

Culturally Responsive Pedagogy to Their Teaching Practices and Competence of Mathematics Teachers

Lheydette Meryll Lozano Mercado

Laguna State Polytechnic University Sta. Cruz Laguna 4009 PHILIPPINES

Email address: mercadolheydette@gmail.com

Abstract—This study examined the Culturally Responsive Pedagogy in relation to the teaching practices and competence of mathematics teachers. Specifically, it aimed to determine the level of Culturally Responsive Pedagogy among mathematics teachers in terms of cultural awareness, culturally relevant curriculum, culturally responsive assessment, differentiated instruction, and cultural reflection; the teaching practices of mathematics teachers in areas such as clear instruction, active engagement, feedback, reflection, and classroom management; their teaching competence concerning content knowledge, pedagogical knowledge, communication skills, and reflective practice; and the significant correlations between Culturally Responsive Pedagogy and both teaching practices and teaching competence of mathematics teachers. The study employed a descriptive-correlational research design involving 86 Mathematics teachers from elementary schools in the big school category, selected through purposive sampling. The research instrument used in this study was the researcher-made questionnaire using a 5-point Likert Scale. Descriptive and inferential statistical tools, including weighted mean, standard deviation, and Pearson product-moment correlation coefficient, were utilized for data analysis. Results revealed that teachers demonstrated a very high level of culturally responsive pedagogy across cultural awareness, culturally relevant curriculum, culturally responsive assessment, differentiated instruction, and cultural reflection. Teaching practices were also rated very high in clarity, active engagement, feedback, reflection, and classroom management. Similarly, teaching competence was found to be very high across content knowledge, pedagogical knowledge, communication skills, and reflective practice. A significant correlation between culturally responsive pedagogy, teaching practices, and teaching competence was revealed. A significant correlation was also found between culturally responsive pedagogy and both teaching practices, indicating that teaching competence is associated with both, leading to the rejection of the null hypothesis. These findings indicate that culturally responsive pedagogy enhances instructional effectiveness and teacher competence, thereby promoting inclusive, student-centered mathematics instruction. Based on the findings, it is recommended that mathematics teachers improve their culturally responsive teaching practices; they need to incorporate their students' culture into their lessons and structure classroom activities and assessments.

Keywords— Culturally responsive pedagogy, teaching practices, teaching competence, mathematics teachers.

I. INTRODUCTION

Culturally Responsive Education has long been recognized by the Philippine national policy. Indigenous Peoples' Education (IPEd) was created by the Department of Education to ensure that instruction and curriculum are suitable for local contexts and rooted in culture. This policy demonstrates a broader effort to align classroom practices with learners' identities and

community knowledge. Incorporating students' cultural backgrounds into teaching, adapting methods to address a variety of needs, and collaborating with families and communities have all advanced significantly.

Culturally Responsive Pedagogy (CPR) is an educational approach which aim is to improve academic achievement and advance equity by utilizing students' cultural backgrounds, languages, and experiences to create a more effective and meaningful learning environment. It entails developing a curriculum that represents other cultures and addresses social inequalities, and using pupils' current abilities as a basis for learning rather than focusing on perceived deficiencies.

Pedagogical competence in teaching mathematics requires a strong foundation in content knowledge and the ability to apply appropriate and effective instructional strategies that address learners' diverse needs. It is not only about mastering the subject matter but also about designing, implementing, and evaluating teaching methods that enhance meaningful learning. Culturally Responsible Pedagogy (CRP) can help teachers incorporate students' cultural backgrounds, lived experiences, and real-world contexts into the teaching of mathematical concepts, making abstract concepts more relatable and accessible.

The DepEd Order No. 32, s. 2015 and DepEd Order No. 21, s. 2019 serves as a policy-level legal bases that reinforce cultural sensitivity, inclusivity, and contextualized teaching. On the other hand, such modalities not only contribute to increased engagement and active involvement but also strengthen critical thinking and analytical skills. Understanding this alignment yields practical results on the possibility of increasing learners' mathematical understanding, performance, and overall academic achievement through the harmonious combination of teacher knowledge and CRP-informed interventions.

The researcher seeks to explore the relationship between the Culturally Responsive Pedagogy and the teaching practices and competence of mathematics teachers in the sub-office of Santa Cruz, Laguna. It aims to support the development of more responsive, equitable, and meaningful mathematics education in the Philippines by examining how CRP affects teaching competency.

1.1 Statement of the Problem

Problem/s which were addressed by the research

This study aimed to determine the culturally responsive pedagogical practices and competence of mathematics teachers.

Specifically, this study sought to answer the following questions:

1. What is the level of Culturally Responsive Pedagogy of Mathematics teachers in terms of:
 - 1.1. Cultural Awareness
 - 1.2. Culturally Relevant Curriculum
 - 1.3. Culturally Responsive Assessment
 - 1.4. Differentiated Instruction and
 - 1.5. Cultural Reflection?
2. What is the level of teaching practices of mathematics teachers in terms of:
 - 2.1. Clear Instruction
 - 2.2. Active Engagement
 - 2.3. Feedback
 - 2.4. Reflection, and
 - 2.5 Classroom Management?
3. What is the level of teaching competence of mathematics teachers in terms of:
 - 3.1. Content Knowledge
 - 3.2. Pedagogical Knowledge
 - 3.3. Communication Skill, and
 - 3.4. Reflective Practice?
4. Is there a significant correlation between the Culturally Responsive Pedagogy and the teaching practices of mathematics teachers?
5. Is there a significant correlation between the Culturally Responsive Pedagogy and the teaching competence of mathematics teachers?

