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Research Article

The Significance of Code-Switching in Teaching English, Science, and Mathematics (ENSCIMA) for Junior High School Students

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Abstract: Code-switching facilitates effective communication, allows speakers to express complex meanings, reinforces identity and belonging, and serves as a tool for both professional and social advancement. This study examines the significance of code-switching in teaching English, Science, and Mathematics (ENSCIMA) to secondary students. Utilizing a quantitative research design, a total of 34 respondents were randomly selected. The findings indicate that the participants' demographic profiles provide valuable context for understanding their back-grounds. Most respondents strongly agreed with the positive role of code-switching in class-room instruction based on observed practices and perceptions. The results further reveal no significant relationship between the weighted mean of students' attitudes toward code-switching and its perceived impact on teaching. Among the three sub-jects, English and Science obtained higher weighted means compared to Mathematics. Moreover, significant differences were observed between the mean scores of Grades 9 and 10 stu-dents compared with those of Grade 8 when exposed to code-switching in ENSCIMA instruc-tion. Proposed guidelines for the intentional and strategic use of code-switching in teaching are provided. The study concludes by recommending further research to validate these results and to examine the broader effects of code-switching across other academic disciplines.

Keywords: academic performance; code-switching; communication; language preference; multilingual education

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1. Introduction

Words themselves function as a form of code, representing concepts and ideas. Language, in this sense, can be viewed as a system or variety used for communication. Code-switching and code-mixing are foundational aspects of bilingualism, both involving the use of two languages by a single individual. Influenced by situational factors and speaker motivation, code-switching has become a prevalent phenomenon in educational settings. It reflects the linguistic reality of students who alternate between languages based on context and communicative needs. Understanding code-switching and its implications for language use has therefore become essential for educators and learners in English-speaking and multilingual societies worldwide (Ezeh et al., 2022; Nteziyaremye et al., 2024).

The Philippines, a Southeast Asian archipelago comprising more than 7,000 islands, is known for its rich linguistic diversity, with 181 actively spoken languages (Bravante & Holden, 2018). The country's long history of colonization has significantly shaped its linguistic landscape. During the American occupation from 1898 to 1946, the widespread use of English was actively promoted. Today, English remains one of the Philippines' official languages, primarily used in government, education, and legal affairs, and is commonly spoken as a second language by many Filipinos (Bravante & Holden, 2018). However, in recent years, a gradual decline in English language proficiency among Filipinos has been observed based on indicators such as the EF English Proficiency Index, the Test of English for International Communication (TOEIC), and the average scores of Filipino IELTS takers (Santos et al., 2022).

The establishment of the ASEAN Economic Community in 2015, along with the United

Nations' Education for All initiative in the same year, prompted the Philippine government to reform the national education system. This reform included a reassessment of the effectiveness of English Language Education, which remains a critical concern today. Stakeholders continue to address the dual challenge of improving Filipino students' English proficiency while simultaneously enhancing overall academic performance (Madrunio et al., 2016). Within this context, relying exclusively on a single language as the medium of instruction poses a significant challenge, particularly in subjects that traditionally require the use of English (Parma, 2023).

Although Prabowo and Ambarini (2022) found that code-switching in multilingual mathematics classrooms can enhance student interaction and effectively facilitate knowledge transfer, Malindi et al. (2023) argued that code-switching is inevitable when learners' first language differs from the language of learning and teaching. This presents challenges for teachers, especially when instructing second-language speakers who may not fully understand the transition between languages. Alić Topić (2021) likewise emphasized that in a bilingual world, the use of multiple languages or dialects within a single communicative event is unavoidable. Conversely, some scholars argue that code-switching reflects linguistic deficiency and should be avoided in formal communication. Furthermore, Walt et al. (n.d.) suggested that English language teachers often criticize subject teachers for not maintaining consistent and exclusive use of English. They recommend that language educators play an active role in promoting awareness of productive and responsible code-switching and translation, particularly in content areas such as mathematics and science.

Jamshidi and Navehebraim (2013) define code-switching as "the alternation of two languages within a single discourse, sentence, or constituent." Similarly, Bullock and Toribio (2009) describe it as the ability of bilingual individuals to alternate effortlessly between two languages in communication. These definitions suggest that code-switching occurs among individuals who have mastery of two or more languages and who utilize them interchangeably during interaction. Code-switching is most commonly observed in bilingual societies—such as the Philippines—where hundreds of languages are spoken. Bullock and Toribio (2009) further noted that non-native English speakers often switch from English to their first language when they either lack the appropriate English expression or momentarily forget the word they intend to use. In the same vein, Bravo- Sotelo (2020) recommended incorporating Tagalog–English intrasentential code-switching in mathematics instruction to facilitate lesson delivery and content comprehension. Moreover, Bravo-Sotelo (2020) emphasized that code-switching reflects bilingual or multilingual competence, serving as an additional communicative resource for bilingual speakers.

Students who are bilingual or multilingual in the classroom naturally engage in code-switching. According to Metila (2009), classroom code-switching fulfills both pedagogical and communicative purposes, making it appropriate for use in educational settings. In fact, Kustati (2014) found that students' classroom engagement increases when they better comprehend the lesson content. However, several factors contribute to challenges in achieving effective instruction. Kilag et al. (2024) identified large class sizes, inadequate facilities, and insufficient instructional materials as significant barriers to effective English language teaching. Furthermore, concerns have been raised regarding the quality of teacher training and professional development opportunities for English teachers. Additionally, some multilingual speakers exhibit a growing tendency to use varied utterances, reflecting their adaptability across linguistic contexts.

