**Chapter I**

**INTRODUCTION**

Stroke is one of the leading causes of long-term disability in adults. Fifteen million people contract stroke worldwide each year (World Health Organization, 2007). Of these, five million die and another five million are permanently disabled. In a study published in The Philippine Journal of Neurology in 2005, Dr. Navarro observes that stroke affects 486 out of 100,000 Filipinos or roughly half a million Filipinos.

These compelling evidences suggest that more and more patients develop expressive aphasia; a condition in which a person can understand what is said but is unable to express himself verbally. Significant recovery from aphasia is made during the first 2 months, but its progress will slow down considerably after 6 monthswhich would make communicating with them a challenging task, considering the certainty in which the patient will have recovered fully (Bakheit, Shaw, Carrington & Griffiths, 2008). Even something as simple as saying “I’m dizzy”, “I want to go to church” or “thank you” would be difficult for the expressive aphasic client. Moreover, this could bring about negative psychological crises to the clients, such as depression, anxiety and frustration because of the inability to express themselves appropriately (Pedersen, Vinter & Olsen, 2004).

It is not at all easier on the part of the families, nurses and/or caregivers. Without a way to effectively communicate with the patients, they might not be able to give the patient the appropriate care and attention that they need. The lack of spoken or written language between them is a major barrier to communication directly affecting client’s health outcomes. Furthermore, imagine the possibilities of committing errors in providing specific needs for the clients such as in giving medication that could potentially harm the patient.

Nurses make the intimate journey with clients and their families from the miracle of birth to the mystery of death. It is necessary to build therapeutic communication for this journey (Potter & Perry, 2009). Communication is important for survival, expressing feelings, imparting information, and working with others. Despite the difficulty, the client’s nurse, family and/or caregiver must find a way to connect with the patient.

According to Lee (2009), One of the most common ways how the families handle this situation is by relying on body language or expression through movement or behavior such as hand gestures, facial expressions, or writing or drawing on a piece of paper what they need or want to express. Unfortunately, not all expressive aphasic clients are able to perform these. Alternative forms of communication must be looked at, like an augmentative and alternative communication tool such as what this study is presenting.

The challenge of thinking of a way to break the barrier of communication between the patients and their families, nurses and/or caregivers has been the driving force for this thesis. The previous researchers - Agaton, Agleham, Agorilla, Advincula & Agot (2009) - in which this paper has been derived from had devised a tool that is easy to comprehend for both the patients and the caregivers; hence, the PASIENCE (Physical and Social Interactional Environment Needs Communication Enhancer) Board was created.

The goal of the previous study was to empower patients to participate with their care, to encourage nursing staff to be able to achieve and maintain the same therapeutic relationships with patients who cannot speak with those who cannot. The present researcher adapted their study to determine if the PASIENCE Board is effective in the community setting - to the post-stroke patients who have been discharged from the hospital and is currently living with their families.

**STATEMENT OF THE PROBLEM**

The study intends to determine the effectiveness of the PASIENCE (Physical and Social Interactional Environment Needs Communication Enhancer) Board in improving communication between caregivers and post-stroke clients with expressive aphasia.

***Sub-Problems:***

1. What are the pretest and posttest scores of the caregivers in the control group and in the experimental group regarding their perception of the effectiveness of their communication with patients as to the ease of communication, appropriateness and promptness of care given?
	1. Is there a significant difference between the pretest and posttest scores of caregivers in the control group?
	2. Is there a significant difference between the pretest and posttest scores of caregivers in the experimental group?
2. What are the pretest and posttest scores of the patients in the control group and in the experimental group regarding their perception of the effectiveness of their communication with their caregivers?
	1. Is there a significant difference between the pretest and posttest perception of patients in the control group?
	2. Is there a significant difference between the pretest and posttest perception of patients in the experimental group?
3. What are the pretest and posttest scores of the caregivers and patients in the experimental group regarding their perception of the effectiveness of their communication with patients as to the ease of communication, appropriateness, and promptness of care given?

3.1 Is there a significant difference between the pretest scores of caregivers and patients in the experimental group?

3.2 Is there a significant difference between the posttest scores of caregivers and patients in the experimental group?

1. Is there a significant difference between the pretest and posttest scores of the control and experimental group of patients regarding the perception of effectiveness of communication with their caregivers?
2. Is there a significant difference between the pretest and posttest scores of the control and experimental group of caregivers regarding the perception of effectiveness of communication with their patients?

**OBJECTIVES OF THE STUDY**

General: This study will determine the effectiveness of the PASIENCE (Physical and Social Interactional Environment Needs Communication Enhancer) Board as a tool for communication between caregivers and post-stroke clients with expressive aphasia.

