LEARNING STYLES OF SOPHOMORE STUDENTS OF PUP LABORATORY HIGH SCHOOL (SY 2006-2007)

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ABSTRACT

Learning styles have a big contribution to the academic performance of a student. Awareness of one's learning style will help a person maximize his potential in accumulating learning to the best of his ability with the use of his preferred learning styles. The teacher's awareness of the student's learning styles will help him/her select teaching strategies that would maximize the student's learning potential.

This descriptive research analyzed the learning styles of the sophomore students of PUP Laboratory High School. Specifically, the researchers sought answers to the following sub- problems:

1. *What is the description of the respondents in terms of selected personal variables?*
2. *What is the academic performance of the respondents?*
3. *Is there a significant difference in the academic performance of the respondents when grouped according to the selected personal variables?*

Findings show that there are, more female students than males; that most of the respondents came from families having PHP5001-10,000 monthly family income; and, although they use varied learning styles, the most dominant is the auditory learning style. Academically, students are average learners. Their academic performances significantly differ when grouped according to gender, socio - economic status, and learning styles.

With these findings, the researchers recommend that the PUP-LHS should maintain academic and non-academic programs which addresses the strengths and weaknesses of students of both genders; the school should be involved more with the community programs to know clearly the socio-economic status of students; there should be intensive trainings which will enhance the auditory skills of both the teachers and the students; and, the students should also be responsive to the PUP-LHS' commitment in giving the best educational services for them to improve their academic performance. Follow-up studies are also being recommended.

INTRODUCTION

According to Caragüe (1), the greatness of the Philippines and its people has always been proportionate to the investments in education and the broadening of the intellectual pursuits of their population. Quoting her words, that means that we should put education available for all. In educating our people, we should always make the learner as the center of any educative process since the reason for the existence of teachers and schools is the learner. Alamgir (2) shares the same principle by saying that the "learner should be the major focus for any education system and policy, and that they should be picked up easily, captivated comfortably, and satisfied perfectly."

People differ in how they go about learning, thinking and problem solving. Some people like to study alone while some like to study in groups. Others like to study in a room with a bright light, while some opt to study in a table with a lamp shade. Some people comprehend more when they see graphs, tables and figures while some understand better when reading their lessons or hearing somebody lecturing. Some people work better during the morning while others prefer to work in the latter part of the day. Some people want to study with background music while some want to study in a quiet room. These are the varied learning styles of the students.

Learning styles have a big contribution to the academic performance of a student along with other factors such as learners physical and emotional conditions, the characteristics and teaching methods of the teacher, the nature of school or learning environment, and many others. Awareness of one's learning styles will help a person to maximize his/her potential in accumulating learning to the best of his/her ability with the use of his/her preferred learning styles. The teacher's awareness of the student's learning styles will help him/her select teaching strategies that would maximize the student's learning potential. When mismatches exist between learning styles of most of the students in a class and the teaching style of the professor, the students may become bored and inattentive in class, do poorly on tests, get discouraged about the courses, the curriculum, and themselves, and in some cases change to other curricula or drop out of school. Professors, confronted by low test grades, unresponsive or hostile classes, poor attendance and dropouts, know something is not working. They may become overly critical of their students (making things even worse) or begin to wonder if they are in the right profession. Most seriously, society loses potentially excellent professionals.

In the study of Reyes-Batino (4) entitled " Learning Style Intervention: Effects on Math Achievement, Attitude, and Anxiety Reduction, they used three instruments for the study: (1) Dunn and Dunn Learning Styles Inventory; (2) the Developed Math Attitude Scale; (3) the modified Role's Math Anxiety Scale. The study concluded that learning styles intervention made no significant improvement in math achievement but slightly improved the over-all academic performance of college freshman with average cognitive level. Learning styles have toughly affected a positive change in the attitude towards math and a decrease in anxiety towards math.

In the study of Bustos (5) where she used the Dunn and Dunn model, it revealed that learning styles of the elementary school children significantly affect the reading achievement for each grade level. Her study also concluded that for the Filipino learners, emotional and sociological preferences were predominant learning styles.

Review of Related Literature and Studies

According to Felder (3), students preferentially take in and process information in different ways: by seeing and hearing, reflecting and acting, reasoning logically and intuitively, analyzing and visualizing, steadily and in fits and starts. Teaching methods also vary. Some instructors lecture, others demonstrate, and lead students to self-discovery; some focus on principles and others on applications; some emphasize memory and others understanding (6). It is commonly believed that most people favor some particular method of interacting with, taking in and processing stimuli or information. Based on this concept, the idea of individualized "learning styles" originated in the 1970's, and has gained popularity in recent years. A learning style is the method of learning particular to an individual that is presumed to allow that individual to learn best.

