An Analysis of Teachers' and Students' Perceptions of Codeswitching in Teaching Science and Mathematics in a Philippine Private High School

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This descriptive analysis of two teachers' and 32 3rd Year high school students' perceptions of codeswitching during classroom instruction reports that codeswitching in Chemistry and Geometry is a resource in making knowledge more comprehensible to the students than when only English is used. Through survey questionnaires, interviews, focus group discussion and 220 minutes of class observations, the results show beneficial effects in teaching and learning of highly technical s subjects. However, this study also argues that frequent codeswitching in highly technical subjects can be detrimental to the learners because it can cause confusion in the students' understanding of difficult concepts. Moreover, this study highlights implications for the "English Only" policy for instruction that seems impractical and ineffective in countries where English is the second or foreign language. The findings present strong indications that codeswitching by teachers should not be construed as incompetence in English proficiency because codeswitching is a bilingual speaker's skill, not a disadvantage.

Key words: perceptions, codeswitching, teaching flexibility, alternative resource, bilingual skill

INTRODUCTION

The Philippines, like any other post-colonial country, is an environment where a diversity of languages exists. In a linguistically-rich environment, Filipinos acquire a number of languages, English being one of them, in addition to the vernacular and the national language. As the diversity of languages causes the acquisition of more than one language and the mixing of codes in usage, second language acquisition must involve the active, integrated role of the local languages (Canagarajah, 1999). Codeswitching is defined as "the mixing by bilinguals or multilinguals of two or more languages in discourse, often with no change of interlocutor or topic" (Poplack, 2001, p. 2062). Being a linguistic phenomenon, its use has become widespread in post-colonial countries such as the Philippines for the functions it serves the speakers in various domains such as personal interaction, media, business, politics, science, and scholarship.

Despite earlier studies showing codeswitching to be a tool to achieve personal motivations and communicative efficiency which is defined as "the fastest, easiest, most effective way of saying something" (Bautista, 1999), and a struggle against hegemonizing forces, this mode of communication is perceived quite negatively in the Philippine educational context. It is seen as a "less than ideal language behavior" indicative of deteriorating language skills and low levels of bilingual language proficiencies (Bernardo, 2005).

In an attempt to remedy the declining proficiency of both teachers and students in the English language, private schools have sought measures to revive the "English Only" campaign. Most parents prefer the education of their children to be in English to enable the latter to gain the competitive edge in business, commerce and industry (Sibayan, 1996). The campaign has also been the perceived remedy against codeswitching and an attempt to improve the quality of English in the Philippines. However, with the persistence of codeswitching and the predilection of schools to the "English Only" policy, the question arises: Is a policy that places heavy emphasis on English the answer to the perceived decline in English language proficiency?

Citing the Monroe Survey Commission in 1925 which investigated the factors affecting the deterioration of Philippine Education, Patricia B. Licuanan, Ph.D. (personal communication, January 24, 2007), a prominent school administrator and social psychologist said that "the most consistent empirical evidence shows the damaging effects of English on Filipino student learning. When English is used, students do not learn well, and at times do not learn at all." Brigham and Castillo (1999) reported that 20 percent of Metro Manila high school students have low proficiency in English; thus they are likely to perform poorly in Science and Mathematics subjects which are mandated to be taught in English.

Despite this reality, private school administrators do not support the use of codeswitching in the classroom as it is deemed unacceptable and inappropriate to the educational setting. But how can teachers adhere to a language policy and at the same time address their students' difficulties in their subjects if the mandated language of instruction is incomprehensible to the learners? Moreover, why do the teachers resort to codeswitching in the classroom despite its unacceptability to the administrators as well as to other stakeholders of the school such as the parents?

Hence, the objective of this research is to explore the perceptions of teachers and students in a private high school regarding codeswitching during classroom instruction in Chemistry and Geometry at the 3rd Year level. This case study shall focus on the following questions: Under what circumstances do the Chemistry and Geometry teachers code-switch in the classroom? What are the teachers' views towards codeswitching in the teaching of Chemistry and Geometry and how do these manifest in their teaching practice? What are the students' views towards their teachers' codeswitching in the teaching of Chemistry and Geometry?

Also, the findings will show how codeswitching can be used as a resource for expressing difficult concepts in high school Science and Mathematics in more precise ways. This undertaking is in line with the notion forwarded by Bernardo (2005) that codeswitching can provide teachers the flexibility to express concepts and ideas with more precision than they would in only one

language. Rather than conform strictly to a one-language of instruction policy, Bernardo (2007) suggests that code mixing can be "a resource for improved student learning of content and language skills." The speech mode can aid teachers in simplifying concepts for the students to make knowledge more accessible and promote better understanding in the classroom. Moreover, for schools to be adaptive to the times, the New London Group (cited in Bernardo, 2007, p. 14) asserts:

> Every classroom will inevitably reconfigure the relationships of local and global differences that are now so critical. To be relevant, learning processes need to recruit, rather than attempt to ignore and erase, the different subjectivities, interests, intentions, commitments, and purposes that students bring to learning. Curriculum now needs to mesh with the different subjectivities, and with their attendant languages, discourses, and registers, and use these resources for learning. This is the necessary basis for a pedagogy that opens possibilities for greater access (2000, p. 18).