Specific:

* To determine the pretest and posttest scores of the patients and nurses/caregivers who would utilize the PASIENCE Board as a means of communication
* To obtain the pretest and posttest scores of the patients and caregivers who would use the traditional means of communication
* To compare the pretests and posttests scores of the primary caregivers in both groups
* To compare the pretests and posttests scores of the patients in both groups
* To provide a detailed evaluation of the ease, promptness and appropriateness of communication between the nurse/caregiver and the post-stroke aphasic client through the use of the PASIENCE Board Evaluation tool

**SIGNIFICANCE OF THE STUDY**

The study the effectiveness of the PASIENCE (Physical and Social Interactional Environment Needs Communication Enhancer) Board can be of great help to the profession of Nursing:

*Expressive Aphasic Clients and their Families*. People who suffer from expressive aphasia find it very difficult to write, speak or read. The result - expressive aphasia sufferers cannot communicate and converse effectively (Antai-Ontong, 2007). The PASIENCE Board can then be used was devised to benefit both post-stroke clients and their caregivers by providing a medium of a concrete, precise and accurate manner of communication. Through this, the patient can express themselves properly, reducing common psychological crises such as depression, anxiety and frustration and the patient’s family, which is their immediate caregiver, can attend to their needs appropriately (Pedersen, Vinter & Olsen, 2004).

*Nursing Service*. Part of a nurse’s clientele is the patient’s family. The development of the PASIENCE Board would be help nursing service by promoting its use to the families who have expressive aphasic patient. Also, it is important for nurses to provide quality nursing care based on the identified patient needs in collaboration with other member of the health team, utilizing a holistic approach (Antai-Ontong, 2007). Since the patient cannot communicate efficiently, the PASIENCE Board could also be used by the nurses and other health team members to meet the basic and social interactional needs of the patient which could ultimately lead to a better sense of well-being.

*Nursing Research.* This study could pave way for future researches to improve the provision of nursing care for post-stroke expressive aphasic clients, focusing on how to manage the communication barriers resulting from the complications of stroke. This paper could motivate other researchers to enhance or follow-up this augmentative and alternative communication (AAC) tool; they could likewise devise their own AAC tool, which may still be related to expressive aphasia, or delve into other human conditions requiring AAC tools.

*Nursing Education.* This study gives evidence to the theory of Virginia Henderson’s fourteen basic human needs and applies it to create a means of communication between caregivers and post-stroke patients. Educational institutions could profit from this as the study provides substantial data about the use of the PASIENCE Board to bridge the gap of communication among post-stroke patients and their caregivers that professors and clinical instructors may impart the outcome of this study to the nursing students, even using the PASIENCE Board during their duty hours in the hospitals, a proof that evidence-based practice (EBP) is being encouraged. EBP is the deliberate used of current best evidence to make decisions about patient care, considering the patient’s preferences and values, as well as one’s own clinical expertise (Melnyk & Fineout-Overholt, 2005).

**ASSUMPTIONS**

The researcher assumed that:

1. There is a need for everyone to communicate.

2. Effective communication is needed to maximize the care given to clients.

3. Problems develop when care is not effectively delivered.

4. Expressively aphasic clients are unable to effectively convey their needs to the caregivers causing problems for the client and the healthcare provider.

**CONCEPTUAL FRAMEWORK**

Communication involves the reciprocal process in which messages are sent and received between two or more people (Riley, 2000. For post-stroke patients who developed expressive aphasia, they are not able to communicate their needs and wants well to their nurse/caregiver. The nurse/caregiver, in turn, is not able to understand what the patient is trying to convey to them. These situations will lead to the inability to attain the fourteen human basic needs for the patient and the inability to provide for these needs for the nurse/caregiver.

 On this note, the researcher has established the dilemma in which she wants to solve by applying the model of Augmentative and Alternative Communication (AAC) and the Syntactic Theory of Visual Communication. AAC refers to the supplementation or replacement of natural speech and/or writing using a combination of two kinds of symbols, these being aided - symbols that require something external to the body to represent, select or transmit messages - and/or unaided - symbols that require only human body to produce (Lloyd, Fuller & Arvidson, 1997). This model acknowledges the importance of the situation and the communication partners as part of the communication process; in the case of this study, the situation is that of the nurse/caregiver and the patient with expressive aphasia. Together with the AAC is the Syntactic Theory of Visual Communication, which is concerned with the development of structure of languages and a general theory of syntax specifying what languages have in common in a particular area (Borsley, 1999). These two models were used as a final point to create the PASIENCE Board, a communication tool that will now aid the interaction of the nurse/caregiver and the patient. After the application of the PASIENCE Board, the patient is then able to attain the fourteen human basic needs, alongside the nurse/caregiver being able to provide for the patient’s needs.

**THEORETICAL FRAMEWORK**

According to Virginia Henderson, one of the fourteen basic needs of clients is to communicate with others in expressing emotions, needs, fears or opinion. There is a need to fulfill all the basic needs in order for the client to attain a state of well-being, free from any kind of problems and disease (Potter & Perry, 2009).

As man is a social being, social factors play important role in health. Social conditions and not only promote the possibility of illness and disability, they also enhance prospect for disease prevention and health maintenance (Potter & Perry, 2009). Health life style and the avoidance of high-risk behavior, advance the individual’s potential for a longer and healthier life. The client's health is not static and is a reflection of the ongoing interactions between the client and his/her environment (Potter & Perry, 2009). Post-stroke clients have not only basic needs but also psychosocial needs which need to be addressed in order for the client to attain a state of well-being.

Nursing care is needed when the client is incapable of providing continuous self-care. As the client has just experienced stroke, neurologic complications are present which inhibit the client from performing the self-care which he needs to maintain a state of well-being. The nurse must then be able to provide the care that the client is unable to give to himself. Communication needs are one of the most important factors of self-care deficit the nurse must address. This can be accomplished through the use and application of alternative communication tools that can bridge the communication gap between the client and nurse.