Rita Dunn explains, "Learning style is the way in which each learner begins to concentrate on, process, and retain new and difficult information. A biologically and developmentally imposed set of personal characteristics make the same teaching method effective for some students and ineffective for others."(6)

As Richard M. Felder of the Department of Chemical Engineering at North Carolina State University states, "Students have different learning styles, characteristics, strengths and preferences in the ways they take in and process information. Some students tend to focus on facts, data, and algorithms; others are more comfortable with theories and mathematical models. Some respond strongly to visual forms of information, like pictures, diagrams, and schematics; others get more from verbal forms written and spoken explanations. Some prefer to learn actively and interactively; others function more introspectively and individually (7)." When we take the time as educators to become familiar with how our students learn as individuals, we are better prepared to design learning environments accommodating their unique needs. If time and resources do not allow individualized instruction, we can vary at the very least

design a variety of learning opportunities which meets the needs of a broad spectrum of learners. It has been proposed that teachers should assess the learning styles of their students and adapt their classroom methods to best fit each student's learning style.

Multiple Intelligence (MI) theory of Howard Gardner states that there are at least seven different ways of learning anything, and therefore there are "seven intelligences": bodily/kinesthetic, interpersonal, intra-personal, logical/mathematical, musical/rhythmic, verbal/linguistic and visual/spatial. In addition most of the people have the ability to develop skills in each of the intelligence, and to learn through them. However, in education we have tended to emphasize two of "the ways of learning": logical/mathematical and verbal/linguistic. In addition, according to Gardner, the implication of the theory is that learning/teaching should focus on the particular intelligences of each person. For example, if an individual has strong spatial or musical intelligences, they should be encouraged to develop these abilities (8). Gardner points out that the different intelligences represent not only different content domains but also learning modalities. A further implication of the theory is that assessment of abilities should measure all forms of intelligence, not just linguistic and logical-mathematical. Its principles include (1) Individuals should be encouraged to use their preferred intelligences in learning; (2) Instructional activities should appeal to different forms of intelligence; and (3) Assessment of learning should measure multiple forms of intelligence (9)

Grace and Smith identify a number of specific factors in flexible learning that can impact the success of adult learners. They assert that failure or dropout is not

determined by a single factor but by the interaction of a number of factors that build over time. Some of these factors include: 1. the student's readiness for self-directed learning; 2. the availability of appropriate learning support and management systems; 3. the student's ability to balance the demands of study with other commitments such as family and work; 4. the student's literacy levels required to succeed in the resource-based learning; 5. the design, presentation and appropriateness for student level of the course; 6. the student's ability to understand and deal with the assessment requirements; 7. the student's level of motivation; 8. the student's access to computers or other required technology; 9. confidence in using this technology for learning; and, 10. the impact of previous educational experiences (10).

According to Dunn and Griggs (11), research suggests that students whose instruction is not responsive to their learning styles achieve significantly less than students whose instruction is responsive.

According to Gunter, Estes, Schwab (12) some students learn better in a highly structured environment; some do better in a more open and student-centered atmosphere. Some students want to solve problems for themselves; others feel more comfortable if solutions are presented to them. Some learners think deductively: some are comfortable with inductive thinking. Some students learn better by themselves, some work better in groups. If a teacher creates a single environment in the classroom or repeatedly uses the same instructional approach, only those students who learn well in that environment or with that approach will succeed. The teacher who utilizes a variety of instructional approaches is more likely to reach all students in the classroom: moreover, students are encouraged to learn in a variety of ways.

Reid (13) explains the learning styles preferences as used in her questionnaire. According to her, a student learns in many different ways and that students' learning style preferences show how well they learn material in different situations. The following are the descriptions that give information about ways in which a person learn best: *Visual Major Learning Style Preference:* Students can learn well from *seeing words* in books, on the chalkboard, and in workbooks. Also, students can remember and understand information and instructions better if they read them. A visual learner don't need as much oral explanation as an auditory learner, and one can often learn alone, with a book. One should take notes of lectures and oral directions if he/she wants to remember the information.

Auditory Major Learning Style Preference: One can learn from *hearing words* spoken and from oral explanations. It may be easy to remember information by reading aloud or moving lips as one read, especially when learning new material. One can benefit from hearing audio tapes, lectures, and class discussions, and also can benefit from making tapes to listen to, by teaching other students, and by conversing with the teacher.

Kinesthetic Major Learning Style Preference: One learn best by experience, by being involved physically in classroom experiences. The information can be remembered well when you actively participate in activities, field trips, and role-playing in the classroom. A combination of stimuli, for example, an audiotape combined with an activity, will help one to understand new material.

Tactile Major Learning Style Preference: A student can learn best when he/she has the opportunity to do "hands-on" experiences with materials. That is, working on experiments in a laboratory, handling and building models, and touching and working with materials provide him/her with the most successful learning situation. Writing notes or instructions can help one to remember information, and physical involvement in class related activities may help the students to understand new information.

Group Major Learning Style Preference: Students can learn more easily when study with at least one other student, and they will be more successful in completing work well when they work with others. Group interaction and class work with other students, should be valued, and one can remember information better when they work with two or three classmates. The stimulation one can receive from group work helps them to learn and understand new information.

