education policy in the Philippines, anchored on DepEd Order No. 32, s. 2017, requires inclusive curricula, gender-fair language, and non-discriminatory teaching, yet studies report a gap between policy intent and classroom practice, especially in STEM. This descriptive phenomenological study explored how senior high school teachers using English as the medium of instruction in STEM-oriented classrooms experienced implementing the policy, including their experiences with materials, professional development, resources, beliefs, ethical concerns, school-level support, integration models, and stakeholder resistance. Five licensed teachers at a public senior high school in Taguig City were purposively selected and interviewed. Data were analyzed through Giorgi's five-step method, with Shulman's Pedagogical Content Knowledge framework applied at the later steps. All participants understood the policy, mainly through institutional trainings, but this understanding reached evaluated classroom practice unevenly. Practice was strongest where training was tied to the teacher's subject matter and weakest where pre-approved materials were trusted without examination. Schools provided training but rarely materials review, monitoring, or subject-specific resources, and one teacher met resistance without institutional backing. The gaps lay in the systems around teachers, not in their knowledge of the policy. Drawing on these gaps, the study proposes the AC²FG Model, a cyclical school-based procedure led by the Gender and Development (GAD) focal person with five stages: Audit, Curate, Capacitate, Follow-through, and Guard. Derived from a single site, the model should be validated through expert review and pilot implementation.

Keywords: Gender-responsive Education, DepEd Order No. 32, s. 2017, STEM English Instruction, Descriptive Phenomenology, AC²FG Model

INTRODUCTION

Education can preserve or weaken existing social inequalities.[1,2] The Philippines supports gender equality through national policy, most notably DepEd Order No. 32, s. 2017, the Gender-Responsive Basic Education Policy, which requires an inclusive curriculum, gender-fair language, and non-discriminatory teaching at every level. Yet in many classrooms, practice still does not match the policy.[3–5] The gap is especially visible in STEM senior high school programs, where English instruction is a subject in which gender norms can be challenged or quietly reinforced.[6,7]

Studies repeatedly show that understanding a policy does not by itself change teaching.[8,9] Teachers who endorse gender equality may still lack relevant training, use materials that are not inclusive, work under limited time and school support, or face resistance from colleagues, parents, and officials.[10] In STEM, gender concerns are also often treated as less important than technical content.[11] English teachers in this setting must meet content expectations while building an inclusive classroom, often with little guidance on how to do both,[12,13] and the voices of the teachers who manage this daily are still scarce in research and policy discussions.[9,14]

This study is anchored on Shulman's Pedagogical Content Knowledge (PCK) framework and its Model of Pedagogical Reasoning and Action, which describes teaching as a cycle of comprehension, transformation,

instruction, evaluation, reflection, and new comprehension.[15] Because the framework does not explicitly theorize gender, the study extended it by treating the ability to integrate gender perspectives in English instruction as a specialized form of PCK. Specifically, the study asked (1) to what extent gender-responsive policies and their implementation facilitate gender-responsive practices among STEM English teachers; (2) how teachers experience curriculum materials, professional development, resources, prevailing beliefs, and ethical concerns around gender topics; and (3) how they experience school-level policy support, models for integrating gender perspectives, and stakeholder resistance, including the gaps and opportunities these present. Based on the findings, the study also proposes a school-based model that schools may use independently.

Experimental Method/S

The study used a descriptive phenomenological psychological design to describe how teachers consciously experienced translating DepEd Order No. 32, s. 2017 into classroom practice.[16,17] The design suited the aim of understanding lived experience in context rather than measuring implementation numerically. Where the research questions use the phrase "to what extent," it refers to the depth and variation of experience, not to quantity.

Participants and site. Participants were selected through purposive criterion sampling.[18] They were five licensed teachers currently teaching Grade 11 or Grade 12 STEM subjects in English at one public senior high school in Taguig City. Length of service was not a criterion. Teachers of non-STEM strands, teachers using another medium of instruction, Junior High School-only teachers, administrators without teaching duty, and those unavailable or unwilling to give consent were excluded. Participants are referred to as P01 to P05.