II. METHODOLOGY

The study employed a descriptive-correlational research design involving 86 Mathematics teachers from elementary schools in the big school category, selected through purposive sampling. The research instrument used in this study was the researcher-made questionnaire using a 5-point Likert Scale. Descriptive and inferential statistical tools, including weighted mean, standard deviation, and Pearson product-moment correlation coefficient, were utilized for data analysis.

III. RESULTS AND DISCUSSION

This part discusses the presentation, analysis, and interpretation of the data collected, which shows a significant relationship between Culturally Responsive Pedagogy and the teaching practices and competence of mathematics teachers.

Culturally Responsive Pedagogy of Mathematics Teachers

In this study, the term refers to an educational approach that acknowledges, values, and incorporates students' cultural origins into teaching practices to foster fairness, inclusivity, and meaningful learning. The researcher used this to determine its correlation to teaching practices and competencies of the mathematics teachers.

The level of culturally responsive pedagogy among mathematics teachers, in terms of cultural awareness, culturally relevant curriculum, culturally responsive assessment, differentiated instruction, and cultural reflection, was analyzed statistically using means and standard deviations.

Table 1 shows the level of culturally responsive pedagogy of mathematics teachers in terms of cultural awareness. Including several indicators with their corresponding mean, standard deviation, and remarks.

The results revealed that all mathematics teachers show a high level of cultural awareness. There was also a high level of agreement among the teachers that they recognize their students' cultures and traditions; value cultural diversity in their classrooms; and utilize culturally responsive teaching techniques based on their students' diverse cultural backgrounds. In addition, teachers strongly agreed that they consider students' cultural identities to gauge how they learn and participate in the classroom, and to promote cultural awareness to create inclusive and respectful learning environments for all students.

Table 1. Level of Culturally Responsive Pedagogy of Mathematics Teachers in Terms of Culturally Awareness

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...identify the culture and traditions of my students	4.69	0.47	Strongly Agree
...appreciate cultural differences among people in classroom.	4.73	0.45	Strongly Agree
...apply teaching strategies that are responsive to and considerate of students' cultural backgrounds	4.74	0.44	Strongly Agree
...consider students cultural identities when analyzing their learning style and participation.	4.77	0.42	Strongly Agree
...promote cultural awareness to create a respectful and inclusive learning environment.	4.71	0.48	Strongly Agree
Weighted Mean	4.73		
SD	0.45		
Verbal Interpretation	Very High		

The mean of 4.73 with a standard deviation of 0.45 indicates that all mathematics teachers demonstrate a very high level of culturally appropriate pedagogy in terms of cultural awareness.

In summary, based on these findings, all mathematics teachers demonstrate a high level of cultural awareness in the classroom. The high mean scores across all dimensions indicate that teachers are aware of their students' cultural diversity and implement strategies that foster cultural awareness, thereby creating an inclusive and respectful learning environment that facilitates student engagement, participation, and learning in mathematics.

Table 2 presents the level of culturally responsive pedagogy of mathematics teachers in terms of culturally responsive curriculum.

The results reveal that mathematics teachers demonstrate a very high level of culturally responsive pedagogy in terms of culturally relevant curriculum ($M = 4.76$, $SD = 0.42$). The high mean indicates strong agreement among teachers in integrating students' cultural backgrounds into instruction, valuing cultural diversity as a classroom resource, exploring students' cultural practices and traditions, and respecting their diverse cultural identities, while the low standard deviation reflects consistency in responses. This suggests that teachers

effectively embed cultural diversity into their lessons, making learning more meaningful and engaging.

Table 2. Level of Culturally Responsive Pedagogy of Mathematics Teachers in Terms of Culturally Relevant Curriculum

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...explain the importance of integrating students' cultural backgrounds into instruction.	4.70	0.46	Strongly Agree
...respect the diverse cultural identities of my students.	4.83	0.38	Strongly Agree
...examine how cultural differences affect students' learning styles.	4.71	0.48	Strongly Agree
...value cultural diversity as a resource in the classroom.	4.78	0.42	Strongly Agree
...explore the cultural practices and traditions of my students.	4.78	0.42	Strongly Agree
Weighted Mean	4.76		
SD	0.42		
Verbal Interpretation	Very High		

Table 3 presents the level of culturally responsive pedagogy among mathematics teachers in culturally responsive assessment, including several indicators with their corresponding means, standard deviations, and remarks.

The findings show a very high level of culturally responsive pedagogy in terms of assessment ($M = 4.68$, $SD = 0.55$). This means that mathematics teachers have a strong agreement to design assessment tools that accommodate students' cultural backgrounds; use various criteria to evaluate students' strengths; and provide ways for students to demonstrate their learning. In the same way, mathematics teachers agreed to avoid assessment practices that can disadvantage students from certain cultural groups and to deliver culturally sensitive feedback. Although the standard deviation is slightly higher, indicating some variation, the overall high mean confirms that teachers apply inclusive and fair assessment practices. This implies that teachers provide multiple opportunities for students to demonstrate learning, reducing cultural bias.