Individual Major Learning Style Preference: Students can learn best when they work alone, and can think better when they study alone, and remember information when learnt by self. The new material can best be understood when it is learnt alone, and you make better progress in learning when you work by yourself.

Minor Learning Styles: In most cases, minor learning styles indicate areas where one can function well as a learner. Usually a very successful learner can learn in several different ways.

Negligible Learning Styles: Indicates that one may have difficulty learning in that way. A solution may be to direct learning one's style to a stronger one. Another solution might be to try to work on some of the skills to strengthen the learning style in the negligible area.

The Theory of Experiential Learning popularized by C. Rogers (14) viewed that since a learner has a natural tendency to learn, it is the role of the teacher to facilitate such learning. It is the duty of a teacher to set a positive climate for learning, clarify the proposed pf (problem for mutation) of the learner(s), and organize and make available learning resources, balance intellectual and emotional components of learning, and share feelings and thoughts with learners without dominating. According to Rogers, learning is facilitated when 1. the student participates completely in the learning process and has control over its nature and direction; 2. it is primarily based upon direct confrontation with practical, social, personal or research problems; and 3. self-evaluation is the principal method of assessing progress or success. He also emphasizes learning to learn and openness to change.

D. Rumelhart & D. Norman proposed that there are three modes of learning: accretion, structuring and tuning. Accretion is the addition of new knowledge to the existing memory. Structuring involves the formation of new conceptual structures or schema. Tuning is the adjustment of knowledge to a specific task usually through practice. Accretion is the most common form of learning; structuring occurs much less frequently and requires considerable effort; tuning is the slowest form of learning and accounts for expert performance. Restructuring involves some form of reflection or insight (i.e., metacognition) and may correspond to a plateau in performance. On the other hand, tuning often represents automatic behavior that is not available to reflection

(e.g., learning procedures). This theory includes the following principles: 1. Instruction must be designed to accommodate different modes of learning; 2. Practice activities affect the refinement of skills but not necessarily the initial acquisition of knowledge (15).

The theory of B.F. Skinner is based upon the idea that learning is a function of change in overt behavior. Changes in behavior are the result of an individual's response to events (stimuli) that occur in the environment. A response produces a consequence such as defining a word, hitting a ball, or solving a math problem. When a particular Stimulus-Response (S-R) pattern is reinforced (rewarded), the individual is conditioned to respond. The distinctive characteristic of operant conditioning relative to previous forms of behaviorism is that the organism can emit responses instead of only eliciting response due to an external stimulus. Reinforcement is the key element in Skinner's S-R theory. A reinforcer is anything that strengthens the desired response. It could be verbal praise, a good grade or a feeling of increased accomplishment or satisfaction. The theory also covers negative reinforcers -- any stimulus that results in the increased frequency of a response when it is withdrawn (different from adversive stimuli -- punishment -- which result in reduced responses). A great deal of attention was given to schedules of reinforcement (e.g. interval versus ratio) and their effects on establishing and maintaining behavior. One of the distinctive aspects of Skinner's theory is that it attempted to provide behavioral explanations for a broad range of cognitive phenomena. For example, Skinner explained drive (motivation) in terms of deprivation and reinforcement schedules. Skinner tried to account for verbal learning and language within the operant conditioning paradigm, although this effort was strongly rejected by linguists and psycholinguists. Skinner deals with the issue of free will and social control (16).

Max Wertheimer was one of the principal proponents of Gestalt theory which emphasized higher-order cognitive processes in the midst of behaviorism. The focus of Gestalt theory was the idea of "grouping", i.e., characteristics of stimuli cause us to structure or interpret a visual field or problem in a certain way. The primary factors that determine grouping are: 1. proximity - elements tend to be grouped together according to their nearness, 2. similarity - items similar in some respect tend to be grouped together, 3. closure - items are grouped together if they tend to complete some entity, and 4. Simplicity - items will be organized into simple figures according to symmetry, regularity, and smoothness. These factors were called the laws of organization and were explained in the context of perception and problem-solving (17).

Learning styles theories have been criticized by many. Some psychologists and neuroscientists have questioned the scientific basis of these models and the theories on which they are based. Many educational psychologists believe that there is little evidence for the efficacy of most learning style models, and furthermore, that the models often rest on dubious theoretical grounds.

Significance of the Study

This study is of great importance to the following sectors:

To the PUP-LHS Administration - This study will serve as a guide in their academic planning. This could help them in making plans that will fit to the student support learning needs of their students in order to achieve better quality of education, thus producing more competent graduates who are responsive to the needs of the society. In addition, this study can also be a reference in re-educating and training their teaching staff.

To the Curriculum Makers - This study will serve as a guiding tool in the creation and development of the school curriculum that will correspond to the pedagogical needs of the students.

To the PUP-LHS faculty members - The result of this research will give them an in-depth understanding of how varied are the learning styles of the PUP-LHS sophomore students. In this way, they can think of instructional methods and strategies that will be responsive to the learning needs of the students.

