

The Gender-Sensitive Teaching in Physics for Technologist Curriculum: Basis for Enrichment

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Abstract: *The curriculum in the Philippines must establish gender-sensitive teaching. This is important to establish an inclusive education in our country. However, there are students and educators that are not aware of the importance of gender-sensitive teaching in the institution. To solve these issues, this study evaluates the Physics for Technologists curriculum based on gender-sensitive teaching in one of the universities in Manila, Philippines. The first part of the result shows that the student's perception about the gender sensitivity of the said curriculum is mostly applied in terms of learning materials, didactics, learning experience, and subject matter. Even if they are agreed that gender sensitivity is applied to the curriculum the students suggest an improvement for this. Moreover, the teacher's perception of the gender sensitivity of the said curriculum has the same result as the first part of the study. Therefore, the student and teachers have a congruent perception of the pedagogical practices regarding gender in the said curriculum. Furthermore, the quantitative results show that most of the teachers are not particular about the effect of gender sensitivity on the success of learning Physics. Further, this study constructs a framework for the enrichment of the curriculum to promote gender sensitivity. The STAR framework was suggested by the researcher to employ in the curriculum. This suggests that any gender must be equally shown in the learning materials. There must be a transformation of traditional stereotypes to a modern role in sample problems. The Attitudes toward gender equality must be reflected in teaching and learning. Finally, there must be regular checking and verification of the content of gender equality. All these components were suggested to the stakeholders in promoting an education that is equal to any gender.*

Keywords: *Gender Responsiveness, Perception, Gender Sensitive Pedagogical Practices, Didactics*

I. INTRODUCTION

A. Background of the Project

Despite the developments and improvements in achieving gender parity in the Philippines, most of the institutions in our country are not evaluated by gender sensitivity in terms of their curriculum. Based on the Global Gender Gap Report in 2021 [1], the Philippines has dropped one position in the ranking based on the overall gender gap index. This shows that the gender responsiveness of our country needs development for us to eliminate gender issues. In addition to this, women's representation in science in our country has a low percentage of 52% compared to other countries (USAID, 2015) [2].

According to Hernandez and Cudiamat (2018) [3], the application of gender-based differentiated instruction affects their learning. The study shows that when this method is used students are motivated to attend the class. It also shows that this method is recommended to apply in other subject areas. The gender-responsive collaborative learning strategy improves the achievement of students in science and mathematics subjects (Akhigbe and Adeyemi, 2020) [4]. That is why a gender-responsive curriculum is suggested to apply in the planning and implementation of science lessons by science teachers (Akhigbe and Adeyemi, 2020) [4].

A place like a school is an environment wherein students can experience discrimination for both boys and girls. Sometimes teachers forget to notice the importance of the gender of their students. According to UNESCO, by 2030 all children must have inclusive quality and gender-sensitive education. They state that their member institutions must “Ensure equitable quality education and lifelong learning for ALL by 2030” [5].

B. Justification of the Project

This study will be assessing the gender responsiveness of our curriculum in the institution that can help in increasing the achievement of students towards positive attitudes and motivations in dealing with the courses. Gender equality promotes the full human potential of the students and free equal dignity despite differences in gender. Gender equity can also promote equal benefits and responsibilities between men and women.

Results from studies in other countries show positive outcomes in improving the quality of education by applying a gender-sensitive curriculum (Akhigbe and Adeyemi, 2020 [4]; Acar-Erdol and Gozutok, 2018 [6]; Ozoji and Duru, 2018[7]). Here in our country, an institution applies the integration of Gender and Development in the classroom, and it shows positive engagement and enthusiasm of the students (Hernandez and Cudiamat, 2018) [3]. This is the reason why we need to assess the existing curriculum for us to be at par with the international standards based on the Sustainable Development Goal (SDG) 4 of UNESCO in the year 2030 [8].

C. Objectives of the Project

The aim of this study is to assess the gender responsiveness of the curriculum of the Physics for Technologists course at the Technological University of the Philippines as a basis for enrichment of the said course. The following are the specific objectives of this study:

- (1) Determine the perception of students and faculty of the extent of gender sensitivity of the Physics for Technologists curriculum.
- (2) Develop and proposed the basis of enrichment of gender-sensitive Physics for Technologists curriculum in the university.