To explore the significance of native language use in linguistic development, this study focuses on code-switching as an instructional tool in the classroom. Although numerous studies have examined code-switching, relatively few have explored its role in academic instruction and its effects on student performance. Specifically, this research seeks to determine how code-switching influences students' learning outcomes in Science, Mathematics, and English classes. Based on the findings of Owusu-Darko (2022), the use of code-switching in mathematics instruction yielded significantly higher mean scores compared to instruction conducted in Twi or English alone. Similarly, Al-Qaysi (2019) reported that demographic variables such as gender, age, major, and degree had no significant effect on students' attitudes toward code-switching. The study also found that gender, age, academic rank, and teaching experience did not significantly influence educators' attitudes toward its use. Correspondingly, Teklesellassie and Boersma (2018) found that both content-subject teachers and first-year students expressed favorable attitudes toward the use of Amharic—a local language of wider communication—in English-medium classrooms.

According to Nordquist (2019), code-switching involves alternating between two

languages or shifting between different dialects or registers of the same language within a single discourse. This phenomenon occurs more frequently in spoken interactions than in written forms and is sometimes described as code-mixing or style-shifting. Linguists examine this linguistic behavior to determine when it occurs and under what conditions bilingual speakers transition from one language to another. Meanwhile, sociologists investigate it to understand why it happens—particularly its relationship to group identity and social context (e.g., casual or professional interactions). Code-switching, as the fluid transition between languages within a single conversation, is most common among bilingual individuals who possess communicative competence in both languages. It also serves as a social strategy that employs linguistic cues to express social categories and foster group cohesion. Thus, code-switching reflects speakers' attitudes, values, and identities. Although once viewed negatively, it has become increasingly accepted in multilingual environments (Yim & Clément, 2021).

Additionally, code-switching plays a crucial role in the language development of Filipino bilinguals. It is now recognized as a structured, complex, and functionally purposeful linguistic practice used to achieve diverse communicative, social, personal, and cognitive goals within bilingual communities. In many cases, employing code-switching enables these goals to be accomplished more effectively than using only Filipino or English. Consequently, code-switching can serve as an effective medium for collaboration between student learners and teacher facilitators in constructing and sharing knowledge across subject areas, particularly since both groups are typically bilingual. Indeed, code-switching represents a shared linguistic resource that supports the mutual pursuit of understanding in the classroom (Bernardo, 2005).

Several studies have revealed the benefits of code-switching in classroom instruction. Research findings indicate that:

The use of code-switching is "most of the time used" for curriculum access, classroom management, and fostering interpersonal relationships;

The grades of students taught by teachers who do not employ code-switching are generally higher than those taught by teachers who do;

Students display a positive attitude toward teachers' use of code-switching, as it facilitates their learning;

Students welcome teachers' code-switching efforts during English lessons, while teachers advocate a balanced approach to language switching—particularly in developing communication skills; and

The use of the mother tongue in English-medium classrooms does not hinder learners' understanding of the content but instead facilitates classroom participation (Santos, 2021, p. 48; Al-Adnani & Elyas, 2016; Yildiz & Su-Bergil, 2021).Furthermore, according to Reyes (2004, as cited in Fachriyah, 2017, p. 84), the elements of code-switching include: (1) representation of speech, (2) imitation of quotations, (3) accommodation of turns, (4) shifting topics, (5) switching situations, (6) insistence, (7) emphasis, (8) clarification or persuasion, (9) specification of persons, (10) shifting questions, and (11) functioning as a discourse marker. Code-switching provides teachers with opportunities to connect more effectively with students and can influence learners' academic performance.

Moreover, several effects of code-switching are noteworthy in this context. Its potential impacts on English language learning can be summarized as follows:

a) It allows students to communicate more openly with peers, teachers, and parents across various environments;

b) It enhances comprehension of new concepts when explained in the first language (L1), suggesting that certain subjects are taught more effectively through language switching;

c) It helps students recall terms in cases where they may not know the equivalent word in the target language; and

d) It may serve as a status symbol in communication.

In this regard, code-switching serves a directive purpose by directly engaging the listener (Villanueva & Gamiao, 2022). Furthermore, Amarille and Bercasio (2024) found that, based on both teachers' and students' experiences, code-switching is beneficial for making lessons comprehensible, explaining abstract concepts, emphasizing key points, clarifying instructions, encouraging classroom interaction, facilitating communication, reducing distance in remote learning, acknowledging bilingualism and diversity, and ultimately achieving learning outcomes.

On the contrary, some teachers experience dilemmas and complexities in using code-switching, as they consider it a pedagogical challenge. Mangila (2018) reported that teachers often code-switched for reformulation and facilitation purposes but rarely for language

acquisition or habitual use. Similarly, Parcon (2024) found that the challenges associated with code-switching include the excessive use of complex vocabulary, poor pronunciation among instructors, and abrupt language shifts. Agna et al. (2022) further noted that due to the lack of native-speaking models, teachers tend to vernacularize aspects such as sound, sentence structure, intonation, and vocabulary.