According to the Basic Communication Theory, an effective communication process includes the interaction between the sender of the message and its receiver through a certain channel. A problem with one of its parts would lead to the ineffectiveness of the communication process. In the case of the communication process between a nurse and an expressive aphasic client, there is a problem with the sender, which is the client with expressive aphasia; therefore, their communication is said to be ineffective.

Due to aphasia, many patients have difficulty in expressing themselves, especially with regard to their needs. Beside from their basic needs, the social needs of these clients are greatly affected. Due to these things, these patients are affected not only physically, but also mentally and emotionally. These things not only pose problems for aphasic patients, but also, for their primary health care providers as well. Hence, a tool, which could aid the communication between primary health care providers and expressive aphasic clients, is a must.

**HYPOTHESES**

Ho1: There is no significant difference between the pretest and posttest scores of non-fluent aphasic clients who used the PASIENCE Board regarding their perception on the effectiveness of communication.

Ho2: There is no significant difference between the pretest and posttest scores of post-stroke aphasic clients who used the traditional method on the effectiveness of communication.

Ho3: There is no significant difference between the pretest and posttest scores of caregivers who used the PASIENCE Board regarding their perception on the effectiveness of communication.

Ho4: There is no significant difference between the pretest and posttest scores of the caregivers who used the traditional method on the effectiveness of communication.

**SCOPE AND LIMITATION**

This study aims to determine the effectiveness of the PASIENCE (Physical and Social Interactional Environment Needs Communication Enhancer) Board in improving communication between post-stroke clients with expressive aphasia and their caregivers, focusing on the enhancement of communication between the two subjects and delivery of health care subsequent to the usage of the PASIENCE Board. Furthermore, this paper will also study the effectiveness of the tool in the psychosocial aspect of the client’s needs and the caregivers themselves.

The subjects of the study will be limited to 18 clients who are community-based, aged 55 years old and above, who are conscious and coherent, as indicated by a score of 11 in the Glasgow Coma Scale, without visual or hearing impairment. The study will include clients who are expressively aphasic, a condition which causes clients to have difficulty in their verbal expression. The study will not include clients who has had hemorrhagic stroke and those who acquired expressive aphasia due to causes besides stroke. This study will not include clients who are experiencing receptive or global aphasia, because they would not be able to understand the purpose of the tool and may not be able to use it effectively. Clients who are quadriplegic will not be included in the study, because they would not be able to mobilize their extremities, something they will need in order for them to maximize the use of the tool. The study will not include clients who have complete hearing disability because it would hinder them from hearing the instructions of the researchers and healthcare personnel, hindering the intended effect of the study. The study will not include those with complete impaired visual ability because they would not be able to use the tool as effectively as those who can see the tool.

**DEFINITION OF TERMS**

**Aphasia** is the loss or deterioration of verbal communication due to an acquired lesion on the nervous system involving one or more aspects of the processes of comprehending and producing verbal messages (Basso & Cubelli, 1999). It is not the result of a sensory deficit, a general intellectual deficit, or a psychiatric disorder. In this study, it also means having a score of <25/30 in the Frenchay Aphasia Screening Test (FAST).

**Effective Communication** refers to the situation where the needs and wants of the patient are properly conveyed to the caregiver, resulting to their prompt and appropriate intervention. This would be measured with the use of the PASIENCE board assessment tool that includes 1) Ease of communication, 2) Appropriateness of care, and 3) Promptness of care.

**Expressive Aphasia** is a motor speech problem in which the patient generally understands but cannot communicate verbally (Ignatavicius & Workman, 2010). In this study, it will be determined by incurring a score of <25/30 in the Frenchay Aphasia Screening Test (FAST), specifically with a score of <6/10 in the verbal expression component (David, 2007).

**Frenchay Aphasia Screening Test** (FAST) is a tool developed to provide healthcare professionals working with patients who might have aphasia with a quick and simple method to identify the presence of a language deficit. The FAST is intended to be used by the researcher as a screening device to identify the participants of their study; that is, post-stroke patients with expressive aphasia.

**PASIENCE (Physical And Social Interactional Environment Needs Communication Enhancer) Board** refers to an instrument that contains pictures and text that represent the basic and social needs of the clients: 1) Breathing normally, 2) eating and drinking adequately, 3) eliminating body wastes, 4) moving and maintaining a desirable position, 5) sleeping and resting, 6) selecting suitable clothes, 7) maintaining body temperature within normal range by adjusting clothing and modifying the environment, 8) keeping the body clean and well groomed to protect the integument, 9) avoiding dangers in the environment and avoiding injuring others, 10) communicating with others in expressing emotions, needs, fears or opinions, 11) worshiping according to one's faith, 12) working in such a way that one feels a sense of accomplishments, 13) playing or participating in various forms of recreations and 14) learning, discovering or satisfying the curiosity that leads to normal development and health, and using available health facilities.

This tool would aid the nurse and patient in their communication with each other, maximizing the level of health care that the patient would receive from the nurse and other health caregivers.