D. Conceptual Paradigm

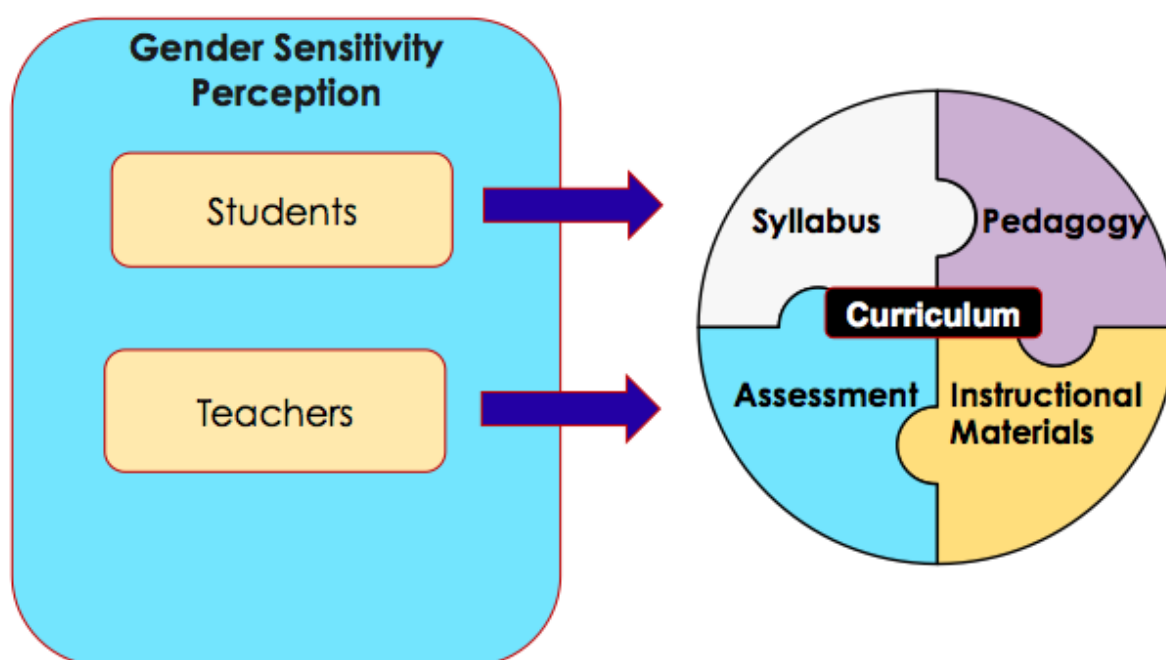


Figure 1. Conceptual Paradigm of the Study

II. METHODOLOGY

A. Research Design

This study is exploratory action research that is focused on the assessment of the gender sensitivity of the existing Physics for Technologists curriculum in one of the state universities in our country. A mixed method research design is selected as it is deemed suitable in for planning, interpreting, or contextualizing quantitative findings (Creswell, 2003) [9]. Mixed method design used in this study is the concurrent triangulation design. It is characterized by the collection of both quantitative and qualitative data. The quantitative data in this study will come from the results of surveys from students and faculty that are involved in the said curriculum. On the other hand, the qualitative data will be gathered from the survey for teachers. Although priority is given to the quantitative results, qualitative findings will be used to corroborate the results.

B. Research Setting

This study is characterized as mixed method research based on quantitative and qualitative data collected from selected students and faculty of the Technological University of the Philippines. The quantitative data will originate from a standardized survey of 83 college students who are taking Physics for Technologists subjects. Regarding the sex, the percentage of male students is considered higher than that of the female percentage. Students will be informed about the research and their participation in the survey must be voluntarily. The second part of quantitative data will be collected from the survey of the Physics instructors from the TUP College of Science who are teaching Physics for Technologists courses or having an experience in teaching the said course. This will be in line with the ethical principles of the university.

The qualitative data will be collected from the surveys of Physics instructors that are involved in this study.

C. Research Instrument

For this study, the researchers will use a mixed-method approach that includes a survey questionnaire to gather both qualitative and quantitative data about the perceptions of the students and faculty toward the extent of gender sensitivity in the Physics for Technologists course curriculum. The survey questionnaire will be a 5-point Likert scale with items designed to gain insights about the students' and teachers' observance of gender sensitivity as well as the extent of gender sensitivity across the different components of the existing curriculum such as the syllabi, the instruction, the instructional materials, and the assessments. The said questionnaire, which will be adapted from existing gender-sensitivity instruments, will be modified by the author to be assured of its alignment to the purpose of the study. This questionnaire is in reference to the instrument used by the University of Fribourg [10] for measuring gender equality in the curriculum [Cornbleth, C. (1984) [11]; Dehler et. al (2019) [12]; Grossman et. al. (1994) [13]; Howie et. al (2002) [14]]. The interview questions are intended to gain a better understanding of how students and professors feel about the gender sensitiveness of the current curriculum.

The research instrument used by this study has four (4) components in the educational spectrum, which are the learning materials, didactics, learning experience, and subject matter.

To facilitate the interpretation of the results for respondents' assessment of their pedagogical practices, the following mean ranges with their corresponding interpretations were used:

Scale	Mean Ranges	Verbal Interpretation
4	3.51 – 4.00	Highly Applied (HA)
3	3.01 – 3.50	Mostly Applied (MA)
2	2.01 – 3.00	Applied (A)
1	1.01 – 2.00	Slightly Applied (SA)
0	0.01 – 1.00	Not Applied (NA)

The gender-sensitive teaching in Physics for Technologists was classified, presented, and interpreted based on the rating below:

Scale	Rating Ranges	Verbal Interpretation
5	4.51 – 5.00	Excellent (E)
4	3.51 – 4.50	Very Good (VG)
3	2.51 – 3.50	Good
2	1.51 – 2.50	Fair
1	1.00 – 1.50	Poor

After careful reviews of different kinds of literature, the researcher came up with an 18-item questionnaire to reveal the respondents' personal assessment of gender-sensitive teaching of the said curriculum. To ensure the instrument's validity and reliability, the researcher sought the assistance of three experts in the field of educational research. The obtained 0.9084 alpha coefficient suggests that the instrument was highly reliable. Below is the summary of the Cronbach alpha values, which were computed from Wessa P. (2021) as an online statistical platform [15].

