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FOREWORD

La Salle University provides quality education for the youth. Over the years, the institution is committed to improve the quality of education and services it offers to students. Hence, the faculty members continue to search for knowledge to improve the quality of education by exploring on what can enhance and improve teaching-learning process.

The articles on the Misconception on the Path of the projectile, Use and Non-use of Songs in Teaching Pronunciation and the Novel Use of Flow Chart in Teaching Factoring are proofs that lessons in the classroom can be imparted to students in various creative ways. The articles on Algebraic Method in Solving Word Problems and on Teachers' Qualities attest that our teachers are committed to give quality education to our clientele through probing on the different situations that might have affected their learning process. Lastly, the article on The Tutorial Extension Program at Calabayan National High School confirms that La Salle University is doing an extension service to students other than its own clientele.

The editorial board wishes to continue our research endeavors by providing you more on our next issue. Lastly, we would like to acknowledge the contributors of this issue for their untiring support for without them this publication would never be a reality.

Dr. REZYL R. MALLORCA
Institutional Research Director

Misconception on the path of the projectile near the surface of the earth

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Abstract

This paper explores some misconceptions on the true path of a projectile as presented in some textbooks in physics. An exposition on the paper of Burko and Price was presented in qualitative form. A series of discussions was presented and the correct approximation on the elliptical case to parabolic form was introduced. A number of situations were also mentioned for the projectiles path to deviate from the idealized trajectory.

1. Introduction

One of the reasons why man today needs *science* in everyday living can be traced on the pursuit of the correct path of *projectiles*. These apparent paths guided humans in the course of history to modern inventions and technologies, from the projectile presented by David in defeating Goliath to the "apples" of Newton and to the paths of sub-atomic particles. Yet, in the early chapters of many physics textbooks, the path of a projectile is discussed as a parabola. Indeed, all of the mathematical formulae and calculations dealing with projectile motion of objects falling, thrown or propelled support that interpretation. But in later chapters, when earth satellites and ballistic missiles are discussed, the textbook would state that their orbits are portions of ellipses. Later, when the orbits of planets and comets are discussed, they are all elliptical [2]. This is conflicting; if not confusing. “What is the mathematical shape of a projectile's path?”

When dealing with projectiles of short range and near the earth's surface, textbooks used a coordinate system in which one axis is "horizontal" and one axis is "vertical" treated in a Cartesian Coordinate System and get a parabola [3], [4].

But, in [1], Newton's Principia noted:

> *"If the ellipsis, by having its centre removed to an infinite distance, degenerates into a parabola, the body will move in this parabola; and the force, now tending to a centre infinitely remote, will become equable. Which is Galileo's theorem."*

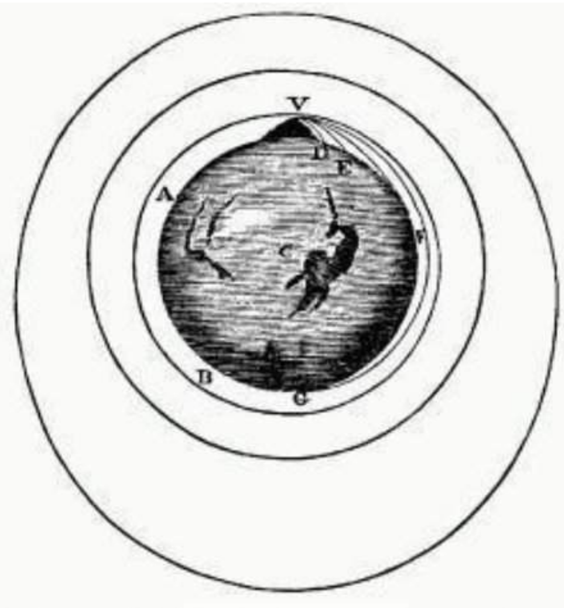

Figure 1: Newton's mountain, 1729

Common high school and college physics textbooks "do not" discuss the nature of the approximation and if some do, the presentation assumes a vague discussion on the subject, i.e. they "do not" discuss the conditions under which the flat-earth parabola is an "accurate" approximation for what is really a central force ellipse [1], see Figure 1.

The purpose of this paper is to discuss correct conditions on the approximation of elliptical path to parabolic path of projectiles.

2. Discussion

Evaluating Figure 2, two vertical" lines are not exactly parallel. They diverge from the center of the earth. Also, horizontal" surfaces are not flat, they are portions of spheres. Also, the equations of the parabola trajectory are based on the assumption that the acceleration due to gravity, *g*, is constant. In fact, *g* decreases with height [2].

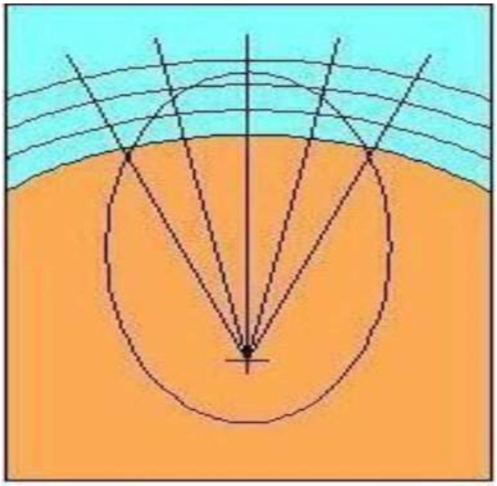

Figure 2

To "flatten the earth" without any approximation (see figure 3), we introduce earth centered polar coordinates illustrated in the figure and plot them as if they were Cartesian coordinates [1].

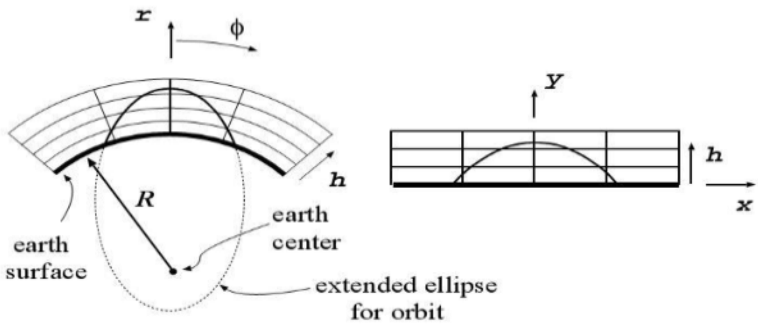

Figure 2: Elliptical and parabolic paths

If we were to look at the trajectory from a long way off in a coordinate system anchored on the earth's center (polar), we would see that the trajectory is actually a portion of an ellipse, with one focus of the ellipse at the earth's center, as shown in Figure 2.

Textbooks plainly assumed that if the trajectory of the projectile is small compared to the radius of the earth and add the assumption that g is constant, then proceed to prove that a particle being acted upon by gravity alone moves in parabolic path. It would seem, therefore, that gravitational acceleration *must* be acting vertically in Figure 3. In the paper of Burko and Price [1], they noted:

> *"These naive expectations are not correct …. The large deviations from the parabola occur when the range of a trajectory is only around 60 km, a tiny distance compared to the size of the earth …. The replacement of the spherical earth surface with a flat surface is justifiable only if the trajectory is more sharply curved than the earth surface."*

Burko and Price [1] provided the mathematical derivation as well as the computational verification of their claim. Thus, the correct approximation would be the curvature of the projectile path is much greater than the curvature of the surface of the earth. Another way of interpreting their findings would be, if we choose to pretend that all verticals are parallel, and all "level" surfaces are planes and are parallel, *then we distort the real situation,* converting ellipses into parabolas [2].

Burko even noted: We can now understand this in terms of the radius of curvature of the trajectory.

For a small *h*, high velocity orbit, a projectile can move “just above” the surface of the earth on a trajectory with a range much larger than its height *h* (but much smaller than *R*). The curvature of that trajectory in space is mostly due to the curvature of the earth. In the flat earth picture the true trajectory would seem to have almost constant height, and would greatly deviate from a parabola.

There are other factors that cause real projectile trajectories to depart from these idealized paths. The friction of the air (air drag) continually slows a projectile, making its orbit deviate from the ideal parabolic path. If we choose a coordinate system that is fixed on the earth's surface, then the path, in this coordinate system, will depart from the idealized path. This is because the earth itself is rotating on its axis, and our coordinate system fixed on the earth is a non-inertial coordinate system. The effects of earth's rotation on the trajectory include centripetal and Coriolis effects, which are very important in atmospheric and oceanographic studies, and military applications of long range cannons and ballistic missiles [2].

For short distances, near the earth, the small portion of path we usually observe can be approximated as an ellipse or a parabola, and we don't even "notice" the results of coriolis and centripetal effects. In fact, for shallow trajectories (launched at small angles to the ground), the trajectory is approximately a "circular arc”. This is the case for rifle bullets, baseballs, and golf balls. If you take a small enough portion of any curve, it approximates a circular arc [2].

3. Conclusion

Elliptical and parabolic representation of a projectile's path can be equally applied as long as correct conditions are clearly presented. For small scale trajectories, elliptical path could be approximated to a parabolic form as long as the curvature of the trajectory is much greater compared to the curvature of the earth's surface. Besides, taking into account the rotation of the earth and some resisting medium could make the trajectory not elliptical nor parabolic.

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The Use and Non – Use of Songs in Teaching Pronunciation to English 2A Students of LSU Ozamiz City"

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Abstract

This study aimed to find out the effectiveness of the use and non-use of songs in teaching pronunciation to two groups of twenty students enrolled in Speech and Oral Communication. One group was taught pronunciation with the use of songs, while the other group was taught with the use of drills. An adapted and revised questionnaire was used in data gathering. The data gathered were statistically treated using the Paired Sample T-test.

1. The Problem and a Review of Related Literature

Pronunciation is the aspect of a language that most adult learners of English (and other languages) most need and want to master; yet, it is also the aspect that most English teachers find themselves least able to teach effectively. Dalton (1997) stated, "We are comfortable in teaching reading, writing, listening and to a degree, general oral skills but when it comes to pronunciation we often lack basic knowledge of articulatory phonetics to offer our students anything more than rudimentary". Hence, in some colleges or universities, English pronunciation is unduly neglected, if not ignored (Fangzhi, 1998).

This situation is indeed of grave concern since it means that many language students do not reach the desired level of proficiency in the speaking skills. Baker (1992) as cited by Fangshi (1998) states "advanced students find that they can improve all aspects of t0heir proficiency in English except their pronunciation, and mistakes which if repeated for years are impossible to eradicate." Morely (1998) in Florez (1998) added that limited pronunciation skills can undermine learner's self-confidence, restrict social interactions, and negatively influence estimations of speaker's credibility and abilities.

Review of Related Literature

Songs provide examples of authentic, memorable, and rhythmic language. They can be motivating for students keen to repeatedly listen to and imitate their musical heroes.

Almost everyone loves music. It is part of our language and life from before birth onwards. As babies we hear lullabies, as young children we play, sing and dance to a myriad of nursery rhymes, as adolescents we are consumed by the beat of popular music artists worldwide. As adults, every form of advertising we hear, every special event we experience, is in part, music. Music pervades television, movies, theater and even the nightly news. When we exercise, when we work, when we play, when we worship and even when we die, music is there to reinforce or alter every mood and emotion.

Music pervades virtually every aspect of our lives. It contains numerous useful elements for teaching pronunciation and it is fun for both the teacher and the students.

Singing is also practically used in the teaching of pronunciation since it is very helpful in stimulating the learner to listen to the tune and to the way the words of the song are spoken or sung. Also, singing is very useful in teaching pronunciation because, while the student sings she/he can retain one or more sounds for a relatively long time rather naturally and thus hear his/her own pronunciation of this sound, and perhaps, possible errors that s/he must get rid of, so s/he becomes more conscious of his/her own weaknesses. Indeed, singing is one of the best ways to improve one's own pronunciation for it brings variety and life into the classroom.

Students will take songs outside the classroom and will go on performing or listening to them after the lesson has finished. Unlike drills, which usually slip from the pupil's minds as soon as they have the classroom, songs can last a lifetime and become a part of one's own culture.

In many cases, however; pronunciation teaching still focuses in discrete phonemic awareness and production; for many reasons, this approach has been relatively ineffective to date (Egbert:n.d). Fraser as cited by Egbert notes that most language learners feel that pronunciation is a crucial part of language learning. Students believe that the best way to improve their pronunciation is to practice, and many pronunciation experts agree that pronunciation teaching and learning must be situated in communicative context. This is strengthened by Hong when he emphasized that teachers simply turn on the tape to let students listen and repeat when dealing with pronunciation; few teachers stop to explain to students the mechanism of producing sounds; consequently, students easily forget the correct pronunciation of words.

Hinofotis and Baily (1980) as cited by Okita (n.d.) reported that up to a certain proficiency standard, the fact which most severely impairs communication process in EFL/ESL learners is pronunciation, rather than vocabulary or grammar. This argument makes pronunciation instruction all the more important in improving the communication competence of learners.

Kramer (n.d) in his experience pointed out that appropriately selected song can serve (like pictures) as a type of comprehensible input or form realia that packages language rules into extralingustic context for beginning students. He further emphasized that songs, with their micro narrative- like structure, encapsulates a coherent context more suitable for understanding vocabulary; they also aid students in acquiring new rules of the target language because their text contains understandable messages that include the new rules. Thus, songs offer a number of mnemonic codes, such as repetition, rhyme and melody that aid listener's memory. Brady as pointed out by Kramer stated that the teaching of songs in the FL classroom can help motivate students to learn the target language since many students enjoy listening to songs in their native language. In his research, Jolly as cited by Kramer found out that songs create a relaxing and enjoyable atmosphere in the FL classroom; consequently, some learners feel less threatened, which in term lowers the affective filter or mental barrier that is caused by low motivation, high student anxiety, low student self-esteem.

According to Harrison and Sinchaeng (2005:603) as cited by Hong, "Music is highly motivating, and helps blending and linking the flow of speech and the rise/fall of the voice – all of which maximize pitch range." There is also an interesting phenomena related to music and language observed by the writer: many people, who cannot understand a single word in English, are able to sing English songs with excellent proper pronunciation of their lyrics. That may be the reason why the idea of using songs in teaching and learning language is introduced by many educators

Richards (1993)b as pointed out by Stansell prescribes music, rhythm, and movement to create a relaxed, stress-free atmosphere. She later points out that general classroom music activities that include singing and rhythm help enhance the development of auditory discrimination skills, including integration of letter sounds, syllabication and pronunciation of words. Willcox (1995) as cited by Stansell investigated the effects of classroom singing among adult ESL students at a community college and among the many studies she reviewed, music was shown to improve pronunciation memory.

Fangzhi (1998) suggested that it is advisable to place students in meaningful and contextual situations rather than present them with a series of isolated sentences which make the students sit passively and bored by parrot-like repeating task. He further concluded in his study that the teacher must pay attention to the areas where the students are likely to have problems, and plan his teaching strategies accordingly and the teacher must involve the students in meaningful and communicative activities and make learning as interesting and motivating.

This is also supported by Kral (1980) as he emphasized that students are only often able to mimic the teacher's production of a target sound within those drills, but they may continue to make the same pronunciation errors when the target sound appears in another context when pronunciation drills are confined to the practice of minimal pairs or the repetition of individual sounds or sentences.