**Post-stroke patients** refer to those who have suffered occlusive or ischemic stroke, damaging the frontal lobe of the brain, specifically the Broca’s Area, causing expressive aphasia as determined by the FAST.

**Caregivers** in this study refer to an individual who directly assist in the care of the non-fluent aphasic client; they may be family members, guardians, nurses and other people who are in direct contact with the client.

**CHAPTER II**

**Review of Related Literature**

 This chapter presents the review of related research of the components of the development of the said tool. The literatures about stroke, expressive aphasia alternative and augmentative communication, nurse-patient interaction and their relationship with one another are discussed.

 A report from the World Health Organization revealed that 15 million people suffer stroke worldwide each year. Of these, 5 million die and another 5 million are permanently disabled (WHO, 2007). In the Philippines, stroke alone kills about five million people each year and is considered as the second leading cause of death worldwide. At least 15 million patients have non-fatal strokes annually, and about a third is significantly disabled as a consequence (“When Stroke Strikes”, 2006). As of July 2010, stroke ranked second to the list of top causes of deaths in our country (Central Intelligence Agency [CIA], 2010). In terms of sex differences in stroke severity, there was no significant dissimilarity between males and females with regard to stroke severity, stroke subtype, or infarct size and location in patients with incident ischemic stroke (Barret et al., 2007).

As a consequence, the likelihood of a person after a stroke to develop an acquired aphasia also increases. It is estimated that a fifth of all stroke victims will experience some degree of aphasia after their stroke and 11,400 people become aphasic due to stroke every year in the UK (National Aphasia Association[NAA], n.d.).

Aphasia is an impairment of language, affecting the production or comprehension of speech and the ability to read or write (Kirshner & Jacobs, 2009). Stroke is likely the most common cause of aphasia, and it has been estimated that about 20% of stroke patients develop aphasia. More than 700,000 strokes occur in the United States each year, and approximately 170,000 new cases of aphasia every year are related to stroke (“Aphasia”, n.d.).

Expressive aphasia, also known as Broca’s aphasia, is a disorder wherein speech output is severely reduced and is limited mainly to short utterances of less than four words. Vocabulary access is limited and the formation of sounds by persons with this disorder often laborious and clumsy. The person may understand speech relatively well and be able to read, but be limited in writing. Broca's aphasia is described by the National Aphasia Association (NAA, n.d.) often referred to as a "non-fluent aphasia” because of the halting and effortful quality of speech.

The results of a study conducted by Barkheit et al. (2008) about the recovery patterns of patients with aphasia following a stroke revealed that six months after the onset of expressive aphasia, 100% of them still have not yet recovered from it.

It is not only the post-stroke expressive aphasic client who is affected by the downfalls of this condition but also their respective caregivers. It can be very stressful and frustrating to be suddenly thrust into the position of caregiver with little or no warning. This may lead to stress and burnout that may increase over time if the caregiver's needs are not met. Some of those needs may include the need for skills in the physical aspects of care, the need for support in the “case management” aspects of care and most essentially, the need for information - for better understanding of the emotional and behavioral changes – in which therapeutic and effective communication comes in. If these needs would not be met, caregivers might suffer these one or more of the following emotional reactions: anxiety, guilt, depression, frustration, resentment, impatience, and fear. Coping with these reactions is paramount to a healthier caregiver, and ultimately, to a healthier patient (Edwards, n.d.).

According to Virginia Henderson, man has fourteen basic needs which are also the basic components of nursing care; (1) breathing normally (2) eating and drinking adequately (3) eliminating body waste (4) moving and maintaining a desirable position (5) sleeping and resting (6) selecting suitable clothes (7) maintaining normal body temperature by adjusting clothing and modifying the environment (8) keeping the body clean and well groomed to promote integument (9) avoiding dangers in the environment and avoiding injuring others (10) communicating with others in expressing emotions ,needs, fears or opinions (11)worshipping according to one's faith (12) working in such a way that one feels a sense of accomplishment (13) playing or participating in various forms of recreation (14) learning , discovering or satisfying the curiosity that leads to normal development and health, and using available health facilities. These components could be classified into four; (1) physiological (2) psychological (3) spiritual and (4) social (Potter & Perry, 2009).

In order to fulfill these fourteen basic needs and addressing the challenges of caring for a person who cannot articulate himself well, both the patient and their families will have to resort to a method in which they can communicate with each other effectively. Establishing a form of communication for the client provides hope and maintains self-esteem while at the same time minimizing or preventing feelings of depression, anger and hostility (White, 2000).

Most clients deal with this problem with the use of gestures as a "symbolic" function - emblems in which one uses body communication to express conventional meaning instead of words (waving one's hand for "good-bye") - or illustrators in which body communication used to illustrate something (pointing in a circle when uttering "round"). These findings show that expressive aphasics do use body communication for conveying factual information (Morrell-Samuels & Krauss, 1992).