Table 3. Level of Culturally Responsive Pedagogy of Mathematics Teachers in Terms of Culturally Responsive Assessment

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...design assessment tools that accommodate students' cultural backgrounds.	4.70	0.55	Strongly Agree
...provide multiple ways for students to demonstrate their learning.	4.69	0.51	Strongly Agree
...avoid assessment practices that can be disadvantageous to students belonging to certain cultural groups.	4.65	0.55	Strongly Agree
...evaluate students according to various criteria which are able to show their strengths.	4.70	0.51	Strongly Agree
...deliver culturally sensitive feedback to guide student learning.	4.65	0.61	Strongly Agree
Weighted Mean	4.68		
SD	0.55		
Verbal Interpretation	Very High		

Table 4 presents the level of culturally responsive pedagogy among mathematics teachers in terms of differentiated instructions.

Table 4. Level of Culturally Responsive Pedagogy of Mathematics Teachers in Terms of Differentiated Instruction

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...adapt instructional practices to accommodate the needs of students.	4.66	0.50	Strongly Agree
...select different learning resources that are appropriate to different learners.	4.76	0.43	Strongly Agree
...use flexible grouping strategies to support collaborative learning.	4.74	0.44	Strongly Agree
...modify lessons to suit varying student abilities.	4.71	0.51	Strongly Agree
...offer student options in the process of showing their knowledge.	4.64	0.53	Strongly Agree
Weighted Mean	4.70		
SD	0.47		
Verbal Interpretation	Very High		

The results indicate a very high level of differentiated instruction ($M = 4.70$, $SD = 0.47$). Teachers consistently adapt their strategies to meet students' diverse needs; use flexible grouping strategies to support collaborative learning; modify lessons to suit to the needs of the students; offer student options to showcase their knowledge; and adapt instructional practices to accommodate the needs of students. This suggests that instruction is flexible and responsive, promoting inclusive learning environments.

Table 5 illustrates the level of culturally responsive pedagogy of mathematics teachers in relation to cultural reflection.

Table 5. Level of Culturally Responsive Pedagogy of Mathematics Teachers in Terms of Cultural Reflection

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...examine how my own cultural background affects my teaching practices.	4.70	0.49	Strongly Agree
...evaluate the representation of different cultures by my teaching materials.	4.65	0.48	Strongly Agree
...adjust classroom practices to align with the cultural values and traditions of my students.	4.65	0.48	Strongly Agree
...consider cultural differences when addressing the needs and behaviors of students.	4.64	0.53	Strongly Agree
...monitor classroom interactions to promote inclusiveness and respect for all cultures.	4.76	0.43	Strongly Agree
Weighted Mean	4.68		
SD	0.48		
Verbal Interpretation	Very High		

The findings reveal a very high level of cultural reflection ($M = 4.68$, $SD = 0.48$). Mathematics teachers demonstrate strong agreement with their own cultural perspectives and adjust their practices accordingly; monitor inclusiveness and respect for all cultures; examine how cultural background affects their teaching practices; and consider cultural differences in addressing the needs and behavior of the

students. This indicates that reflective teaching contributes to inclusivity and continuous improvement.

The results concerning the case of culturally responsive pedagogy in mathematics teachers in the context of cultural reflection indicate that those mathematics teachers who are actively involved in the process of cultural reflection are more likely to design culturally responsive and inclusive learning environments.

Teaching Practices of Mathematics Teachers

In this study, the term refers to the observable methods, actions, and approaches educators use in the classroom to present lessons, oversee students, and achieve teaching objectives.

The level of teaching practices of mathematics teachers in terms of clear instruction, active engagement, feedback, reflection and classroom management was treated statistically using mean and standard deviation.

Table 6 shows the level of teaching practices of mathematics teachers in terms of clear instruction.

Table 6. Level of Teaching Practices of Mathematics Teachers in Terms of Clear Instruction

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...explain step by step instructions to make lessons clear.	4.78	0.42	Strongly Agree
...state clear learning objectives of my students.	4.77	0.42	Strongly Agree
...simplify complex concepts in basic and comprehensible ways.	4.69	0.47	Strongly Agree
...check students' comprehension before proceeding to the next lesson.	4.81	0.39	Strongly Agree
...illustrate difficult ideas using appropriate examples.	4.76	0.48	Strongly Agree
Weighted Mean	4.76		
SD	0.44		
Verbal Interpretation	Very High		

The results show a very high level of clear instruction ($M = 4.76$, $SD = 0.44$). Teachers consistently provide clear explanations and structured lessons. Mathematics teachers strongly agree to check students' comprehension before proceeding to the next lesson; explain step-by-step instructions to make lessons clear; simplify complex concepts to basic concepts; state clear learning objectives; and illustrate difficult ideas with appropriate examples. This suggests that clarity is a strong component of teaching practices.

Table 7 presents the level of active engagement in teaching practices among mathematics teachers.

The findings revealed a very high level of active engagement ($M = 4.77$, $SD = 0.46$). Teachers frequently use interactive strategies that promote student participation. The mathematics teachers show mark agreement to encourage students to discuss their questions and ideas; facilitate collaborative learning; apply interactive activities to hold students active; design learning tasks that involve participation of students; and involve students in decision-making related to classroom learning activities. This implies that classrooms are dynamic and learner-centered.