The Conceptual Framework

Good pronunciation plays an important role in supporting learner's over-all communicative powers which eventually give them self-confidence and enhance their self-image. For this reason, a study on whether or not the use of songs is effective in the teaching of pronunciation to English 2a students in La Salle University.

Figure 1 in schematic diagram depicts the conceptual framework of the study.

Independent Variables **Dependent Variables**

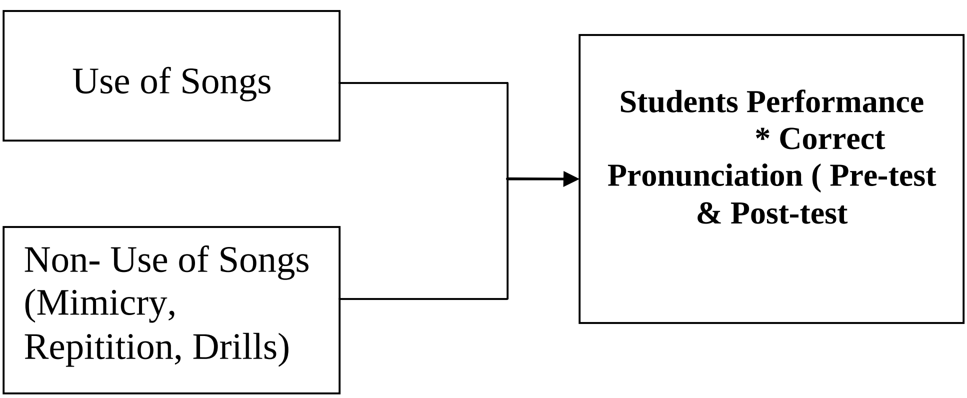

Figure 1

In this study as shown in Figure 1, there were two variables involved: the independent variables which included the use of songs and non-use of songs in teaching pronunciation. These items were hypothesized to influence the dependent variable: the level of performance of the students taught with or without the use of songs during their pre-test and post-test.

Statement of the Problem

This study aimed to determine the relationship of the use and non-use of songs in teaching pronunciation to the pronunciation performance of the students enrolled in English 2a in La Salle University, Ozamiz City, in the second semester of school year 2006-2007. Specifically this study sought to answer the following questions:

1. What is the level of performance of the students taught with the use of songs during the pre-test and post-test?
2. What is the level of performance of the students taught without the use of songs during the pre – test and post-test?
3. Is there a significant difference between the group taught through songs and the group taught using mimicry, repetition and drills in terms of :
    1. Correct pronunciation /enunciation of words representing the English vowel sounds.

Hypothesis

Below is the hypothesis of the study:

1. There is no significant difference between the group taught using songs and the group using the drills (repetition, mimicry) in terms of their pronunciation performance.

Significance of the Study

Any work on aspects of pronunciation can take a long time to show improvements and can be challenging for both the students and the teacher since pronunciation is an integrated part of the entire language learning. As such this study will specifically benefit the following:

The School. The result of the study may help the school in providing the English teachers in-service or pre-service training on.

The Language Teachers. This study may give them more encouragement to devote more time and attention to an up-to-date pronunciation component within the curriculum and to design learning activities in real and clear context that will give the students more practice in producing the English sounds.

The Students. The findings of this study may provide them a deeper concern on pronunciation so that they may work on the features on the pronunciation that have greatest bearing on their communicative effectiveness.

Scope and Limitation

This study dealt only on the relationship of the use and non-use of songs in teaching pronunciation to English 2a students.

The respondents were 40 students enrolled and randomly chosen from the two sections of English 2a of La Salle University.

The independent variable was limited to the use and non-use of songs in teaching pronunciation while the dependent variable is the level of pronunciation performance of the English 2a students in terms of correct pronunciation/enunciation of words, representing the English vowel sounds.

Pre-test and post-test on English vowel sounds were given to assess the students' performance in pronunciation. The researcher-constructed test was limited only to the 10 English vowels (/i/. /I/, /e/, /E/, /ae/. /u/, /ɔ/, /o/ ang /a/. The test is composed of two parts: Test I-Minimal Pairs and Test II Sentences with words representing the vowel sounds.

2. Methodology

This study made use of quantitative analysis method. It aimed to determine the significance of the use and non-use of songs in the teaching of pronunciation. Two groups of twenty students each were used. One group was taught using songs while the other group was taught using drills, mimicry, etc.

The respondents of the study were 40 students who enrolled in English 2a (speech and oral communication) in the second semester of school year 2006-2007.

The forty students were randomly selected from 2 English 2a classes. Each group consisted of 20 respondents (10 boys and 10 girls).

The research instrument used in the study was the adapted diagnostic test questionnaire on the English vowel sounds. The test consisted of 2 parts. The first part focused on minimal pairs on vowel sounds. The second part consisted of sentences particularly focusing on a vowel sound.

After choosing two sections from English 2a classes, 20 students from each section were randomly selected. One group was assigned as the use-of-song group and another group was the non-use of song group. Each group was scheduled 1 hour and a half per class meeting, two times a week. One class was held 11:30-1:00 Tuesday and Thursday while the other was held at 4:00-5:30 Tuesday and Thursday. Both groups were given a 55 item pre-test and post-tests. Throughout the teaching of vowel sounds, one group was taught using songs, while the other used drills, repetition and mimicry.

The use – of – song group was given Christmas songs and nursery rhymes for them to master the vowel sounds. Four Christmas songs were used during the study. They are " Joy to the World ", " Jingle Bells ", " Silent Night " and " Hark the Herald Angel Sing ". The nursery rhymes used were " Baa Baa Black Sheep ", " I'm a Littele Tea Pot", " Row, Row, Row Your Boat", " Twinkle, Twinkle, Little Star ", " Jack and Jill "and " London Bridge ". A CD of the songs was played while the students listened attentively. After three times of playing, the students were asked to sing along with the music. They sang the songs for a couple of times, then they identified the sounds of the words in the lyrics. The task was done collaboratively. The same procedure was followed in the teaching of vowel sounds using the nursery rhymes.

On the other hand, the non- use – of song group was given handouts containing the word, phrase and sentence drills and tongue twisters for all the vowel sounds. Each vowel sound was mastered through repetition and drills by group, pair, and individual. The teacher modeled on the correct pronunciation of the vowel sounds , the drills and the tongue twisters and the students repeated them. Then they were divided into groups according to sounds.

The pre-test and the post-test were administered to the respondents by the researchers themselves. The students' voices were tape- recorded while they read the questionnaires both during the pre-test and the post-test.The recording was done in the speech laboratory of La Salle University, Ozamiz City.

The test on English vowel sounds consists of 55 items. The following are interpretations of the scores.

Scores	**Verbal Interpretation**
55 – 45	Very Satisfactory
44 – 34	Satisfactory

33 – 23	Fair
22 – 12	Poor
11 – 0	Very Poor

The Paired Sample T-test was used to determine the significant difference between the use- of- songs group and the non-use of songs group.

3. Results and Discussion

The data presentation is arranged according to specific problems treated in this study?

Table 1 shows the paired sample statistics of the class using songs in learning pronunciation of the vowel sounds.

Table 1

Paired Samples Statistics [a]

	Mean	N	Std. Deviation
Pair 1 Post- test Scores	31.65	20	6. 854
Pre- test Scores	39.40	20	6. 747

As shown in Table 1, the students using songs in learning pronunciation were satisfactory in their pronunciation performance during the pre-test as shown in the mean of 39.40. However, their performance' level lowered during their post-test for they got only *Fair with* the mean of 31.65. This means that students' performance was affected by the intervention of the songs during the learning. This simply implies that the students were not very attentive to the sounds of the words in the songs; they were more up to the beat/tune and the rhythm in the song. They were more captivated and overjoyed by the rhythm that they did not put more concern on how the words are pronounced. Also the nursery rhymes may not be very appropriate and interesting to the level of the respondents. The rhymes were too elementary for them. They were carried by their child- like thinking that they were remembering their childhood while singing; thus, they did not pay much attention to the sounds. In addition, the Christmas songs were also very overwhelming for them. Too much excitement for the Christmas season overlapped the real purpose to master the vowel sounds. The songs were also too familiar to the students that they sang them in their usual tone, accent, and pronunciation. Another reason can be traced to the fact that the songs and rhymes used did not represent a specific sound to master. They were analyzed as a whole unlike the drills and the tongue twisters that really focused on individual sounds.

Table 2 presents the level of pronunciation performance of the class taught without the use of songs.

Table 2

Paired Samples Statistics[a]

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Post- test Scores	36.40	`20	6. 739	1. 507
Pre- test Scores	41.05	20	6. 004	1.343

The mean level of the class taught without the use of songs was 41.05 (satisfactory) during their pre-test and 36.40 (satisfactory) during their post-test. It is important to note that the students performed better during their pre-test rather than their post-test though they got satisfactory in both tests. This implies that the students became more conscious on how to pronounce the words correctly after they had undergone more drills on vowel sounds. The drills in words, phrases , sentences and the tongue twisters were too many that the mastery of the sounds was not given more emphasis and the respondents seem to forget the correct pronunciation of the words. They also felt the boredom of the parrot- like repeating task all throughout.

Comparing the two means, the mean score of the students taught without the use of songs was higher than the mean score of the students taught with the use of songs both during the pre-test and the post-test. This implies that the students taught without the use of songs performed better than the students taught with the use of songs. The non- use- of – song group showed better performance than the use- of – song group. This may be due to the intensity of the focus. The non- use-of-song group paid much attention to the individual vowel sounds as each sound was represented with drills and tongue twisters focusing on a particular

sound while the use-of-song group was taught using songs and rhymes which do not particularly focus on a single/ specific sound.

The Paired Sample T-test was used to find out if there is a significant difference between the group taught with the use of songs and the group without the use of songs in their pronunciation performance.

Tables 3 and 4 show the paired samples test of the difference in performance between the group taught with the use of songs and the taught group without use of songs during their pre- test and post- test.

Table 3

Paired Sample[a] Test

	Paired Differences		t	df	Sig(2-tailed)
	Mean	Std. Deviations			
Pair 1 Post-test Scores - Pre-test Scores	- 7.75	4.541	- 7.633	19	.000

As shown in Table 3, there was no significant difference of the pronunciation performance of the group taught with the use of songs during their pre-test and post-test.

Table 4
Paired Sample[a] Test

	Paired Differences		t	df	Sig(2-tailed)
	Mean	Std. Deviations			
Pair 1 Post-test Scores -Pre-test Scores	- 4.65	3.815	- 5.451	19	.000

As shown in Table 4 there was no significant difference of pronunciation performance of the group taught without the use of songs during their pre-test and post-test.

Therefore, the null hypothesis is accepted.

4. Summary, Conclusions, and Recommendations

This study aimed to find out the relationship of the use and non-use of songs in teaching pronunciation to students' pronunciation performance. It involved two groups of twenty students enrolled in English 2a (Speech and Oral Communication) in the second semester of school year 2006-2007. One group was taught pronunciation with the use of songs, while the other group was taught with the use of drills. An adapted and revised questionnaire was used in data gathering. The data gathered were statistically treated using the Paired Sample T-test.

Summary

1. The students taught with the use songs were *satisfactory* (39.40 mean) in their pronunciation performance during their pre-test, however; their performance lowered to *fair* (31.65 mean) during their post-test.
2. The students taught without the use of songs were satisfactory in both pre- and post-tests with the means of 41.05 and 36.40 respectively.
3. The mean score of the group taught without the use of songs was higher than those taught with the use of songs both in pre- and post- tests.
4. There was no significant difference of the pronunciation performance of the group taught with the use of songs and the group taught without the use of songs.

Conclusion

After having analyzed the gathered data, the researchers conclude that in this particular group of respondents, the use of songs did not give a significant edge over those taught without songs and that the teaching of pronunciation can be effectively done with or without the use of songs. It is up to the teacher what method he/she is comfortable to use and he/she thinks more appropriate and effective to maximize.

Recommendations

Based on the findings and conclusion, the following recommendations are presented:

1. More studies on teaching and learning pronunciation must be conducted using a greater number of respondents.
2. The songs that must be used during the study must be appropriate and must appeal to the interest of the respondents and must focus on particular sounds for better mastery.

3. Teachers must be given in service or pre service training so that they themselves can be aware of the state of the art and be confident in their teaching

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Algebraic Method in Solving Word Problems

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Abstract

This research was a case study aimed at identifying 8 students level of performance in solving word problems using Algebraic Method. Specifically, the study attempted to answer the following questions: (1) What is the students' attitude towards problem solving? (2) Do students apply algebraic method in solving word problems? (3) What is the level of performance of the students in solving word problems? Problem Solving Attitude Scale was used to identify the attitude of the participants in solving word problems and Test on Problem Solving using Algebraic Method was employed to determine the level of performance of the students in solving word problems. Moreover, students' outputs were closely examined to know whether students apply algebraic method in solving problems.

It was found out that students showed positive attitude towards problem solving and were categorized as transitional problem solvers. Further, it was revealed that students attempted to use algebraic method but were not able to apply the process successfully.

1. The Problem and Review of Related Literature

Algebra is oftentimes regarded as the language of all mathematics. One way of finding out whether students have fully understood this mathematical language is by integrating problem solving in each topic taught in Algebra. However, many students do not like problem solving much less Algebra.

Nowadays, a lot of strategies have been employed in problem-solving in the classroom to valuably motivate learners to love Algebra. However, despite these strategies, students still hate the process. With this situation, every Math teacher is bothered as to his/her teaching competency in the subject. As a result, many students fail for they do not absorb the techniques afforded to them by their teachers in solving word problems.

A word problem requests a result subject to various conditions which must be simultaneously satisfied by a student. Solution to a word problem consists of solving a set of simultaneous equations. This is the "problem to find" described by Polya (1945). However, obtaining a set of simultaneous equations is the student's difficulty. Such context poses a serious problem whether the students hate or love the subject—for they lack the capacity for solving the problem .

Word problems according to Novotna (2000) constitute one of the few school mathematics domains which require the mathematization of situations described in words and transformation of a mathematical situation back to the content of the problem. Often times, when an algebra problem is presented in symbolic form, students are often intimidated and have no real instinct for solving the problem without the memorized methods available to older students (Fermiano, 2003). Fermiano commented that algebraic problem solving is crucial for a child's development of mathematical skills, and the process of learning algebraic techniques must be built from the child's "discovery" and intuitive concepts of algebra. Shown in this situation, Fermiano claimed that word problems may provide a much more insightful view of the students' inherent understanding of algebra and its fundamental concepts since they cater to a child's innate mathematical responses. Roehler (2004) added that alternative strategies, such as guess-and-check, help students discover fundamental algebraic concepts on their own, and building on the student's inherent understanding will greatly enhance their mathematical success.

Booth (1988) further explored some of the problems at the core of algebra learning in her article, "Children's Difficulties in Beginning Algebra". Students often do not feel that a problem has a solution if it contains variables; there is no concrete "final answer" for them to achieve. At one hand, Schoen (1988) in his work on "Teaching Elementary Algebra with a Word Problem Focus," presented his belief that "it is possible to focus on interesting applications and word problems in the teaching of first-year algebra without deleting important topics". Hence, Schoen (1988) urged that teaching should "lead gradually from verbalization to algebraic symbolism". By using word problems and verbal representations, teachers can better connect the underlying concept to the symbolic representation. In addition, he recommends that teachers "introduce algebraic topics with applications" and teach these topics "from the perspective of how they can be applied".