Various studies have been made in order to prove this claim. A study done by Morrell-Samuels and Krauss (1992) revealed that gestures facilitate lexical retrieval, because with the low familiarity words, gesture has more time to have its facilitatory effect. Graham and Argyle (1975) hypothesized that gesturing aids the speaking process itself by precluding participants from gesturing and look at the effects this has on their speech. Graham and Argyle (1975) presented geometrical line drawings to what they called ‘‘encoders’’. Encoders were either native speakers of Italian or native speakers of English. The task of the encoder was to describe those drawings to a ‘‘decoder’’ who had to reproduce the drawing. In one condition encoders were allowed to gesture, while in the other they were not. The accuracy of the reproduction was higher when the encoder was allowed to gesture. This effect was even stronger for those drawings that were rated to be of low codability, demonstrating that the information presented in the encoder’s gesture had a positive effect on the communication between encoder and decoder. No effects on the content of the speech were found. In Graham and Heywood (1975) essentially the same experiment was run with only English speaking participants. They coded a large number of speech-related dependent variables, of which only a few turned out to differ significantly between the gesture and the no-gesture condition. The elimination of gesture led to an increase in expressions describing spatial relations and to a decrease in the number of demonstratives.

 However, the development of speech is not only the concern of the people responsible for taking care of the expressive aphasics. Augmentative and alternative communication (AAC) treatment approach means focusing on communication and participation rather than on recovery of speech alone. AAC may provide a means of communicating through devices and techniques when spoken communication skills are not yet functional. Stipulating the use of AAC devices to adults with Broca’s aphasia may decrease the impairment in communication by increasing options for communication and activity level and improving participation in daily living activities (Johnson, Hough & King, 2008).

 Research show that some patients with communication disorders due to aphasia benefit from the use of AAC. Aftonomous, Steele and Wertz (1999) said in their study involving sixty patients that measures of both language impairmentand functional communication can be broadly, positively, andsignificantly influenced by therapy services that are deliveredto persons with aphasia in these community-based programs. Thesignificant improvements are shown to be available to individualswith chronic as well as acute aphasia and independent of diagnostictype of aphasia, impairment severity at start of care, or geographicprogram location. Another study is that by which Garrett, Beukelman and Low-Morrow (1989) had done involved a multimodal communication system consisting of natural speech, gestures, writing, drawing a first letter spelling alphabet card, a thematic word dictionary, breakdown “clues,” and control phrases was eventually developed. The tangible components of the system were consolidated into a small portable notebook. Issues regarding instruction in system use, interaction, and vocabulary selection were addressed and data was collected by videotaping interaction with unfamiliar speakers revealed that fewer communication breakdowns were present in the augmented condition than in the unaugmented condition, indicating greater efficiency of message transmission.

Moreover, in more developed countries, several studies have reported positive results when the residual skills of a person with aphasia are considered (Koul, Corwin, & Hayes, 2005) and when clinical therapy and computer-based home training are combined (Wallesch & Johannsen-Horbach, 2004). In one of the few efficacy studies of AAC intervention published by Koul et al (2005), the performance of individuals with severe Broca’s aphasia or global aphasia who were using computer-based AAC intervention was found to be superior to their performance when using natural speech. A brief narrative description of the journal article, document, or resource.A single-subject multiple baseline design was used to investigate the ability of 9 individuals with severe Broca's aphasia or global aphasia to create graphic symbol sentences of varying syntactical complexity using a software program that turns a computer into a speech output communication device. The participants with aphasia were able to access symbols and navigate the computer to produce phrases and short sentences. The sentences ranged in complexity from simple two-word phrases to those with morphological inflections, transformations, and relative clauses. Overall, results indicated that individuals with aphasia are able to access, manipulate, and combine graphic symbols to produce phrases and sentences of varying degrees of syntactical complexity.

Furthermore, Wertz and Katz (2004) had done a more in-depth study of computer-assisted language treatment with aphasic adults that was a thorough replicable protocol to document the treatment outcome of functional communication using AAC. The purpose was to examine the benefits to individuals with severe chronic expressive aphasia of an intensive therapy regimen with a specified format that utilized a computer-based AAC system involving training the caregiver in the therapy approach and use of the AAC device, and consistent caregiver participation throughout the treatment. The specific questions addressed were (a) whether participants with aphasia could successfully progress through a specified treatment program involving hierarchical structure of symbols with an AAC device, and (b) whether, following the treatment, changes would be noticeable in performance on speech and language aphasia tests and measures assessing functional communication skills and quality of life. Generally, the results of this study suggest that the participants with chronic expressive aphasia were able to use an AAC device, and that there was some general improvement in their communication skills. The findings support previous research demonstrating that individuals with this condition are able to learn symbol meaning in therapy using an AAC device (Koul et al., 2005 and Koul et al, 1998). Results showed that use of an AAC device in daily life as well as in treatment, generally resulted in some improvements in language and cognitive skills communicative Independence, and caregivers’ perceptions of communicative independence (Wertz & Katz, 2004).

The effectiveness of the use of any AAC tool is dependent not only on the patient but also the caregivers’ usage. The authors of a study concluded that the caregiver’s role was important to the success of device use as a communication tool. The caregiver needs to adjust to the new mode of communication and allow the participant the opportunity to use the device to communicate during daily activities. Caregivers perceived that effectiveness of communicative abilities increased along with participant communicative independence and quality of communication (Johnson et al., 2008).