Table 7. Level of Teaching Practices of Mathematics Teachers in Terms of Active Engagement

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
... use interactive activities to keep students engaged.	4.77	0.48	Strongly Agree
...encourage students to discuss their questions and ideas.	4.80	0.43	Strongly Agree
...design learning tasks which involve the participation of students.	4.76	0.48	Strongly Agree
...facilitate collaborative learning through group work activities.	4.79	0.41	Strongly Agree
...involve students in decision-making related to classroom learning activities.	4.73	0.50	Strongly Agree
Weighted Mean	4.77		
SD	0.46		
Verbal Interpretation	Very High		

Table 8 illustrates the level of feedback practices among mathematics teachers.

Table 8. Level of Teaching Practices of Mathematics Teachers in Terms of Feedback

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...provide timely feedback on students' performance.	4.66	0.52	Strongly Agree
...deliver constructive feedback to support student improvement.	4.72	0.48	Strongly Agree
...acknowledge students' strengths during the feedback.	4.74	0.44	Strongly Agree
...encourage self-reflectiveness with students.	4.74	0.46	Strongly Agree
...reinforce learning through positive and motivating feedback.	4.73	0.45	Strongly Agree
Weighted Mean	4.72		
SD	0.47		
Verbal Interpretation	Very High		

The overall mean of 4.72, with a standard deviation of 0.47, is verbally interpreted as very high. Teachers have a consistent agreement to provide timely, constructive feedback; deliver feedback that supports student improvement; acknowledge students' strengths during feedback; encourage self-reflection with students; and reinforce learning through positive, motivating feedback. This indicates that feedback is effectively integrated into teaching.

Table 9 the level of mathematics teachers' teaching practices in terms of reflection.

Table results shows that mathematics teachers exhibit a very high reflective teaching practice ($M = 4.72$, $SD = 0.49$). The ratings for all indicators were Strongly Agree, indicating that the teachers consistently involve students in reflecting on their learning experiences, progress, and goal-setting based on those reflections. Also, teachers actively use teacher reflection to enhance their personal teaching practices and promote reflective practices such as journaling. In summary, the findings indicate that reflection is closely embedded in teaching and learning processes, and it helps to sustain the improvement of students and teachers.

Table 9. Level of Teaching Practices of Mathematics Teachers in Terms of Reflection

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...guide students to consider learning experiences.	4.71	0.55	Strongly Agree
...provide opportunities for students to assess their progress.	4.76	0.43	Strongly Agree
...encourage journaling or other reflections in the classroom.	4.70	0.49	Strongly Agree
...use student reflections improve my teaching practices.	4.76	0.46	Strongly Agree
...assist students in setting goals which are based on their reflections.	4.70	0.53	Strongly Agree
Weighted Mean	4.72		
SD	0.49		
Verbal Interpretation	Very High		

Table 10 illustrates the level of teaching practices of mathematics teachers in terms of classroom management.

Table 10. Level of Teaching Practices of Mathematics Teachers in Terms of Classroom Management

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...establish clear classroom rules and expectations.	4.80	0.40	Strongly Agree
...apply positive discipline strategies in managing behavior.	4.73	0.50	Strongly Agree
...create positive learning environment that is safe and respectful.	4.77	0.42	Strongly Agree
...manage instructional time effectively during lessons.	4.70	0.51	Strongly Agree
...resolve conflicts in the classroom fairly and consistently.	4.72	0.50	Strongly Agree
Weighted Mean	4.74		
SD	0.47		
Verbal Interpretation	Very High		

The findings indicate that the classroom management practices portrayed by mathematics teachers are very high, with an overall weighted mean of 4.74 (SD = 0.47). This implies that the teachers always use effective classroom management strategies when teaching.

Among the indicators, creating clear classroom rules and expectations received the greatest mean, implying that teachers place significant attention on establishing clear guidelines to ensure order and foster a well-organized learning process. This is followed by the establishment of a safe, respectful learning environment and the implementation of positive disciplinary measures to address behavior, indicating that teachers are dedicated to fostering a positive, respectful classroom. In the meantime, the fair and consistent resolution of classroom conflicts and the effective use of instructional time during lessons also received high ratings, indicating that teachers could control the classroom and make the most of learning time.

On the whole, the results suggest that mathematics educators successfully use classroom management strategies that facilitate the organized, respectful and conducive learning environment among students.

Teaching Competence of Mathematics Teachers

In this study, it pertains to the comprehensive capacity of educators to successfully combine knowledge, skills, values, and attitudes when providing instruction that promotes student learning and growth.

The level of teaching competence of mathematics teachers in terms of content knowledge, pedagogical knowledge, communication skills, and reflective practice was analyzed statistically using means and standard deviations.

Table 11 shows the level of mathematics teachers' teaching competence in terms of content knowledge. The findings indicate that mathematics teachers possess very high competence in content knowledge, as indicated by an overall weighted mean of 4.76 (SD = 0.44). This implies that teachers are highly proficient in the subject matter and will always put their knowledge to good use when teaching mathematics.