The illustrated framework below is used in the study.
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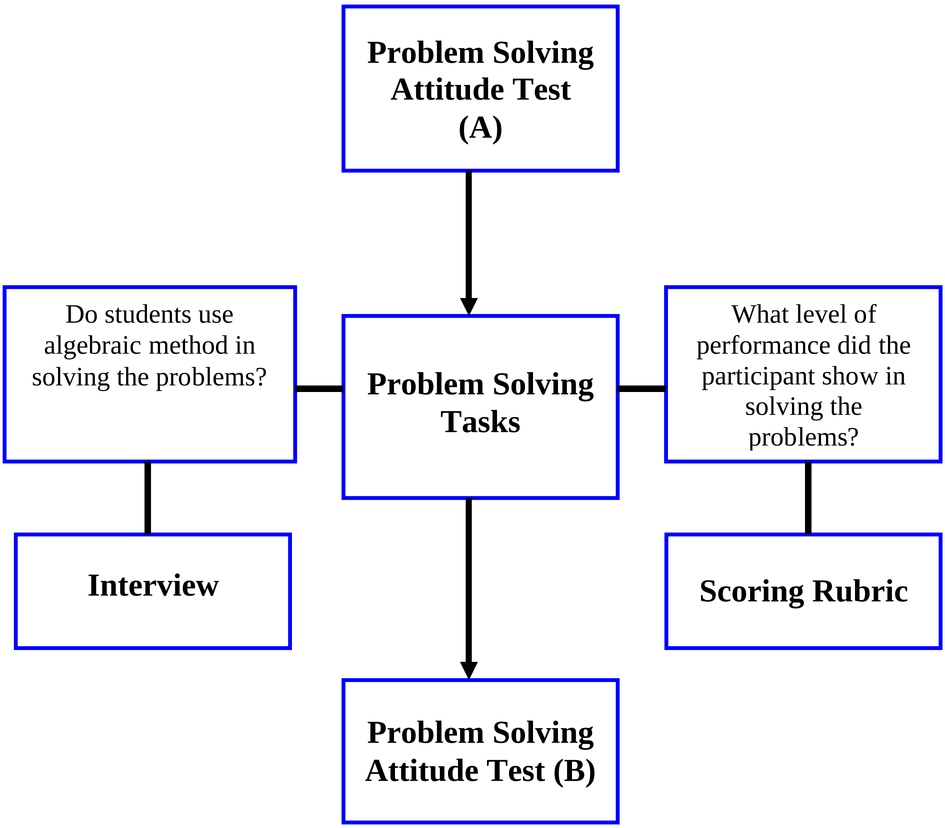


It involves 3 stages: problem solving attitude (A), problem solving tasks, and problem solving attitude (B). Problem solving tasks are done before and after the problem solving attitude tests. Problem attitude tests A and B are the same tests. These are conducted to see if there is a change of attitude of the students in solving problems after they answered the given problems.

During problem solving task, the researcher would see two results. (1) the students' frequency in using algebraic method in solving problems. In like manner, interview ensues to extract reasons from students for using and not using algebraic method in solving the problem; and (2) the level of performance of the students in solving problems.

More importantly, Constructivist theory of learning is applied in the study. Such theory aids the researchers to identify the student's notion of algebraic method in solving problems through giving the students the freedom to choose their way of answering the problems.

Statement of the Problem

This study aimed at identifying the students' level of performance in solving word problems using Algebraic Method. Specifically, the study attempted to answer the following questions:

1. What is the students' attitude towards problem solving?
2. Do students apply algebraic method in solving word problems?
3. What is the level of performance of the students in solving word problems?

Scope and Limitation

The study was conducted in La Salle University Integrated School in Ozamiz City during the school year 2006-2007. The researchers used grade-10 students on the assumption that the students were already taught a long coverage of mathematics topics. The researchers selected only 8 participants chosen randomly. The data were extracted from the students' answers in the given problems, test, and interviews.

An important limitation of this study was the time frame. All data were gathered in 2 weeks and were limited to word problems using algebraic method.

Significance of the Study

The results of the study may help mathematics teachers design and plan appropriate techniques or strategies in facilitating problem solving in every lesson taught in algebra. Likewise, knowing the students' attitude in solving problems will guide math teachers to be flexible to their approach in teaching algebraic method.

At one hand, the answers of the students in this study will also provide an avenue for every math teacher to look for a corresponding solution so students would not fail in the subject.

2. Methodology

Research Design Used

This research was a case study. Data gathered were analyzed qualitatively with close examination of the student's output from the given activities. This study tried to show the students' performance in solving word problems using algebraic method in the series of activities given to them.

The design of the study involved the following:

1. Determining the attitudes of the participants towards problem solving before and after having them answered the 5 word problems;
2. Determining some factors that hinder the learners to use algebraic way of solving problems through interviewing the participants; and

3. Exposure of the learners to various problem solving tasks.

Stage 1

Before the students were exposed to problem solving tasks, a pretest about problem solving attitude scale was answered by the participants to determine their attitude toward solving word problems.

Stage 2

There were 5 word problems. The problems were answered by the students in 2 meetings. Through this, the researchers identified the performance of the students in solving problem using algebraic method.

Stage 3

After they were answering the problems, they would answer again the test about problem solving attitude scale. In this case, the researchers wanted to see if there were changes in their attitude in solving word problems.

Stage 4

If algebraic method was not used by the participants they would be interviewed for their reasons of not using it.

Research Instruments

The following instruments were used:

1. **Problem Solving Attitude Scale** (Limjap, 1996) was used to identify the attitude of the participants in solving word problems. The instrument consisted of various statements rated as follows:

1 - Strongly Agree;	3 - Disagree;
2 - Agree;	4 - Strongly Disagree.

The assessment was based on the following: an average of **1 - 2.4** means the student is assessed to have a negative attitude toward problem solving; an average of **2.6 - 4** shows that the student is assessed to have a positive attitude toward problem solving. A student who gets an average of **2.5** is assessed to have a neutral attitude toward problem solving.

2. **Test on Problem Solving using Algebraic method** was employed to determine the level of the respondents in solving word problems. This 5-problem test consisted of the following parts: age problem, number-related problems, and geometry-related problems. These problems were taken from the book of Litong (1996). The following were chosen for these problems could be solved using algebraic method. Below are the contents of the questionnaire:

1. Imelda is 2 years older than Dennis. The sum of theirs ages 3 years from now is 52. Find their present ages.

2. A number is twice another and their sum is 75. What are the numbers?

3. The length of a rectangular lot is 13 m more than its width. If the area is 48 meter squared, how wide is the rectangular lot?

4. One angle of a triangle is 10 degree less than another while the third measures 30 degrees. Find the measure of the two angles.

5. If 10 is subtracted from the product of two consecutive even numbers, the result is 14. Find the numbers. (Domingo, 1996)

Data Analysis

The study focused on the performance of the students in solving word problems using algebraic method. The following scoring rubric was employed in evaluating students' performance in solving problems.

Category	4	3	2	1
Problem Representation	Makes correct representations	Makes representations with a minimal mathematical error	Makes incorrect representations	Does not make any representation
Solution	Solution shows complete understanding of the given problem.	Solution shows substantial understanding of the given problem	Solution shows some understanding of the given problem.	Solution shows a very limited understanding of the given problem.

http://www.uen.org/Rubric/rubric.cgi?rubric_id=13

The adopted rubric from the internet was revised to valuably suit the researchers' purpose in obtaining the desired data. After the students were evaluated in their performance in solving the problems, they were categorized as:

Expert (3.5 - 4.0)	Solve the problems correctly and accurately without mathematical error committed in the solution.
Transitional (2 - 3.4)	Solve the problems with nearly accurate and complete solution but committed few errors in the process of solving.
Novice (0 – 1.9)	Make significant errors in solving the given problems.

Limjap, 1996

3. Results and Discussion

This section presents, analyzes, and interprets the obtained data. Moreover, the presentation jives with the sequence of the statement of the problems for logical comprehension of the study. Various tables showing their method in solving the problem and their level of performance in solving them are also presented.

Students' Attitude towards Problem Solving

Attitudes influence everything that we do. They affect our relations with other people and our openness to new experiences. If our attitude toward a task is positive, we will most likely enjoy the process of doing it and look for opportunities to do it. If our attitude is negative, we will most likely avoid or delay the occasion of doing it and, if we must do the task, we will probably not enjoy it or do well at it. Our attitude toward mathematics affects how well or how often we do it, and how much enjoyment we derive from it (http://www.occc.cc.or.us/webpages/math/attitude.html*)*.

In the study, the attitude of the participants towards mathematics identified as positive, negative and neutral.

Table 1 presents respondents' attitude before and after they answered the problems.

Table 1

Respondents' Attitudes towards Mathematics

Attitude Before Problem Solving Tasks	**Verbal Description**	**Attitude After Problem Solving Tasks**	**Verbal Description**
3.76	Positive	3.83	Positive
2.83	Positive	2.97	Positive

3.1	Positive	3.17	Positive
2.93	Positive	3.14	Positive
3.59	Positive	3.55	Positive
3.28	Positive	3.03	Positive
2.76	Positive	2.85	Positive
2.93	Positive	2.97	Positive
Average**=3.15**	Positive	Average **=3.19**	Positive

As depicted on Table 1, respondents have a positive attitude towards mathematics. A minimal difference of attitudes of respondents before and after problem solving tasks were given to them can be noted. With the positive attitude, students are seen to be open to learning and that they are seen to be willing to learn more about problem solving.

Methods Used and Performance Level of Students in Solving Word Problems

<u>Problem #</u>1. Imelda is 2 years older than Dennis. The sum of theirs ages 3 years from now is 52. Find their present ages.

<u>Student A</u>

x = Dennis
x + 2 = Imelda
x + (x + 2) = 52
2x + 2 = 52
2x = 52 – 2

2x = 50
x = 25
= 25 - 3
x = 22 $\longrightarrow$ age of Dennis

therefore age of
Imelda is 27 – 3 = 24 $\downarrow$ age of Imelda

Student A's way of solving the problem was algebraic but she wasn't able to formulate correct representations of the problem.

Student B

Imelda		Dennis		
	2 yrs older			
27	+	25 = 52	3 →	years from now
-3		-3		
24		22		
Imelda		Dennis		

Student B divided 52 by 2 to be able to get 27 as Imelda's age. Then she subtracted 27 from 52 to get the age of Dennis. She did not guess but her process of solving showed a very limited understanding of the problem.

Student C

$$(3n + 2) + (3n) = 52$$
$$3n + 2 + 3n = 52$$
$$6n + 2 = 52$$
$$6n = 52 - 2$$
$$6n = 50$$

$$\frac{6n}{6} \quad \frac{50}{6}$$
$$n = 8.33$$

$$\text{Imelda} = 3n + 2$$
$$= 3(8.33) + 2$$
$$= 24.99 + 2$$
$$= 26.99$$
$$\text{Dennis} = 3n$$
$$= 3(8.33)$$
$$= 24.99$$

The solution of Student C showed that he did not understand the problem. He represented the problem incorrectly. In his equation, he showed that each present age was multiplied by 3 after 3 years.

Student D

Let x be Dennis' age
x + 2 be Imelda's age

x + 3 be Dennis' age after 3 years
x + 5 be Imelda's age after 3 years

$$x + 3 + x + 5 = 52$$
$$2x + 8 = 52$$
$$2x = 44$$
$$x = 22$$

Dennis' age is 22.
Imelda's age is 24.

Student D used correct algebraic method in solving the problem. She had representations both for present ages and ages after 3 years. Among the participants, she was the one who had a very organized solution. The solution showed complete understanding of the problem by indicating appropriate labels at the end of the solution.

Student E

x = Dennis' age

x + 2 = Imelda's age

$[x + (x + 2)] + 3 = 52$

$2x + 2 + 3 = 52$

$2x + 5 = 52$

$2x = 52 - 5$

$x \quad 23\frac{1}{2}$

Student E gave incomplete representation and formulated an incorrect equation of the problem. He added 3 to the sum of the ages to be equated to 52. Based on his solution, he showed limited understanding of the problem.

Student F

Let x = Dennis' age

2 + x = Imelda's age

$2x + x = 52$

$3x = 52$

$x = 17.33 \rightarrow$ after 3 years 34.66

$2x = 34.66 \rightarrow$ after 3 years

Imelda's

$$\begin{array}{r} 34.66 \\ \underline{-3} \\ 31.44 \end{array} \rightarrow \text{present age}$$

Dennis

$$\begin{array}{r} 17.33 \\ \underline{-3} \\ 14.33 \end{array} \rightarrow \text{present age}$$

Student F made an incomplete representation of the problem. Her solution indicated that she had a limited understanding about the problem. Based on her solution, the value of x would be Dennis' age but she did not indicate it in the representation.

Student G

a = Imelda's age	$b + a = 52$	$a = b + 2$
b = Dennis' age	$b + b + 2 = 52$	$= 25 + 2$
	$2b = 52 – 2$	$a = 27$
$a = b + 2$	$2b = 50$	
	$b = 25$	

Student G represented the problem in two variables. He did not indicate in the representation whether the variables represented the ages at present or after 3 years. But if you would base it from the solution, it showed that the two variables represented both ages after 3 years. But there was no label for the final answer.

Student H

25		$25 – 3 = 22$	$\longrightarrow$ Dennis
+ 27	ages 3 years from now	$27 – 3 = 24$	$\longrightarrow$ Imelda
52			

Student H did guess the answer of the problem. She just chose 25 and 27. She subtracted 3 from each number to get the present ages of Dennis and Imelda.

Table 2 presents the performance level of the Students in solving problem number 1.

Table 2
Performance Level of the Students in Solving Problem Number 1

Students	**Method applied in solving**	**Remarks**	**Average Level of performance**
A	Incorrect algebraic method	She represented variable as the unknown of the problem but it was not completely done.	2.5
B	Incorrect approach	She did not represent a variable to be the unknown on the problem.	1.5
C	Incorrect algebraic method	He used variable in his representation but he arrived at a wrong equation as the basis for the solution of the problem.	1.5
D	Correct algebraic method	She represented x as Dennis' age and x + 2 as Imelda's age. She also make correct representation of their ages after 3 years. She got the correct answer.	4
E	Incorrect algebraic method	He represented x as Dennis' age and x + 2 as Imelda's age but the equation that he formed was incorrect.	3
F	Incorrect algebraic method	She represented x as Dennis' age and x + 2 as Imelda's age but she did not arrive at an equation as basis in solving the problem.	2
G	Incorrect algebraic method	He represented Imelda's age as *a* and *b* for the age of Dennis. Then he added their ages and equated it to 52.	1.5
H	Guessing	She only guessed her answer. There was no representation of variable done in the solution.	1

Problem #2. A number is twice another and their sum is 75. What are the numbers?

Student A

x + 2x = 75 therefore the numbers are 25 & 50.
25 + 2(25) = 75
25 + 50 = 75

Student A formulated the correct equation but failed to represent what is x and 2x. She assumed that x is 25 and so from the equation 2x is 50.