Moreover, Dente et al. (2016) emphasized that not all Filipino learners can effectively learn English through an English-only policy (EOP) mode of instruction because of the significant linguistic differences between English, Filipino (the national language), and other native Philippine languages that serve as students' mother tongues. Consequently, a substantial gap exists between a Filipino student's mother tongue and the English language, which functions as a foreign language in the Philippines. To bridge this linguistic gap, teachers have adopted a code-switching strategy in classroom instruction to help students better comprehend lessons in both the foreign and native languages. This approach may serve as a foundation for enhancing language practices in English, Science, and Mathematics (ENSCIMA), where the strategic use of local dialects can enrich students' learning experiences—particularly in public high schools.

Therefore, the objective of this study was to determine the impact of code-switching in teaching ENSCIMA at Don Sergio Osmena Memorial National High School as perceived by the teacher respondents. This study sought to address the following concerns: (1) to determine the teachers' perceptions of code-switching in teaching ENSCIMA; (2) to identify the language preference of the teacher respondents in teaching ENSCIMA subjects; (3) to determine the teacher respondents' attitudes toward code-switching in the classroom based on their practices and per-ceptions; (4) to analyze the teacher respondents' attitudes or feelings toward the impact of code-switching in teaching ENSCIMA subjects; (5) to examine the significant association between teachers' attitudes toward code-switching and their perceived impact on students' academic performance; (6) to determine the significant difference in students' academic per-formance in ENSCIMA when exposed to code-switching; (7) to provide recommendations based on the findings to improve teaching practices using code-switching.

Statement of Hypotheses:

Ho1: There is no significant relationship between the means of teachers' attitudes toward code-switching and their perceived impact on teaching ENSCIMA

Ho2: There is no significant difference in students' academic per-formance in ENSCIMA when exposed to code-switching

2. Theoretical and Conceptual Framework

Code-switching has long been part of the learning process in multilingual classrooms, where both teachers and students can speak multiple languages. The study of second-language acquisition has been advanced through Krashen's Input Hypothesis, which has also guided modern approaches to foreign language instruction (Gong, 2023). This theory supports the premise that teaching ENSCIMA through code-switching can influence students' academic performance.

Likewise, Vygotsky's Socio-Cultural Theory emphasizes the role of meaningful human interaction in effective language learning, particularly in second-language (L2) development (Alkhudiry, 2022). Vygotsky's work highlights the importance of social interaction and structured instruction, proposing that development does not precede socialization. Instead, social structures and relationships facilitate the emergence of higher mental functions (Huitt, 2000, as cited in Blake & Pope, 2008). In this context, learners' experiences and observations within their social environment significantly shape their learning processes.

As a result, Vygotsky introduced the concepts of cognitive learning zones. The Zone of Actual Development (ZAD) represents a stage where students are capable of completing tasks independently, indicating that there is no new material for them to learn at this level. In this zone, students demonstrate autonomy in their learning processes. Conversely, the Zone of Proximal Development (ZPD) pertains to situations where students require guidance from adults or peers to accomplish tasks that they cannot complete on their own. The ZPD signifies the disparity between the abilities that learners can demonstrate independently and those for which they require assistance (Daniels, 2001, as cited in Blake & Pope, 2008). The role of a teacher is not only limited as a source of information, but also, they have to guide their students to successfully finish the given tasks. Moreover, it also allows students to become independent individuals in society. It is then suggested by Garcia (2020) that code-

switching is motivated by various motivations such as euphemism, specificity, bilingual punning, lack of words, language facilitation, style, expression of identity, and making a request.

Further, Vygotsky's theory promotes collaborative and cooperative learning among children, teachers, and peers. Scaffolding and reciprocal teaching serve as effective educational strategies rooted in Vygotsky's principles. Scaffolding entails the teacher providing supportive frameworks to assist students in mastering skills that are slightly beyond their current capabilities. In reciprocal teaching, both teachers and students alternate in leading discussions, employing strategies such as summarizing and clarifying. Both scaffolding and reciprocal teaching highlight the collective construction of knowledge, aligning with Vygotsky's phi-losophies. Likewise, code-switching and code mixing a dominant phenomena in any bilingual ESL setting. These strategies serve as powerful tools for making meaning, classroom engagement, and peer interactions. Frequent reliance on these practices may impede full immersion in English, affecting fluency and accuracy in formal language contexts (Durrani et al., 2025). Therefore, when the students and teachers unite, they can achieve the set learning goals and objectives. Creating a conducive environment for both the teachers and students.

The independent variables comprising the respondents' profiles, such as sex, field of specialization, and length of service, are assumed to influence their language preference of the teacher respondents in teaching ENSCIMA subjects. Consequently, their attitudes toward code-switching and students' academic performance are correlated with the utilized media of instructions, to wit: English, Filipino, and Cebuano Visayan languages. Its value is expected to change in response to the independent variable. Overall, the study focused on the relationship between code-switching types and respondents' demographic profiles and attitudes, ultimately aiming to provide some recommendations based on these findings to improve the pedagogical practices in English, Mathematics, and Science.

Figure 1 presents the framework of the study, which illustrates the relationship between teachers' code-switching practices and their application in teaching ENSCIMA subjects. The framework indicates that teachers' code-switching serves as a central instructional strategy that links these subject areas. It is further influenced by teachers' demographic profiles such as sex, field of specialization, educational attainment, and length of service. The insights obtained from these relationships serve as the basis for developing proposed guidelines for effective code-switching strategies in teaching ENSCIMA subjects.