Table 1: Summary of the value of Cronbach alpha of the survey questionnaire of this study

Number of Respondents (N)	Number of items (n)	Cronbach Alpha (α)
83	18	0.9084

D. Procedure

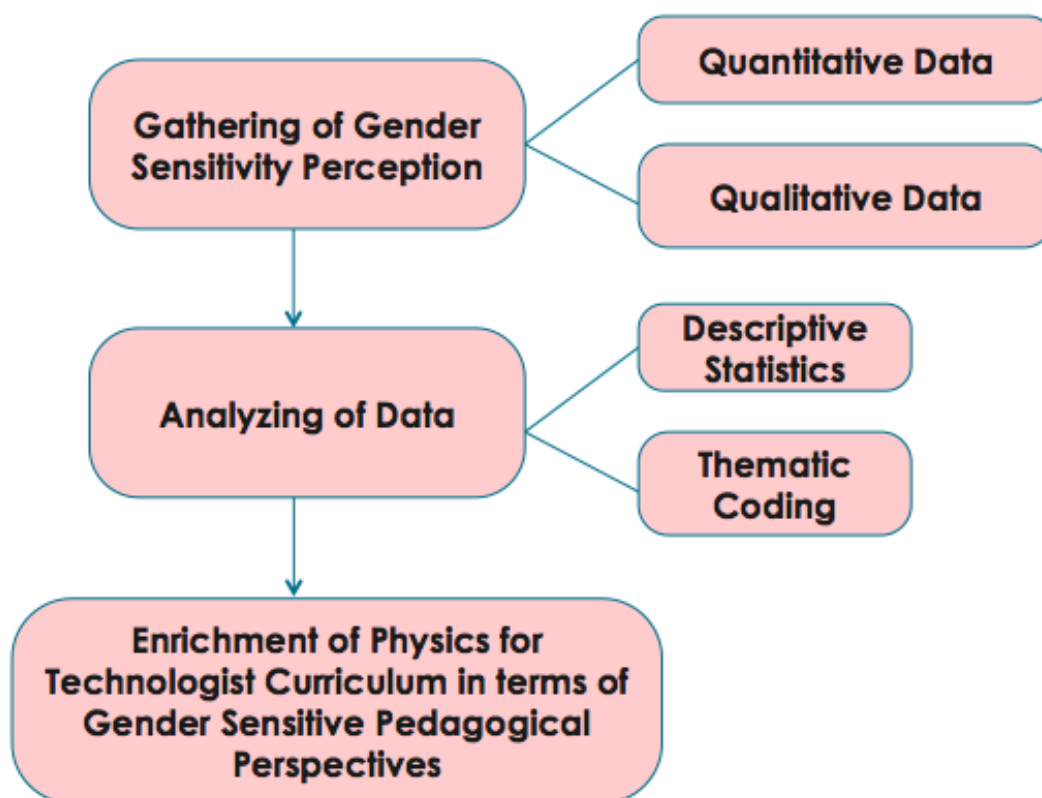


Fig. 2 Research Methodology

A letter requesting a permit to conduct a survey and semi-structured interviews will be drafted by the researchers. The necessary signatures of the institutional administration will be secured before the survey is administered to the students. The survey will be administered online and will be coursed through the professors in the Physics Department who have been given Physics for Technologists load or have experienced teaching the said course. The respondents are going to be given an orientation on their role in the research process and will be assured of data privacy and confidentiality.

Similarly, the link to the survey for the educators will be sent to all the faculty in the Physics Department. Those who have current Physics for Technologists loads as well as those who have had experience handling Physics for Technologists classes will be encouraged to participate in the data gathering.

E. Data Analysis

The quantitative data will be collected from the survey responses of the students and the faculty. Mean scores and standard deviations (SD) will be calculated for each subscale to determine the extent of the gender sensitivity of the components of the existing non-STEM Physics for Technologists curriculum as perceived by the students and the faculty. The overall mean score and SD will also be calculated to determine the extent of gender sensitivity in general.

The qualitative data, on the other hand, will be gathered from the survey questionnaire conducted for the students and the faculty. The essay answered by the students and faculty will be transcribed and then coded. The themes will then be identified from the codes to support the quantitative data on the overall perception of the academic community on the gender sensitivity of the Physics for Technologists curriculum.

III. RESULTS AND DISCUSSION

A. Gender Sensitive Pedagogical Practices based on the Students' Perspective

Based on the data obtained, four tables and one graphical representation were presented in this study. The results are organized relative to the specific problem formulated by the researcher.

Table A.1 shows the gender-sensitive teaching pedagogical practices in terms of learning materials. A mean of 3.33 shows that the students learning materials are adjusted for male and female students based on their values, principles, and experiences. This shows that teachers applied gender-sensitive materials in their lessons. In addition to this, males and females connoted appear equally and with the same importance in the learning materials. However, students observed that educators must improve on including male and female persons in their examples, pictures, and other representations in the lesson (3.20). According to Olinghouse (2008) [16], to effectively teach students, educators need to bring out a unique background, set of skills, and educational needs of the students by including representation of their gender role in the classroom. In general, the table shows that components of gender-sensitive teaching in terms of learning materials are mostly applied (3.26). Gender equality because of teaching and learning, as well as the school's socialization process, must be part of any good curriculum (UNESCO, 2009) [5]. Gender equality should be an interdisciplinary topic that educators can explore within the framework of their subject, fighting prejudice and advocating for more gender-inclusive options (Eurydice, 2010) [17].