Table 11. Level of Teaching Competence of Mathematics Teachers in Terms of Content Knowledge

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...demonstrate competency in the area I teach.	4.76	0.43	Strongly Agree
...update my content knowledge based on current trends on my subject.	4.77	0.42	Strongly Agree
...relate lesson content with real-life situations.	4.77	0.48	Strongly Agree
...integrate interdisciplinary knowledge into my teaching.	4.73	0.45	Strongly Agree
...present proper and current information in teaching.	4.76	0.43	Strongly Agree
Weighted Mean	4.76		
SD	0.44		
Verbal Interpretation	Very High		

In general, the results suggest that mathematics teachers possess a high level of content mastery, which can be applied to effective teaching and enhanced learning experiences for students.

The indicators, updating content knowledge in accordance with the current trends in the subject and relating lesson content to real-life situations (M = 4.77, SD = 0.48) received the highest mean scores, which means that teachers are actively engaged in the improvement of their subject knowledge and make mathematics more meaningful through connecting the lessons with real-life situations. Also, competency in the field they teach and the careful delivery of appropriate, up-to-date information in teaching were highly rated areas, which show that teachers are very careful with the information they provide.

On the other hand, the interdisciplinary area of knowledge in teaching, which is a bit lower than the other indicators, was rated as strongly agree, indicating that teachers can introduce the idea of interdisciplinary knowledge to improve students' understanding of mathematics.

Table 12 shows the level of pedagogical knowledge among mathematics teachers.

Some of the indicators, the application of appropriate instructions relevant to the lesson and consistency of lessons with the established learning standards, received the highest mean scores, showing that teachers make sure that their instructional methods are not incorrect and do not contradict

the educational standards. This indicates their planning and execution of well-organized lessons that contribute to students' learning goals. Moreover, the ability to simplify complicated concepts using effective methods and to change teaching methods depending on the students learning styles was also rated high, implying that the teachers adopt various instructional methods in order to support the needs of the students and also to increase their understanding of mathematical concepts. In the meantime, the use of technology to enhance learning, though rated slightly lower, received a strong agreement rating, thus demonstrating that teachers use technological devices to facilitate and enrich the learning process.

The findings show that the mathematics teachers have a very high degree of pedagogical competence with a total weighted mean of 4.73 (SD = .49). This implies that the teacher can use appropriate teaching plans and instructions to facilitate effective learning in mathematics.

Table 12. Level of Teaching Competence of Mathematics Teachers in Terms of Pedagogical Knowledge

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...apply suitable instructions applicable to the lesson.	4.76	0.46	Strongly Agree
...adjust teaching approaches based on students' learning styles.	4.72	0.48	Strongly Agree
...incorporate the use of technology to improve learning.	4.70	0.55	Strongly Agree
...utilize effective techniques in order to simplify complex ideas.	4.73	0.47	Strongly Agree
...align my lessons with establish learning standards.	4.76	0.48	Strongly Agree
Weighted Mean	4.73		
SD	0.49		
Verbal Interpretation	Very High		

Overall, the results suggest that mathematics educators are well-equipped with pedagogical knowledge and have the capacity to provide effective learning experiences, adapt teaching methods to suit student needs, and encourage meaningful learning activities in mathematics classrooms.

Table 13 presents the level of teaching competence in mathematics, focusing on communication skills.

Table 13. Level of Teaching Competence of Mathematics Teachers in Terms of Communication Skill

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...communicate effectively with my students.	4.73	0.41	Strongly Agree
...listen to the concerns and ideas of students.	4.77	0.50	Strongly Agree
...use language that the students can easily understand.	4.77	0.48	Strongly Agree
...encourage open and respectful classroom interaction.	4.84	0.37	Strongly Agree
...employ appropriate verbal and non-verbal communication skills.	4.78	0.42	Strongly Agree
Weighted Mean	4.79		
SD	0.44		
Verbal Interpretation	Very High		

The results revealed that that cultural awareness had an approximately moderate to very strong positive relationship between every one of the teacher effectiveness measures; the strongest correlations were in the area of providing feedback ($r = 0.65$, $p < 0.001$), providing clear instruction ($r = 0.64$, $p < .001$), and active participation ($r = 0.63$, $p < .001$). The correlations with providing classroom management ($r = 0.53$, $p < .001$) and using reflection ($r = 0.51$, $p < .001$) were slightly lower but still statistically significant. This supports the conclusion that the more culturally aware a teacher is, the higher the quality of teaching across a variety of areas.

All indicators were rated Strongly Agree, indicating consistency in communication practices. Some of the items with the highest mean include encouraging open and respectful classroom interaction, indicating that teachers highly encourage a positive, participatory learning environment. Their responsiveness and clarity in instruction stem from their ability to listen to students' concerns and use understandable language. In the meantime, effective communication and the use of verbal and non-verbal communication skills confirm once more that the teachers have the necessary communication skills that can be used in successful teaching.

In general, the standard deviations are low, and it implies that there is consistency in responses and there are common perceptions of the respondents towards the strong communication skills of teachers. These findings suggest that effective communication is a major strength of Mathematics teachers, and therefore, leads to improved classroom interaction and comprehension.

Table 14 shows the level of teaching competence in terms of reflective practice.