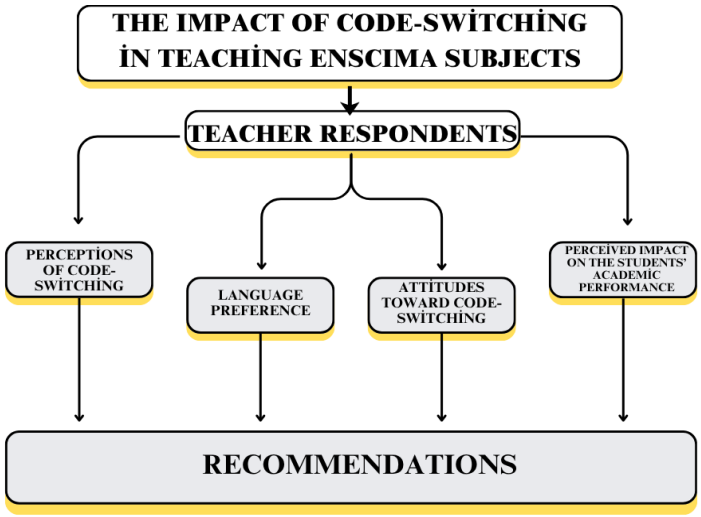

Figure 1. Framework of the study.

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improve the pedagogical practices in English, Mathematics, and Science.

3. Materials and Methods

The study employed a descriptive inferential research design, which focuses on gathering numerical data to understand and analyze specific phenomena (Creswell & Creswell, 2018). This approach is appropriate because the study aims to measure teachers' attitudes, language prefer-ences, and the perceived impact of code-switching on students' academic performance using structured survey instruments and statistical analysis. Quantitative research allows for objective data collection, ensuring the reliability and validity of the results. Moreover, it enables the study to examine relationships between variables, such as attitudes and perceived impacts, and draw generalizable conclusions based on numerical evi-dence.

The study will consist of 34 teachers, as respondents, who are teaching English, Mathematics, and Science in Don Sergio Osmeña Senior Memorial National High School. The profile of teacher respondents was described in terms of sex, field of specialization, educational attainment, and length of service. The data, gathered from the teacher respondents, are organized according to the research questions, including the respondents' profiles, language preferences, attitudes toward code-switching, and its perceived impact. Statistical analyses are used to interpret the data and provide insights into the relationship between teachers' attitudes and their perceived impact on students' academic performance.

The findings align with recent studies on teacher demographics, attitudes toward code-switching, and its classroom implications. Consistent with Maranan et al. (2025), who examined Filipino educators, the predominance of female teachers in this study reflects wider trends in the teaching profession. Their findings suggest that gender and teaching experience may indirectly influence teachers' openness to code-switching, with female educators often demonstrating more flexible communication styles.

They were sampled using a stratified random technique to ensure that every subgroup is represented in the final sample for ENSCIMA. A matrix questionnaire was used to gather data. The researchers agreed to conduct their study with EN-SCIMA teachers because these subjects serve as foundational pillars for education and professional development. Researchers used a modified – adopted questionnaire to gather data. The questionnaire is recast into Google Forms for easy distribution and access by teachers. Moreover, the respondents, being full-time teachers, have a lot of administrative and teaching loads to attend.

The data analysis in this study utilized descriptive and inferential statistical methods to address the research objectives. Descriptive sta-tistics, such as frequency counts, percentages, means, and standard de-viations, were used to summarize the respondents' demographic profiles, language preferences, and attitudes toward code-switching. These measures provided a clear overview of the participants' characteristics and responses. Inferential statistics, specifically Pearson's correlation, were employed to determine the relationship between teachers' attitudes toward code-switching and its perceived impact on students' academic performance. Moreover, on the other hand, the One-way Analysis of Variance (ANOVA) was utilized to compare the means of the students' academic performance in ENSCIMA. This method allowed the study to assess the strength and significance of associations between variables, providing evidence-based ideas into the research problem. The statistical analyses ensured an objective interpretation of the data and supported the validity of the study's conclusions. The researchers ventured a 5% risk or at an α 0.05 level of significance of concluding a statistically sig-nificant effect exists when, in reality, there is no actual difference.

A transmittal letter was personally handed to the school principal of Don Sergio Osmeña Senior Memorial National High School to ensure compliance with existing ethical standards in conducting research. All master teachers and the school research coordinator were notified in this school-based study to provide coaching and mentoring before and during data collection. After the approval, the researchers gave the questionnaires to teacher respondents. Respondents will be made to sign an informed consent before taking part in the study and will be given a couple of days to answer so as not to disturb their instruction time.

4. Results and Discussion

The balanced representation of ENSCIMA teachers in this study supports the idea that code-switching varies by discipline. Balilla et al. (2024) reported that pre-service English teachers were generally more receptive to code-switching than Mathematics specialists,

viewing it as a tool to enhance engagement and bridge meaning. Similarly, Decipolo and Eliaga (2024) found that high school teachers perceived code-switching as an effective strategy to clarify lessons and build rapport, while Ilarde et al. (2024) observed that college English majors viewed it as essential for fostering inclusion and reducing anxiety. Collectively, these studies reinforce that strategic language mixing promotes comprehension and student participation across contexts.

The connection between code-switching and academic achievement is still complicated, though. According to Aparece and Bacasmot (2023), code-switching did not directly predict academic success, but it did assist students in overcoming communication difficulties. This is consistent with current research, which shows that teachers are aware of the short-term pedagogical advantages of code-switching, such as increased comprehension and engagement, but that more empirical research is needed to determine the long-term effects on quantifiable achievement.