To the PUP-LHS students - This study will help them to assess and identify their own learning styles; thus they will be able to clearly know their learning strengths and

weaknesses. In attaining these, they can think of ways of how to be adaptive to the different kinds of teaching methodologies and strategies of their instructors or professors.

To other Researchers - This study can be a reference to their researches in conducting similar or related research.

Background of the Study

The PUP Laboratory High School is an academic institution, which offers a commercialized business curriculum. The existing academic programs are guided with the following educational philosophy:

1. Inculcate a strong sense of nationalism and social consciousness and develop spiritual and moral uprightness;
2. Democratize access to secondary education;
3. Promote competencies and excellence among members of the academia;
4. Emphasize the advertisement of the unique commercial curriculum which equip the students with basic office and entrepreneurial skills, and
5. Further upgrade business skills through knowledge connectivity using information and communication technology.

The students are being trained with the different skills related to the modern business trend. This resulted for students, in acquiring different learning styles to cope up to the academic programs. In the process, they are able to develop their own learning styles which in some ways affect on how they perform in school. On the other hand, there are some factors affecting the academic performance of the students regardless of their learning styles.

This study is conducted to give suggestions for improvements regarding the learning styles of the PUP Laboratory High School students.

Theoretical Framework

This study is inspired by the theory of Perceptual Modality (18). Perceptual modality refers to the primary way our body takes the information. Commonly, researchers identify auditory, visual, kinesthetic, and tactile styles. The field of accelerated learning also relies heavily on modality to explain how learners can process information faster.

Visual learners prefer seeing what they are learning. Pictures and images help them to understand ideas and information better than explanations. A drawing may help more than a discussion to explain the same. When someone explains something to a visual learner, he or she may create a mental picture of what the person talking describes.

Auditory learners also fall into two categories. Auditory learners prefer spoken messages. The less understood auditory learners need to hear their own voice to process the information. The more prevalent type, 'Listeners,' most likely did well in school. Even, out of school too, they remember things said to them and make the information their own. They may even carry on mental dialogues and determine how to continue by thinking back on the words of others.

Kinesthetic learners want to sense the position and movement of what they are working on. Tactile learners want to touch. "Enough talking and looking," they may say. "Let's work with this stuff. Let's get our hands dirty already." Even if kinesthetic or tactile learners don't get much from the discussion or the written materials, they may catch up and exceed the lesson plan by working through scenarios and labs. Often, they don't thrive in traditional schools because most classrooms don't offer enough opportunity to move or touch.

This study is also highly influenced by Kolb's theory of learning styles (19) which says that learning styles could be seen on a continuum running from:

a) concrete experience - being involved in a new experience
b) reflective observation - watching others or developing observation about own experience
c) abstract conceptualization - creating theories to explain observations
d) active experimentation - using theories to solve problems, make decisions

Conceptual Framework

The researchers used the Systems Approach or the IPO (Input, Process and Output) conceptual paradigm since this is a descriptive study.

In this study, the INPUT included the following: 1. the personal variables of the respondents which include gender, socio-economic status, and learning styles and 2. academic performance based on their general weighted average in first year.

An arrow pointing from the INPUT box down to the PROCESS box indicates that data in the INPUT box are used or processed in attaining the goal of this study.

The PROCESS was a descriptive analysis of the respondents' personal variables and their learning styles using the Perceptual Learning-Style Preference Questionnaire.

An arrow pointing from the Process box down to the Output box signifies that after this research undertaking, the researchers were looking forward for the expected outcome when result of this study is used.

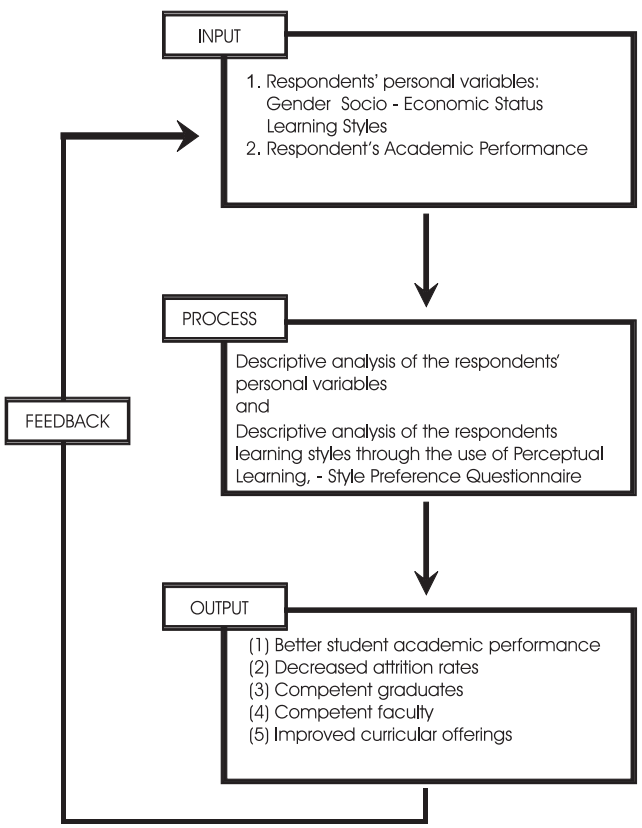

Figure 1. Conceptual Paradigm

The OUTPUT included: 1. better student academic performance; 2. decreased attrition rates; 3. competent graduates; 4. competent faculty and 5. Improved curricular offerings.