REVIEW OF LITERATURE

In the Philippines, studies on Filipino-English codeswitching show its functions in facilitating student learning of content subjects. Limoso's (2002) study on codeswitching in a college literature classroom revealed that the teachers codeswitched mainly to perform the effective transfer of knowledge during classroom instruction. The study also showed that using the speech mode engages the students in the learning process through active participation in the lesson and collaborative class activities. It was assumed that the students were most likely to understand the lesson when teachers communicate in a familiar language.

Abad's (2005) study on classroom discourse in a high school Christian Life Education class concluded that codeswitching is not a clash, but a complement of two languages. Codeswitching helped the teacher to bridge the gap between the Bible and the learners to explain the concepts in

simplified form and help them find meaning in Bible reading. Canagarajah (1999) maintains that codeswitching enables the teacher to proceed into greater detail and depth. I.P. Martin's (2006) research project on codeswitching in Science courses in selected Philippine tertiary-level institutions reported that the discourse mode "does support educational goals of delivering content knowledge." This study reinforced the functions of codeswitching in achieving not only cognitive but also affective goals during instruction.

Metilla's (2007) work revealed the codeswitching patterns of senior high school students in a private high school during classroom activities and break-time conversations. These patterns formed the basis in proposing measures in limiting its use in the classroom since its functions in various communicative and social functions as well as in learning cannot be ignored. Maintaining English as the medium of instruction during formal discussions, allowing codeswitching during group work or only in the most important and appropriate contexts, and discouraging the indiscriminate use of the speech mode were proposed.

In other studies of codeswitching abroad, the speech mode is shown to be useful in a teacher's management of classroom activities. In Macaro's (2001) study on codeswitching of pre-service teachers in foreign language classrooms, the subjects' reflections and beliefs on using the speech mode during instruction were analyzed. His case study of six teachers revealed that conveying procedural instructions and keeping control of the students and/or reprimanding them were some occasions for two teachers to codeswitch.

In addition, codeswitching is also shown to be beneficial in creating a low anxiety atmosphere in the classroom. As opposed to an "English Only" policy as the language of instruction, forcing students to speak English, or any language that is not their first language, before they are ready to is extremely anxiety-provoking, most especially when they are asked to do this in front of a class (Krashen, 1981). Krashen (cited in Horwitz, Horwitz & Cope, 1986, p. 127) asserts that when anxiety is heightened, an individual becomes unreceptive to language learning and acquisition. Thus, because of

its non-threatening nature, Canagarajah (1999) claims that codeswitching encourages empathy.

Similarly, P.W. Martin's study (cited in McLellan & Chua Wong, 2002, p. 13) of Brunei classroom interaction noted the stigmatizing effect of the use of English only inside and outside the classroom whereby speakers become labeled as snobbish or "stuck-up." Canagarajah (1999) argues that the use of English only is restricted to the educated bilinguals alone thus causing inequalities.

According to Krashen (personal communication, December 14, 2004), speech production proceeds from comprehension of input. Oral fluency is not the result of more speaking. It is not forced nor taught directly; rather, speaking ability emerges on its own after the learner has built-up competence through comprehending input. Moreover, students in any class are at different levels of acquisition depending on their amount of comprehensible input obtained and the attitude towards the target language (Krashen, 1981). Access to input-rich environments which promote second language learning eventually discourage the persistence of the mixed mode. However, a significant study by Wagner-Gough and Hatch (cited in Krashen, 1981, p. 10) revealed that environments outside the classroom or the real world are often quite unwilling to provide the learner with comprehensible input.

On the other hand, other studies also present counterarguments to codeswitching. First, codeswitching limits the learners' access to comprehensible input which is a pre-requisite to second language learning. According to Polio and Duff (1994), "the students consequently miss useful opportunities to process communicative target language input, to practice new target language structures thoroughly in nonmechanical ways, and also to express and resolve comprehension problems in the target language" (p. 322).

Second, codeswitching can also present problems to the social development of the learners because it can stifle their communication with people of other cultures whose language differs from their own. Codeswitching is a nonstandard variety appropriate for interaction with family and friends and in certain circumstances at school (Trudgill, 2000), but it cannot be a language

to wider communication.

Third, while it is only natural for bilinguals to codeswitch, Jones(2000) argues that code-switching can be "pernicious" (p. 235) to language development. It prevents the learners from receiving input that can expose them to life-like situations of target language use. Thus codeswitching in content areas whose materials are presented in English disables the students from learning the registers specific to the disciplines. In particular the language of Science and Mathematics is highly technical that there are no equivalent terms in the Filipino vocabulary that can aptly translate these. De Guzman (cited in Brigham & Castillo, 1999, p. 25) argues that Filipino has not reached an intellectualized level that frequent borrowing of English terms can possibly lead to confusion of meanings of concepts in the learners' minds.

Last, critics view codeswitching as a way to compensate for diminished language proficiency. In a study by Chick (cited in McLellan & Chua-Wong, 2002, p. 13), the findings show that this mode is a comfortable excuse to hide the incompetent bilingual speaker's poor command of English and his inadequate mastery of the subject matter, and to make it appear that effective learning is taking place.