Table 1 presents the distribution of teacher respondents based on sex. Out of the 34 respondents, 82% (28 teachers) are female, while 18% (6 teachers) are male. This finding reflects the dominance of female teachers in the teaching workforce, which is a common trend in the education sector, particularly in the Philippines. The data indicate that most of the respondents are female, which aligns with national statistics showing that teaching is a female-dominated profession (Philippine Statistics Authority, 2022). This may be attributed to societal norms and the perception of teaching as a nurturing profession, traditionally associated with women. The smaller representation of male teachers highlights the need to encourage gender balance in the teaching profession to provide diverse perspectives in the classroom.

Table 1. Sex of the teacher respondents.

Sex	Frequency	Percentage (%)
Male	6	18
Female	28	82
Total	34	100

Table 2 shows that 35% of the teacher respondents specialize in English, another 35% in Mathematics, and 29% in Science. This balanced distribution reflects a diverse mix of subject expertise, allowing for a well-rounded analysis of code-switching across disciplines. Such diversity is essential in understanding how teachers from different content areas integrate language strategies into their instruction. This finding echoes Balilla et al. (2024), who noted that English teachers use code-switching to enhance engagement and comprehension, while Mathematics and Science educators employ it mainly for clarifying technical concepts. Similarly, Maranan et al. (2025) emphasized that subject specialization influences teachers' attitudes toward language flexibility, as different fields demand varying communicative approaches.

Table 2. Field of specialization of the teacher respondents.

Field of specialization	Frequency	Percentage (%)
English	12	35
Science	10	29
Math	12	35
Total	34	100

In line with these observations, Decipolo and Eliaga (2024) found that teachers across disciplines view code-switching as a practical way to bridge linguistic gaps, while Rini et al. (2022) highlighted that interdisciplinary collaboration enhances teachers' awareness of effective language use. Likewise, Torres (2025) reported that specialization shapes how teachers balance English fluency goals with the need for inclusive instruction. Overall, the distribution in this study underscores that effective code-switching is not bound by subject area—it serves as a pedagogical tool that adapts to the communicative demands of different disciplines while promoting understanding and participation among learners.

Table 3 shows that most of the teacher respondents hold graduate-level qualifications, with 53% having a Master's Degree, 44% a Bachelor's Degree, and 3% a Doctoral Degree. This suggests that the respondents are not only academically competent but also committed to lifelong learning. The strong presence of graduate-degree holders supports the continuing

professionalization of teachers in the Philippines, reflecting national efforts to promote higher educational standards (Commission on Higher Education, 2023).

Table 3. Educational attainment of the teacher respondents.

Educational attainment	Frequency	Percentage (%)
Bachelor's Degree	15	44
Master's Degree	18	53
Doctoral Degree	1	3
Total	34	100

This pattern aligns with recent findings by Gabe (2025) who reported that Filipino teachers pursuing postgraduate education demonstrate enhanced pedagogical adaptability and confidence in using innovative strategies such as code-switching. Similarly, Banegas and Arellano (2024) emphasized that higher educational attainment positively influences teachers' reflective practices and openness to multilingual pedagogy. In a related study, Torres (2025) found that graduate-trained teachers are more likely to integrate flexible language use in classrooms to support student comprehension, especially in bilingual settings.

Furthermore, Robillos and Bustos (2022) highlighted that professional growth through postgraduate studies enhances teachers' instructional decision-making, which may explain the positive attitudes toward code-switching observed in this study. Meanwhile, Villanueva et al. (2021) noted that despite the increasing number of educators with master's degrees, the pursuit of doctoral studies remains limited due to workload and financial barriers – echoing the findings here, where only one teacher respondent holds a Ph.D.

In essence, the data affirm that a highly educated teaching force contributes to pedagogical innovation and reflective practice. The scarcity of doctoral graduates underscores the need for more institutional support and incentives for advanced study, ensuring that teachers continue to evolve as both scholars and practitioners.

Table 4 presents the respondents' length of service, showing a balanced mix of novice and seasoned educators. The largest group (26%) has 11–15 years of teaching experience, followed by 21% with 6–10 years and 18% with less than 5 years. Meanwhile, 36% have been in the profession for over 20 years, reflecting both continuity and institutional stability. This blend of experience levels suggests that schools benefit from a dynamic exchange between the innovative ideas of younger teachers and the expertise of veteran educators.

Table 4. Length of service of the teacher respondents in years.

Length of service	Frequency	Percentage (%)
5 years and below	6	18
6 - 10 years	7	21
11 - 15 years	9	26
16 - 20 years	6	18
21 - 25 years	3	9
25 years up	3	9
Total		34

These findings are consistent with Pham (2025), who found that teaching experience significantly enhances classroom management and adaptability to multilingual instruction. Similarly, Torres (2025) emphasized that teachers with over a decade of experience are more confident in using code-switching and other flexible language strategies to support learner comprehension. The mix of early-career and long-serving teachers in this study mirrors what Rini et al. (2022) described as a "complementary ecosystem" of mentorship and professional learning that sustains instructional quality.

Furthermore, Banegas and Arellano (2024) observed that experienced teachers tend to employ code-switching more strategically, drawing from years of pedagogical reflection. In contrast, new teachers often use it intuitively to build rapport or clarify lessons. Maranan et al. (2025) likewise found that teachers' years of service correlate with positive attitudes toward code-switching, as experience deepens understanding of when and how to use multiple languages effectively.