Student B

25 + 50 = 75

50 is twice the number 25 so when both are added the sum is 75.

Student B's answer was correct but she did not make any representation. From the interview, she said it was so obvious that the two numbers were 50 and 25 so there was no need for a representation. She used guessing in obtaining her answer.

Student C

n + 2n =75 therefore the numbers are 25 and 50.
3n = 75
n = 25

Student C's solution showed that he had understood the problem clearly. The equation which was formulated was correct and the solution was also correct. The solution showed a complete understanding of the problem.

Student D

Let x be the first number
75 – x be the second number.

2(75 – x) = x
150 -2x = x
150 = x + 2x
150 = 3x
x = 50.

75 – 50 = 25

therefore, the two numbers are 50 and 25.

The solution of Student D was different from Student C but they arrived at the same correct answers. The representations were correct and also the equation. Student C got first 25 before 50 but Student D got first 50 before she found 25. The solution showed a complete understanding of the problem.

Student E

Let x be the first number
Let 2x be the second number

x + 2x = 75
3x = 75
x = 25 ; 2x = 50

Student E and Student C showed the same process of solving. The differences were, Don represented the problem correctly and clearly but Numer did not. Numer concluded his answers but Don did not. They got correct answers.

Student F

Let x = number

2x + x = 75 a) 25

3x = 75 b) 50
x = 25

Student F made representation only for one number. She did not represent the second number but she made correct equation which made her to arrive at a correct answer. In her conclusion, she used a and b instead of x as what she used in her representation.

Student G

2x + x = 75	larger number	smaller number
3x = 75	a = 2x	b = x
x = 25	= 2 (25)	= 25
	= 50	

Student G had no representation. But the solution was correct. He used the terms larger and smaller numbers.

Student H

Let x = 25
2x + x = 75
2(25) + 25 = 75
50 + 25 = 75
75 = 75

Student H assumed that one of the two numbers was 25. She formulated correct equation. She substituted 25 to her equation and ended a balance equation. She did not conclude about the numbers.

Table 3 presents the performance level of the Students in solving problem number 2.

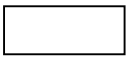
Table 3
Performance Level of the Students in Solving Problem Number 2

Students	Method applied in solving	Remarks	Average Level of performance
A	Guessing	She formulated correct equation but she did not solve for the value of x. She guessed it to be 25. Then she substituted the value to the equation.	1
B	Guessing	She did not make variable representation of the unknown. She only guessed the answer. She concluded the numbers to be 25 and 50 since when you add them, the sum is 75.	1
C	Correct algebraic method	He was able to make correct representation of the unknown in the problem. He got the correct answer.	4
D	Correct algebraic method	She was able to make correct representation of the unknown in the problem. He got the correct answer.	4
E	Correct algebraic method	He was able to make correct representation of the unknown in the problem. He got the correct answer.	4
F	Correct algebraic method	Red made representation only for one number. She did not represent the second number but she made correct equation which made her arrived at a correct answer	3.5
G	Correct algebraic method	He represented $a = 2x$ as the larger number and $b = x$ the smaller number. He used the terms larger and smaller numbers. He was able to get the correct answer.	4
H	Incorrect algebraic method	Abby assumed that one of the two numbers is 25. She formulated correct equation. She substituted 25 to her equation and ended a balance equation only. There was no answer.	1.5

Problem #3. **The length of a rectangular lot is 13 m more than its width. If the area is 48 meter squared, how wide is the rectangular lot?**

Student A

13 m

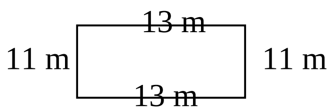


$A = l(w)$
$= xy$
Given: $A = 48\ m^2$
$l = 13\ m$
Sol'n: $A = lw$
$48\ m^2 = 13\ m(y)$
$\frac{48\ m^2}{13\ m} = \frac{13\ my}{13\ m}$
$3.7\ m = y$

Therefore, the width of the rectangle lot is 3.7 m.

Student A illustrated a rectangle. She wrote the given of the problem but made a mistake for the value of the length of the rectangle. Hence, her solution for the problem was wrong.

Student B



48 meter squared

Length of the rectangle lot is 13 m
The width is 11 m

13 m	$48\ m^2$	$2 \overline{)22}$ = 11 width
13m	26 m = height	
$26\ m^2$	22 = width	

Student B made an illustration for the problem. The labeling of the sides of the triangle showed that she had limited understanding about the problem.

Student C

$A = l \times w$	$n + 16 = 0$	$n - 3 = 0$	$A = 48m^2$
$48 = (13 + n)(n)$	$n = -16$	$n = 3$	$l = 16$ m
$48 = 13n + n^2$			$w = 3$ m
$0 = -48 + 13n + n^2$			
$n^2 + 13n - 48 = 0$			
$(n + 16)(n - 3) = 0$			

Student C made use of the formula A = lw. He used n as representation for the unknown width of the rectangle and 13 + n for the length. He multiplied the two and equated it to 48. He arrived at two values but he chose n = 3m to be the width of the rectangle because he knew that there could be no negative measurement of a certain figure.

Student D

Let x be the width	$x + 16 = 0$;	$x - 3 = 0$
x + 13 be the width	$x = -16$	$x = 3$
$A = 48m^2$		
$x(x + 13) = 48m^2$	$\therefore$ The width is 3m and the length is 16 m.	
$x^2 + 13x \quad 48$		

The solution of Student D showed that she had a complete understanding about the problem. She made correct representations for the width and length of the rectangle. She formulated correct equation out of the problem. After, she solved the equation algebraically and got two values. She chose 3m to be the width of the rectangle and 16m to be the length of the rectangle.

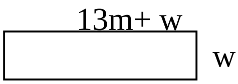
Student E

Let x = width
x + 13 = length

48 = x (x + 13)

Student E made correct representations and equation of the problem. Based on the interview, he was not able to solve the equation because he was running out of time.

Student F



$A = lw$

$48\ m^2 = 13\ m + w\ (w)$

$\sqrt{48\ m^2} = 13\ m + w^2$

$6.94\ m - 13\ m = w^2$

$-\ 6.06 = w^2$

Student F made correct representations of the problem. She formulated correct equation. But the process of getting the value of the width was wrong.

Student G

$lw \quad 48m^2$

$(w + 13)\ (w) = 48$

$w^2 + 13w \quad 48$

$w^2 + 13w - 48 \quad 0$

$(w + 16)\ (w - 3) = 0$

$w + 16 = 0 \qquad w - 3 = 0$

$w = -\ 16 \qquad w = 3$

Student G was able to formulate correct equation out of the problem. He solved the problem algebraically. He got two values of *w* but he did not indicate which value of w would be the value of the width of the given rectangle.

<u>Student H</u>

$l = 13$ m $\quad$ $w = ?$

$a = 48\ m^2$ $\quad$ $A = lw$

$w = A \div l$

$= 48\ m^2 / 13$ m

$W = 3.\ 69$ m

Student H was not able to solve the problem properly for she made incorrect representation of the problem.

Table 4 presents the performance level of the Students in solving problem number 3.

Table 4

Performance Level of the Students in Solving Problem Number 3

Students	**Method applied in solving**	**Remarks**	**Level of performance**
A	Incorrect algebraic method	She used the formula of the area of the triangle in solving the problem but she wasn't able to get the correct answer because her representation for the width & length were incorrect.	2
B	Guessing	She did not use variable to represent the unknown. She based her solution from a wrong concept that was why she ended at a wrong answer.	1
C	Correct algebraic method	He was able to made correct representation of the unknown in the problem.	3.5
D	Correct algebraic	She was able to made correct representation of the unknown in the	4

	method	problem and successfully got the correct answer.	
E	Incomplete algebraic method	He was able to made correct representation of the unknown in the problem but he did not continue solving the problems.	2.5
F	Incorrect algebraic method	She was able to made correct representation of the unknown in the problem but she did not get the correct answer.	3
G	Correct algebraic method	His representation was incorrect and so he ended with an incorrect answer.	3.5
H	Incorrect algebraic method	She did not use variable in representing the unknown of the problem.	1

Problem #4. **One angle of a triangle is 10 degree less than another while the third measures 30 degrees. Find the measure of the two angles.**

Student A

1^{st} angle = x
2^{nd} angle = x – 10
3^{rd} angle = 30

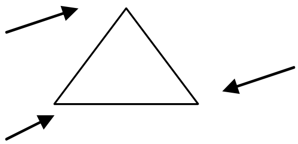
1^{st} angle + 2^{nd} angle + 3^{rd} angle = 180
x+ x – 10 + 30 = 180
2x – 10 + 30 = 180
2x + 20 =180
2x = 180 -20
2x = 160
x = 80

Therefore, the first angle is 80 degrees, the second angle is 70 degrees. and the third is 30 degrees.

Student A made correct representations of the angles of the triangle. She added the three measures and equated them to 180 since the sum of the angles of a triangle is $180°$. She was able to get the three measures, 80, 70, and 30 degrees, respectively.

<u>Student B</u>

80



70

180 - 30 = 150 angle A = 30

30 75 angle B = ?

2 ⟌150 angle C = ?

80 + 70 = 150 + 30 = 180

Student B got the correct answer but did not solve the problem algebraically.

<u>Student C</u>

$(n - 10°) + n + 30° \quad 180°$

$n - 10° + n + 30° \quad 180$

$2n + 20° \quad 180°$

$2n = 180° - 20°$

$2n \quad 160°$

$n \quad 80°$

by substituting:

1st angle = $n - 10°$

$= 80° - 10°$

$= 70°$

2nd angle= n

$= 80°$

Student C made correct algebraic solution of the problem. He got the correct values for the angles of the triangle.

<u>Student D</u>

Let x be the measure of an angle of the triangle.
x – 10 be the measure of the second angle of the triangle.
$m\angle 3 \quad 30°$

x + x – 10 + 30 = 180

2x + 20 = 180

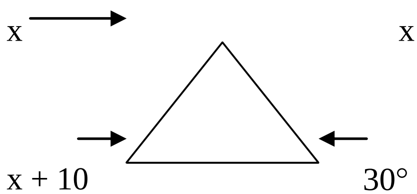
x = 80

∴ The measures of

$2x = 180 - 20$ the two angles of the
$2x = 160$ triangle are 80° and 70°.

Student D gave correct representations of the angles of the triangle. She made correct algebraic solution of the problem. She concluded that the measures of the other two angles were 80 and 70 degree.

Student E

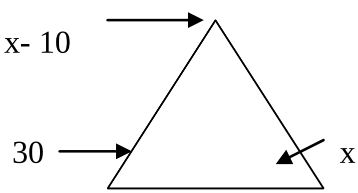


$x + (x + 10) + 30 = 180$ $\qquad$ $x + 10 = 80$
$2x + 10 = 180 - 30$
$2x + 10 = 150$
$2x = 150 - 10$
$x = 70$ $\qquad$ $70^\circ + 80^\circ + 30^\circ \quad 180^\circ$

Student E solved the problem algebraically. He found out that the measures of the other two angles were 70 and 80 degrees.

Student F

Let x = another angle



$30 + x - 10\ x = 180$
$20 + 2x = 180$
$2x = 180 - 20$
$2x = 160$
$x = \underline{80}$
$x - 10 = \underline{70}$

Student F drew a triangle with correct representations. She solved the problem algebraically and got the correct measures of the triangle.

Student G

Let a and b be the two angles
$b = a - 10^\circ$

$$a+b+30^\circ \quad 180^\circ$$
$$a+a-10^\circ+30^\circ \quad 180^\circ$$
$$2a \quad 180-20$$
$$2a = 160$$
$$\frac{2a}{2} \quad \frac{160}{2}$$

$$a \quad 180^\circ$$
$$b \quad a-10^\circ$$
$$80-10^\circ$$
$$b \quad 70^\circ$$

Student G made correct representations of the problem. He solved the problem algebraically. He gave accurate measures of the angles.

Student H

- no answer -

Student H did not solve the problem.

Table 5 shows the performance level of the Students in solving problem number 4.

Table 5

Performance Level of the Students in Solving Problem Number 4

Students	**Method applied in solving**	**Remarks**	**Level of performance**
A	Correct algebraic method	She correctly represented the unknown in the problem and ended with a correct answer.	4
B	Guessing	She only illustrated the problem by drawing a triangle and labeled it with an assumed degree measures.	1
C	Correct algebraic method	He correctly represented the unknown in the problem and ended with a correct answer.	3.5
D	Correct algebraic method	She correctly represented the unknown in the problem and ended with a correct answer.	4

E	Correct algebraic method	He correctly represented the unknown in the problem and ended with a correct answer.	3.5
F	Correct algebraic solution	She correctly represented the unknown in the problem and ended with a correct answer.	4
G	Correct algebraic method	He correctly represented the unknown in the problem and ended with a correct answer.	4
H	No answer, no solution	Abby did not attempt to solve the problem.	0

Problem #5. **If 10 is subtracted from the product of two consecutive even numbers, the result is 14. Find the numbers.**

Student A

4 (6) = (not *done*)

Student A did not solve the problem.

Student B

10

6 x 4 = 24

$$\begin{array}{r} \\ -\ 10 \\ \hline 14 \end{array}$$

2 $\boxed{4}$ $\boxed{6}$ 8

$$\begin{array}{r} 24 \\ -\ 10 \\ \hline 14 \end{array}$$

Student B did guess the answer of the problem.

Student C

No solution

Student C did not solve the problem.

Student D

Let x be the 1st even #
x + 2 be the 2nd #

[x (x + 2)] – 10 = 14

$x^2 + 2x - 10 \quad 14$

$x^2 + 2x - 10 - 14 \quad 0$

$x^2 + 2x - 24 \quad 0$

(x + 6) (x – 4) = 0
x = -6 x = 4

∴ The two consecutive even numbers are 4 and 6 or - 6 and -4.

Student D made correct representations of the two consecutive even numbers. Out of the representation, she made correct equation. She solved the equation algebraically using factoring to get the values of the 1st even number. She concluded that the two consecutive even numbers were 4 and 6 or -6 and -4.

Student E

4 and 6

Student E did guess the answer of the problem.

Student F

x (x + 2) – 10 =14
x^2 + 2x = 14 +10
x^2 + 2x = 24
x^2 + 2x – 24 = 0
(x – 4) (x + 6) = 0
x = 4; x = -6

4 (4 + 2) – 10 = 14
4 (6) – 10 = 14
24 – 10 = 14
14 = 14

Student F made a correct equation out of the problem. She solved the values of x by factoring. However, she was not able to conclude for the values of the two consecutive even numbers.

Student G

a and be are consecutive even numbers a = larger number

b = smaller number

$ab - 10 = 14$

$ab = 14 + 10$

$ab = 24$

$a = 6$

$b = 4$

Student G made incorrect algebraic solution of the problem. Nevertheless, he was able to get one pair of consecutive even number.

Student H

Let $x_1 = 4$

Let $x_2 = 6$

$(x_1)(x_2) - 10 = 14$

$(4 \text{ x } 6) - 10 = 14$

$24 - 10 = 14$

Student H did guess the values of two consecutive even numbers.