Table A.1: gender-sensitive pedagogical practices in terms of learning materials

Code	Statements As a student, I observed that ...	Mean	SD	VI
S1.1	Spoken and written language uses in the class either gender-neutral or male and female forms.	3.29	0.71	MA
S1.2	Male and female connoted appear equally often and with same importance.	3.33	0.78	MA
S1.3	Male and female persons appear in the material (photos, examples, pictures) to the same extent.	3.20	0.79	MA
S1.4	Male and female persons are presented in the material (photos, examples, pictures) at the same hierarchical levels and in non-stereotypic roles.	3.22	0.77	MA
Overall		3.26	0.76	MA

On the other hand, table A.2 presents the respondents' assessments on gender-sensitive pedagogical practices in terms of didactics. As reflected in the said table, the students highly observed that their teachers give equally intensive and constructive feedback to male and female students (3.61). Moreover, these results also suggest that educators who handled the said course give positive feedback. According to Piccinin (2003) [18], giving constructive feedback will motivate students and promote learning in the classroom. Students observed that educators have the least in reinforcing stereotypic behavior of the students (3.20). Generally, the table shows that the respondents observed that gender-sensitive in the curriculum in terms of didactics is mostly applied (3.40). This indicates that they can recognize and emphasize gender domains in their teaching. According to Grace (2009) [19], Teachers must focus on each individual learner's strengths and shortcomings to deliver gender-neutral class sessions. This is consistent to the study of Cabello, which states that teacher and student-respondents of Malvar Central School assessed gender is highly seen in didactics.

Table A.2: gender-sensitive pedagogical practices in terms of didactics

Code	Statements As a student, I observed that...	Mean	SD	VI
S2.1	The teacher addresses male and female students equally often and with equally stimulating demands.	3.46	0.79	MA
S2.2	The teacher equally takes on contributions from male and female students.	3.57	0.65	HA
S2.3	The teacher gives equally intensive and constructive feedback to male and female students.	3.61	0.62	HA
S2.4	In group tasks, each student takes various and non-stereotypic roles and functions.	3.34	0.72	MA
S2.5	The teacher reinforces the non-stereotypic behavior of students and regulates the stereotypic behavior of students.	3.20	0.84	MA
S2.6	Critical thinking is among the learning objectives and integrated into the teaching activities to enable detection and reflection of inequality.	3.36	0.71	MA
S2.7	Students reflect on their attitudes regarding gender equality and femininity/masculinity.	3.23	0.74	MA

Overall	3.40	0.72	MA
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The next result is table A.3, which presents the respondents' assessments on gender-sensitive pedagogical practices in terms of the organization of the learning experience. Based on the results, the respondents' equal exercises addresses both men and women to explain their thinking and reasoning (3.55). It shows that there is no gender bias in terms of delegating activities to the students that can strengthen gender mainstreaming in the course. The learning dynamics in the course is significantly shown in the result. This approach implies that educators encourage students to do activities without any judgment based on their gender. According to Franzoni (2009) [21], states that the education is effective if the students, teachers, and stakeholders are involved and participated actively. On the other hand, the lowest rating is the criterion where teachers have a least focus in giving examples of non-traditional male and female stereotypes (e.g., female soldier or a male nurse) (2.94). This is important to improve the diversity and promoting gender equality in the course. In general, the table presents that the respondents observed that pedagogical practices in terms of learning experience is mostly applied (3.28). Language is important in breaking the gender barriers in the organization like related classification, region, and location. Moreover, application of gender-neutral language in presenting sample problem can help the students feel that all of them are belong in the organization.

Table A.3 gender-sensitive pedagogical practices in terms of learning experience

Code	Statements	Mean	SD	VI
	As a student, I observed that the teacher...			
S3.1	gives exercises which address for both men and women to explain their thinking and reasoning.	3.55	0.63	HA
S3.2	challenges traditional male and female stereotypes when giving examples to students (e.g. a female soldier or a male nurse)	2.94	0.87	A
S3.3	presents sample problem that has female and male components.	3.19	0.76	MA
S3.4	utilizes gender neutral languages in the classroom activities.	3.42	0.61	MA
	Overall	3.28	0.72	MA

The last table for this section is table A.4, which presents the results for gender-sensitive pedagogical practices in terms of the subject matter. The respondents agreed that their teachers regularly check and verify the content that is appropriate for both male and female students (3.33). However, students observed that their teachers have least focus in adjusting the lesson that taken into consideration their maturity, prior experiences, and social value. The evaluation of content of the course can help to determine if the activities are appropriate in any gender. It is also important in checking the suitability and if these can provide the needs of the learners. According to Okongo et. al (2015) [22], The suitability and appropriateness of the learning material will help to promote inclusive education. In general, the components of pedagogical practices in terms of the subject matter are mostly applied in the course.

Table A.4 Gender Sensitive Pedagogical Practices in terms of the Subject Matter

Code	Statements	Mean	SD	VI
	As a student, I observed that the teacher...			
S4.1	incorporates the suitability of the lesson in male and female students.	3.30	0.73	MA
S4.2	regularly check and verify the content that is appropriate for both male and female students	3.33	0.75	MA
S4.3	adjust my lesson content taking into consideration my male and female students' maturity, prior experiences, and social value.	3.29	0.76	MA
	Overall	3.31	0.75	MA

Even though that all the educational spectrum that is involved in this study is mostly applied in the course. Most of the students are suggesting that the course involved in this study must have an improvement in terms of gender sensitive teaching. Based in Figure 3, Fifty-two percent (52%) of the respondents were agreed to this and forty-eight (48%) of the respondents are contented to the pedagogical practices of the course. The overall rating of the said course by the students is 4.22, which is considered as very good in the rating from the previous section of this study. This reflects those students observed high gender sensitive teaching in the course.