Overall, the distribution of teaching experience in this study reflects a well-rounded teaching workforce where institutional wisdom and fresh perspectives coexist. This balance contributes to sustainable professional growth, improved student engagement, and evolving

language practices in the classroom.

Figure 2 illustrates the language preferences of teacher re-spondents when teaching ENSCIMA subjects. English is the most preferred language, as indicated by 56% of responses. Bisaya follows with 39%, while Filipino is the least preferred at only 4%. A closer look at individual questions reveals that Bisaya dominates in Q1 and Q4, while English is most preferred in Q2, Q3, and Q5. Filipino has minimal responses across all questions, re-flecting its limited use as a medium of instruction. The results suggest that teachers primarily prefer English for teaching ENSCIMA subjects, likely due to its status as the medium of instruction in the Philippines for these subjects. However, Bisaya is frequently used, particularly for con-textualization or clarification, as shown in Q1 and Q4. This aligns with studies emphasizing the role of regional languages in enhancing com-prehension among learners (Bernardo, 2005). The limited preference for Filipino may stem from the specialized vocabulary in ENSCIMA sub-jects, which is predominantly in English. These findings highlight the practical blend of English and Bisaya in facilitating effective teaching, emphasizing the importance of code-switching as a strategy in multi-lingual classrooms

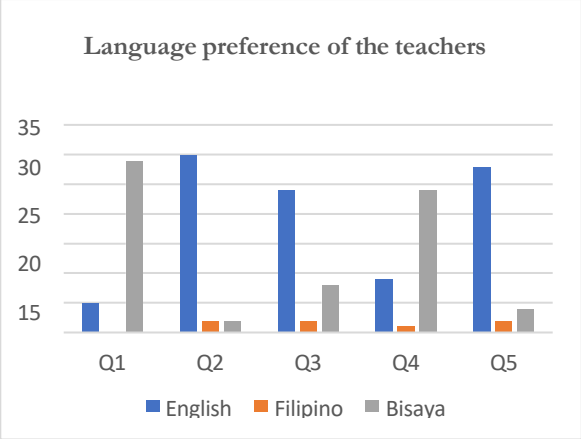

Figure 2. Language preference of teacher respondents in teaching ENSCIMA.

As reflected in table 5, the teachers' attitude towards codeswitching in English-instructed subjects. With a weighted mean of 4.00, most of the teacher respondents strongly agreed that code-switching helps me to convey meaning easily to their students, better expound cultural and complex topics from English to Filipino, and allows the students to feel more comfortable and confident while learning. Having a grand mean of (3.84), the majority of teachers supported the use of code-switching in their classrooms because it served a useful purpose in the process of teaching and learning. The findings are consistent with the previous studies that code switching involves alternating between two languages or switching between different dialects or registers of the same language simultaneously (Nordquist, 2019). Moreover, Garcia (2020) states that code-switching is motivated by various motivations such as euphemism, specificity, bilingual punning, lack of words, language facilitation, style, expression of identity, and making a request. According to Malindi et al (2023), code-switching is inevitable in teaching learners whose first or mother tongue is not the English language when it is used as the language of learning and teaching.

Table 5. Teachers' attitudes toward code-switching in the classroom based on practices and perceptions.

Statements	Mean	Verbal description
1. Code-switching helps me to convey meaning easily to my students.	4	Strongly agree
2. Code switching makes the discussion more interesting.	3.90	Strongly agree
3. I code-switch because of the complexity of certain words in my language.	3.88	Strongly agree
4. I code-switch because I feel that the students are not exposed to English.	3.43	Strongly agree
5. I code-switch because it helps me illustrate new terms that enable my students to learn better	3.93	Strongly agree

6. I code-switch from English to Filipino to better expound cultural and complex topics.	4	Strongly agree
7. I code-switched from English to Filipino to better explain the concepts and ideas in the discussion.	3.67	Strongly agree
8. I code-switch from English to Filipino to elicit better responses from students.	4	Strongly agree
9. I code-switch from English to Filipino to better clarify the lesson content taught.	3.55	Strongly agree
10. Code-switching allows the students to feel more comfortable and confident while learning.	4	Strongly agree
Grand mean	3.84	Strongly agree

Note: Parameters are the following: 1.00-1.80 (Strongly disagree); 1.81-2.60 (Disagree); 2.61-3.40 (Agree); 3.41-4.20 (Strongly agree)

It can be gleaned from table 6 that the student respondents strongly agreed on most of the statements. They can readily learn new terms from their teachers while switching between Filipino/Cebuano Visayan and English by using methods that are closest to one another (Mean = 3.44, 3.45, and 3.46). The main results of the study indicate strong support in understanding basic competencies along subtopics in English, Math, and Science. Aside from that, the mastery level of those subjects forms the foundation of the students' advanced learning, which are considered fundamental skills in education. Consequently, the study by Prabowo and Ambarini (2022) supports the claim that using code-switching in multilingual mathematics classrooms is a beneficial strategy to enhance student interactions in classroom activities and is an effective method for transferring knowledge to students.

Table 6. Teachers' attitudes toward the impact of code-switching in teaching ENSCIMA subjects.