A feedback loop indicates that the output of this research gives benefit to students who will serve as the respondents, since they are the reason of this study.

Statement of the Problem

This study analyzed the learning styles of the sophomore students of PUP Laboratory High School. Specifically, the researchers sought answers to the following sub-problems:

1. What is the description of the respondents in terms of the following selected personal variables:
   - 1.1 gender;
   - 1.2 socio-economic status; and,
   - 1.3 learning styles?
2. What is the academic performance of the respondents?
3. Is there any significant difference in the academic performance of the respondents when grouped according to the following selected personal variables:
   - 3.1 gender;
   - 3.2 socio-economic status; and,
   - 3.3 learning styles?

Hypothesis

The researchers tested the following hypothesis:

There is a significant difference in the academic performance of the respondents when grouped according to the following selected personal variables:

- 1.1 gender;
- 1.2 socio-economic status; and,
- 1.3 learning styles.

Scope and Limitation of the Study

This research covered all the sophomore students of PUP Laboratory High School who were enrolled in school year 2006-2007. Sophomore students were chosen since at their stage, they have somehow attained a certain

adjustment in high school and yet they still have more years to stay in the University where appropriate help is not too late to be provided.

Research Methodology

This part presents the methods of research that were used, the respondents of the study, the data gathering instrument and procedures, and the statistical treatment utilized for data analysis.

Research Method Used

This study is a descriptive research. Descriptive study, according to Best and Kahn (20), describes and interprets what *is*. It is concerned with the conditions or relationships that exist, opinions that are held, processes that are going on, effects that are evident, or trends that are developing.

Research Locale

The place where the researchers gather the data for this study is the Polytechnic University of the Philippines - Laboratory High School. The students from II - Loyalty, II Honesty, and II Sincerity are the selected respondents for this research.

Population

This research included all the enrolled sophomore students of the Polytechnic University of the Philippines - Laboratory High School. There are 150 students enrolled.

Description of the respondents

The respondents of the study are the sophomore students of the Polytechnic University of the Philippines Laboratory High School. Table 1 shows the breakdown of the respondents from the research locale.

Instrumentation

The researchers used the questionnaire by Joy Reid (21) entitled, "Learning Styles Preferences Questionnaire". This questionnaire has 30 sentences that are to be answered by simply marking the answer with a √ in the corresponding column. The researcher made a five-point Likert scale from strongly agree to strongly disagree in answering all the items in the questionnaire. The alternatives to choose from were as follows:

YEAR/SECTION	NO. OF RESPONDENTS
II – Loyalty	50
II – Honesty	50
II - Sincerity	50

Table 1. Breakdown of the Respondents

Since the questionnaire was adapted and standardized, validation process was not utilized. Items in the questionnaire were pre-arranged in random order to avoid biases and false answers. Thus, valid answers could be derived from the respondents. The following are the groupings of the items in the 30-item questionnaire:

Visual Questions	6, 10, 12, 24, 29
Auditory Questions	1, 7, 9, 17, 20
Tactile Questions	11, 14, 16, 22, 25
Kinesthetic Questions	2, 8, 15, 19, 26
Group Questions	3, 4, 5, 21, 23
Individual Questions	13, 18, 27, 28, 30

Data Gathering Procedure

The first step that was applied by the researchers was securing a permit from the classroom teachers by presenting a request letter signed by the researchers and noted by the Principal.

The researchers and/or the research assistants went to the classrooms where they personally administered the questionnaires. Few minutes were allotted in explaining the students the procedures of answering the questionnaire.

Statistical Treatment of Data

The data gathered were analyzed and interpreted by employing the following statistical tools:

Frequency, Percentage and Ranking: These were used to answer problems in describing the respondents in terms of selected variables like gender, socio-economic status and academic performance.

Weighted Mean. This was applied to analyze raw data in in learning styles. WM will determine the learning styles of the respondents. The formula for WM is

$$WM = \frac{\Sigma Fx}{N}$$

Where in:

WM = weighted mean

f = no. of respondents

x = weighted values per category

N = total number of respondents

T-Test. This was used to test the significant difference of two means, in gender. If the P- Value is less than 0.05, the hypothesis is to be accepted or not significant, and if the P-Value is greater than 0.05 the hypothesis is to be rejected or significant.

ANOVA: This was used to answer socio-economic status and learning styles in testing the significant difference of more than two means. If the P- Value is less than 0.05 the hypothesis is to be accepted or not significant and if the P-Value is greater than 0.05 the hypothesis is to be rejected or significant.