Instrument and data gathering. Data were gathered through individual, semi-structured in-depth interviews using a researcher-developed interview guide. The guide consisted mainly of open-ended and scenario-based questions with probes, built from the research questions and the reviewed literature. It was reviewed and validated by experts in gender studies, education, English language teaching, and qualitative research, who helped remove ambiguous or leading items.

Data analysis. Transcripts were analyzed using Giorgi's five-step method: (1) sense of the whole, (2) phenomenological psychological reduction, (3) delineation of meaning units, (4) transformation of meaning units, and (5) synthesis of the essential structure.[16] To protect the reduction, theory was kept out of Steps 1 to 3. Shulman's PCK framework was introduced only at Steps 4 and 5, where it was used to render the meaning units and to organize the essential structure.[15]

Ethical considerations. Participants gave written informed consent after the purpose, procedures, risks, and benefits were explained, and were free to skip questions or withdraw at any time. Pseudonyms were used, the site is described only generically, and identifying details of classroom episodes were removed or generalized. Questions on sensitive gender topics were open-ended and non-judgmental. Generative AI tools were used only to organize and refine text and were not used in analyzing participant data, as disclosed under PUP Executive Order No. 46, s. 2024.

RESULTS AND DISCUSSION

A. Policy comprehension and classroom practice

All five participants understood DepEd Order No. 32, s. 2017, and all traced that understanding to an institutional source such as division seminars, Learning Action Cell sessions, in-service training, and GAD trainings, rather than to independent study. They described the policy's core in the same way, as respect, fairness, and equal treatment of learners regardless of gender identity. Comprehension was the most frequent component of pedagogical reasoning in every account, accounting for 6 to 11 meaning units per participant.

Translation of this understanding into evaluated practice was partial and uneven. It was strongest where professional development was tied to the teacher's own subject, as when P05 reworked physics materials and replaced gendered classroom address terms, and where teachers built concrete habits, such as P02's practice of addressing students as "hijo" or "hija" depending on the student and P03's practice of asking students how they

want to be addressed. It was weakest in two cases. P01 equated the absence of a personally observed problem with the absence of a gap ("I don't think there is a gap from what I see"), and P04 trusted pre-validated materials without examining them. Evaluation and reflection were the least developed parts of the cycle across accounts, and new comprehension rarely appeared unless a personal experience, training, or discomfort pushed a teacher through a full cycle.

This pattern agrees with the finding that awareness of the policy is related to its implementation,[8] while showing the limit of that relationship: awareness coexisted with a felt absence of any gap in P01's account, which fits reports that policy integration is often shallow and dependent on individual agency.[19] The inclusive-address practices of P02, P03, and P05 correspond to the language component of an existing classroom-level framework[13] and to evidence that gender-fair language helps learners feel safer and more confident.[12] Asked what should change, P02 and P03 pointed to stricter monitoring and clearer implementation of existing policy, while P04 and P05 pointed to missing tools, namely a materials-review mechanism and ready-made subject-specific resources.

B. Materials, professional development, resources, beliefs, and ethical concerns

Four of the five participants (P01 to P04) described their materials as free of gender bias, but the judgment rested on personal confidence or institutional validation rather than on a described screening process. Only P05, whose training was tied to her subject, described actively identifying a specific imbalance, the "lone male genius" pattern in physics texts, and reworking the materials. This matches reports that Philippine teaching materials can meet gender-responsive standards on paper while remaining superficial in classroom content.[19,20] It also suggests that gender-responsive PCK around materials develops when training gives the teacher a specific reason and method for looking closely.

GAD and in-service trainings were available to all participants, but for most of them training produced comprehension without a described change in specific classroom decisions. Participants also noted the near-total absence of purpose-built, ready-made gender-responsive materials for STEM English. Beliefs, culture, and religion influenced classroom decisions in every account, but each teacher managed them differently: P01 and P05 kept their approach general or quietly embedded, P02 described beliefs coming from colleagues and administrators and not only from students, and P03, who teaches a predominantly Muslim student population, described religious diversity as reinforcing her balanced approach to respectful discussion. The last point departs from studies that treat religious and cultural values mainly as sources of resistance to gender-inclusive practice.[21]