METHODOLOGY

Participants

The primary participants from a private high school in school year 2008-2009 were one Mathematics teacher and one Science teacher at the 3rd Year level. Both are male with extensive teaching experience and units in graduate studies. Records show that both are highly proficient in English and Filipino. The secondary subjects were 32 all-female students of one section at the 3rd Year level, aged 15-17 and residents of Metro Manila. Guidance records show that 81 percent speak a combination of English and Filipino. Their academic profile reveals that 61 percent fare better in English than in Filipino.

Data Collection Methods

The main instrument used was a survey questionnaire adapted from Levine (2003) with two versions: one for the teachers and another for the students. The major items in the survey were: perceptions of teachers and students of the degree of codeswitching in the classroom; their perceptions of the percentage of codeswitching in the classroom; their perceptions of their level of fluency in English and Filipino; and their beliefs related to codeswitching during instruction.

The instrument had forty (40) statements and the respondents were asked to rate the items using a five-point Likert-type scale. Item numbers 1-32 refer to the frequency of codeswitching occurrences during instruction with the following scale descriptions: low (1-2), moderate (3) and high (4-5) occurrences of codeswitching. Item numbers 33-36 relate to the teachers' and students' level of proficiency in English and Filipino with the following scale descriptions: weak or inadequate in any or both languages (1-2), uncertain about one's proficiency in the languages (3), and highly competent in the languages (4-5). Finally, item numbers 37-40 relate to teachers' and students' beliefs on codeswitching with the following scale descriptions: disagreement to the speech mode (1-2), uncertainty about their beliefs (3), and agreement or highly favorable feedback (4-5).

The other methods were focus group discussion, audio-taped class observations and formal and informal interviews. Teachers' and students' profiles and the observer's notes comprised the corroborative data. The study was conducted from July 2008 to March 2009.

Research Design

This study employed both qualitative and quantitative methods which helped analyze the most common perceptions of the respondents. The qualitative method provided the main perspective for the research. Through this method, the information gathered from the transcribed interviews, focus

group discussion and class observations were used to reinforce or contradict the teachers' and students' responses in the survey; to report additional insights from the participants as a supplement to the results of the survey questionnaire; and, to incorporate the results of the survey and the transcribed interviews, focus group discussion and class observations in the analysis of this study.

Through the quantitative method, teachers' and students' responses were tabulated for frequencies and percentages. These were collated to form a basis for determining the specific descriptors where the majority of the students and the teachers had similar and differing views about and these are presented in the next section. Through descriptive analysis, data were interpreted using mean rating to describe the level and extent of codeswitching and their beliefs, and the percentage distribution to illustrate the proportion of occurrences of codeswitching in the classroom.

CONCEPTUAL FRAMEWORK
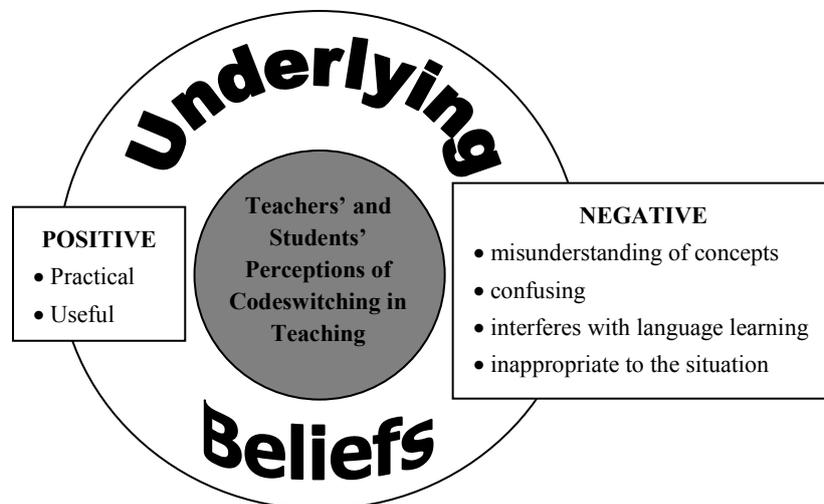
FIGURE 1
Conceptual Framework

The conceptual framework provides the basis in analyzing the data gathered in this study. Hence, as illustrated in the graphic presentation, the teachers' and students' perceptions are at the center. As the teachers' and students' perceptions of codeswitching in teaching are inextricably embedded and are influenced by underlying beliefs related to codeswitching on the twin processes of teaching and learning, this relationship generates two opposing views of codeswitching as experienced by teachers and students during instruction.

On the one hand, codeswitching may be deemed positive as it is a practical and useful tool for both learning and teaching especially in cases when the use of English may not always yield positive learning outcomes. Thus, when the teachers' belief in codeswitching is that it is beneficial for the various functions it serves during instruction, they are likely to incorporate codeswitching or modify their use of language as they see fit in a learning environment where English abounds. Similarly, when the students share the same beliefs with their teachers on the perceived benefits of codeswitching during Chemistry and Geometry classes, they would most likely welcome their teachers' codeswitching but only when the situation warrants it so as to facilitate their learning.

On the other hand, codeswitching may be viewed negatively. When teachers believe that codeswitching is detrimental to instruction which causes the students to misunderstand concepts, they are likely to execute an all-English instruction throughout class time as it is mandated by the school and an expectation of the school's stakeholders. Similarly when the students' perceptions of codeswitching during instruction are negative because it is deemed to bring about confusion in their minds, they would expect an all-English instruction over an all-Filipino medium. Filipino is not the language that they have been accustomed to ever since the grade school. Moreover the confusion that codeswitching can cause may also interfere with language learning since the development of language skills is deemed to be a shared responsibility of all teachers regardless of the subjects they teach. Lastly, codeswitching may also influence the students' understanding of appropriateness

in language use in specific situations as the speech mode may be considered informal and, therefore, inappropriate to a formal setting such as the school.