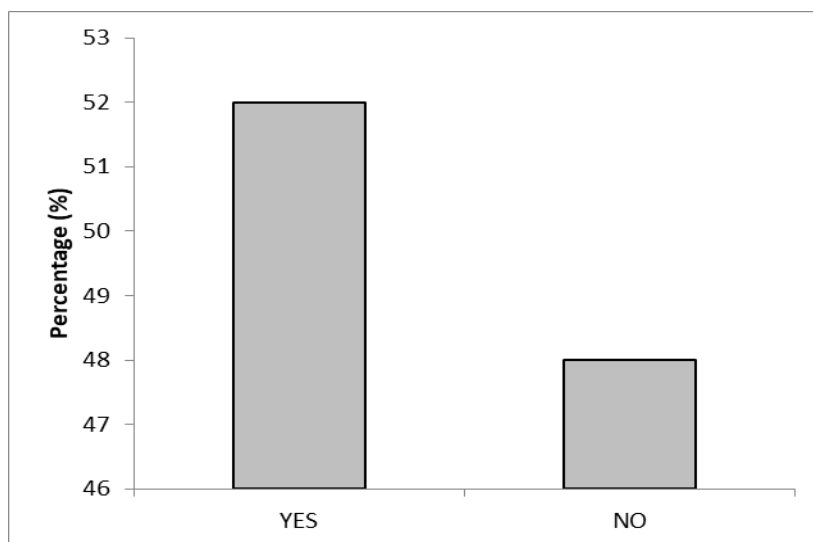


Fig. 3 Percentage of Students' Perception of the Enrichment of Physics for Technologists Curriculum

B. Gender Sensitive Pedagogical Practices based on the Teachers' Perspective

Based on the data obtained, four tables and one graphical representation were presented in this section. In addition to this, the qualitative data will be presented based on the response of teachers in the open-ended questions in the survey. The results are presented and organized relative to the specific problem formulated by the researcher.

The Table B.1 shows the gender sensitive teaching pedagogical practices in terms of learning materials. A mean of 3.23 and a standard deviation of 0.60 shows that the learning materials is adjusted for male and female student based on their values, principles, and experiences. This shows that teachers applied gender sensitive materials in their lessons. In addition to this, male and female connoted appear equally and with same importance in the learning materials. However, students observed that educators must improve on including male and female persons in their examples, pictures and other representations in the lesson (2.85). According to Kollmayer (2022) [26], implementing contents that is fair to both genders will promote gender-sensitive environment and will increase their motivation to excel in the classroom. In general, the table shows that components of gender-sensitive teaching in terms of learning materials are mostly applied (3.12). This result is consistent to the outcome of the survey for students in the same educational spectrum in this study.

Table B.1: gender-sensitive pedagogical practices in terms of learning materials

Code	Statements As a teacher, I...	Mean	SD	VI
T1.1	make sure that the Spoken and written language uses in the class either gender-neutral or male and female forms.	3.23	0.73	MA
T1.2	see to it that male and female connoted appear equally often and with same importance.	3.23	0.60	MA
T1.3	ensure that male and female persons appear in the material (photos, examples, pictures) to the same extent.	2.85	0.80	A
T1.4	see to it that male and female persons are presented in the material (photos, examples, pictures) at the same hierarchical levels and in non-stereotypic roles.	3.15	0.90	MA
Overall		3.12	0.76	MA

On the other hand, table B.2 presents the respondents assessments on gender sensitive pedagogical practices in terms of didactics. As reflected in the said table, the teachers give equally intensive and constructive feedback to male and female students (3.54). Moreover, this results also suggests that educators who handled the said course give positive feedback. According to Geysken (2012) [27], feedback is a learning tool that helps students see what they know and can do while also providing them with strategies for improving their performance, which is one of the most stressed functions. Another criterion that has a high rating is that respondents address male and female students equally stimulating demands. Teachers has least applying about reflection of students on their attitudes toward gender equality and femininity/masculinity (2.85). Generally, the table shows that the respondents observed that gender sensitive in the curriculum in terms of didactics is mostly applied (3.32).

Table B.2: gender-sensitive pedagogical practices in terms of didactics

Code	Statements As a teacher, I...	Mean	SD	VI
T2.1	see to it that I address male and female students equally often and with equally stimulating demands.	3.54	0.52	HA
T2.2	ensure that there are equal contributions from male and female students.	3.38	0.65	MA
T2.3	make sure that I provide equally intensive and constructive feedback to male and female students.	3.54	0.52	HA
T2.4	make sure that in group tasks each student takes various and non-stereotypic roles and functions.	3.38	0.87	MA
T2.5	make sure that I reinforce non-stereotypic behavior of students and regulates stereotypic behavior of students.	3.23	0.93	MA
T2.6	see to it that critical thinking is among the learning objectives and integrated in the teaching activities to enable detection and reflection of inequality.	3.31	0.95	MA
T2.7	make sure that Students reflect on their attitudes regarding gender equality and femininity/masculinity.	2.85	1.14	A
Overall		3.32	0.80	MA

The next result is table B.3, which presents the respondents assessments on gender sensitive pedagogical practices in terms of organization of the learning experience. Based on the results, the respondents' equal exercises which addresses for both men and women to explain their thinking and reasoning (3.38). On the other hand, the lowest rating is the criterion where teachers have a least focus in giving examples of non-traditional male and female stereotypes (e.g. female soldier or a male nurse) (2.62). Gender disparities in success expectations and values of specific tasks and domains were shown to be related to gender stereotypes given by parents and instructors [28][29]. That is why it's very important that we include gender equity in role, beliefs, and competency in our institution so that any students will not be limited on their chosen profession because of their gender. In general, the table presents that the respondents observed that pedagogical practices in terms of learning experience is mostly applied (3.04). This is also consistent to the result in table A.3, wherein students have similar perception with teachers in terms of learning experience in the course.