C. School-level support, integration models, and stakeholder resistance

School support was present mostly as scheduled GAD training and, for some participants, a designated GAD focal person, but it rarely extended to materials review, sustained monitoring, or subject-specific tools. P05 had the most institutional access yet still described a "massive disconnect" between available support and the daily work of finding inclusive physics materials. Most participants could not name a formal framework for integrating gender perspectives and relied on personal models built from their own sense of respect and fairness. None had encountered the frameworks in the literature,[10,13,22] not because none exist but because nothing disseminated to them introduced one. This reliance on individual drive in the absence of active school support is consistent with earlier findings.[2,19,23]

Resistance was directly experienced by one participant, P02, who was questioned by a colleague about her own identity after supporting a colleague and was reprimanded by school administration over a decision involving a student's gender expression. Instead of weakening her commitment, these episodes produced a firmer personal rule for inclusion. This complicates the view that resistance mainly discourages teachers who support LGBTQ+ learners,[23,24] although it also shows that the teacher carried this burden without institutional backing.

D. Essential structure

Across the three research questions, the policy-to-practice gap was less about whether teachers know the policy

and more about whether the systems around them convert that knowledge into examined materials, subject-specific training, and institutional monitoring. Policy was translated into practice unevenly and largely through individual effort, personal history, and, where present, subject-specific training. Read through PCK, comprehension was universal, but the cycle through transformation, instruction, evaluation, and reflection to new comprehension was completed in only a few instances.

E. The AC²FG Model

The study proposes the AC²FG Model, a school-based procedure led by the GAD focal person so that reviewing, preparing, and monitoring do not fall on individual teachers. It has five stages, each responding to a gap and an opportunity named by participants (Table 1). In Audit, a standing committee reviews materials, signages, activity sheets, and assessments against a bias checklist and records the problems found. In Curate, flagged items are revised or replaced and kept in a subject-specific bank that teachers can use and add to. In Capacitate, teachers receive training tied to their subject area and one shared gender-responsive framework, using the bank as content. In Follow-through, the focal person monitors implementation on a set schedule and returns supportive, not evaluative, feedback. In Guard, protocols, stakeholder orientation, and named responders protect teachers who meet resistance, and recorded cases feed the next Audit. The model is cyclical, and a school may enter at the stage of greatest need provided the others are not omitted.

Table 1. Gaps and opportunities underlying each stage of the AC²FG Model

Stage	Gap found	Opportunity found	Source
Audit	No review of the materials teachers use	Standing committee to review materials, signages, activity sheets, and assessments	P04
Curate	No ready-made, subject-specific materials, so teachers rewrite them alone	Practical tools woven into daily language, word problems, and routines	P05
Capacitate	No named framework; training is general	Specialized, practical training; working models of learner-centered and integrated instruction	P01, P02, P04 (gap); P03, P05 (models)
Follow-through	Weak monitoring of implementation	Stricter monitoring and clearer implementation of existing policy	P02, P03
Guard	Resistance faced without institutional backing	Protocols and stakeholder involvement	P02

Capacitate and Follow-through drew on more than one participant, while Audit, Curate, and Guard drew mainly on a single account, so the stages are best read as proposed responses to named gaps and not as findings established across all participants.

CONCLUSION

Knowledge of DepEd Order No. 32, s. 2017 was universal among the participants, but its movement through transformation, instruction, evaluation, and reflection into new comprehension varied widely and was rarely complete. Gender-responsive PCK was most fully realized when professional development was anchored in a teacher's own subject, and trust in externally validated materials without active screening for bias posed a risk to gender-responsive instruction. School support extended training but not sustained monitoring, materials review, or subject-specific resourcing, which placed the work on individual teachers. At this site, the policy-to-practice gap is therefore a gap in the systems around teachers and not in their knowledge of the policy.

Schools are encouraged to strengthen monitoring after initial dissemination, to establish a standing committee for materials review led by the GAD focal person, to provide subject-specific training and ready-made inclusive materials, to adopt protocols that involve stakeholders and support teachers who meet resistance, and to adapt the AC²FG Model to local context and existing DepEd policies. Because the findings come from five teachers at

a single site, they are not generalizable. Future studies should include larger and more diverse samples of STEM English teachers across schools and divisions, and should validate the AC²FG Model through expert review and pilot implementation.

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