FINDINGS

Circumstances of Codeswitching in the Chemistry and Geometry Classes

The teachers contend that although they do not deny codeswitching during instruction, they do so only in certain circumstances. In Chemistry, the teacher (herein referred to as Teacher D) identified only 7 indicators (d) from the questionnaire as shown in Table 1 as occurring frequently or at a high rate of 61-80 percent of the time compared to the low occurrences of other codeswitching functions during instruction.

TABLE 1
Descriptors Identified as Occurring Frequently in the Chemistry Class

Descriptor No.	Descriptor
3	When I codeswitch, I am able to link new information to well-established background knowledge
7	Codeswitching aids me in giving examples or illustrations to clarify concepts.
17	I am able to build rapport with the students when I codeswitch.
18	Codeswitching enables me to praise or affirm my students for correct answers or a job well-done.
20	When class discussions are serious, I can inject humor when I codeswitch.
21	Codeswitching helps me express sincere emotions.
22	Meaningful interaction between me and my students is encouraged when I codeswitch.

From the 7 items identified, one situation was deemed to occur during schema-building when teacher D links new information to well-established background knowledge (d3), and another one during lesson presentation

when he clarifies concepts through examples or illustrations (d7). The rest of the indicators identified (d17, d18, d20, d21 and d22) refer to instances when Teacher D establishes positive relations with the students which is an important factor in creating a low-anxiety learning environment.

Teacher D also cited during the interview that in a lesson, for example, he shifts from English to Tagalog for the purpose of emphasis. One particular situation is when he uses examples to explain concepts or ideas or to clarify the meaning of difficult terms in Chemistry.

Teacher D went on further to say that he shifts from L2 to L1 when he injects humor or trivia especially during class time held at unholy hours of the day such as after lunch to keep the students alert during the lesson. The students added during the focus group discussion that there are times when Teacher D codeswitches to tell a story about topics which usually stray away from the lesson for the day. In the transcript that follows, the teacher codeswitched (utterances italicized and boldfaced) to provide humor while challenging the students to discover how the elements in the periodic table are arranged and why they are arranged that way:

> T: Even the formulas in the … are a matter of chemical behavior. So, that's why it is shaped like that. Chemists did that. But again, I ask you. What do you notice? You may clean it up *(referring to the board monitors)*. **Sige,** [okay] while you're cleaning, just come out with words and strike it.
>
> S: *Parang* [it's like a] puzzle.
>
> T: ***Parang*** puzzle ***ba*** [is it like a puzzle]? It's there staring in the face. ***Parang*** as I told you, ***parang isang dahong palay,*** a green coiled snake, ***na tutuklawin ka*** [it's like a green coiled snake that is ready to attack you]***. Ayan na, ayan na. Takbo! Ilag!*** [it's there, it's there. Run! Take cover!] You don't see it? ***May*** candy ***ang makakakita. Wala? O, heto, ah.*** [I'll give a candy to whoever can find it. No one? Here it goes.]
>
> *(Teacher leads the students to the answer by making an illustration on the board.)*
>
> Ss: *(in English)* 1, 2

T: **Ulit ah** [I'll repeat.] *(repeats the illustration)*. Okay, **sandali ah** [just a while] *(continues with the illustration until the students get the answer)*.

Ss: *(in English)* 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14… ooohhh! 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11…ooohhh! Alam ko na [now I know]!

T: Finally!

Other instances of codeswitching that surfaced in the transcripts of class observations but were not revealed in the questionnaire and the interview were noted when Teacher D codeswitched to manage class behavior in calling the attention of inattentive or misbehaving students.

In Geometry, only two items from the questionnaire presented in Table 2 were identified by the teacher (herein referred to as Teacher G) as occurring frequently compared to the low occurrences of the other codeswitching functions during instruction.

TABLE 2
Descriptors Identified as Occurring Frequently in the Geometry Class

Descriptor No.	Descriptor
12	I am able to assist my students in analyzing the information being learned.
24	I can save time in negotiating meaning of difficult vocabulary or texts coded in English when I codeswitch.

Item 12 indicates that Teacher G perceives codeswitching to be instrumental in simplifying concepts for the students. For one, codeswitching aids him in helping students analyze information learned.

Teacher G also noted the necessity to codeswitch whenever he must cover substantial material within the given class period (d24). In addition he conveyed during the interview that he also occasionally codeswitches when introducing a new lesson with a game as a motivational activity or when introducing new words that may be difficult for the students to grasp when only English is used. In this example volunteered by the students during the focus group discussion,

"Adjacent angles are *magkadikit* [side by side],"

codemixing enabled the teacher to bring the idea of "adjacent" down to a level that the students could easily grasp.

Finally, although the students did not dispute Teacher G's claim that codeswitching is not a usual incidence during formal class time, they observed that the rare occurrences of codeswitching happen in moments when lessons are not taking place.

