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Brief History of Emilio Aguinaldo College

The beginnings of Emilio Aguinaldo College - Cavite are attributed to Dr. Paulo C. Campos, then President of the University Physicians Services Incorporated (UPSI), which acquired the Marian College in Manila in 1973. Eventually, the school became Emilio Aguinaldo College.

With the various socio-economic developments and related circumstances during the Marcos regime, UPSI decided to open a new campus in Dasmariñas, Cavite, which is the hometown of Dr. Campos. This is to support the government's policy on the dispersal and decongestion of the student population in Metro Manila, particularly in institutions of higher learning. The policy also aimed to introduce regional development and democratization of opportunities in the rural areas (Campos, 2008).

Emilio Aguinaldo College in Bagong Bayan, Dasmariñas, Cavite was opened on March 17, 1978. Its opening coincided with the efforts of the then President, Ferdinand E Marcos and wife Imelda Marcos, who was the Minister of Human Settlements and Community Development, to remove the slum dwellers from the streets and under bridges of Manila and relocate them to Cavite. Dr. Campos proposed to the government through the Secretary of Education, Juan L. Manuel, to offer a tertiary school in Dasmariñas, Cavite patterned after the Emilio Aguinaldo College that had been approved in Manila (Campos, 2008).

Consequently, a campus comprising 29 hectares was established. In 1976 to 1978, UPSI developed over a dozen school facilities including school rooms, laboratories, a library, social hall, an administration building, dormitories, an Olympic oval, a landscaped campus, and a man-made lake. They also built a network of roads that covered the whole campus and dormitories (Campos, 2008). A commitment to improve the lives of the underprivileged sectors of the community motivated EAC-Cavite to offer courses in Dressmaking, High Speed Machine Operation and Ceramics. All programs were structured either for six months or two years of intensive study and training.

In the following year, owing to the permit granted by Minister Juan Manuel of the Ministry of Education and Culture, EAC-Cavite opened the College of Criminology, listing among its students the police forces in Cavite as well as the members of the Philippine Constabulary and the security guards of the establishments in the vicinity. In addition, the Graduate Program leading to the degree of Master of Arts in Teaching was offered to provide the school teachers with professional and academic advancement

and opportunities. Envisioned, too, were the programs for Master of Science in Nursing and Master of Arts in Education.

On October 21, 1979, General Emilio Aguinaldo Medical School Foundation Inc. (GEAMSF) was established in Dasmaríñas, Cavite, thus giving birth to the Emilio Aguinaldo College- Cavite of Medicine with Dr. Lourdes E. Campos as Dean. In its first year of operations, the College had 150 students. The University Medical Center (UMC), which was built in 1980 and opened in 1983, served as the training center for the health science students of the College of Medicine and other health science courses.

In 1980, UPSI formed the Yaman Lahi Foundation, Inc. (YLFI) to manage and operate both Manila and Cavite campuses.

In 1986, when Dr. Paulo Campos was not in perfect health anymore, Brother Andrew Gonzales of the De La Salle University (DLSU) expressed the University's interest in acquiring the EAC College of Medicine and the University Medical Center (UMC). Since his UPSI colleagues were not ready to take over, Dr. Campos decided to transfer the ownership and responsibility to this worthy and credible institution.

It was in June 1987 when De La Salle University finally took over the management and the administration of two campuses from UPSI: the 29-hectare campus in Bagong Bayan, Dasmaríñas and the 1.5 hectare Health Science Campus along Congressional Avenue. Included in the transfer were the two big buildings which had a length of 100 meters, 17-meter wide and seven levels of floor area with two elevators, including a basement, ground floor, and rooftop for water tanks and for viewing purposes. The 29-hectare property in Bagong Bayan had a dozen buildings that included classrooms, two administrative units, Olympic oval, network roads and a landscape that included a lake, teaching facilities, hospital equipment, a modest library and a historical museum. After that, the EAC Administration focused on the development of EAC-Manila.

EAC-Cavite reopened in 1996-1997 as a vocational technical school – Center for Technical Education and Skills Training (CTEST) - in a lot along Congressional Avenue (now Mangubat Avenue) which UPSI bought. In 1998, after the completion of five buildings, the voc-tech school became the EAC-Cavite campus and all academic courses were opened except medicine.