Table B.3 gender-sensitive pedagogical practices in terms of learning experience

Code	Statements As a teacher, I...	Mean	SD	VI
T3.1	give exercises which address for both men and women to explain their thinking and reasoning.	3.38	0.65	MA
T3.2	challenge traditional male and female stereotypes when giving examples to students (e.g. a female soldier or a male nurse)	2.62	1.04	A
T3.3	present sample problem that has female and male components.	3.00	1.00	A
T3.4	utilize gender neutral languages in the classroom activities.	3.15	0.80	MA
Overall		3.04	0.87	MA

The last table for this section is table B.4, which presents the results for gender sensitive pedagogical practices in terms of the subject matter. Teachers have a high consideration in preparing for their content in terms of maturity, experiences, and social value of their students (3.15). The least rating is checking and verifying the content that is appropriate for both male and female students (3.00). This is the reason why we need to apply gender mainstreaming in the course to promote inclusive education in our organization. This is consistent to the study of Kollmayer et. al (2018) [30], which suggest that one of the main focuses of making modules is to decrease the gender stereotypes of the learning materials that creates greater interest and motivation to the students. In general, the pedagogical practices of gender sensitivity in the subject matter are mostly applied (3.08). This is the reason that we need to summarize the results for students and teachers' response and rank these to provide a holistic point of view of their assessment for enrichment basis (see appendix A and B).

Table B.4 gender-sensitive pedagogical practices in terms of the subject matter

Code	Statements As a teacher, I...	Mean	SD	VI
T4.1	incorporate the suitability of the lesson in male and female students.	3.08	1.04	MA
T4.2	regularly check and verify the content that is appropriate for both male and female students	3.00	0.91	A
T4.3	adjust my lesson content taking into consideration my male and female students' maturity, prior experiences, and social value.	3.15	0.90	MA
Overall		3.08	0.95	MA

Even though most of the teachers agreed that the gender sensitive pedagogical practices employ in the course this will not be the basis of not enriching or improving the gender sensitivity of the said course. Based in Figure 4, seventy-seven percent (77%) of the respondents were suggesting for enriching the curriculum of the course and twenty-three (23%) of the respondents are contented to the pedagogical practices of the course. The overall rating of the said course by the teachers is 3.62, which is considered as very good in the rating from the previous section of this study. This reflect that teacher are applying high gender sensitive practices in the course.

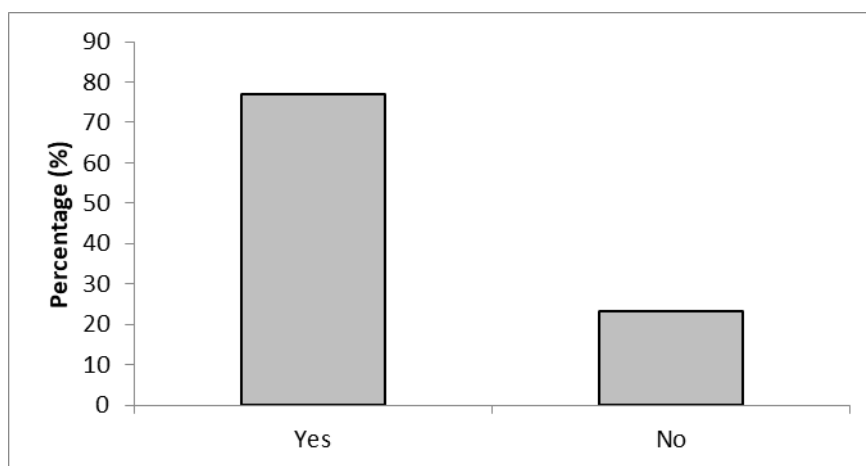


Fig. 4 Percentage of Teachers' Perception of the Enrichment of Physics for Technologists Curriculum

C. Qualitative Results of Teachers' Perception on Gender Sensitivity of the course.

Teachers' perception on gender-sensitive pedagogical practices were asked in the survey questionnaire and the need for the enrichment of the course. The analysis of the qualitative part of the study were obtained from the survey of thirteen educators who are currently handling or have experience in handling Physics for Technologists course. The major themes that emerged were gender sensitivity is not essential in the said course, equal treatment for students and promoting inclusive education.

The first open ended question that arises from this study is "What is your suggestion in having a gender sensitive teaching in Physics for Technologist subject that is not stated above?". Most of the respondents' state that all the components of a gender sensitivity of the course are stated in the questionnaire. However, one teacher (Teacher no. 6) states that:

"Gender should not be a basis in helping students learn in physics"

This answer is not consistent to the results of some studies (Akhigbe and Adeyemi, 2020 [4]; Acar-Erdol and Gozutok, 2018 [6]; Ozoji and Duru, 2018 [7]), where there is a positive outcome in improving the quality of education by applying a gender sensitive curriculum.

Then the researcher asked the respondents about the importance of gender sensitive pedagogical practices. Most of them answered that this is important specially in observing the rights of the students in the learning environment. On the other hand, one respondent (Teacher no. 2) states that:

"There are many factors in the teaching-learning process (in Physics). If gender sensitivity is one of them, assuming it really is, in my honest opinion, it will just minutely play a role."