Statements	Mean	Verbal description
1. Code-switching improves my students' communication skills in English, Science, and Math	3.42	Agree
2. Code-switching helps them to develop their language skills in class in English, Science, and Math	3.40	Agree
3. They code-switch due to the lack of English equivalents	2.79	Agree
4. Code-switching allows them to understand better in English-instructed subjects like Math and Science	3.39	Agree
5. Code-switching helps them to discuss new words easily	3.46	Strongly agree
6. Code-switching makes them feel more comfortable and confident in classrooms.	3.29	Agree
7. I code-switch with my students during the discussion of my reports during ENSCIMA subjects	3.25	Agree
8. Code-switching helps them in learning new words from the educators while they are switching between Filipino/Cebuano Visaya to English.	3.44	Strongly agree
9. I code-switch with my students due to the complexity of some words in their native language	3.29	Agree
10. Usage of Filipino allows them to express their ideas that they cannot express in English, Math, and Science	3.45	Strongly agree
Gran mean	3.32	Agree

Note: Parameters are the following: 1.00-1.80 (Strongly disagree); 1.81-2.60 (Disagree); 2.61-3.40 (Agree); 3.41-4.20 (Strongly agree).

On the other hand, code-switching due to the lack of English equivalents shows the lowest mean (2.79), with the respondents agreeing with it. This implies that teaching grammatical structures in English, Math, and Science subjects has a slight direct effect on single translation in the target foreign language for them. This often occurs due to cultural differences, technical specificities, or inherent linguistic structures of the source language, such as certain suffixes or words unique to a language, as seen with Filipino words. Viewed as an art of teaching, Agna et al (2022) added that due to lack of native-speaking models,

teachers also vernacularized in terms of sound, sentence structure, intonation, and even vocabulary. In general, the Grand Mean of (3.32) indicates an agreement among the teacher respondents on the development of code-switching to better understand their students' skills during lecture discussion, with the complexity of some words in their native language across all topics in ENSCIMA. The complexity of a word is not an inherent property but is influenced by factors such as the word's form, its meaning, and the user's familiarity with it (North & Zampieri, 2023).

Table 7 shows the results of the Pearson correlation, indicating that there is a non-significant, small positive relationship between teachers' attitudes toward code-switching and their perceived impact on teaching ENSCIMA ($r(8) = .104$, $p = .775$). Because the value is positive, it sug-gests that as one variable (attitudes on code-switching based on practices & perceptions) increases, the other variable (Impact of code-switching) also tends to in-crease, but the connection is not strong or reliable. Hence, the p-value > α, H01 cannot be rejected. The results also do not support Vygotsky's belief that learning originates in social and cultural interactions.

Table 7. Correlation between the weighted mean of teachers' attitudes toward code-switching and their perceived impact on teaching ENSCIMA.

		Attitudes on C-S based on practices & perceptions	Impact of C-S teaching ENSCIMA
Attitudes on C-S based on practices & perceptions	Pearson correlation	1	.104
	Sig. (2-tailed)		.775
	N	10	10
Impact of C-S teaching ENSCIMA	Pearson correlation	.104	1
	Sig. (2-tailed)	.775	
	N	10	10

Note: C-S = code-switching.

In particular, the study of Durrani et al. (2025) suggested that code-switching and code-mixing strategies serve as powerful tools for making meaning, classroom engagement, and peer interactions. Frequent reliance on these practices may impede full immersion in English, affecting fluency and accuracy in formal language contexts. It is then suggested that future researchers replicate the same investigation, which highlights the benefits of intentional and strategic code-switching for multilingual students, particularly for clarifying difficult concepts, building rapport, and reducing language anxiety. The key is to manage its use to ensure students still develop proficiency in the target language.

Table 8. Performance level of junior high school students in ENSCIMA when exposed to code-switching.

	English rating	**Science rating**	**Math rating**
Grade 8			
Mean	11.06667**	10.4	10.83333
SD	2.57218	3.55838	3.37418
Grade 9			
Mean	7.83333	6.53333	8.46667**
SD	1.83985	2.06336	2.02967
Grade 10			
Mean	12.6**	12.58065	11.13333
SD	2.17509	1.66882	2.55604

Table 8 shows the students' average scores in each component of ENSCIMA when they are grouped according to grade level (8, 9, 10). As gleaned from the Grade 8 level, they have obtained closer means (10.83 and 11.07). But mostly in English and Math, Ratings cover most when it comes to code-switching. This means that learners adhered to grasping the blended two languages that aid them to comprehend and engage in different activities in the classroom. Likewise, the Grade 9 and Grade 10 students obtained the highest average (8.47 and 12.6) in Mathematics and English. The main outcome of the study aids the teachers' creative strategy that bridges language gaps, improves motivation, and deepens understanding of mathematical concepts by providing multiple linguistic pathways for learning. However, most of the

students have the lowest average in Science subjects across these three grade levels when exposed to switch-coding. As suggested by Bravo-Sotelo (2020), the use of Tagalog-English intrasentential code-switching for math lesson delivery and content knowledge explanation should be considered. This is attributed to an event, action, or relationship that occurs within a single sentence, rather than between multiple sentences.

Table 9 presents the mean difference among group means of Grade 8 students when exposed to ENSCIMA. Based on the results, there is no significant difference (F = 0.3359) and P-value > α.05, which leads to the acceptance of Ho2. This indicates that code-switching does not appear to have a significant impact on the Grade 8 students' performance in English, Science, and Math subjects. This opposes the study of Amarille and Bercasio (2024), who revealed that based on teachers' and students' experiences, code-switching is beneficial in making lessons comprehensible, explaining concepts or ideas, emphasizing points, clarifying instructions and directions, encouraging class interaction, easing communication, reducing distance in remote learning, acknowledging bilingualism and diversity, and achieving learning outcomes. It can be said that one explanation for the findings enlightens the teachers to make lessons in ENSCIMA and complex concepts comprehensible, using a combination of strategic planning, diverse communication techniques, and active learning methods.