Table 14. Level of Teaching Competence of Mathematics Teachers in Terms of Reflective Practice

Statement	MEAN	SD	REMARKS
As a teacher, I ...			
...analyze my teaching practices to identify areas for improvement.	4.83	0.41	Strongly Agree
...seek feedback on my teaching practices by colleagues and students.	4.72	0.48	Strongly Agree
...documents my professional growth and development.	4.71	0.48	Strongly Agree
...assess my teaching effectiveness based on students' learning outcomes.	4.66	0.57	Strongly Agree
...engage in lifelong learning as a way of self-development.	4.76	0.46	Strongly Agree
Weighted Mean	4.73		
SD	0.48		
Verbal Interpretation	Very High		

Even though the lowest mean was obtained, the method of evaluating teaching effectiveness based on student outcomes is still within the range of Strongly Agree, which demonstrates the fact that the concept of using student performance as a reflection tool is actively employed by teachers. The comparatively small standard deviations also indicate that the respondents were consistent in their responses, supporting the idea that reflective practice is a routine and enduring practice among them.

Among mathematics teachers, the level is very high, as revealed by the computed mean of 4.73 and the standard deviation of 0.48, indicating that reflective practices are deeply rooted in the professional practice of mathematics teachers. The ratings for all indicators were strongly agree, indicating that teachers always participate in reflective activities. The highest mean was observed in analyzing teaching practices oneself, indicating that teachers are very aware of what they need to improve. This is then complemented by lifelong learning, seeking feedback and recording professional growth, which all serve as an indication that teachers take their professional growth seriously.

Significant Correlation between the Culturally Responsive Pedagogy and the Teaching Practices of Mathematics Teachers

To test the significant relationship between the culturally responsive pedagogy and the teaching practices of mathematics teachers in terms of clear instruction, active engagement, feedback, reflection and classroom management was treated statistically using Jamovi 2.3.28 using the Pearson correlation coefficient.

The purpose of this analysis is to determine whether there are meaningful relationships between culturally responsive pedagogy and various aspects of teaching. This relationship can provide empirical support for the effect that culturally responsive approaches can have on instructional effectiveness and classroom dynamics among mathematics teachers.

Table 15 presents the relationship between culturally responsive pedagogy and mathematics teachers' teaching practices in terms of clear instruction, active engagement, feedback, reflection, and classroom management.

A culturally relevant curriculum demonstrated a strong positive correlation with providing feedback ($r = 0.73$, $p < .001$) and with providing clear instruction ($r = 0.70$, $p < .001$). A strong to moderate correlation also existed between the culturally relevant curriculum and the measures for active participation ($r = 0.64$, $p < .001$), classroom management ($r = 0.60$, $p < .001$) and using reflection ($r = 0.54$, $p < .001$). Therefore, by incorporating culturally relevant content into the curriculum, a teacher will improve their overall effectiveness. Culturally responsive assessment demonstrated a strong positive correlation with providing feedback ($r = 0.80$, $p < .001$); moderate to strong correlations also existed with the areas of active participation ($r = 0.71$, $p < .001$), using reflection ($r = 0.69$, $p < .001$), providing clear instruction ($r = 0.66$, $p < .001$), and appropriate classroom management ($r = 0.64$, $p < .001$). Thus, evaluation and assessment practices that are based on students' cultural background and experience substantially improve teaching practices with an emphasis on providing meaningful and useful feedback.

Differentiated Instruction has been shown to have significant positive correlations with all aspects of teaching; particularly feedback ($r = 0.79$, $p < .001$), active engagement ($r = 0.78$, $p < .001$), and clear instruction ($r = 0.72$, $p < .001$) are each strongly correlated, while classroom management ($r = 0.69$, $p < .001$) and reflection ($r = 0.68$, $p < .001$) have moderate to strong relationships with differentiated

instruction. Therefore, modifying instruction based on students' needs has a large impact on effective teaching.

Table 15. Culturally Responsive Pedagogy and the Teaching Practices of Mathematics Teachers

Culturally Responsive Pedagogy		Teaching Practices of Mathematics Teachers				
		CI	AE	F	R	CM
Culturally Awareness	Pearson Correlation	0.64* **	0.63* **	0.65***	0.51* **	0.53***
	Significance (2-Tailed)	<.001	<.001	<.001	<.001	<.001
	N	86	86	86	86	86
Culturally Relevant	Pearson Correlation	0.70* **	0.64* **	0.73***	0.54* **	0.60***
	Significance (2-Tailed)	<.001	<.001	<.001	<.001	<.001
	N	86	86	86	86	86
Culturally Responsive Assessment	Pearson Correlation	0.66* **	0.71* **	0.80***	0.69* **	0.64***
	Significance (2-Tailed)	<.001	<.001	<.001	<.001	<.001
	N	86	86	86	86	86
Differentiated Instruction	Pearson Correlation	0.72* **	0.78* **	0.79***	0.68* **	0.69***
	Significance (2-Tailed)	<.001	<.001	<.001	<.001	<.001
	N	86	86	86	86	86
Cultural Reflection	Pearson Correlation Sig	0.78* **	0.72* **	0.76***	0.65* **	0.80***
	nificance (2-Tailed)	<.001	<.001	<.001	<.001	<.001
	N	86	86	86	86	86

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Cultural reflection has demonstrated strong positive relationships with classroom management ($r = 0.80$, $p < .001$), clear instruction ($r = 0.78$, $p < .001$), feedback ($r = 0.76$, $p < .001$), and active engagement ($r = 0.72$, $p < .001$), and a moderate to strong relationship with reflection ($r = 0.65$, $p < .001$). Thus, teachers who engage in cultural reflection tend to be more successful in managing their classrooms and delivering instruction.