The last open-ended question that is asked in the survey questionnaire is: "Do you think that there is a need for enrichment in the Physics for Technologist (PHYSTECH) subject based on gender sensitive teaching?". Respondents agreed that there is a need for the enrichment of the said course in terms of gender sensitive pedagogical practices in curriculum, content and learning materials. The following are some excerpts based on the results that are agreed for the enrichment of the course:

"Maybe it should be reflected in the OBE syllabus" – Teacher no. 4

"Because as a professor, I do not think about gender when I prepare for my lesson which is not right, so I have to be more attentive regarding that matter." – Teacher no. 5

"Gender-sensitivity is not yet reflected in the curriculum and in the activities and instructional materials." – Teacher no. 8

"Gender sensitive curriculum in physics is not fully implemented and adapted so there is a need of training and seminars in incorporating GAD in the" – Teacher no. 9

D. Proposed STAR Strategy for Enrichment Basis of Gender Sensitivity Pedagogical Practices of the Course

Because assessing gender-sensitive practices is an ongoing effort, the researcher developed an approach based on the findings of this study to help sustain and promote equality in the classroom. Following a thorough examination of the findings, the researcher devised an approach and framework, which is constructed as STAR, with the goal of producing gender awareness in the institution specified in the course that used in this study. The formulation of the framework was based on the philosophical and legal bases on the gender and development of the community gender needs of the institution. There are four components to ensure enrichment of gender sensitivity in pedagogical practices in Physics for Technologists curriculum. These are **Show** male and female persons in the material to the same extent; **Transform** traditional stereotypes to modern role in sample problems; **Attitudes** towards gender equality must be reflected in teaching and learning; **Regularly** check and verify the content for gender equality. Monitoring and evaluation processes will be used to track the project's implementation and outcomes in a methodical manner. The Figure 5 shows the STAR strategy for the conceptual framework of this study.

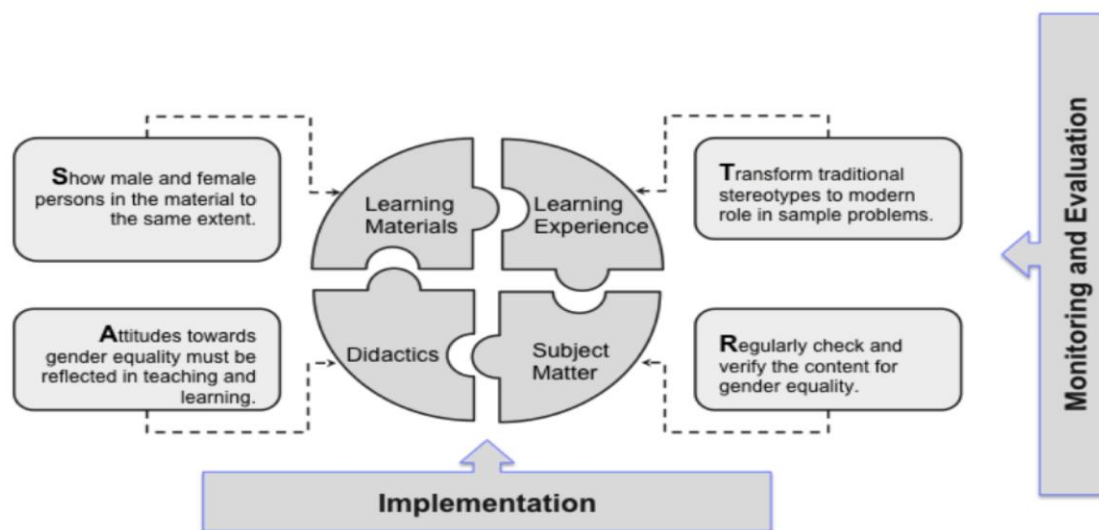


Figure 5: STAR Strategy Framework

Figure 5: STAR Strategy Framework

CONCLUSIONS

To close the gap, educators must become more aware of gender issues and reshape their ideas and practices to eradicate gender preconceptions. Educators that promote gender sensitivity responded to the needs of their students considering their maturity level. They act as a catalyst and promote the rights in the tertiary level. The results of the respondents' assessment on the gender sensitive pedagogical practices will help the researcher to formulate conceptual framework of STAR strategy. The rating that based on the results of this study reflect that educator have high integration of gender sensitivity in their pedagogy. Based on the cited results in the previous section, the researcher has chosen four domains for enrichment basis of the course in terms of the pedagogical practices, which are learning experiences, didactics, subject matter and learning materials.

The learning materials that will be used in the class must be evaluated wherein male and female persons involve must appear in equal extent. This can be done by the revisions of the modules, assessments, and presentations of the said course by incorporating male and female representations. The department head as well as the dean who are in-charge of the monitoring instruction may encourage all faculty members to integrate gender dimensions in their teaching practices. The sample problems that will be presented in class must have male and female components. Gender-neutral pronouns, according to Bojarska (2012) [23], allow teachers to communicate to and about students without making gender assumptions. The educators must also give examples from traditional stereotypes to modern role of any gender in our society (e.g. female driver, male designer). This can be incorporated to the learning resources of the course. For benchmarking purposes, they may also work with other higher educational institutions that have received GAD best practices award(s). The administration may also support additional gender-related lectures and training. Furthermore, the university's book review committee may approve gender-responsive textbooks, manuals, and other materials. According to Lualhati (2019) [24], administrators, faculty, and researchers can evaluate and monitor curriculum to promote gender awareness in instructional procedures. Faculty members might include gender in their course syllabus with specificity, such as outlining their desired learning outcomes in connection with enrichment of gender sensitivity of the course. They are also encouraged to adopt gender-neutral terminology in their classrooms to promote equal treatment of boys and girls. Attitudes towards the enrichment is important with students and educators' cooperation in the changing

mindset and reflecting values to promote gender equity [25]. The researcher's proposed STAR strategy may be taken into consideration by the relevant authorities for optimum implementation and actualization of this framework.