 Johnson’s et.al (2008) study involved three participants, two females and one male with severe Broca’s aphasia. Their therapy did not involve use of a computerized AAC device; instead, personal photographs were used to identify family and friends rather than orthographic symbols if the participant was unable to read particular words. Their spouses were their primary caregiver and underwent training as part of the study. Each device was customized to each client based on specific information (interests, hobbies, activities, friends, family, etc.) acquired during an interview session with the caregiver and participant before the intervention.

 The success of the use of AAC tools as medium of interaction may be attributed to the Syntactic Theory of Visual Communication, which is concerned with the development of structure of languages and a general theory of syntax specifying what languages have in common in a particular area, in this case, a language created by the use of visual aids of pictures (Borsley, 1999). In fact, one of the many studies about visual communication concluded that communication involving a visual component can be far more effective than communication that does not (Hewlett-Packard Development Co., 2004). Another study deduced that people only remember 10% of what they hear and 20% of what they read, but about 80 percent of what they see and do (Lester, 1994-1996).

**Summary of Literature Review**

Each year, the number of stroke cases increases not only in our country but also in most countries. Both males and females have equal chances of suffering this disease. Consequently, the number of expressive aphasic clients also increases.

Aphasia, a common outcome of stroke, is an impairment of language, affecting the production or comprehension of speech and the ability to read or write (Kirshner & Jacobs, 2009). There are many subtypes of aphasia, and expressive aphasia, also known as Broca’s aphasia, is one of them. People suffering from this condition are not able to express themselves verbally but can understand relatively well what the other person is telling him/her.

Studies show that six months after the onset of stroke, non-fluent aphasia might still be existing in most patients, thus, it is somehow incapacitating to both patient and their caregivers as to how they could communicate with each other (Barkheit et al. 2008).

Since communication is a two-way process, both the patient and his/her caregiver might be distressed with the problems associated with ineffectual communication, leading to stress and frustration. Both their needs must be met so as to achieve optimum health outcome for the expressive aphasics (Edwards, n.d.). An established form of communication must then be produced for the client to maintain hope and self-esteem at the same time minimizing or preventing feelings of depression, anger and hostility for both of the concerned parties (White, 2000).

This is where the Augmentative and alternative communication (AAC) treatment approach comes in. This study is dedicated to prove that an AAC tool is an effective instrument for the patient to convey his/her message to his/her caregiver. Various literatures have been published supporting this claim, and a lot of positive feedbacks have been found out.

**Chapter III**

**RESEARCH METHODOLOGY**

The study aims to determine the effectiveness of the PASIENCE (Physical and Social Interactional Environment Needs Communication Enhancer) Board in improving the communication between expressive aphasics and their caregivers. This chapter presents the research design, study sample, data gathering procedures, research instruments, bioethical considerations and statistical treatment of data.

* + 1. **Study design**

The study will use the experimental, pretest and posttest design, allowing an apparent observation of the effectiveness of the PASIENCE board utilization by revealing the differences in the communication of the caregiver and post-stroke expressive aphasic patient prior and after the use of the board. The independent variable in the study was the use of the PASIENCE board for the experimental group while the control group received usual care depending on the patients’ preference. The dependent variable was the effectiveness of the caregiver-patient communication.

The experimental and control groups will be tested at the same time before and after the experimental manipulation with the use of the PASIENCE Assessment tool. Data on the dependent variable will be taken on the first day of the experiment and 72 hours after the utilizing the PASIENCE board.

The patients will be randomly allocated to the experimental and control group through the use of a toss coin. Whenever the researchers recruit a new patient for their study, a coin would be tossed. If the coin turns heads, the patient would belong to the experimental group, and if the coin turns tails, the patient would belong to the control group. On the event that either of the groups reaches a number of 15 members first, the other participants, yet to be recruited, would belong immediately to the other group with a fewer number of members. If both groups reach a number of fifteen participants, the succeeding participants would belong to the groups in alternating manner.

* + 1. **Subjects/Population**

The subjects of the study are limited to 30 post-stroke non-fluent aphasic clients in selected areas in Metro Manila (Las Pinas, Sampaloc, Muntinlupa and Masangkay), aged 55 -75 years old; conscious and without impaired visual or hearing ability. Subjects are living with their family and care givers who would facilitate in the use of the PASIENCE board. Subjects were 55-75 years old because this age group are the ones who are more susceptible to stroke and its detrimental, disabling effects. They are also a mix of male and female patients, as sex differences in stroke severity have no significant dissimilarity between the two genders (Barret, 2007). All of the subjects are either high school or college graduates. Also, the expressive aphasics included in this study are those who have experienced ischemic/occlusive stroke, either thrombotic or embolic. This study will not include clients who experienced hemorrhagic stroke and those who experienced Broca’s aphasia because of other causes other than stroke. None of the subjects are experiencing receptive or global aphasia, because they would not be able to understand the purpose of the tool, and also not quadriplegic or paraplegic as they are not able to move their extremities, thereby unable to utilize the PASIENCE board effectively. The study will also exclude clients who have impaired hearing ability because it would hinder them from hearing the instructions of the researchers and caregivers; also excluded are those with impaired visual ability because they would not be able to use the tool as effectively or totally, as those who can see the tool. However, expressive aphasics with impaired visual ability but with corrective devices such as glasses and contact lenses can be included in the study, provided that they use the corrective devices during the period of the study. Informed consent will be secured from the subjects, or their proxies.