In summary, this implies that culturally responsive pedagogy is significantly correlated with effective mathematics teaching practices. All components of culturally responsive pedagogy demonstrate moderate to strong positive correlations with teaching practices, indicating that cultural awareness, relevant curriculum, culturally responsive assessment, differentiated instruction, and reflective practices enhance the overall effectiveness of instruction. Of these components of culturally responsive pedagogy, culturally responsive assessment, differentiated instruction, and cultural reflection provide the most support in improving teaching practices.

The findings are well supported by recent work that emphasizes the importance of culturally responsive pedagogy (CRP) for improving teaching effectiveness across a variety of areas. Studies have repeatedly found that cultural awareness is positively linked to better instructional clarity, student engagement, and feedback practices because when teachers learn about students' cultural contexts, they can more easily relate the content to students and foster inclusive participation (Gay, 2023). This is in line with the moderate to very strong correlations in the current study.

Similarly, the close connection between a culturally relevant curriculum and teaching practice is confirmed by research showing that including students' cultural backgrounds in the classroom improves comprehension, student motivation, and success. Gloria Ladson-Billings (2021) writes that culturally relevant teaching enhances engagement and teaching effectiveness, especially in learning mathematics classrooms where contextualization contributes to understanding.

Significant Correlation between Culturally Responsive Pedagogy and the Teaching Competence of Mathematics Teachers

To test the significant relationship between culturally responsive pedagogy and the teaching competence of mathematics teachers in terms of content knowledge, pedagogical knowledge, communication skill and reflective practice, was treated statistically using Jamovi 2.3.28 using the Pearson correlation coefficient.

The correlation between culturally responsive pedagogy and the teacher competence of mathematics teachers was also discussed in order to find out whether the culturally responsive pedagogy teaching practices correlate with the professional competencies of teachers. In particular, this discussion focused on four aspects of teaching competence: content knowledge, pedagogical knowledge, communication skills, and reflective practice. Culturally responsive practices have the potential to enable educators to deliver lessons in mathematics in a more meaningful and accessible way, particularly when abstract concepts can be very difficult for students. This is a congruence between pedagogy and competence that could eventually improve the effectiveness of teaching and learning outcomes among the students.

Table 16 shows the correlation between culturally responsive pedagogy and the teaching competence of mathematics teachers in terms of content knowledge, pedagogical knowledge, communication skills, and reflective practice.

The findings indicate a moderate to strong positive correlation between cultural awareness and all areas of teaching competence, with slightly weaker but still significant correlations in reflective practice ($r = 0.53$, $p < .001$) and communication skills ($r = 0.47$, $p < .001$). It shows that culturally aware teachers are more likely to demonstrate competence in key areas of teaching.

There are strong positive correlations of culturally relevant curriculum with pedagogical knowledge ($r = 0.65$, $p < .001$) and content knowledge ($r = 0.61$, $p < .001$), moderate or strong relationships with reflective practice ($r = 0.57$, $p < .001$) and communication skills ($r = 0.56$, $p < .001$). This implies that the ability to incorporate culturally sensitive material improves both the teaching qualification and teaching performance of teachers.

Culturally responsive assessment shows high positive correlations in all competence areas, with highest positive correlation in pedagogical knowledge ($r = 0.71$, $p < .001$) and reflective practice ($r = 0.69$, $p < .001$), then, communication skills ($r = 0.66$, $p < .001$) and then, content knowledge ($r =$

0.63, This means that teaching practices that are based on the cultural background of students are important in enhancing their teaching competence.

Table 16. Culturally Responsive Pedagogy and the Teaching Competence of Mathematics Teachers

Culturally Responsive Pedagogy		Teaching Competence of Mathematics Teachers			
		CK	PK	CS	RP
Culturally Awareness	Pearson Correlation	0.60***	0.56***	0.47***	0.53***
	Significance (2-Tailed)	<.001	<.001	<.001	<.001
	N	86	86	86	86
Culturally Relevant	Pearson Correlation	0.61***	0.65***	0.56***	0.57***
	Significance (2-Tailed)	<.001	<.001	<.001	<.001
	N	86	86	86	86
Culturally Responsive Assessment	Pearson Correlation	0.63***	0.71***	0.66***	0.69***
	Significance (2-Tailed)	<.001	<.001	<.001	<.001
	N	86	86	86	86
Differentiated Instruction	Pearson Correlation	0.71***	0.75***	0.76***	0.71***
	Significance (2-Tailed)	<.001	<.001	<.001	<.001
	N	86	86	86	86
Cultural Reflection	Pearson Correlation	0.77***	0.73***	0.71***	0.72***
	Significance (2-Tailed)	<.001	<.001	<.001	<.001
	N	86	86	86	86

Note: * $p < .05$, ** $p < .01$, *** $p < .001$

Differentiation instruction demonstrates overall high positive relationships with all domains, especially communication skills ($r = 0.76$, $p < .001$), pedagogical knowledge ($r = 0.75$, $p < .001$) and content knowledge and reflective practice ($r = 0.71$, $p < .001$). This implies that implementing instruction according to the needs of learners significantly improves the overall teaching competence.