Teachers' Perceptions of Codeswitching During Instruction

Teacher D believes that although he generally codeswitches, he does so only to a minimal extent when its use is called for in teaching Chemistry. He explained that there are things that are expressed better in the native language for its naturalness and connectedness to the learners' level of competence and experience. He cited that humor expressed in a familiar mode such as codeswitching can awaken students who usually feel lethargic at unholy hours of the day. He also conveyed that at some level, the learners can connect to unfamiliar concepts better when these are communicated in the first language with relevant experiences as background information. However he contradicted himself when he said that when one takes a whole language approach to it, the teacher can teach Science in whatever language he deems effective in conveying a message. He asserted that students will learn a lesson no matter what language is used to teach it. Although he does not discount the advantages of compelling students to speak in English, he opined that Science is not much about learning English and the vocabulary of the content area; it is much more than what he teaches. A review of the class observation transcripts revealed that the incidence of codeswitching in Teacher D's class is shown to occur only about 31 percent of the time. This reinforced the survey findings of Teacher D's perception of its 21-40 percent occurrence as indicated in item 28, Table 3.

The interview with Teacher G revealed that while he is thankful that the

English medium of instruction is a strict requirement in classroom teaching in this private high school, he argued that there is no other way to teach Mathematics but in English. He cited that concepts in Math are better learned in English because the texts are coded in English. Moreover teaching the subject in Filipino is difficult because there are usually no equivalent Filipino terms of Math terminologies presented in English; thus, codeswitching in Math can be confusing for the learners.

Although he did not totally discount the incidence of codeswitching during instruction, he expressed his belief of its rare occurrence as indicated in item 28, Table 4. The transcripts of class observations show only 17 percent occurrences which reinforced Teacher G's claim of low codeswitching frequency during instruction.

He insisted that he would usually carry out his lessons either in straight English or, if necessary, in straight Filipino. Because the school is a formal setting, the language used in the classroom should also be appropriate. He went on further to say that the language of instruction in Math is the least of his concerns as his main objective is to make the students understand abstract concepts by providing them with numerous opportunities for practice. He added that students seem to be lacking in experience with concretizing abstract concepts in Math.

Students' Perceptions of Codeswitching in Chemistry and Geometry Teaching

The results of the students' survey questionnaire showed that there were no indicators that matched Teacher D's perceptions of codeswitching functions as frequently occurring in the Chemistry class. Only one indicator, d2, Table 3 showing the students' responses appeared as frequently occurring in Chemistry with a 4 rating which Teacher D rated as 3 or occurring only sometimes.

Significantly, Table 3 also revealed that the students perceive codeswitching to occur at a low frequency rate of 0-20 percent during Chemistry. However, a

closer look at the students' and teacher's responses to d28 showed a difference in the way the respondents assess the frequency of occurrences in Chemistry. While Teacher D perceives codeswitching to occur sometimes, the students perceive its occurrence rarely. Nevertheless, both responses indicate low frequency.

Also significant was the difference in perception of Teacher D's own level of proficiency in English as against the students' perception. Although the students rated Teacher D's English proficiency as 5 or extremely high, Teacher D rated himself as only 3 or moderate.

TABLE 3
Descriptors with Significant Student and Teacher Responses in Chemistry

| Descriptor No.	Descriptor	Students' Response	Teacher D's Response
2	Codeswitching is useful in helping me recall the information I already know and relate it to new information.	4 Frequently	3 Sometimes
28	My teacher uses codeswitching during classroom instruction about _____ of the time.	1 Rarely	2 Sometimes
33	I would rate my teacher's level of fluency in English as _____.	5 Extremely High	3 Moderate
34	I would rate my teacher's level of fluency in Filipino as _____.	4 High	4 High

In Geometry, there was only one indicator that appeared to be perceived by the students as frequently occurring in Geometry. This item, d24, Table 4 matched Teacher G's response of a 4 rating. Moreover, the majority of students responded with a 1 or "rarely" to d28, Table 4 indicating low frequency, thus reinforcing Teacher G's perception of its rare occurrence.

Also noteworthy was the similarity in Teacher G's perception of his high proficiency in English and Filipino and the students' perception of his language proficiency.

TABLE 4
Descriptors with Significant Student and Teacher Responses in Geometry

Descriptor No.	Descriptor	Students' Response	Teacher G's Response
24	My teacher can save time in negotiating meaning of difficult vocabulary or texts presented in English.	4 Frequently	4 Frequently
28	My teacher uses codeswitching during classroom instruction about _____ of the time.	1 Rarely	1 Rarely
33	I would rate my teacher's level of fluency in English as _____.	4 High	4 High
34	I would rate my teacher's level of fluency in Filipino as _____.	4 High	4 High

Remarkably, despite the teachers' codeswitching during instruction, the students regard both Teacher D and Teacher G with high esteem as both of them were rated highly proficient in both English and Filipino with responses ranging from "high" to "extremely high" in d33-d34, Tables 3 and 4.
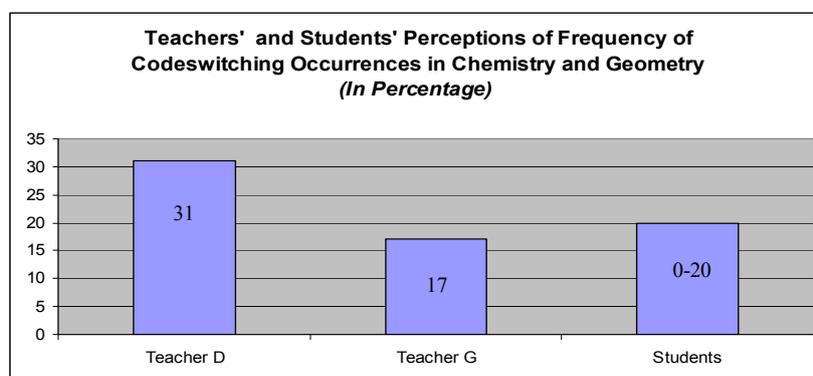
FIGURE 2