Using these statistical treatments, the researchers used the Statistical Package for the Social Science or SPSS.

An arbitrary scale shown on table 2 was used by the researchers to interpret the learning styles of the respondents. To interpret the relationship of the variables, table 3 was used as guide (22).

Presentation, Analysis and Interpretation of Data

This part presents the analysis and interpretation of the data relative to the learning styles of the PUP-Laboratory High School sophomore students.

Weighted Mean	Verbal Interpretation
1.– 5.0	Strongly Agree
3.51 – 4.5	Agree
2.51 -3.5	Undecided
1.51 – 2.5	Disagree
1.0 – 1.5	Strongly Disagree

Table 2. Arbitrary Scale

F- VALUE	VERBAL DESCRIPTION
0.7 - higher	Very strong relationship
0.5 – 0.69	Substantial relationship
0.3 – 0.49	Moderate relationship
0.1 – 0.29	Low relationship
0.00 – 0.09	Negligible
Negative Value	Inverse relationship

Table 3. Verbal Description To Interpret The Relationship Of The Variables

1. Description of the respondents in terms of the following selected personal variables?

1.1 Gender

Table 4 presents the frequency and percentage distribution of the respondent's gender. As presented, first in rank are 84 females which is 56% of the total respondents. Second in rank are 66 males; they compose 44% of the total respondents. It can be observed that majority of the respondents were females.

1.2. Socio Economic Status

Table 5 shows the socio economic status distribution of the respondents. First in rank are 46 respondents or 30.67% who belong to a family earning Php5,001-10,000 monthly. Next in rank are 37 respondents or 24.67% whose families are earning Php10,001 to 15,000 monthly. Third in rank are 26 respondents or 17.33% whose families earn Php5,000 and below per month. Fourth in rank are 25 respondents or 16.67% whose monthly family income is Php20,000 and above. In rank five are 16 respondents or 10.67% who belong to family having Php15,000 to Php20,000 monthly income.

It can be seen that majority of the respondents belong to a family having an income ranging from Php5,001 to Php10,000. This shows that the families of these students

Gender	Number of Respondents	Percentage	Rank
Female	84	56%	1
Male	66	44%	2
	150	100%	

Table 4. Frequency and Percentage Distribution of the Respondent's Gender (N=150)

SES	Number of Respondents	Percentage (%)	Rank
Below 5000	26	17.33%	3
5001-10,000	46	30.67%	1
10,001- 15,000	37	24.67%	2
15,001- 20,000	16	10.67%	5
20,000- Above	25	16.67%	4
TOTAL	150	100%	

Table 5. Frequency and Percentage Distribution of the Respondent's Socio-Economic Status

are financially limited to fully support school activities that will ensure improved academic performance and maximized learning potential.

1.3 Learning Styles

Table 6 shows the weighted mean of the learning styles of the respondents. As presented, majority of the respondents with a weighted mean of 4.93 learned best by oral explanations or auditory learning styles; reading and seeing words or visual learning style were preferred by some of the respondents with a weighted mean of 4.19. On the other hand, a weighted mean of 4.18 for group learning style or learning with the help of others were chosen by the other respondents; being physically involved in a classroom situation or kinesthetic learning style with a weighted mean of 3.97 were chosen by the other respondents, and finally an equal weighted mean of 3.85 were derived from the respondents who prefer to learn by having hands on and experiments or tactile learning style and learning through studying alone or individual learning style.

2. The Academic Performance of the Respondents.

Table 7 shows the frequency distribution of the respondent's academic performance. As presented at the Table, in rank one are 66 or 44% of the students who have a general average ranging from 81 to 85. Rank 2 are 55 or 36.67% of the respondents whose average grade is 86 to 90%. In rank 3 are 26 or 17.33% of the respondents who have an average grade of 76-80. Only 3 or 2% of the total respondents received a general average of 91 to 95%. It can be observed from the Table that most of the respondents attained the grades ranging from 81 to 85% or 66 or 44% of the total population. This indicates that most of students are average learners.

Learning Styles	Weighted Mean	Verbal Interpretation
Visual	4.19	Agree
Auditory	4.93	Strongly Agree
Tactile	3.85	Agree
Kinesthetic	3.97	Agree
Group	4.18	Agree
Individual	3.85	Agree

Table 6. Weighted Mean of the Respondent's Learning Styles

General Average	Number of Respondents	Percentage (%)	Rank
91-95	3	2%	4
86-90	55	30.67%	2
81-85	66	44%	1
76-80	26	17.33%	3
TOTAL	150	100%	

Table 7. Frequency and Percentage Distribution of the Respondent's Academic Performance

3. Significant difference in the academic performance of the respondents when grouped according to the selected personal variables:

3.1 Gender

Table 8 presents the significant difference in academic performance of the respondents according to their gender. The P-Value, 0.46, shows the significant difference in academic performance of the respondents according to their gender. Results shows that females perform better than males.