RECOMMENDATIONS

This study has some limitations and further improvements may suggest to the future researchers. This study was conducted at a single university with a small sample size, and this is one of the limitations of this research. As a result, the findings cannot be extrapolated to a larger population. As a result, additional research at various universities is suggested. Another idea is that future researcher can investigate the effectivity of applying gender sensitive curriculum in the said course. Furthermore, proposal and constructing gender sensitive course syllabus is also recommended.

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Appendix A

Code	Statements	Mean (Students)	Mean (Teachers)	Ave.	SD (Students)	SD (Teachers)	Ave.
S/T1.1	Spoken and written language uses in the class either gender-neutral or male and female forms.	3.29	3.23	3.26	0.71	0.73	0.72
S/T1.2	Male and female connoted appear equally often and with same importance.	3.33	3.23	3.28	0.78	0.60	0.69

*S/T1.3	Male and female persons appear in the material (photos, examples, pictures) to the same extent.	3.20	2.85	3.03	0.79	0.80	0.80
S/T1.4	Male and female persons are presented in the material (photos, examples, pictures) at the same hierarchical levels and in non-stereotypic roles.	3.22	3.15	3.19	0.77	0.90	0.83

*Criteria that are included with the lowest rating based on the Appendix B

Code	Statements	Mean (Students)	Mean (Teachers)	Ave.	SD (Students)	SD (Teachers)	Ave.
S/T2.1	see to it that I addresses male and female students equally often and with equally stimulating demands.	3.46	3.54	3.50	0.79	0.52	0.65
S/T2.2	ensure that there are equal contributions from male and female students.	3.57	3.38	3.48	0.65	0.65	0.65
S/T2.3	make sure that I provide equally intensive and constructive feedback to male and female students.	3.61	3.54	3.58	0.62	0.52	0.57
S/T2.4	make sure that In group tasks each student takes various and non-stereotypic roles and functions.	3.34	3.38	3.36	0.72	0.87	0.80
S/T2.5	make sure that I reinforces non-stereotypic behavior of students and regulates stereotypic behavior of students.	3.20	3.23	3.22	0.84	0.93	0.88
S/T2.6	see to it that critical thinking is among the learning objectives and integrated in the teaching activities in order to enable detection and reflection of inequality.	3.36	3.31	3.33	0.71	0.95	0.83
*S/T2.7	make sure that Students reflect on their attitudes regarding gender equality and femininity/masculinity.	3.23	2.85	3.04	0.74	1.14	0.94
Code	Statements	Mean (Students)	Mean (Teachers)	Ave.	SD (Students)	SD (Teachers)	Ave.
S/T3.1	give exercises which address for both men and women to explain their thinking and reasoning.	3.55	3.38	3.47	0.63	0.65	0.64
*S/T3.2	challenge traditional male and female stereotypes when giving examples to students (e.g. a female soldier or a male nurse)	2.94	2.62	2.78	0.87	1.04	0.96
*S/T3.3	present sample problem that has female and male	3.19	3.00	3.10	0.76	1.00	0.88

components.

S/T3.4	utilize gender neutral languages in the classroom activities.	3.42	3.15	3.29	0.61	0.80	0.70
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*Criteria that are included with the lowest rating based on the Appendix B

Code	Statements	Mean (Students)	Mean (Teachers)	Ave.	SD (Students)	SD (Teachers)	Ave.
S/T4.1	incorporate the suitability of the lesson in male and female students.	3.30	3.08	3.19	0.73	1.04	0.88
*S/T4.2	regularly check and verify the content that is appropriate for both male and female students	3.33	3.00	3.16	0.75	0.91	0.83
S/T4.3	adjust my lesson content taking into consideration my male and female students' maturity, prior experiences, and social value.	3.29	3.15	3.22	0.76	0.90	0.83

*Criteria that are included with the lowest rating based on the Appendix B

Appendix B
Ranking of the Criteria of Gender Sensitive Pedagogical Practices

Questions	Mean			SD		
	Students	Teachers	Average	Students	Teachers	Average
*S/T3.2	2.94	2.62	2.78	0.87	1.04	0.96
*S/T1.3	3.20	2.85	3.03	0.79	0.80	0.80
*S/T2.7	3.23	2.85	3.04	0.74	1.14	0.94
*S/T3.3	3.19	3.00	3.10	0.76	1.00	0.88
*S/T4.2	3.33	3.00	3.16	0.75	0.91	0.83
S/T1.4	3.22	3.15	3.19	0.77	0.90	0.83
S/T4.1	3.30	3.08	3.19	0.73	1.04	0.88
S/T2.5	3.20	3.23	3.22	0.84	0.93	0.88
S/T4.3	3.29	3.15	3.22	0.76	0.90	0.83
S/T1.1	3.29	3.23	3.26	0.71	0.73	0.72
S/T1.2	3.33	3.23	3.28	0.78	0.60	0.69
S/T3.4	3.42	3.15	3.29	0.61	0.80	0.70
S/T2.6	3.36	3.31	3.33	0.71	0.95	0.83
S/T2.4	3.34	3.38	3.36	0.72	0.87	0.80
S/T3.1	3.55	3.38	3.47	0.63	0.65	0.64
S/T2.2	3.57	3.38	3.48	0.65	0.65	0.65
S/T2.1	3.46	3.54	3.50	0.79	0.52	0.65
S/T2.3	3.61	3.54	3.58	0.62	0.52	0.57