While the collated information from the students' survey and focus group

discussion reinforced the teachers' claim of low occurrence of codeswitching during Chemistry and Geometry classes as summarized in Figure 2, the results also shed light on the students' arguments supporting and contesting codeswitching in Chemistry and Geometry classes.

On the one hand, the students perceive their teachers' codeswitching positively when it enables their teachers to express difficult concepts better especially in defining new and unfamiliar terms in the subject. The students also claimed that when lectures are conducted in either straight English or Filipino, there are instances when they would take a longer time to understand certain concepts. Thus the teacher can maximize his time in tackling as much matter as he can than when only English is used. They added that codeswitching aids them in understanding difficult concepts when these are illustrated with students' experiences in a familiar mode. And because codeswitching is a comfortable mode, it eases the difficulty of some students in comprehending lessons conducted in either straight English or straight Filipino.

The students also agree that codeswitching aids in rapport building between the teachers and the students. They claimed that when only English is used, classroom atmosphere becomes very formal which can strain their relationship with the teachers. When the teachers allow them to codeswitch, the class becomes relaxed and the students are encouraged to actively participate in discussions because grammar concerns are minimal.

On the other hand, the students clarified during the focus group discussion that its occurrence is acceptable only within reasonable bounds. They believe that when teachers codeswitch all the time, they see more consequences than benefits to their education as well as to their personal growth. For one, codeswitching during Geometry and Chemistry classes can be confusing for them particularly where precise meanings of words are concerned. When the meaning of a new word is codeswitched, both students and teachers may not necessarily share the same meanings. Because concepts in these two subjects are definite, students are not entitled to their own interpretations. They added that they have to know definitions word-for-word. Otherwise, if one word in

a statement is incorrect, the whole idea is wrong. Thus, they expect their teachers' codeswitched statements be repeated in straight English to avoid getting mixed-up with meanings. Furthermore, they said that because the language of Mathematics and Science is coded in English, it is only fitting to learn it in English. They also opined that codeswitching is detrimental to their English vocabulary building and grammar improvement since they tend to invent words that are totally nonexistent such as the italicized word in the statement, "She is *sapaking* me" instead of using the formal English term "hitting" in its place when the statement is uttered in straight English. Furthermore, they believe that codeswitching is an informal speech mode used with friends and family members or even with the teachers outside the classroom. Hence its lack of formality makes the students feel that they are not in a private school where formal training for life should be taking place. Finally, they expect their teachers to be proficient in English and/or Filipino. Teachers should be role models of good language use; thus the students deem codeswitching to be a bad speaking habit aside from being annoying. However, while they expect their teachers to be role models of good speaking, they are also keen in saying that they should be allowed to speak in the language that best expresses their message and not force them to speak in English in subjects other than English Communication Arts. Although some of the respondents recognize the benefits of being compelled to speak in English, there are some others who say that it is not right to force people to speak it most especially when they are not ready to. The experience can be an anxiety-provoking one.

DISCUSSION

The data show that both the teachers and the students share similar perceptions of codeswitching functions and effects during instruction. Although the use of English prevails more than 65 percent of the teaching time in Geometry and Chemistry classes, both teachers and students agree

that codeswitching has established itself as a speech mode in teaching these subjects alongside English. The results gathered from the survey show 0-20 percent occurrences in Geometry and 21-40 percent occurrences in Chemistry. These results were further reinforced by the findings from the interviews, focus group discussion and class observations confirming the low frequency rate of codeswitching occurrences of 17-31 percent in these two subjects combined.

The results further validate earlier findings on the cognitive and affective functions of codeswitching during instruction (Abad, 2005; Limoso, 2002; Macaro, 2001; Martin, 2006; Metilla, 2007). Particularly in Chemistry and Geometry, codeswitching aids in breaking down difficult words, concepts or ideas to the level of competence and experience of the students. The insights gathered from the students confirm their increased comprehension of lessons, especially the difficult ones, when their teachers adapt their language to the students' speech style. The findings reinforce Bernardo's (2005) claim that "codeswitching may result in a more definite rendering of a complex idea that would otherwise be imprecise or vague when expressed in just one language" (p. 159).

Codeswitching is also instrumental in creating a low-anxiety classroom atmosphere where the students become very interactive and involved. When the students are not expected, but only encouraged, to speak in English during Geometry and Chemistry, they become responsive to questions and assertive in asking for clarifications, expressing opinions, and reasoning out without being forced to speak in the language that they are not very comfortable with. Moreover, because codeswitching is a shared speech mode, it helps the teachers in building rapport with the students.

In addition, the speech mode helps the teachers in managing students' behavior and class time thus giving the teachers more opportunities to engage the students in hands-on activities such as laboratory experimentation and problem-solving drills, among others, that provide the learners with meaningful learning of concepts which lectures alone cannot impart.