Table 9. Mean difference between the Grade 8 students' rating in ENSCIMA as exposed to code-switching.

Source	DF	Sum of squares	Mean of square	F statistic	P-value
Between groups	2	6.8667	3.4333	0.3359	0.7156
Within groups	87	889.2334	10.2211		
Total	89	896.1	10.0685		

Note: The result is not significant since p-value > α, Ho is accepted

The findings in table 10 shows a significant difference (F =7.4335) since the P-value < α 0.05, which failed to reject the Ho2. In other words, the differences between the sample averages are big enough to be statistically significant. Testing where the significant difference lies, the Post Hoc shows the following pairs that are significantly different (x1-x2, x2-x3). It means that there is a genuine difference in the average scores obtained between English and Science using code-switching. On the other hand, the average scores obtained from Science and Mathematics are significantly different from each other as far as code-switching is concerned. These findings show alignment with the theory of Vygotsky, who believed that cognitive development is rooted in social interactions, rather than occurring in isolation. Students learn through active engagement with others, making learning a social and collaborative endeavor. Through these interactions, children internalize new cognitive skills, knowledge, and ways of thinking, particularly within the ZPD, the range of tasks a child can do with guidance but not alone. Indeed, code-switching can function as a scaffolding tool within a student's ZPD, allowing teachers to bridge language gaps, foster comprehension, and promote a deeper understanding of new concepts by using familiar linguistic structures in teaching ENSCIMA.

Table 10. Mean difference between the Grade 9 students' rating in ENSCIMA as exposed to code-switching.

Source	DF	Sum of squares	Mean of square	F statistic	P-value
Between groups	2	58.2889	29.1445	7.4335*	0.0011046
Within groups	87	341.1	3.9207		
Total	89	399.389	4.4875		

Note: The result is significant at p < α, Ho is rejected*

Emerging in table 11, there is a significant difference between the means of the groups of Grade 10 students as reflected in the F statistic (4.5785), and the P-value (0.01283) is less than α = 0.05, which indicates a failure to accept Ho2. This practically means that code switching in ENSCIMA allows high school students to grasp complex ideas by enabling teachers to provide clarifications in the students' native language. Since the means of the group are significantly different, the Post Hoc test specifies that the significant difference lies between the scores obtained in English and Mathematics (x1-x3) and Mathematics and Science (x2-x3) when they were exposed to code-switching.

Table 11. Mean difference between the Grade 10 students' rating in ENSCIMA as exposed to code-switching.

Source	DF	Sum of squares	Mean of square	F statistic	P-value
Between groups	2	42.6861	21.343	4.5785*	0.01283
Within groups	88	410.2151	4.6615		
Total	90	452.0912	5.0322		

Note: The result is significant at $p < \alpha$, Ho is rejected*

The findings above are congruent with the report that under-standing code-switching and its impact on language use have become essential for educators and learners in English language societies around the world (Ezeh et al., 2022; Nteziyaremye et al., 2024). This further implies that when students experience speech blocks or cannot find the right English words in learning basic concepts, either in Eng-lish, Science, or Mathematics, code-switching allows them to maintain the flow of conversation and elaborate on their ideas.

Based on the overall results, proposed guidelines for teaching code-switching in ENSCIMA for junior high school students are hereby intentionally and strategically given to wit: (1) to establish clear ground rules, create a shared understanding with students about when and why code-switching is an acceptable and effective tool for learning, and when the focus should be solely on the target language; and (2) target specific pedagogical goals using code-switching for specific teaching functions, such as clarification (to explain complex grammar, vocabulary, or instructions), reiteration (to repeat or rephrase an idea in the na-tive language to check for comprehension), emphasis (to highlight the importance of a particular point), and affective support (to ease student anxiety and build a safe, comfortable classroom environment).

5. Conclusions

The study examines the impact of code-switching on junior high school students in teaching ENSCIMA. Most of the teacher respondents were female, majoring in English and Math, with units in master's degree, served the public school for 11 to 15 years, and English is the most preferred language. Those demographic profiles provide context for understanding participant backgrounds. The majority of them strongly agree when it comes to measuring their attitudes toward Code-Switching in the classroom based on practices and perceptions. Furthermore, most of them agree when surveyed on the impact of Code-Switching in teaching ENSCIMA subjects. However, there was a weak positive correlation between the weighted mean of their attitudes toward Code-Switching and their perceived impact on teaching. This suggests that while a teacher's atti-tude does have an influence, it is not the most significant factor deter-mining student impact, and many other variables play a crucial role. Out of the three learning stages (Grades 8 to 10), there were significant dif-ferences between the means of the groups when they were exposed to Code-Switching in ENSCIMA compared to the lower level (Grade 8). It signifies that mutual understanding, facilitating classroom learning, fostering social connection, and expressing identity, though it can also lead to anxiety and negatively impact communicative competence, are normal characteristics for a country whose lingua franca is truly native (Cebuano Visayan language), while switching to English as a foreign language. While it allows for clearer explanations, fills linguistic gaps, and builds solidarity, it can also be perceived as a sign of poor profi-ciency in a target language and may enforce social pressures to conform to specific linguistic norms. Further research is needed to confirm these findings and explore the effects of code-switching in different areas of disciplines.

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