3.2 Socio-Economic Status

Table 9 presents the significant difference in academic performance of the respondents according to their socio-economic status. The 2.02 F-Value shows a very strong relationship with the academic performance of the respondents according to their socio-economic status. The P-value of 0.09 shows the significant difference in academic performance is depending on the socio-economic status of the students.

3.3. Learning Styles

Table 10 presents the relationship and significant difference in academic performance of the respondents according to their learning styles. It can be observed that

Gender	P- Value	Remarks
	0.46	Significant

Table 8. Significant Difference of the Academic Performance of the Respondents according to their Gender

Income	F- Value	Verbal Description	P- Value	Remarks
	2.02	Very strong relationship	0.09	Significant

Table 9. Relationship and Significant Difference in Academic Performance of the Respondents according to their Socio Economic Status

Learning Styles	F- Value	Verbal Description	P- Value	Remarks
Visual	.65	Substantial relationship	.80	Significant
Auditory	.92	Very strong relationship	.62	Significant
Tactile	.94	Very strong relationship	.52	Significant
Kinesthetic	1.65	Very strong relationship	.07	Significant
Group	.76	Very strong relationship	.72	Significant
Individual	1.45	Very strong relationship	.12	Significant

Table 10. Relationship and Significant Difference in Academic Performance of the Respondents according to their Learning Styles

kinesthetic learning style has the highest F-value of 1.65; next is the individual learning style with the F-value of 1.45; tactile learning style with 0.94 F-value; auditory learning style with the F-value of 0.92, and group learning style with 0.76 F-value. The above learning styles have a very strong relationship with the academic performance of the respondents. On the other hand, visual learning style which has an F-value of 0.65 showed a substantial relationship with the academic performance of the respondents.

It can be generalized, that the academic performance of the respondents has a significant difference according to their learning styles.

Findings

In terms of gender, a total of 66 or 44% of the respondents were male, while 84 or 56% of the respondents were female. In terms of socio-economic status, there are 46 respondents or 30.67% who belong to a family earning Php5,001-10,000 monthly. 37 respondents or 24.67% whose families are earning Php10,001 to 15,000 monthly. 26 respondents or 17.33% whose families earn Php5,000 and below per month. 25 respondents or 16.67% whose monthly family income is Php20,000 and above. 16 respondents or 10.67% who belong to family having Php15,000 to Php20,000 monthly income. In terms of learning styles, majority of the respondents with a weighted mean of 4.93 learned best by oral explanations or auditory learning styles; reading and seeing words or visual learning style were preferred by some of the respondents with a weighted mean of 4.19. On the other hand, a weighted mean of 4.18 for group learning style or learning with the help of others were chosen by the other respondents; being physically involved in a classroom situation or kinesthetic learning style with a weighted mean of 3.97 were chosen by the other respondents, and finally an equal weighted mean of 3.85 were derived from the respondents who preferred to learn by having hands on and experiments or tactile learning style and learning through studying alone or individual learning style.

When described in terms of their academic performance, a total of 66 or 44% of the students have a general average ranging 81 to 85%; 55 or 36.67% of the respondents received a grade of 86 to 90%. On the other hand, 26 or 17.33% of them attained a general average ranging to 76 to 80% and only 3 or 2% of the total respondents received a general average of 91 to 95%. It can be observed that most of the respondents attained the grades ranging from 81 to 85% or 66 or 44% of the total population.

When grouped according to personal variables, it was found out that there is a significant difference to the academic performance of the respondents with regards to their gender. The p-value of 0.46 shows the significant difference between the two of them. In terms of socio-economic status, the 2.02 f-Value shows a very strong relationship with the academic performance of the respondents according to their socio-economic status. The p-value of 0.09 shows the significant difference in academic performance of the respondents depending on their socio-economic status. In terms of learning styles, it can be observed that kinesthetic learning style has the highest f-value of 1.65 or a p-value of .07; next is the individual learning style with the f-value of 1.45 or a p-value of .12; tactile learning style with 0.94 f-value or a p-value of .52; auditory learning style with the f-value of 0.92 or a p-value of .62, and group learning style with 0.76 f-value or a p-value of .72. The above learning styles have a very strong relationship with the academic performance of the respondents and remarked as significant. On the other hand, visual learning style which has an f-value of 0.65 or a p-value of .80 showed a substantial relationship with the academic performance of the respondents and also remarked as significant. It

can be generalized that the learning styles employed affect the academic performance of the respondents.

Conclusions

Based on the summary of findings the researchers arrived at the following conclusions:

1. In terms of their personal variables, it is concluded that majority of the respondents are female. With the apparent difference in population as to gender, the condition signifies that there are more females who give education more emphasis than males. Majority belong to families with Php5001-10,000 monthly income. This shows that the students live in modesty wherein basic needs are of greatest priority. In terms of their learning styles, majority of the students learn best with the use of auditory learning styles. This only signifies how important the employment of listening activities is in facilitating the teaching-learning process. Listening skills are seen to be primary factors in letting the students perform at its fullest.