Table 6 presents the performance level of the Students in solving problem number 5.

Table 6
Performance Level of the Students in Solving Problem Number 5

Students	Method applied in solving	Remarks	Level of performance
A	No answer, no solution	She did not solve the problem. She only wrote 4 (6) =.	0
B	Guessing	There was no variable representation of the unknown in the problem. She only guessed the answer.	1
C	No answer, no solution	In his solution sheet, he only wrote 10. There was no solution done.	0
D	Correct algebraic method	She made correct representation of the unknown in the problem. She got the correct solution and answer.	4
E	No solution	Don only wrote 4 and 6. No solution was presented.	1
F	Correct algebraic method	Red was able to formulate correct equation. She was able to solve the correct values of x but did not make correct conclusion from her solution.	3.5
G	Incorrect algebraic method	He let *a* be the larger number and *b* the smaller number. But his equation was formulated from a wrong notion. He got correct but incomplete answers.	2
H	Guessing	She let x_1 be 4 and let x_2 be 6. She only guessed the values for x_1 and x_2.	1.5

4. Summary, Conclusion, and Recommendations

This study endeavored at identifying the students' level of performance in solving word problems using Algebraic Method specifically, the study purported to answer the following questions:

1. What is the student's attitude towards problem solving?
2. Do students apply algebraic method in solving word problems?

3. What is the level of performance of the students in solving word problems?

Summary of Findings

Table 7 shows the following findings.

Table 7
Summary Table of the Respondents' Method Used, Performance Levels in Solving Word Problems and Their Attitudes towards Mathematics

Names	**Common Method Used in all problems**	**Average Level of Perform ance in all given problems**	**Verbal Categories based on Level of Performan ce**	**Attitude Before Problem s Solving Tasks**	**Attitude After Problem s Solving Tasks**
A	Algebraic method with errors	1.9	Novice	3.76	3.83
B	Guessing	1.1	Novice	2.83	2.97
C	Algebraic method with errors	2.5	Transitional	3.1	3.17
D	Algebraic method with no errors	4.0	Expert	2.93	3.14
E	Algebraic method with errors	3.1	Transitional	3.59	3.55
F	Algebraic method with errors	3.2	Transitional	3.28	3.03
G	Algebraic	3.0	Transitional	2.76	2.85

	method with errors				
H	Guessing	1.0	Abby	2.93	2.97
Averag e Rating	**Algebraic method with errors**	**2.5**		**3.15**	**3.19**

As revealed, the students showed a positive attitude towards problem solving as manifested by their obtained means**.** In terms of level of performance, only Pamela was considered as an expert in solving routine problems using algebraic method as indicated by her obtained mean level of **4.** She really understood perfectly the method as exemplified in her organized solution. Such performance could also be attributed to her positive attitude (before and after) in solving the problems.

On the other hand, Student A, Student C, Student E, Student F and Student G also used algebraic method but along the process they were not able to apply it successfully since they had committed errors in some of their solutions. They liked the algebraic method because according to them the method was very organized and simple. But along their process of solving, they committed errors. It can be noted that they all have positive attitude before and after the problem solving tasks were given.

Student H and Student B, on the other hand, used guessing in solving. For Student H, she didn't like the method, because it was difficult as manifested despite her positive attitude before she solved the problems. However, her attitude became neutral after she solved the problems. For Student B, she liked the method but she forgot the process. Liking the method might be an expression of her positive attitude towards problem solving.

Conclusions and Recommendations

Based on the results of the study, the following conclusions and recommendations are given:

1. The students show positive attitude towards problem solving signifying that they are willing to learn and solve word problems. The researchers, therefore, recommend that math teachers should provide more challenging problems to the students.

2. The students attempted using algebraic method but were not able to apply the process successfully. They committed errors in the process of solving routine problems in Math utilizing algebraic method. Along this vein, the researchers suggest that math teachers should give more time in solving routine problems using algebraic method in their classes. The process must be mastered by the students before touching other topics in Math. Such mastery is a basic requirement in studying other Math subjects.

3. Generally, the students were categorized as transitional problem solvers. Transitional problem solver solves problems with nearly accurate and complete solution but committed few errors in the process of solving. With this finding, the researchers recommend that the math teachers should give varied types of routine problems -- ranging from easy, average, to difficult types. Math teachers must be patient enough in monitoring the solutions of the answers of the students to ensure accurate and complete solutions of the problems.

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A Novel Use of Flow Chart in Teaching Factoring

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Abstract

This study was conducted as a sequel of the study entitled "Performance of College Algebra: Basis for Proposed Modules where the Factoring Flowchart was part of the proposed modules. The use of Flowchart in teaching factoring lesson was introduced in the modules since it was revealed in the findings of the study that the mastery level of the students in factoring was low.

The Flowchart was then implemented the following school year, in Math 1 course to find out whether or not it helps students learn better and gain mastery in the lesson. The first implementation was done in the first semester. This was given to Math 1 class composed of first year nursing students. The cases of factoring were given first to the students as a review of how their teachers taught this lesson when they were in high school. After that, the use of flowchart was introduced where each student was given a copy of the flowchart. The same thing happened in the second semester but at this time some revisions were made based on the comments and suggestions of the students in the first semester.

The students found the flowchart very helpful on their part. For them, they were guided already as to what formula should be applied. Their confusion or difficulties were minimized if not solved. They found factoring polynomials easier this time compared before. Their scores in the test had improved. With this, their attitude towards the subject also became better since they found it easy to factor polynomials correctly

1. Introduction

Mathematics is one of the most potent tools in the development and advancement of science and technology. It is very useful in almost all fields like physical and social sciences, medicine, psychology, humanities, economics and even the arts. Because of the importance of

Mathematics, every student should learn the subject and be able to relate the knowledge that he/she gains in his daily life situations.

Over the last ten years, I have taught different mathematics courses – from arithmetic, algebra, geometry, trigonometry, and calculus – to different types of students in the university. As I observed, many students failed in Algebra, Analytic Geometry and Calculus not only in my classes but also in other classes handled by my colleagues. In our classes in one of our instructional design meetings, we discussed the reasons for so many failures, many of us claimed that students' attitude toward the subject was one of the major causes. Another probable reason as pointed out by a colleague is the students' high school foundation in Mathematics. This is confirmed by my interviews with some students who said that they did not learn much from their high school Algebra. Others claimed that they have not really been good in mathematics since elementary. Most of them said that math is the subject where they have the lowest grade since grade school. Moreover, they said that High School Algebra was the subject they hated most because they could not really the applicability of the variables x, y, and z in their real life situations.

As an Algebra teacher for a good number of years, I realized that students hate this subject because teachers fail to find strategies of teaching the topics in a way that students could see their importance and use in the real world. Algebra is such an abstract course that hinders students to relate easily or understand underlying concepts or principles in the different algebraic operations and processes. Thus, Algebra is considered as the shorthand of Arithmetic and a very potent tool in understanding the basic concept on calculus, which is the limit of a function. Without mastery of the different algebraic manipulations and processes, students could neither appreciate the beauty of calculus. Instead, they would find calculus as the most difficult one when in fact it is the only subject that shortens the long process of solving a problem in algebraic method.

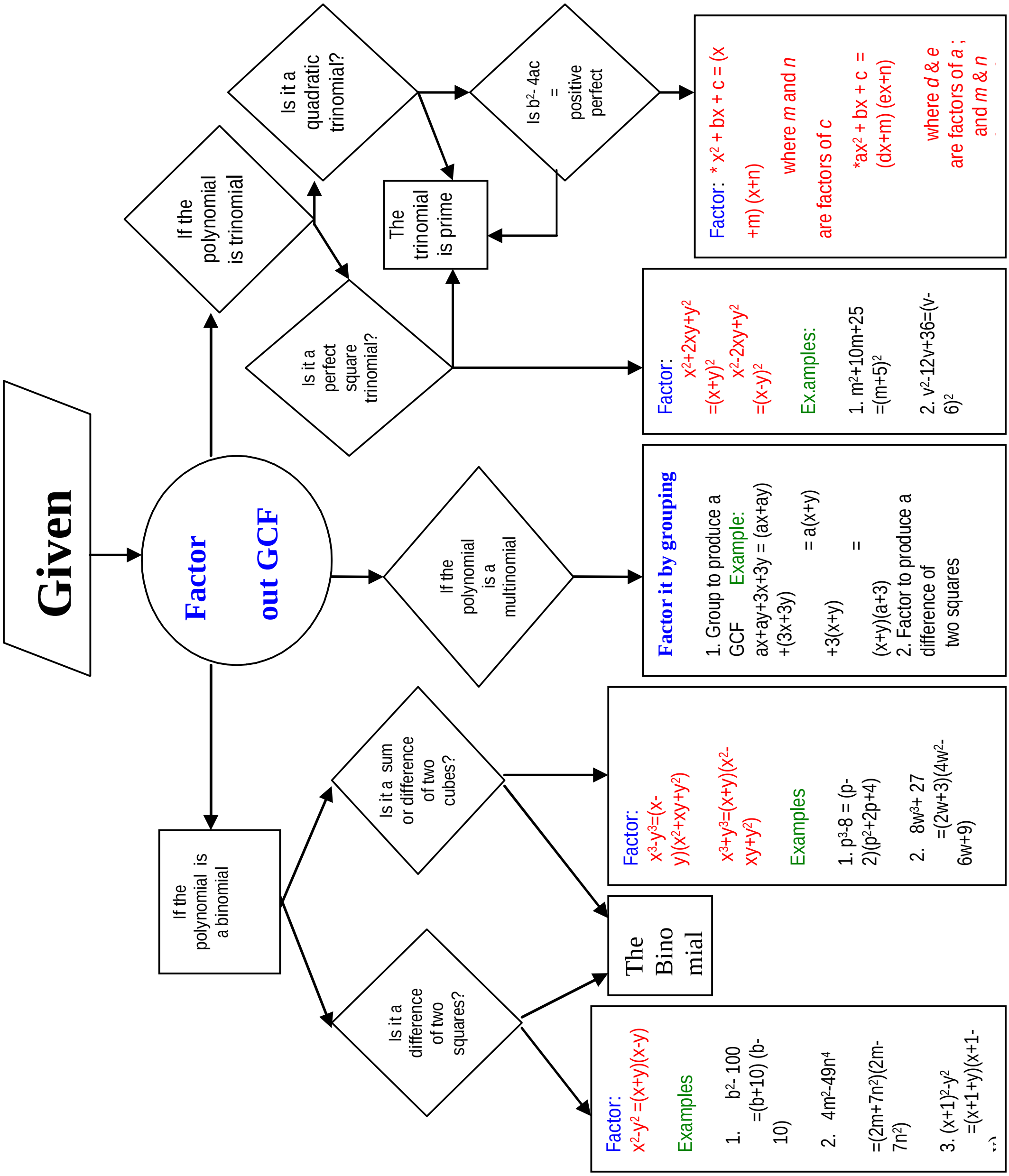
Algebra topics such as special products and factoring algebraic expressions particularly polynomials are the most important algebraic processes that students should ought to know with high level of mastery. Such mastery is very useful in the next mathematics subject- be it trigonometry, pre-calculus or calculus. It is necessary for one to know the special ways of getting the product of two or more polynomials for him/her to give the answer orally or with just a blink of an eye. In higher mathematics, students are encouraged to use or apply some shortcuts for them to finish solving the problems within the allotted time. If students forgot the shortcuts of getting the product, they could still answer the problem by applying the traditional method but would definitely require enough time to finish the work. However, in factoring polynomials, students have to get on other options of getting the correct factors. Thus, they must have to learn the topic by and with heart on it because this is one of the salient pre-requisite topics in higher mathematics courses.

Factoring lesson is presented in any Algebra book in a way that students have to learn one case at a time. Many Algebra authors presented six cases of factoring. Case 1 is factoring out the greatest common factor; Case 2 is factoring difference of two squares; Case 3 is factoring a perfect square trinomial; Case 4 is factoring quadratic trinomial; Case 5 is factoring the sum or difference of two cubes; and Case 6 is factoring by grouping. These basic cases should be learned and mastered by the students.

As I noticed, teaching this topic as presented in the book was not effective for our students. They could hardly relate one case to another. When I gave a summative test where all cases were applied, students got lost. They could hardly identify the case appropriate for a given problem. They needed to be told as to what case should be observed and followed in every given problem. With this kind of difficulty that most of my students encountered, I thought of using **Factoring Flow Chart**. It might minimize, if not remove the confusion of the students, in factoring polynomials.

2. Factoring Flow Chart

As I learned from a seminar on graphic organizer, a graphic organizer is an illustrated visual form that summarizes information and ideas through words, symbols, pictures and drawings. It uses words and numbers to clarify the meanings of drawings and visual symbols or to present quantitative information in condensed form. It is otherwise known as concept map where all the necessary concepts are placed in a way that relationship or connections can be easily seen and understood. The **Factoring Flow Chart** is a form graphic organizer or a concept map where all the six cases are placed in a manner that students are guided on what to do when given a particular polynomial to be factored. It is very easy to use and there is a corresponding example in each case or formula.


Given
Factor out GCF
If the polynomial is a binomial
Is it a difference of two squares?
Factor: $x^2-y^2=(x+y)(x-y)$
Examples
1. b^2-100 $=(b+10)(b-10)$
2. $4m^2-49n^4$ $=(2m+7n^2)(2m-7n^2)$
3. $(x+1)^2-y^2$ $=(x+1+y)(x+1-$
Is it a sum or difference of two cubes?
Factor: $x^3-y^3=(x-y)(x^2+xy+y^2)$
$x^3+y^3=(x+y)(x^2-xy+y^2)$
Examples
1. $p^3-8=(p-2)(p^2+2p+4)$
2. $8w^3+27$ $=(2w+3)(4w^2-6w+9)$
The Binomial
If the polynomial is a multinomial
Factor it by grouping
1. Group to produce a GCF
Example: $ax+ay+3x+3y=(ax+ay)+(3x+3y)$
$=a(x+y)+3(x+y)$
$=(x+y)(a+3)$
2. Factor to produce a difference of two squares
If the polynomial is trinomial
Is it a perfect square trinomial?
Factor: $x^2+2xy+y^2=(x+y)^2$
$x^2-2xy+y^2=(x-y)^2$
Ex.amples:
1. $m^2+10m+25=(m+5)^2$
2. $v^2-12v+36=(v-6)^2$
The trinomial is prime
Is it a quadratic trinomial?
Is b^2-4ac = positive perfect
Factor: $* x^2+bx+c=(x+m)(x+n)$
where m and n are factors of c
$*ax^2+bx+c=(dx+m)(ex+n)$
where d & e are factors of a; and m & n

The Factoring Flow Chart

What the students do is to start from the parallelogram where they can read “Given Polynomial” and then follow the ray connecting from it to the next. The next box which is an ellipse in shape directs the students to factor out the Greatest Common factor (GCF) if there’s any. After factoring the GCF or if ever there is no GCF other than 1, the student has to classify the polynomial to be factored whether binomial, trinomial, or multinomial. If the polynomial is a binomial, then the student has to further classify it whether it is a difference of two squares, or a sum or difference of two cubes. If the binomial is a difference of two squares, he/she is directed to factor using the formula: $x^2 - y^2 \quad (x+y)(x-y)$. If the binomial is a sum or difference of two cubes, he /she is directed to factor it using the formula: $x^3 - y^3 \quad (x-y)(x^2 + xy + y^2)$ or $x^3 + y^3 \quad (x+y)(x^2 - xy + y^2)$. If the binomial is neither a difference of two squares nor a sum or difference of two cubes, then the given polynomial is prime. A prime polynomial is not anymore factorable. It has to note that students should know what a difference of two squares and a sum or differences of two cubes are during their lesson on special products.