* + 1. **Procedure**

The following are chronological steps in each phase of the study:

*Pre-Experimental Phase*

1. The previous researchers developed the Physical and Social Interactional Environment Needs Communication Enhancer (PASIENCE) Board, that is, an alternative communication tool that would help post-stroke patients with expressive aphasia. The researchers would use an assessment tool to evaluate the effectiveness of the communication between the caregiver and the patient. These tools are going to be validated by experts and its reliability proven using Pearson’s Correlation and Cronbach’s alpha test.
2. The researcher, with the help of other doctors and nursing personnel, would recruit subjects via snowball method and duly inform them and their significant others about the possibility of their inclusion in the study.
3. The researcher would explain to the selected participants and their significant others the purpose of the study, the intervention that will be used, the consequence of participation or non-participation, and other essentials of the study.

*Experimental Phase*

1. The researcher would personally go to the residence of the participants and go through the process of the study. The total length of the experiment would be 72 hours per patient.
2. The study would be requiring fifteen (15) patients in the experimental group, and another fifteen (15) in the control group as per Gay’s prescribed number of participant to yield a significant result. On the other hand, if more than 30 participants would be recruited, the researcher would include them as to increase the generalizability of the result.
3. After establishing rapport to the patient and their family, the Frenchay Aphasia Screening Test (FAST) would first be done to both experimental and control groups to confirm the presence of expressive aphasia.
4. After FAST has been completed, a pretest would be conducted on the experimental group – both patient and caregivers taking care of them - using the “PASIENCE Chart Assessment Tool for Patients and Caregivers” to determine ease, promptness, and appropriateness of communication prior to application of the independent variable.
5. The researcher would then introduce the PASIENCE board to the experimental group of patients and caregivers. They would explain its purpose, discuss its mechanics, and provide opportunity for return demonstration and questioning.
6. The subjects in the control group, on the other hand, would be employing their usual way of communication that they are using. A pretest would also be given using the “Communication Assessment and Evaluation Tool for Patients and Caregivers” for the same reason as with the experimental group.
7. The participants would continuously and constantly use the board as a means of communication throughout the 3- day study.
8. The researcher would come back to the residence of the participants for feedback and evaluation three days after the initial contact.
9. Upon return, the researchers would be administering the posttest on the patients and caregivers who participated in the control group. Likewise, the patients and caregivers who belonged to the experimental group who used independent variable would be given posttests, similar to that given upon initial contact. This would be done to evaluate the effectiveness of the PASIENCE board.
10. Three days after the PASIENCE board has been used by the first participant in the experimental group, the researcher would then give it to the next participant. This would go on until all the participants have used the AAC tool.

Below is a schematic diagram to better understand the proceedings of this study:

Caregiver

O1 O2

 O3 X1 O4

Patient

 O1 O2

 O3 X1 O4

Where:

O1: Measured as the pretest of the control group of both the caregiver and the patient

O2: Measured as the posttest of the control group of both the caregiver and the patient

O3: Measured as the pretest of the experimental group of both the caregiver and the patient

O4: Measured as the posttest of the experimental group of both the caregiver and patient

X1 : Measured as the Intervention (PASIENCE Board)

* + 1. **Instruments/Questionnaire used or Questionnaire development**

**Frenchay Aphasia Screening (FAST) Tool**

FAST is a reliable test by which non-specialists could distinguish between aphasia and normal language (Enderby, Wood, Wade & Hewer, 1987). This tool was devised in 1987 by Enderby et al. (1987). FAST assesses language in four major areas: comprehension, verbal expression, reading, and writing. The testing is centered on a single, double-sided stimulus card depicting a scene on one side and geometric shapes on the other and five written sentences. All instructions or item tasks presented to the respondent are of graded length and difficulty. The perfect score of this test is 30, indicating absence of aphasia (FAST, n.d.).

**PASIENCE (Physical And Social Interactional Environment Needs Communication Enhancer) Board**

ThePASIENCE board was originally developed by the previous researchers of this study (Agaton et al., 2009). The objective of the previous proposal is to improve caregiver-patient interaction among expressive aphasics. It is a tool that depicts the physical and social needs of the patient through illustrations and accompanying text.

The previous researchers classified Virginia Henderson’s fourteen fundamental needs into nine: Oxygenation, Nutrition, Elimination, Sleep and Rest, Hygiene, Comfort, Recreational, Social, and Others. The other 5 needs (worship according to one’s faith and the need for learning, discovering or satisfying the curiosity) are excluded because these cannot be addressed by a communication tool alone.