Lastly, cultural reflection has the highest correlations of all variables namely in content knowledge ($r = 0.77$, $p < .001$), pedagogical knowledge ($r = 0.73$, $p < .001$), reflective practice ($r = 0.72$, $p < .001$) and communication skills ($r = 0.71$, $p < .001$). This implies that educators who participate in reflective practice based on cultural awareness are the most competent.

Overall, every aspect of culturally responsive pedagogy has moderate to very strong positive relationships with teaching competence, which means that the combination of cultural awareness, relevant curriculum, responsive assessment, differentiated instruction, and cultural reflection considerably contributes to the competence of mathematics teachers. Of these, the most powerful predictors of overall teaching competence are cultural reflection and differentiated instruction.

The findings are well supported by recent reports highlighting the importance of culturally responsive pedagogy in improving teachers' overall competence. According to a systematic review by Gulya (2024), culturally responsive pedagogy builds on key teacher skills, such as pedagogical, reflective, and instructional skills, which directly contribute to the strong positive associations observed across all domains in the current study. On the same note, as pointed out by Ogodu (2024), culturally responsive pedagogical knowledge incorporates content knowledge, pedagogy, and social context

to help teachers effectively respond to different learners, thus enhancing instructional quality and communication skills.

Additionally, a recent study has shown that the inclusion of culturally relevant practices in teaching increases student engagement, academic outcomes, and teaching performance. A methodical review by Caingcoy (2023) highlighted that acknowledging students' cultural backgrounds and tailoring the instructional experience to meet their needs leads to better learning and teacher competence, particularly in content delivery and classroom interaction. This is consistent with the high correlations existing between culturally relevant curriculum, differentiated instruction, and teaching competence in the research.

IV. CONCLUSION AND RECOMMENDATIONS

The study revealed that there is a significant relationship between culturally responsive pedagogy and teaching practices; thus, the null hypothesis was rejected. This implies that teachers who integrate students' cultural backgrounds into their instruction tend to employ more effective and engaging teaching strategies, thereby improving classroom practices.

The study found a significant relationship between culturally responsive pedagogy and teaching competence; thus, the null hypothesis is rejected. This indicates that culturally responsive teaching enhances teachers' overall competence, including their ability to plan, implement, and evaluate instruction in ways that are meaningful and inclusive for diverse learners.

Through the conclusions drawn from the findings, the following recommendations are made:

District Supervisors are encouraged that all schools be continually monitored and assisted by providing continuous monitoring and technical assistance so they can effectively implement culturally responsive pedagogy into all Schools' classrooms. They may have the opportunity to conduct regular classroom observations that provide opportunities for mentoring and Learning Action Cell (LAC) meetings that emphasize the use of culturally responsive strategies to improve classroom instruction and build classroom effectiveness. Supervisors should also assist in making data-driven decisions to continue improving instructional quality through school improvement.

School principals may create an atmosphere that supports inclusivity and promotes the use of CRP by using support systems for staff at their building. This can include providing in-building training, echo seminars, and collaborating with staff to share best practices. Furthermore, principals may write culturally responsive education into their school's improvement plan and support creative development of instructional materials/strategies that reflect the cultural backgrounds of all students

Teachers may be encouraged to improve their culturally responsive teaching practices; they need to incorporate their students' culture into how they plan lessons, structure classroom activities, and assess their students. They should participate in professional development opportunities that build their ability to offer different ways for students to learn, reflect on their own cultures, and assess students inclusively. Furthermore, it is important for teachers to demonstrate and maintain reflective practices and to utilize innovative, student-centered strategies to increase their overall proficiency and effectiveness in teaching mathematics.

Future researchers may also consider employing a more varied and representative sample of mathematics teachers in different regions, school types, and cultural settings in the future. This will increase the generalizability of the findings and provide a more holistic view of the application of culturally responsive pedagogy.

REFERENCE

- [1]. Caingcoy, M. (2023). Culturally responsive pedagogy: A systematic overview. *International Journal of Education and Learning*, 5(2), 152–164. <https://philarchive.org/rec/CAICRP>
- [2]. Gay, G. (2023). *Culturally responsive teaching: Theory, research, and practice* (3rd ed.). Teachers College Press. <https://www.scirp.org/reference/referencespapers?referenceid=4028734>
- [3]. Gulya, N. (2024). Fostering culturally responsive pedagogy-related competencies among pre-service teachers: A systematic review of the recent research literature. *Teaching and Teacher Education*, 108, 103522. <https://doi.org/10.1016/j.tate.2023.103522>
- [4]. Ladson-Billings, G. (2021). *Culturally relevant pedagogy 2.0: a.k.a. the remix*. Harvard Educational Review. https://www.academia.edu/91608536/Culturally_Relevant_Pedagogy_2_0_a_k_a_the_Remix
- [5]. Ogoto, J. A. (2024). Culturally responsive pedagogical knowledge: An integrative teacher knowledge base for diversified STEM classrooms. *Education Sciences*, 14(2), 124. <https://doi.org/10.3390/educsci14020124>