However, if the polynomial is a trinomial, the student has to classify it whether it is a perfect square trinomial or just simply a quadratic trinomial. If the trinomial is a perfect square trinomial, then he/she has to factor it using the formula: $x^2 + 2xy + y^2 \quad (x+y)^2$ or $x^2 - 2xy + y^2 \quad (x-y)^2$. If the trinomial is a quadratic trinomial, then he/she has to proceed to the next question “ Is $b^2 - 4ac$ equal to a positive perfect square?” IF Yes, then the student is directed to factor it following the formula: $x^2 + bx + c \quad (x+m)(x+n)$ where *m* and *n* are factors of *c* which when added, it has the sum equal to *b;* or $ax^2 + bx + c \quad (dx+m)(ex+n)$ where *d* and *e* are factors of a, and *m* and *n* are factors of *c*. The sum of products of the inner terms and outer terms should be equal to the middle term *bx.* One has to note that if all the terms in the quadratic trinomial are positive then both factors are all positive. If it is only the middle term is negative, then both factors will have negative signs. On the other hand, if the last term is negative, then the two factors will have opposite signs. Lastly, if the trinomial is neither a perfect square trinomial nor a quadratic trinomial of which b^2-$4ac$ is not equal to a positive perfect square, then the polynomial is not anymore factorable. It is called a prime polynomial.

Finally, if the polynomial is a multinomial, the student is directed to factor it by grouping. Two terms are being grouped together to produce a greatest common factor or to form a difference of two squares; or three terms are grouped together to form a perfect square trinomial. For a better and clearer understanding of the Flow Chart, examples are provided in every case.

This factoring flow chart was tried first semester and second semester of school year 2006-2007. The following were the comments of some students who used it.

Joan: *"I can say that it's a big help because all the steps I should do are found in the flow chart. It can help me everytime I am confused on what move to take."*

Leonalyn: *"Using the flowchart is very easy on our part on how to factor the given expression because we will be well-guided by it. It is so effective compare to case method of teaching factoring. It is our great privilege and for that we are very thankful that a lasallian math teacher has organized such flow chart which can really greatly help students especially those who have difficulties in factoring."*

Karen: *"For me, the flowchart is very helpful in studying factoring. In my case, it really helped me a lot to remember the steps in factoring. Everytime I encountered problems in factoring I recalled the steps in the flowchart. It's easier to factor now than in high school."*

Khedin: *"The flow chart helped us to develop and improve our skills in math particularly in factoring. We now have better understanding of the factoring lesson."*

Catherine: *"Using flow chart really gives us benefits. We are guided on what steps we should take in factoring different types of polynomials. It is something which is "HAN-AY" or organized. We can easily identify how to get the factors of a certain polynomial."*

Roselie: "*The flow chart can easily help us in getting the correct factors. It eliminates the students' difficulties during the time the teacher gives us a "mixed quiz" (all cases of factoring are included).*

Zeny: *"The flow chart is more efficient compared to the cases we used when we were in high school. We are guided in the flow chart and it is not difficult to use."*

Dennis: "*The flowchart guides us in way that we can easily get the correct factors. Without the flowchart, it is very difficult to factor because we do not know which of the cases should be applied. We easily get confused as to how to factor a given expression without it."*

Cherilyn: *"For me the diagram is good because the students can easily understand how to factor polynomials. I don't like the process or the case procedure in high school since I easily get confused. I experienced more difficulties in solving factoring before."*

3. Conclusion

Many students appreciated the use of flow chart in teaching factoring. The first time I introduced it to the first year nursing students during the first semester of school year 2006-2007, they told me that they found factoring lesson easier than when they were in high school. Through the flow chart, the students were guided in determining the correct factors. Their confusion or difficulties were minimized or reduced. Besides, they suggested that an example should be given in each type. For them, the formula is not enough. The said suggestion was positively taken. That's why in the second semester; I inserted examples in every formula to show how it is applied (see attached flow chart).

It is my plan that this flow chart will be thoroughly studied as to what extent the students have been helped by it on the first semester of school year 2007-2008. A quasi-experimental method will be used where the control group will be subjected to a case approach of teaching factoring and the experimental will be subjected to the use of flow chart in teaching the same lesson. Moreover, I have a plan to present this to ACE math teachers with the desire to help the students ease their difficulty in math. It is hoped that their attitude toward mathematics subject and their math performance will improve.

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The Tutorial Extension Program of LSU - Mathematics and Sciences Departments in Calabayan National High School

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Abstract

A tutorial program for math and Science was conceptualized by the faculty of La Salle University as part of their community extension program. The recipient was the National high School in Calabayan.

This paper is an initial attempt to profile (1) the tutees as regards their learning style, attitude towards Math & Science, and perception towards the tutorial program, (2) the tutors in terms of their educational qualifications, (3) the school in terms of class size, facilities, & instructional materials.

1. Introduction

Beginning from zero, every teacher tries to bring each student up to 100. But teachers today are faced with extensive time and energy demands. In many schools, particularly public schools, teachers are faced with 40 to 90 students in a class.

In Calabayan National High School (CNHS), Ozamiz City, teachers work with 86 first year students in one section, 54 second year students in one section, 48 third year students and 57 fourth year students (Pongase, Principal). With this scenario, how could a particular teacher be effective in meeting the needs of his/her students? Students complain "Math is a difficult subject, I don't understand many things"; "We do not have books at home, we cannot do our assignments"; "My seat is very far from the teacher, I don't understand the discussion."; "No one can help me in my assignments".

As a response to these needs the faculty of La Salle University conceptualized tutorial program for both mathematics and sciences as their community extension program. Labelled tutorial extension classes, the program was to assist CNHS students in their difficulty in Mathematical concepts and skills in computation and problem solving, difficulty in some concepts in biology, chemistry and physics.

According to Damon and Phelps (1989), tutoring is an approach in which one person instruct another person on material in which the first is an expert and the second is a novice. Thus, it refers to a more advanced student guiding and encouraging less experienced ones.

As gleaned above, tutorials valuably help students achieve academic and personal success by improving study skills, building confidence and clarifying goals.

The tutorial extension program of La Salle University is now in its second year. As observed during the first year, the program was conducted only ones a month, it was conducted only later part of the school year and few of the students attended the program. In the second year of the implementation of the program, it started June of year 2006 until March of 2007. The program was observed for the entire school year. Thus, the researcher aimed to asses and find out the problems met by the tutors of the tutorial program conducted in Calabayan National High School for school year 2006-2007 as basis for the improvement of the program for the next school year.

Statement of the Problem

Specifically, it sought answers to the following questions:

1) What is the profile of the student respondents in terms of
    a. Learning styles
    b. attitudes toward mathematics or science
    c. perception towards the tutorial program?
2) What is the profile of the tutors in terms of

a. educational qualification
b. frequency of conducting a tutorial class
c. perception towards the extension program?

3) What is the profile of the CNHS school in terms of
    a. educational qualification of the teachers
    b. class size
    c. instructional materials
    d. perception towards the tutorial program?

Dweck & Legget (1988) identified performance goals &positive attitude as two types of achievement goals that affect students academic performance. Performance goals are associated with the desire to achieve favorable grades and social approval. Students with this orientation are typically concerned with the outcome rather than with the actual process of learning.

Students with positive attitudes are more likely to sustain their efforts and have the desire to be involved in the learning tasks. There is some evidence that attitude toward mathematics relates positively with achievement (Mattern & Schau, 2002) and attitudes may influence student's attainment, consistency and quality of work (Germann, 1988). In "Synthesis of Research on the Effects of Tutoring" (Cohen, PA., and Kulik, J. A. (1981), the study briefly describes a meta-analysis of 65 objective, comparative studies of tutoring through computer searches. Efforts on both tutor and tutees were positive in the areas of learning, attitude toward the subject matter, and self-concept, although self-concept outcomes were small, especially for tutees.

Significance of the study

The present study is important for the following reasons:

1) The identified perceptions in this study may be used as basis for the improvement of the tutorial extension program of LSU faculty.

2) The findings of this study will be used as basis to sustain the program, to gain more support from the administrators, teachers and parents of the clientele school.
3) The knowledge of the students' learning style and attitudes toward learning Mathematics and Sciences may prove useful to administrator, guidance services personnel, academic supervisor, and student's affairs personnel in their planning of students programs which promotes the development of positive attitude toward mathematics.
4) The result of this study may serve as viable basis in raising their academic performance through developing good study habits in rapport with their tutors and teachers.

Scope and Delimitation of the Study

In this study, the researcher considered only the profile of the student (tutee) who attended the tutorial program, teachers (tutor) who conducted the tutorial and the school (CNHS) where the tutees coming from and where the tutorial is conducted.

2. Methodology

The study made use of the descriptive-normative type of research. As such the study aimed at describing the profile and perceptions of the respondents in the implementation of the tutorial extension classes. It used purposive sampling in which all tutees and all tutors were included because they were the key informants of the tutorial program.

There were 50 respondents in this study. These were students from CNHS, first year to fourth year high school who attended the tutorial program. On the other hand, there were eleven Math and Sciences teachers from LSU who conducted the tutorial sessions. Seven were math and four were sciences teachers.

Data Gathering Instrument

The data gathered in the study were obtained through the use of the following instruments.

Survey Questionnaire, to gather the tutors' perceptions towards the program.

A Modified Fennema-Shernman Mathematics Attitude Scale, a standardized questionnaire, to determine the attitude of the tutees towards Math/Science. More importantly, the instrument consisted of four sub scales: a confidence scale, a usefulness scale, a scale that measures mathematics as a male domain and a teacher perception scale.

- The confidence in learning Mathematics/Science is intended to measure the confidence in one's ability to learn and perform well on mathematics/ science task. The dimensions range from distinct lack of confidence to definite confidence.
- The Usefulness scale is designed to measure student's beliefs about the usefulness of mathematics/science currently, and in relationship to their future education, vocation, or other activities.
- The teacher perception scale is designed to measure the beliefs and expectations teachers have of the student's ability and performance in mathematics.
- The subject as a male domain scale is design to measure the students' beliefs that male performs better than females in math/ science.

The items were constructed using a Likert-scale format with the following anchors: 1 strongly disagree, 2 disagree, 3 neutral, 4 agree, and 5 strongly agree. Twelve items were reversed, which were given the appropriate value for data analysis. The score was the sum of the ratings.

Interview, to gather tutees' perceptions towards the program. Also used to gather comments and information from the teachers and administrators in Calabayan National High School, Barnagay Calabayan, Ozamiz City; and was also used to gather data of the school factors, tutors factors and problems encountered during the tutorials.

Learning Style Inventory, to determine the respondents' style of learning. The instrument was made up of 24 questions utilized to detertmine learning style of the student-respondents whether they were auditory, visual or tactile (Dr. Richard Felder of Carolina State University, 2000).

3. Results and Discussion

1.Student Respondents' Profile

Table 1 shows the predominant learning styles of the tutees.

Table 1
Respondents in Learning Style

Learning Style	Frequency	Percentage Distribution
Visual	17	34%
Auditory	24	48%
Tactile	6	12%
Both Visual & Auditory	3	6%
Total	n = 50	100%

This means that students prefer to listen to verbal instructions and explanations. Auditory learners like class discussion, learn by listening and can easily repeat statements back to the teacher. These are students who can retain information best by first listening to lectures, audio-tapes or discussions (http://www.learningstyle.org/sevenstyleoverview-html.).

From this point of reference, the results readily imply that teachers and tutors should employ lectures, more discussions and explanations in every topic. In like manner, teachers and tutors should support discussions with visual aids, charts, maps, graphic organizer so that the both visual and auditory learning will be developed. Role playing, will also develop tutees tactile type of learning .

Table 2 shows respondents' attitudes towards Math & Science.

Table 2.
Attitude Towards Math / Science

	Mean	Standard Deviation	Value	Interpretation
Confidence	37.7	5.08	3.14	Neutral
Usefulness	41.04	7.78	3.42	Slightly Positive
Teachers attitude	37.78	6.60	3.43	Slightly Positive
Male Domain	33.98	4.02	3.09	Neutral

As indicated in Table 2, the results reveal that tutees showed a slight positive attitude towards usefulness of the subject and the teacher's attitude. From this vantage, one can infer that the respondents need to be properly motivated to love to learn the involved subjects. Along this vein, teachers should capitalize on students' attitude so they can perform better in math and science subjects.

Perceptions towards the program

Most of the tutees had these perceptions enumerated below:

(1) "It helps me to understand the subject". This is because during the tutorial sessions, students were free to ask questions.+ If a topic is not so clear with the students, tutors re teach it.

(2) It provides the students venue to participate more, do more exercises and even developed their confidence in solving math problems. This was supported by the following statements from the students/tutees:

" I become active in class "

" I participate more in the classroom."

" Dili me mahadlok mo answer." (I am not afraid to answer)

" Sana every Saturday and mag solve me ug many problems." (Hopefully it will be every Saturday and we will solve many problems)

" Ganahan kayo me kay maka answer na me sa classroom." (We like it very much because we can participate during the discussion)

"Perfect ang among assignment because naay tulong." (We got perfect score in our assignment because of the help extended)

"Our house is far, kapoy ug hike in coming in school." (Our house is far it's is tiresome to come to school by walking)

"More explanation and use a visual aid para dili na magsulat sulat." (More explanation and the teacher must use visual aids to minimize boardworks)

2. Tutors' Profile

Table 3 shows the Profile of Tutors Educational Qualification

Table 3.
Tutors' Educational Qualification

Educational Attainment	Frequency	Percentage Distribution
Doctoral Degree	0	0%
Masters Degree/Licensed Engr.	8	72.73%
Bachelors Degree	3	27.27%
Total	N = 11	100%

Based on the Table, 72.73% of the tutors were master's degree holders in their own fields (Math and Science). Such findings imply that the tutors are highly qualified to teach math and science subjects. Thus, students have benefited from the expertise of their highly qualified tutors in those areas.

Frequency in Conducting the Tutorials

The tutors took turn in conducting the tutorials. Five tutors were assigned every 1st Saturdays and 6 for the 2nd Saturdays of the months. There were fourteen tutorial sessions for SY 2006-2007.

Table 4 shows the attendance of the tutors in their tutorial classes

Table 4
Tutors Attendance in Tutorial Classes

Tutors	Schedule	June-Oct.2006 (1st Semester)	Nov-Mar2007 (2nd Semester)	Total
1	2nd Sat	4	2	6
2	4th Sat	4	2	6
3	2nd Sat	4	3	7
4	4th Sat	3	2	5
5	4th Sat	3	2	5
6	2nd Sat	3	3	6
7	4th Sat	4	2	6
8	2nd Sat	4	2	6
9	4th Sat	3	2	5
10	2nd Sat	2	2	4
11	2nd Sat	4	2	6
Total Sessions		8	6	14
Attendance				62

As reflected in the Table above, each tutor had an average of 6 sessions for the whole school year. This showed that the tutors were committed to service and showed willingness to conduct the tutorial program.