2. In terms of academic performance, most of the sophomore students received a general average ranging from 81-85% during their first year and occupied a percentage of 44%. This can be observed that majority of the students were average learners and perform in a normal level of intelligence and skills.

3. When grouped according to selected personal variables, it shows that there is a significant difference in the academic performance of the students based on their gender. The sexuality of the respondents may affect his performance inside the academia. This is also true when respondents were grouped according to their socio-economic status which shows the important role of family resources in giving the proper attention to academic matters. When grouped according to learning styles, it is concluded that the teaching and learning process is useless, if no learning styles are employed. Realization of proper strategies in carrying out the learning situation results to better educational outputs.

Recommendations

Based on the summary of findings and conclusions, the researchers recommended the following:

1. The PUP-LHS should maintain academic and non-academic programs which addresses the strengths and weaknesses of students of both genders. There should be no discrimination as to who will perform better, the male or the female students.

2. The PUP-LHS should be getting involved with the community programs to know clearly the socio-economic status of students. It is necessary to keep in touch with the community since this mold the students' character.

3. The formation of the Parents Teachers Community Association (PTCA) will help to establish student programs suitable to their socio-economic lifestyle. These programs include socio-oriented academic offerings (improved social science subjects in line with practical arts development) and extra-curricular activities (tie-up projects between the school and community-based linkages)

4. Since the auditory style was preferred the most, the PUP-LHS should have intensive trainings that will enhance the auditory skills of both the teachers and the students. Keeping abreast with up-to-date audio-visual tools and using them frequently as instructional medium will increase students' learning proficiency. Seeking the assistance of out-of-school linkages in bringing forth the above conditions will therefore improve PUP-LHS educational technology.

5. Consultation from the Guidance and Counseling Office must be regularly conducted so that assistance from the said office is always at hand to achieve a well-disciplined and more effective learning.

6. As part of the educative process, the students should be responsive to the PUP-LHS' commitment to give the best educational services for them to improve their academic performance. Every student should do their job without reluctancy and that always seeking for academic excellence.

7. For further research, the researchers suggest to conduct follow-up studies that will enliven the continuity and further development of the study on hand.

Nomenclature

For clarity and better understanding, the researchers

operationally defined the following terms in this research:

Analysis - refers to the assessment and identification of the learning styles of the sophomore students of PUPLHS.

Auditory Learning Preference - learning from hearing words spoken and from oral explanations.

Gender - grouping the respondents into male and female

Group Learning Style Preference - learning best when working or studying with others.

Individual Learning Style Preference - learning best when working or studying alone.

Kinesthetic Learning Style Preference - learning best by experience and by being physically involved in classroom experiences.

Learning Styles - refers to the MTC students' learning styles identified as visual, auditory, tactile, kinesthetic, group or individual.

Respondents - refers to the sophomore students of PUPLHS.

Selected Personal Variables - include gender, socio-economic status, and parental presence.

Tactile Learning Style Preference - learning best by having a hands-on experiences with materials like doing experiments and working on materials.

Visual Learning Style Preference - learning style which prefers reading and seeing words in books, chalkboards and in workbooks.

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Appendix

Questionnaire

I. Personal Data: Please check your answer.

Name (optional):

_____

Gender: ___Male ___Female

Socio-Economic Status (family monthly income):

___ below P5000

___ P5001-10000

___ P10001-15000

___ P15001-20000

___ P20001 and above

General Weighted Average in First Year:

_____

Pls. refer to your classcards or curriculum sheets

II. Please respond to each statement by marking your choices with a check.

List of Tables

Perceptual Learning-Style Preference Questionnaire

SA Strongly agree	A Agree	U Undecided	D Disagree	SD Strongly Disagree
5	4	3	2	1

Item	5	4	3	2	1
1. When the teacher tells me the instructions I understand better					
2. I prefer to learn by doing something in class.					
3. I get more work done when I work with others.					
4. I learn more when I study with a group.					
5. In class, I learn best when I work with others.					
6. I learn better by reading what the teacher writes on the chalkboard.					
7. When someone tells me how to do something in class, I learn it better.					
8. When I do things in class, I learn better.					
9. I remember things I have heard in class better than things I have read.					
10. When I read instructions, I remember them better.					
11. I learn more when I can make a model of something.					
12. I understand better when I read instructions.					
13. When I study alone, I remember things better.					
14. I learn more when I make something for a class project.					
15. I enjoy learning in class by doing experiments.					
16. I learn better when I make drawings as I study.					
17. I learn better in class when the teacher gives a lecture.					
18. When I work alone, I learn better.					
19. I understand things better in class when I participate-in role playing					
20. I learn better in class when I listen to someone.					
21. I enjoy working on an assignment with two or three classmates.					
22. When I build something, I remember what I have learned better.					
23. I prefer to study with others.					
24. I learn better by reading than by listening to someone.					
25. I enjoy making something for a class project.					
26. I learn best in class when I can participate in related activities.					
27. In class, I work better when I work alone.					

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