The PASIENCE board is a 15x10 board with ten windows exposing the specific needs that the client wants to convey. It comprises 12 laminated cardboards (13x8.5) inside with full-color illustrations and texts (both in English and Filipino originally made by the previous authors. Tabs are placed on top of each cardboard to make easy access to the contents. The cardboards contain the specific illustration where the patient can choose the exact need he wants to convey. The first cardboard, oxygenation, contains illustrations depicting the needs dealing with the patient’s airway and breathing problems. It includes illustrations of having difficulty breathing, raising head of bed, lowering head of bed, being suctioned and having a sitting position. The next two is for nutrition containing illustrations of being hungry and depicting the needs such as food that the patient wants to eat with the choices of different food group as well as liquids if the client is thirsty with the choices of water, milk or juice. The next cardboard is for elimination. This includes request to go to the comfort room, as well as requests for bedpan and diaper change and the need to expel vomitus. The next cardboard is for sleep and rest. This contains illustrations of being sleepy, requests for pillows and turning the lights on or off. The next two pages represent hygiene (sponge bath, change gown, change linen, oral care, change diapers, hair care, nail care, ear cleaning, use of petroleum jelly, and powder). The next four cardboards represent comfort. It is subcategorized into Pain (location and pain rating scale), Positioning (sitting, lying-down, side-lying, and semi-sitting) and temperature (increasing or decreasing room temperature, turning the air conditioner and electric fan on or off, opening or closing the window, requesting for a fan, blanket, sponge bath or a cold drink). The next cardboard is for recreational containing illustrations of television, radio, and requests for a book, magazine and newspaper. The next two represents social needs. The first part includes pictures of faces expressing happiness, anger, sadness and frustration. The second part shows images of greetings. The last category includes alphabets and numbers placed on the sides if the patient cannot find an illustration that can depict the need he must convey. In this case, the patient can point out to the letters on the alphabet and spell out need or request. The last page of PASIENCE Board is the copyright page. If patients have difficulty pointing, the caregiver can facilitate the communication process by running her finger through each illustration then the patient will signal her to stop if she has reached the need he wishes to convey.

The PASIENCE Board was validated by Occupational Therapist, Physical Therapist, Caregivers working in Neuro-Psych wards and Nursing professors previously done by the subsequent authors.

**Communication Assessment and Evaluation Tool (CAET)**

The CAET for Nurses and the CAET for Patients are four-item tests that were created by the previous authors, in which the CAET for Caregivers was based. These assessment tools were revalidated by a Physical Therapist. The CAET for Patients and Caregivers will be used both as a pretest and posttest instrument. The criterion is based on the components of effective communication which includes ease (level of difficulty in conveyance of needs), promptness (frequency of request prior to understanding the message) and appropriateness (needs understood appropriately and needs addressed appropriately. It also shows the traditional means of communication employed by the caregiver and the patient.

The CAET for Patients and Caregivers were validated by Occupational Therapist, Physical Therapist, Intensive Care Unit Caregiver and Nursing professors by the previous researchers.

* + 1. **Proposed Statistical Analysis**

The statistical analysis of this study will make use of four tests including the mean, standard deviation, percentage and t-test using the 0.1 significance level to analyze and conclude the responses of the expressive aphasics regarding the effectiveness of the PASIENCE board by answering one pretest and one posttest per participant.

The researcher will summarize the data by making a frequency distribution table that presents the frequency of the answers per question as they were chosen by the participants through the Likert scales in the pretest and the posttest, after which the mean would be taken for each of the answers per question. The mean will be used to determine the most common responses of the participants regarding the effectiveness of the PASIENCE board in both the pretest and the posttest, and the standard deviation will be used to see the proximity and similarity of the subjects’ responses with each other. The percentage will reveal the demographical number of subjects involved and the number of subjects that meets the criteria in relation to the sample.

The t-test will be used as a basis for either supporting or rejecting the hypotheses apropos the effectiveness of the PASIENCE board on improving caregiver-patient communication. Using the 0.1 significance level, it will also determine the presence or absence of a significant difference in the effectiveness of the communication of the patients and caregivers in either the control or experimental group. The independent and dependent t-tests will be used to know the significant difference between the scores of the experimental group and the scores of the control group, and to determine the significant difference between the pretest and posttest scores of both groups, respectively.

**Chapter IV**

**PRESENTATION, ANALYSIS AND INTERPRETATION OF DATA**

 This chapter contains the data collected by the researcher from the series of pretests and posttests she conducted for the study. These data were tabulated, statistically treated and analyzed using statistical methods in order to answer the problems stated in Chapter 1.

1. What are the pretest and posttest scores of the caregivers in the control group and in the experimental group regarding their perception of the effectiveness of their communication with patients as to the ease of communication, appropriateness and promptness of care given? Is there a significant difference between the pretest and posttest scores of caregivers in the control group? Is there a significant difference between the pretest and posttest scores of caregivers in the experimental group?
2. What are the pretest and posttest scores of the patients in the control group and in the experimental group regarding their perception of the effectiveness of their communication with their caregivers?
	1. Is there a significant difference between the pretest and posttest perception of patients in the control group?
	2. Is there a significant difference between the pretest and posttest perception of patients in the experimental group?
3. What are the pretest and posttest scores of the caregivers and patients in the experimental group regarding their perception of the effectiveness of their communication with patients as to the ease of communication, appropriateness, and promptness of care given?

3.1 Is there a significant difference between the pretest scores of caregivers and patients in the experimental group?

3.2 Is there a significant difference between the posttest scores of caregivers and patients in the experimental group?

1. Is there a significant difference between the pretest and posttest scores of the control and experimental group of patients regarding the perception of effectiveness of communication with their caregivers?
2. Is there a significant difference between the pretest and posttest scores of the control and experimental group of caregivers regarding the perception of effectiveness of communication with their patients?