Perceptions towards the tutorial program

The following are the weaknesses, strengths, and suggestions of the tutors regarding the tutorial program:

Strengths	Weaknesses	Suggestions
1. The teachers/tutors displayed high level of commitment to serve the tutees.	1. Irregular attendance of the tutees.	1. Assigned teachers (tutors) to a particular year level as they will handle it for the entire school year.
2. The tutees showed interest to learn. They listened attentively to their tutors.	2.The tutors were not assigned to a particular year level for the entire school year.	2. Ask the list of topics in advance so that tutors can prepare some instructional materials.
3. Tutors are experts in their respective fields.	3. There was no coordination with the CNHS faculty regarding the topics to be discussed.	3. Enough budget should be allocated to carry out the plan.
4. Administrator and teachers of CNHS are very accommodating and supportive.	4. No preparation in terms of instructional materials for enrichments.	4. Pretest and posttest should be given to determine the extent of the program has helped the tutees.
5. Tutees misconceptions were corrected.	5. No formative evaluation conducted to check the progress of the tutees.	5. There must be closed monitoring of tutees attendance.
	6. Meeting hours are too long. Tutees tend to get tired after one	6. Tutors should have the copy of the course outline of the tutors in order to know the flow

	hour. 7. Not all tutees have problems in math; many of those who attended were the honor students.	of the topics. 7. Include student teachers in the tutorial program.

3. Profile of CNHS

Table 6 shows the Educational Qualification of the teachers in CNHS.

Table 6
CNHS teachers' Educational Qualification

Educational Qualification	**Math**	**Science**	**Others**
Doctoral Degree	**0**	**0**	**0**
Masters Degree/Licensed Engr. / CAR	**1**	**1**	**1**
Bachelors Degree	**1**	**1**	**1**
Total	**2**	**2**	**2**

Based on Table 6, teachers in CNHS are qualified to teach Math and Sciences. Three of the 4 Math & Sciences teachers are teaching both math and sciences subjects (Pongase, TIC).

Class Size

As shown in the Table 7, class size in CNHS averages of 55.

Table 7
Class Size in CNHS

Year level	Class size
First Year	60
Second Year	56
Third Year	55
Fourth Year	48

Though teachers are qualified to teach the subject as reflected in Table 7, teachers cannot accommodate all students query because of the class size (Pongase, TIC).

Table 8 shows the instructional materials & educational learning facilities at CNHS

Table 8
Instructional Materials & Educational Learning Facilities

Laboratories/AVR	None	OHP/LCD	None
Library	Yes	Science Visual Aids	Yes but few
Textbook	Yes	Slides/ VHS/CD's	None
Computer Lab	No	others	clinic

As shown on theTable 8, CNHS does not have laboratories and audio-visual rooms. This implies that students in CNHS are not exposed to different laboratories and do not have experience in performing experiments inside a laboratory especially in chemistry and physics.

Perceptions of the CNHS Teachers towards the tutorial program:

Below are the weaknesses, strengths, and suggestions of the CNHS teachers regarding the tutorial program:

Strengths	Weaknesses	Suggestions
1. Students are interested to come during Saturdays.	1. Lectures are repeated.	1. There should be coordination between the tutors and the CNHS teachers regarding the flow of the content.
2. Students become active in performing tasks.	2. On the spot lectures by the tutors.	2. If possible schedule of meeting will be every week.
3. Helps the students and the school in terms of the content.	3. No advance preparations by the tutors.	3. Include English specially for speech and oral communication
4. Improve students study habit.	4. Attendance of the tutees are not regular due to financial problems and distance.	4. Send student teachers.
5. Great help for the school and for the students.		5. advance topics if possible instead of reviewing.

Based on the Table above, teachers in CNHS find the tutorial program useful to the students. They even gave suggestions on how to improve the program.

4. Summary, Conclusion, and Recommendation

The tutorial extension program of the LSU math and science departments of La Salle University in Calabayan National High School was conducted every second and fourth Saturday of the Month. Since SY 2006- 2007 was the second year of implementation of the program the researcher deemed it appropriate to asses the extension program in terms of the tutees/ tutors profile, and their perception towards the program.

The researcher found out that 48% of the tutees tended to be auditory learners, believe in the usefulness of the subject. Most of the tutors and tutees find the program very helpful. The CNHS is a small school with not enough facilities for learning for an average class size of 55 per section in every year level.

Recommendations

The tutorial extension program should be continued on a weekly basis. It is recommended that administration of LSU give full financial support to the program for its sustainability.

Tutors and CNHS should work hand in hand in monitoring the tutees attendance every session, topics or content to be discussed, preparing instructional materials for the tutees, exposure of the tutees to different laboratories and other instruction facilities. Continuing evaluation should be conducted to determine the effectiveness of the extension program in terms of the tutees academic performance and achievement.

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Teachers' Qualities: Their Relation to Students' Motivation to Study

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Abstract

This descriptive correlational type of research aimed to determine the teachers' qualities and their effects on students' motivation to study. The relationship between personal qualities (managing relationship with students, motivating and building trust and role modeling) and professional qualities (mastery of the subject matter, use of the instructional materials and classroom management) with the students' motivation to study.

1. Introduction

Education is a long range and complex activity that cannot exist without planning. The task of educational managers is to develop, change and adapt educational services in a period of unprecedented change.

The key to educational progress lies in the hands of the teacher. In fact, every classroom teacher has a high expectation regarding the development of the learners. He/she wants them to become self-reliant, productive, creative and hardworking individuals equipped with skills and competencies. The teacher is the most powerful factor in educational progress because he/she molds the youth to become good and upright citizens of the country. But ever since teachers have had the greatest burden of responsibility of educating the bulk of the future generation.

Motivation is one aspect in education that is very important. It is a process of activity wherein it could contribute to the arousal of pupils' interests to the formal instruction in the teaching-learning process. All formal learning needs a motivation so that goals could be achieved as they are perceived. The academic success of every individual lies in the high degree of motivation.

Therefore, qualities of a teacher really matter most. His job is not confined solely to the transmission of knowledge and information. What is more important is his qualities in teaching in order to be liked by students. "A good teacher is someone who teaches not only with mind but also with heart," (Kelly, 1996). When love and skills work together, expect a masterpiece (Ruskin, 1996). Teacher cares about humanity in general. Once the teacher loves, enjoys, and appreciates the individuality of each and every child in a classroom-everything else falls into place. A good teacher takes cognizance of the fact that she/he is a role model for children remembering that he can teach more by what he does than by what he says (Buttler, 1996).

Statement of the Problem

The main purpose of this study was to determine the teachers' qualities and their effects to students' motivation to study.

Specifically, this study aimed to answer the following questions:

1. What are students rating of their teachers in terms of:

    1.1 Personal Qualities
    - 1.1.1 Managing Relationship with Students
    - 1.1.2 Motivating and Building Trust
    - 1.1.3 Role Modeling

    1.2 Professional Qualities
    - 1.2.1 Mastery of the Subject Matter
    - 1.2.2 Use of the Instructional Materials
    - 1.2.3 Classroom Management

2. What are levels of the college Education student's motivation to study?

3. Is there a significant relationship between each of the following variables and motivation to study?
    3.1 Personal Qualities
        3.1.1 Managing Relationship
        3.1.2 Motivating and Building Trust
        3.1.3 Role Modeling
    3.2 Professional Qualities
        3.2.1 Mastery of the Subject Matter
        3.2.2 Use of the Instructional Materials
        3.2.3 Classroom Management

Null Hypothesis

There is no significant relationship between the personal qualities (managing relationship with students, motivating and building trust and the role modeling) the professional qualities (mastery of the subject mater, use of the instructional materials and classroom management) and the motivation to study.

Theoretical Framework

This study is anchored on the theories of the factors that greatly affect students' motivation to study.

Greeman(1988) stressed that materials invite pupils to explore, manipulate, play, experiment, discover and invent and have fun. Heinich (1993) as cited by Cadosales (2004) stated that instructional materials are the carriers of information between the teacher and the pupils. They motivate pupils to participate actively in the class.

In addition, Salandanan (2001) stressed that instructional materials offer the best means by which a teacher can provide direction in her students' daily understanding and verification, particularly by the use of printed materials. In the same way, Aquino (1999) stated that motivation is obtained by relating instruction to the needs and interest of students.

On the other hand, modeling – when applied deliberately , can be an effective and efficient means of teaching new behavior (Bandura, 1986); Schunk (1987) study indicated that modeling can be must effective when the teacher makes use of all the elements of observational learning namely paying attention , retaining information or impressions , producing behaviors and being motivated.

Conceptual Framework

The study employs these two variables namely; the independent variables which are the teachers' personal and professional qualities as evaluated by the students and the motivation to study as the dependent variable.

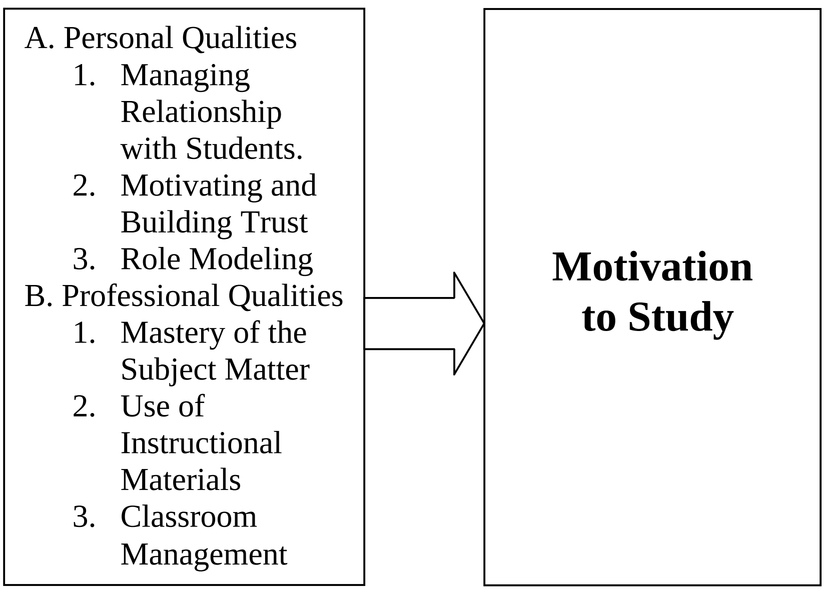

Figure 1

The independent variables in this study are the teacher factors. The teacher factors are divided into two, the personal and professional qualities. The personal qualities include managing relationship with students, motivating and building trust, and role modeling. The professional qualities include mastery of subject matter, use of instructional materials and classroom management.

Significance of the Study

The findings generated from this study are beneficial to teachers, administrators, and students.

The findings of the study will create an awareness on the part on the education teachers with regard to their teaching competencies or qualities that can affect students' motivation to study. This study will help them in adjusting and modifying their teaching skills, behaviors, attitudes and values in motivating students.

For the administrators. This may enable them to assess college instructors in terms of personal as well as professional characteristics. The result serves as basis in the planning of service teacher training programs. It may also provide a basis in selecting and hiring instructors.

For the students. This study will determine what kind of qualities do they like that can affect their motivation to study.

Scope and Limitation

The respondents of the study were 50 education students enrolled in Immaculate Conception College-La Salle in the second semester of the school year 2005-2006.

The study is limited to the teacher factors namely: the personal and professional qualities. this study include managing relationship with students, motivation and building trust, role modeling, mastery of the subject matter, use of instructional materials and classroom management as the independent variables and motivation to study as the dependent variable.

Review of Related Literature

Managing Relationship with Students

Aquino (1988) mentioned that desirable behaviors of teachers like warmth, cognitive organization, orderliness, indirectness, and ability to solve instructional problems enhance teacher-student relationship. Moreover Richards (1999) cited that teachers' personal qualities like caring, accepting, loving, respecting, understanding and patience and listening to students and personal qualities such as content, knowledge, teaching in different learning styles and teaching skills, enhance the learning experience of the students.

Cadosales (2004) stated that teacher-pupil good relations are established by the way teachers show patience, friendliness, and sensitivity to pupils' needs and feelings. Gage and Berliner (1998) as cited by Cadosales assert that teachers build the personality of pupils. The way teacher relates with pupils also influences their behaviors, attitudes, temperament, emotional responses, character, cognitive styles and values.

Mastery of the Subject Matter

Subject matter is an essential component of teaching. Knowledge is neither a new nor a controversial assertion. After all, if teaching entails helping others learn, then understanding what is to be taught is a control requirement of teaching. Buchman (1984).

(Peter 1977) stated that if anything is to be guided as a specific preparation for teaching priority must be given to a through grounding on something to teach.

A very important indicator of teaching effectiveness is the teachers' mastery of the subject matter and the use and knowledge of varied appropriate methods and techniques that facilitate the transfer of learning and which creates an impact and delivery of lectures/instruction (Ornstein 1990:93) cited by Cajote (1997).

Role Modeling

The term model can refer to an actual person whose behavior serves as a stimulus for an observers' response, or as is more often the case in our society. It can refer to a symbolic model. Symbolic models include such things as oral/written instructions, pictures, mental images, and cartoon in film characters in books and televisions. For some children, symbolic models may be as important as real- life models. This is not to deny that peers, siblings, and parents also serve as models or that teacher and other well-balanced people are often held up as extemporary models. (Lefrancois 2000). He added that the modeling effect involves the acquisition of a new behavior as a result of seeing a model emit behavior.

Bayawa (1992) cited by Leonardo (1998) mentioned modeling as an effective way of developing values. As regards modeling in schools, pupils learn much from the teachers not only on what they are talking about, but more so in their actions.

Motivating and Building Trust

Motivation is a key to effective instruction and management. (Moore 1989). To build a healthy relationship among students and the teacher a climate of mutual trust grows and develops. Trust, like order, is not something that can be built at once and forgotten about. It constantly changes and constantly needs nourishment. Trust begins as people take the risk of disclosing more and more of their thoughts and feelings to each other. Mutual trust enhances the possibility of effective communication.

Keith and Cool (1992) as cited by Lefrancois (2002) tried to determine some of the factors that most contributed to the achievement scores of more than 25,000 students. They stated that students enrolled are a high-quality school and curriculum were more highly motivated. Students with high academic motivation took more academic course work. Tulio (2000) claimed that motivation is at the center of psychology, with its roots reaching into learning, memory, emotion, personality and other related areas. It is the basic factor of learning. The term motive refers to the condition within the individual that initiates activity toward a goal, needs, and drives for the basic framework for motivation.

Gregorio (1995) states that motivation is the key to directing and guiding learning in the understanding of the needs, motives, and interest of the learners.

2. Methodology

The Research Method

The descriptive research method was employed in this study since the study involved description, recording, analyzing and interpreting of the conditions that exist (Best 1981). This is also correlational since it was concerned with finding out the relationship between personal qualities (managing relationship with students, motivating and building trust and role modeling) and professional qualities (mastery of the subject matter, use of the instructional materials and classroom management) with the students' motivation to study.