The data further show the teachers' awareness of how, when and the extent

to which they actually codeswitch during instruction. For one, the transcripts of class observations validated the teachers' claim of low frequency of codeswitching occurrences ranging from rarely to sometimes. Moreover the data revealed that both teachers, aside from being held with high esteem by the students for their teaching competence are also considered competent bilinguals. The profiles of both teachers prove that they possess high proficiency in English and Filipino which is, according to Poplack (1980), a requirement of "true bilinguals." In addition, contrary to popular belief that bilingual codeswitching is a reflection of low English language proficiency and lack of linguistic control (Malakoff & Hakuta, cited in Bernardo, 2005, p. 153), and "less than ideal language behavior" (Bernardo, 2005, p. 153), the findings show that both teachers' codeswitching was a conscious and deliberate act of getting the message across as effectively as possible. They cite the following reasons for this perception:

1) Being Filipinos and bilinguals at that, both teachers believe that it is only natural to fall back on one's native language for the ease and naturalness of expression it affords the speakers. As codeswitching is a shared speech mode, it facilitates the common understanding of ideas in a communication act. This highlights the notion that codeswitching is a tool to achieve personal motivations (Scotton, cited in Bautista, 1999, p. 26) and communicative efficiency (Bautista, 1999); and,

2) The teachers also believe that codeswitching becomes a necessity at certain points in a lesson when they perceive that learners are encountering difficulty in understanding unfamiliar or complicated concepts. Codeswitching acts as a bridge in easing the gap between the learners and the text that is coded in English. After all, as Poplack (1980, p. 615) asserts, codeswitching is a bilingual speaker's edge since it requires linguistic competence in more than one language.

Significantly, because "codeswitching is used to enhance or complement communication to bilingual speakers" (Malakoff & Hakuta, cited in Bernardo,

2005, p. 152), it can also be inferred from the participants' insights that there is strong preference for the codeswitching functions established in this study to remain as such – to enhance or complement classroom communication – while English remains as the language of instruction. The participants argued that although developing proficiency in the English language is not the priority of the teachers, both teachers and students believe that too much codeswitching during instruction can have adverse effects on the students' learning in Science and Mathematics. Technical terms are exact in meaning and cannot be subjected to personal interpretations. This reinforces De Guzman's claim (cited in Brigham & Castillo, 1999) that frequent borrowing can lead to confusion of meanings of concepts in the learners' minds. Thus it can be inferred that using one language with occasional codeswitching is practical in teaching content subjects to facilitate the expression of concepts and ideas with more precision than when only one language is used (Bernardo, 2005). This implies that the language of instruction can be flexible to enable teachers to achieve instructional objectives. The participants further argued that because the school is the place where formal learning takes place, it is only fitting to teach the subjects in their appropriate language code which is English. To date, however, there is still no literature that adequately proves this argument (Bernardo, 2000). The participants also conveyed that students will learn the scientific and mathematical concepts better when these are taught in English since most students are proficient in English. However, Bernardo (2000) only suggests that there is the possibility of better performance of students in subjects that involve abstract processes when these are carried out in the language that students are accustomed to in acquiring the concepts and procedures. The participants further claimed that the students will learn the scientific and mathematical concepts regardless of the language used to teach these. However, Bernardo (2000) asserts that what is really more important is that the teachers are able to provide the students with enough schema or opportunities for meaningful learning of abstract concepts and procedures to enable the students to function on their own.

CONCLUSION

This case study reinforced the positive perceptions of codeswitching in teaching Chemistry and Geometry as presented below:

1) Codeswitching is a play of complimentary roles of two languages because it facilitates the breaking down of difficult or complicated texts in English to make input comprehensible to the learners. In Chemistry and Geometry, codeswitching is particularly helpful in simplifying meaning of difficult words or abstract concepts to the level of competence and experience of the learners. The speech mode has also been shown to create a low-anxiety classroom atmosphere conducive to learning. Furthermore, codeswitching aids the teachers in keeping the students focused in the lesson and maintaining order in the classroom. Finally, codeswitching is time efficient in content subjects, thus providing the teachers with more opportunities to use class time for meaningful activities to supplement lectures. Hence, the findings support that codeswitching in the classroom has beneficial effects to learning;

2) Codeswitching is rule-governed. It requires competence in two languages. It is not an indication of lack of linguistic control or low proficiency in two languages. The data have established that both teachers are not only competent in their respective fields of specialization but competent bilinguals as well. Moreover in a school setting where the language of instruction in Mathematics and Science is English, teachers codeswitch purposefully to achieve instructional goals and without prejudice to English as the mandated language of instruction. This is an indication of their awareness of how, when and to what extent they codeswitch. Hence, this study has shown that codeswitching is a bilingual skill, not a detriment; and,

3) Codeswitching is a convenient speech mode for the ease and naturalness in expression it provides the speakers.