Respondents of the study

The respondents of the study were the 50 grade four students enrolled in La Salle University Integrated School in the school year 2006-2007. A complete list of the total grade four students involved in this study is presented in Table 1.

Table 1
Distribution of Respondents by Level

Section	Population Size	Sample Size
4 – St. Miguel	35	35
4 – St. Hilario	38	15
Total	73	50

Sampling Technique

Grade four levels had a population of 73, 35 students from St. Miguel and 38 students from St. Hilario. From this figure, 50 were taken as respondents.

The researcher used the random lottery sampling technique in choosing the respondents.

Researcher Instruments

This study used the questionnaires prepared by Cadosales (2004). It consisted of 2 main parts, Part 1 was the motivation for study checklist, Part 2 included the items of the personal and professional qualities of subject teachers. There were only 9 subject teachers being evaluated by the 50 student responses. The respondents were the ones to choose the subject teacher to be evaluated.

Scoring Procedure

In the interpretation of data, scales were made to measure the variables in the study.

The verbal description of personal qualities and professional qualities scores is as follows:

4.20 - 5.00	Excellent
3.41- 4.20	Very Good
2.61-3.40	Good

1.81 - 2.60	Fair
1.00 -1.80	Poor

The motivation to study checklist is categorized into the following scale.

4.21 – 5.00	Very Highly Motivated
3.41 – 4.20	Highly Motivated
2.61 – 3.40	Fairly Motivated
1.81 – 2.60	Less Motivated
1.00 – 1.81	Least Motivated

Research Procedure

The researcher sought permission from the academic assistant of La Salle University Integrated School Cluster 1 to administer the questionnaire to the students. Then, the collected data were tabulated and interpreted.

Statistical Treatment

The data collected from through study were tested using the following tests.

1. Percentage distribution was used to present a profile of respondents in terms of personal qualities and professional qualities.
2. Weighted mean was computed to present he levels of the following:
   a. personal qualities
   b. professional qualities
3. Weighted mean was computed to present the motivation to study of the respondents.
4. Pearson r was used to determine the relationship between the independent variables which are personal and professional qualities and the dependent variables, which is the motivation to study
5. T test was used to determine whether r is significant.

3. Results and Discussion

Personal Qualities

Personal qualities refer to the teacher's personality, interests, attitudes and beliefs, his/her behavior in working relationship with pupils and other individuals (Lardizabal 1991)

The evaluation of the personal qualities of the respondents is presented in Table 1.

Table 1

Teachers' Personal Qualities Profile

Scores	Levels	Number	Percent
4.21-5.00	Excellent	40	80
3.41-4.20	Very Good	6	12
2.61-3.40	Good	4	8
1.81-2.60	Fair	0	0
1-1.80	Poor	0	0
Total		**50**	**100**

The data in Table 1 reveals that a big majority 40 or 80 percent of the respondents had *excellent* personal qualities, 6 or 12 percent had very good personal qualities and 4 or 8 percent had good personal qualities. No one was rated *fair* and *poor.*

This implies that the teacher discusses the lesson well, he/she encourages everyone to participate in the class discussion. He/she provides varied learning activities and above all the teacher is patient, friendly, and approachable and has a good sense of humor.

Table 2 shows the detailed indicators of the teachers' personal qualities.

Table 2
Indicators of the Personal Qualities of the Education Teachers

INDICATORS	WEIGTED MEAN	VERBAL INTERPRETATION
A. Managing Relationship with Students		
1. My teacher is patient, friendly, and approachable and has a good sense of humor.	4.68	Excellent
2. My teacher accepts my ideas and corrects them nicely when they are wrong.	4.52	Excellent
3. My teacher sets reasonable standards so that we are capable of completing the requirements.	4.44	Excellent
4. My teacher understands my feelings.	4.43	Excellent
5. My teacher always gives positive feedback.	4.42	Excellent
Average	**4.50**	**Excellent**
B. Motivating and Building Trust		
1. My teacher has life in teaching.	4.74	Excellent
2. My teacher encourages everyone to participate in the class.	4.7	Excellent
3. My teacher believes that we are capable of getting good grades.	4.52	Excellent
4. My teacher smiles or nods when I say the right answer.	4.52	Excellent
5. My teacher provides varied learning activities that suits to our abilities and interests.	4.48	Excellent

Average	**4.60**	**Excellent**
C. Role Modeling		
1. My teacher pays attention every time I speak.	4.66	Excellent
2. My teacher explains until the students can understand the lesson.	4.64	Excellent
3. My teacher listens and gives understandable answer to my questions.	4.6	Excellent
4. My teachers' movements and actions help me understand the points he/she wants to emphasize.	4.5	Excellent
5. My teacher guides me when I give the wrong answer.	4.46	Excellent
Average	**4.57**	**Excellent**
Grand Mean	**4.56**	**Excellent**

As shown in Table 2 the respondents were excellent in all indicators of the personal qualities. The indicators which had the highest mean were "My teacher is patient, friendly, and approachable and has a good sense of humor". "My teacher accepts my ideas and corrects them nicely when they are wrong", which had a weighted mean 4.68 and 4.52 respectively in managing relationship with students. "My teacher has life in teaching and my teacher encourages everyone to participate in class", which has a weighted mean of 4.74 and 4.7 in motivating and building trust. "My teacher pays attention every time I speak" and "My teacher explains until the students can understand the lesson which had a weighted mean of 4.66 and 4.64 in the role modeling indicators.

Professional Qualities

Professional qualities are the teachers' knowledge of the general subject matter to be taught, his/her understanding of psychological and educational principles, and his/her understanding and appreciation of the teaching profession (Lardizabal 1991).

Table 3 presents the profile of the teachers' professional qualities.

Table 3

Teachers' Professional Qualities Profile

Scores	**Levels**	**Numbers**	**Percent**
4.21 – 5.00	Excellent	39	78
3.41 – 4.20	Very good	9	18
2.61 – 3.40	Good	2	4
1.81 – 2.60	Fair	0	0
1 – 1.80	Poor	0	0
Total		**50**	**100**

The data in Table 3 shows that 78% of the Education teachers' professional qualities was rated excellent, 18 percent were rated very good professional qualities and 2 or 4 percent were rated good professional qualities. No one of the teachers was rated fair or poor.

Table 4 shows the detailed indicators of the teachers' professional qualities.

Table 4

Indicators of the Professional qualities Grade Four Teachers

Indicators	**Weighted mean**	**Verbal Interpretation**
A. Mastery of the Subject Matter		
1. My teachers' ability to explain or to discuss the lesson clearly.	4.58	Excellent
2. My teacher's knowledge of the subject he or she teaches is evident.	4.56	Excellent
3. My teacher makes the subject interesting and challenging.	4.5	Excellent

4. My teachers' day to day preparedness of the lesson.	4.5	Excellent
5. My teacher's ability to present lesson in a well – organized manner so we can find them easy to understand.	4.54	Excellent
Average	**4.54**	**Excellent**
B. Use of the instructional materials		
1. My teacher utilizes instructional time productivity that he or she uses the period entirely for the lesson.	4.52	Excellent
2. My teacher's ability to encourage the student to participate in class discussion.	4.48	Excellent
3. My teacher integrates values in teaching the subject matter.	4.36	Excellent
4. My teacher uses boardworks, examples. Illustration and other teaching aids to make the lesson clear.	4.36	Excellent
5. My teacher develops or inspires me to think more, study more and be more interested on her or his subject.	4. 50	Excellent
Average	**4.50**	**Excellent**
C. Classroom Management		
1. My teacher checks attendance and tardiness.	4.88	Excellent
2. My teacher is watchful and efficient in conducting quizzes and examinations	4.76	Excellent
3. My teacher praises or gives encouraging comments when	4.58.	Excellent

student show satisfactory performance such as correct answers, asking good questions, giving good reports etc.		
4. My teacher maintains order and discipline.	4.5	Excellent
5. My teacher imposes routine activities like arranging the chair, picking up paper and cleaning the board before leaving the classroom.	4.5	Excellent
Average	**4.64**	**Excellent**
Grand Mean	**4.56**	**Excellent**

Table 4 shows that the respondents were rated excellent in all the indicators of the professional qualities. The indicators which had the highest mean were “My teachers’ ability to explain or discuss the lessons clearly”. “My teachers’ knowledge of the subject he/she teaches” which had the weighted mean of 4.58 and 4.56 respectively in mastery of the subject matter. “My teachers’ ability to encourage the students to participate in class discussion “which had a weighted mean of 4.72 and 4.52 in the use of instructional materials. “My teacher checks attendance and tardiness”, “my teacher is watchful and efficient in conducting his/her quizzes and examinations” which had a weighted mean of 4.88 and 4.76 in classroom management indicators.

The data reveals that the majority of the education teachers were professionally competent to teach. A professional teacher masters his or her ability to discuss the lessons clearly. Thus, the teacher could really make the lesson interesting on the part of learners and thereby challenge themselves to become effective. Teacher showed much preparedness on the lesson by organizing, utilizing instructional time productively because it is their great responsibility to inspire their pupils to think more, study more and become more interested upon teaching their lesson meaningfully.

Respondents' levels of motivation to study

Motivation is one aspect in education that is very important. It is a process of activity where in it could contribute to the arousal of pupils' interest to the formal instruction in the teaching – learning situation.

In this study the respondents' motivation to study was based on the motivation for study checklist.

Table 5 shows the levels of motivation to study of the randomly selected seventy three grade four students.

Table 5
Motivation to study Profile of the Students

Scores	**Levels**	**Number**	**Percent**
4.21 – 5.00	Very highly motivated	22	44
3.41 – 4.20	Highly motivated	24	48
2.61 – 3.40	Fairly motivated	3	6
1.81 – 2.60	Less Motivated	1	2
1 – 1.80	Least Motivated	0	0
Total		**50**	**100**

It is clear in Table 5 that 44 % were very highly motivated. The date further show that 24 or 48 percent were highly motivated while 3 or 6 percent were fairly motivated.

In above data reveal that majority of the students were highly motivated. This means that they were motivated to perform well in the studies beacsue the teacher possesses very good personal qualities and professional qualities "People at work are more productive if they are motivated. "(Manzaro 2002).

Table 6 shows the detailed indicators for motivation to study.

Table 6
Indicators of the Respondents' Motivation to Study

Indicators	**Weighted Mean**	**Verbal Interpretation**
1. I take care of my school books, desks and other things.	4.58	Very highly Motivated
2. I follow directions.	4.56	Very highly Motivated
3. I take care of my clothing, books and other things.	4.52	Very highly Motivated
4. I listen to the ideas of others. 5. I clean the place when my work is finished.	4.52 4.46	Very highly Motivated Very highly Motivated
6. I get to class on time.	4.34	Very highly Motivated
7. I listen to the teacher.	4.24	Very highly Motivated
8. I help my classmate.	4.16	Very highly Motivated
9. I work until the job is finished.	4.06	Very highly Motivated
10. I move quietly to and fro my classes.	4.04	Very highly Motivated
11. I have my pencil, paper and books ready when they are needed.	4	Highly Motivated
12. I do my share in class projects.	3.94	Highly Motivated
13. I work on learning activities in free time.	3.92	Highly Motivated
14. I ask question about schoolwork.	3.88	Highly Motivated
15. I listen to the ideas of others.	3.86	Highly Motivated
16. If I make mistakes, still keep	3.82	Highly

working.		Motivated
17. I correct mistakes.	3.76	Highly Motivated
18. I still work even when the teacher has left the room.	3.74	Highly Motivated
19. I begin school work right away.	3.68	Highly Motivated
20. I read during my free time.	3.68	Highly Motivated
Grand Mean	**3.50**	**Highly Motivated**

Table 6 shows that the respondents were highly motivated. The indicator which had highest weighted mean "I take care of my books, desks and other things" and "I follow directions" which had a weighted mean of 4.58 and 4.56 respectively.

The date further show that the students who were very highly motivated to study followed directions, listened to the ideas of others, got to class on time, listened to the teacher and were highly motivated to work on the tasks given and work on learning activities during their free time.

Good and appropriate motivations really contribute to the academic success of an individual learner (Cabrillos 2002).

Table 7 presents the correlation results between personal and respondents' motivation to study.

Table 7
Correlation Results between Personal qualities
and Respondents' Motivation to Study

r	tc	tt	Level of Significance	Interpretation	Decision
.13	.93	1.960	0.05	Not significant	Ho is accepted

The t value of tc 0.93 is lesser than the tabular value of tt 1.960 at 0.05 level of significance.

The hypothesis is accepted, so personal qualities do not significantly affect students' motivation to study.

Table 8 presents the correlation result between professional qualities and respondents' motivation to study.

Table 8
Correlation result between professional qualities
and students' Motivation to Study

r	tc	tt	Level of Significance	Interpretation	Decision
0.10	0.71	1.960	0.05	Not significant	Ho is accepted

The computed value of tc 0.71 is lesser than the tabular value of tt 1.960 at 0.05 level of significance. The hypothesis is accepted. Therefore, professional qualities of the teachers do not significantly affect students' motivation to study.

4. Summary, Conclusion, and Recommendations

The main purpose of this study was to find out the students level of motivation to study of the selected grade four students in La Salle University Integrated School in the school year 2006 – 2007.

The study made use of the descriptive correlational type of research. The descriptive method was specifically employed to describe the respondents profile as to personal qualities, professional qualities and motivation to study. The main respondents of the study were the fifty grade four students from both sections who enrolled in La Salle University Integrated School during the S.Y. 2006-2007. Only fifty grade four students were taken randomly as respondents. The only instrument used in gathering data was a questionnaire which has two parts. First part was the personal and professional qualities of the teachers. The second part was the motivation to study checklist.

Percentage distribution was used to present the profile of the respondents in terms of personal and professional qualities, weighted mean was computed to percent levels and mean was computed to present motivation to study. Pearson r was used to determine the relationship between independent and dependent variables and t test was used to determine whether r is significant.

Summary of findings

1. Majority of the teachers were excellent in performing the indicators of personal qualities.
2. Majority of the teachers were excellent in performing the indicators of professional qualities.
3. Majority of the respondents were highly motivated to study.
4. Managing relationship with students does not significantly affect students' motivation to study.
5. Students' motivation to study does not depend on motivating and building trust.
6. Role modeling does not significantly affect to students' motivation to study.
7. Mastery of the subject matter does not significantly affect students' motivation to study.
8. Use of instructional materials does not significantly affect to students' motivation to study.

9. Students' motivation to study does not depend on classroom management.

Conclusions

Based on the findings, the researchers have the following conclusions:

1. Teachers' personal qualities did not significantly affect students' motivation.
2. Teachers' professional qualities did not significantly affect students' motivation to study.
3. Respondents' motivation to study was not influenced by teachers' personal qualities.
4. Respondents' motivation to study was not affected by teachers' professional qualities.

Recommendations

Based on the findings, the researchers have the following recommendations:

1. Since this study found out that personal and professional qualities of the teachers did not affect students' motivation to study, there should be another study that will try to find whether these factors are not contributory to the levels of students' motivation to study.
2. This study is limited to the personal and professional qualities of teachers, there should be another study that would include other factors that can affect students' motivation to study.
3. Another study could be conducted with students in higher levels, e.g. college.

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