On the other hand, while it recognizes the benefits of codeswitching in the

teaching-learning process, this study emphasizes that this mode could remain in the Chemistry and Geometry classes in this private high school but only likely at low frequency and as a complement of English. The insights gathered from the participants point out the repercussions of frequent codeswitching in teaching Chemistry and Geometry as explained below:

   1) Highly technical subjects like Chemistry and Geometry are better taught in one language with occasional codeswitching. The frequent occurrence of codeswitched utterances can be annoying and confusing to the learners because technical terms are not only exact in meaning but also not translatable in Filipino. Moreover, it prevents the students from learning the language registers of the subjects which is vital in knowledge acquisition that English instruction can provide; and,

   2) Although codeswitching is a convenient speech mode, it is not appropriate to a school setting where formal learning takes place, including the development of language proficiencies in the first and second languages.

   Hence, the participants appear to be more inclined to believe that using English as the mandated language of instruction is indeed important and, therefore, should prevail in the classroom considering the nature of the Science and Mathematics subjects and the expectations of the school's stakeholders. However, in the event of a breakdown in comprehension of concepts presented in English, codeswitching becomes a strategy to remedy the situation – a bridging mechanism to ease the gap between the text and the students – to help them overcome their difficulties. Nevertheless, it is only in such circumstances that codeswitching occurrences can be tolerable, if not, acceptable.

   No matter how unacceptable it may seem to school administrators at present, codeswitching is a language that one has to reckon with since it facilitates the development of communication skills, promotes understanding of difficult concepts and gets learning objectives achieved.

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REFERENCES

Abad, L. (2005). Code-switching in the classroom: A clash of two languages? *Faculty Research Journal of Miriam College,* 36-52.

Bautista, L. (1999). An analysis of the functions of Tagalog-English code-switching: Data from one case. In L. Bautista & G. Tan (Eds), *The Filipino bilingual: A multidisciplinary perspective. Festschrift in honor of Emy M. Pascasio* (pp. 19-31). Manila: Linguistic Society of the Philippines.

Bernardo, A. (2000). The multifarious effects of language on mathematical learning and performance among bilinguals: A cognitive science perspective. *Parangal Cang Brother Andrew,* 303-316.

Bernardo, A. (2005). Bilingual code-switching as a resource for learning and teaching: Alternative reflections on the language and education issue in the Philippines. In D. Dayag & J. Quakenbush (Eds.), *Linguistics & language education in the Philippines & beyond* (pp. 549-554). Manila, Philippines: Linguistic Society of the Philippines.

Bernardo, A. (2007). Language in Philippine education: Rethinking old fallacies, exploring new alternatives amidst globalization. In T. Tupas (Ed.), *(Re)Making society: The politics of language, discourse, and identity in the Philippines* (pp. 1-16). Quezon City, Philippines: The University of the Philippines Press.

Brigham, S., & Castillo, E. (1999). *Technical background paper No. 6: Language policy for education in the Philippines.* Philippines: Asian Development Bank.

Canagarajah, A. (1999). *Resisting linguistic imperialism in English teaching.* Hong Kong: Oxford University.

Horwitz, E., Horwitz, M., & Cope, J. (1986). Foreign language classroom anxiety. *The Modern Language Journal, 70*(2), 125-132.

Jones, G. (2000). Some language planning questions facing Brunei Darussalam, Singapore, Malaysia, and the Philippines. *Parangal Cang Brother Andrew,* 226-237.

Krashen, S. *Second language acquisition and second language learning* [book on-line] (Pergamon Press, Inc., 1981 accessed 17 December 2004); retrieved from http//www.sdkrashen.com

Levine, G. (2003). Student and instructor beliefs and attitudes about target language use, first language use, and anxiety : Report an a questionnaire study. The *Modern Language Journal*, *87*(3), 343-364.

Limoso, R. (2002). *Codeswitching among literature teachers of Miriam college: Patterns, functions, implications.* Unpublished, doctoral thesis, Ateneo de Manila University.

Macaro, E. (2001). Analyzing student teachers' code-switching in foreign language classrooms: Theories and decision-making. *The Modern Language Journal, 84*(4), 531-548.

Martin, I. (2006). Language in Philippine classrooms: Enabling or enfeebling? *Asian Englishes, 9*(2), 48-67.

McLellan, J., & Chua-Wong, P. (2002). Two languages in the classroom: Clashing codes or coexistence? *The ACELT Journal, 6,* 11-19.

Metilla, R. (2007). Recurrent patterns of English-Filipino code-switching: Bases for language teaching modifications. *Philippine Journal* o*f Language Teaching,* 2-13. Quezon City: Philippine Association of Language Teaching.

Polio, C., & Duff, P. (1994). Teachers' language use in university foreign language classrooms: A qualitative analysis of English and target language alternation. *The Modern Language Journal, 78*(3), 313-326.

Poplack, S. (1980). Sometimes I'll start a sentence in Spanish y termino en Espaňol: Toward a typology of codeswitching. *Linguistics, 18,* 581-618.

Poplack, S. (2001). Codeswitching: Linguistic. In N. Smelser & P. Baltes(Eds). *International encyclopedia of the social & behavioral sciences* (pp*.* 2062-2065). Elsevier. Science Ltd.

Sibayan, B. (1996). Difficult tasks in teaching Filipino children in two or three languages: Some suggested solutions. In L. Bautista & G. Tan (Eds.), *The Filipino bilingual: A multidisciplinary perspective. Festschrift in honor of Emy M. Pascasio* (pp. 4-10)*.* Manila, Philippines: Linguistic Society of the Philippines.

Trudgill, P. (2000). *Sociolinguistics: An introduction to language & society.* England: Penguin Books.