In 2001, under the leadership of Dr. Jose Paulo E. Campos, the first son of Dr. Jose Paulo E. Campos, the school administration strengthened the curricula of existing academic programs and opened new courses aligned with emerging trends. In 2003, the Commission on Higher Education (CHED) granted government recognition to AB Communication, Psychology, Business Administration, Accountancy, Computer Science, Secondary Education, and Hotel and Restaurant Management.

The other academic programs soon followed. In 2005, Elementary Education, Civil Engineering, Mechanical Engineering, and Diploma in Graduate

Midwifery earned government recognition, followed by Nursing and Criminology in 2006; Customs Administration in 2007; and Computer Engineering and Electronics and Communication Engineering in 2010.

In 2008, the Technical Education and Skills Development Authority (TESDA)-registered vocational-technical courses, namely, Automotive Servicing, Computer Hardware Servicing, Consumer Electronics Servicing, Machining, and Programming were offered. In response to the emerging trends on health sciences, real estate and tourism, the administration opened Medical Technology, Physical Therapy and Radiologic Technology in 2011, Doctor of Dental Medicine and Real Estate Management in 2012, and Bachelor of Science in Midwifery and Tourism Management in 2015.

In its quest to achieve excellent standards in higher education, the institution participated in the accreditation by the Philippine Association of Colleges and Universities Commission on Accreditation (PACUCOA), thus, receiving Level 1 Accredited Status in Nursing, Psychology, Criminology and Hotel and Restaurant Management programs in 2015 up to 2018. Likewise, Elementary Education, Secondary Education and Business Administration programs were granted Candidate Status until 2017.

Along with the commitment to innovate, the institution inaugurated the *Bulwagang Aguinaldo* in 2012, which was the replica of the Aguinaldo Shrine in Kawit, Cavite making it the ideal venue for the annual Philippine Independence Day Celebration held by the city government of Dasmariñas. The modernization of Buildings 3 and 4 which house the Life Science Institute, Engineering Science and Technology Institute, and School Library were completed in 2014. These developments sought to meet the needs of the growing student population.

In adhering to the call of the Department of Education (DepEd) headed by Secretary Bro. Armin Luistro to enhance the basic education program in the country, the institution earned the permit to implement the Senior High School programs in April 2015. This paved way for the restructuring of Building 5 for Senior High School and Building 6 which housed the new canteen and multi-purpose hall. The Senior High School started its operations and welcomed its pioneer batch in June 2016.

The institution strives to explore more avenues to serve its community and undertake worthwhile development programs towards its continuous transformation as a responsive and competent institution, as its Founders envisioned it to be.

Special acknowledgements are accorded to Dr. Lourdes E. Campos (co-Founder), Atty. Paulo E. Campos Jr. (Director, EAEC), Dr. Jose Paulo E. Campos (EAC President), Dr. Georgina B. Palmario (Vice President for Academic Affairs), Ms. Maria Teresa Santos (Chief Librarian) and Ms. Shelley Anne C. Martinez (Executive Assistant) for their contributions to this manuscript.

PHILOSOPHY

Emilio Aguinaldo College is a private, non-sectarian, co-educational institution of learning that fosters equal and fair opportunities for the holistic development of the persons conscious of their national identity and their roles in the global community.

VISION

Emilio Aguinaldo College envisions itself as an internationally recognized autonomous academic institution rooted in its nationalist tradition that consistently pursues the advancement and welfare of humanity.

MISSION

Emilio Aguinaldo College provides an outcomes-based education with relevant curricula geared towards excellent research, active industry cooperation and sustainable community extension.

CORE VALUES

Virtue

Emilio Aguinaldo College integrates knowledge and understanding among Emilians equipping them with wisdom to choose to do only the right thing.

Excellence

Emilio Aguinaldo College inculcates among Emilians the habit of doing only the best in all undertakings.

Service

Emilio Aguinaldo College develops among Emilians a strong sense of duty and responsibility of helping others for the school, community, country and Mother Nature.

EDUCATIONAL OBJECTIVES

The objectives of Emilio Aguinaldo College are to:

- offer opportunities for quality and relevant education to all;
- cultivate the intellectual, spiritual, moral, social and physical aspects of a person;
- instill appreciation and pride for one's national identity; and
- produce graduates of global quality equipped with competencies in their field of expertise.

QUALITY POLICY

Emilio Aguinaldo College commits to the continuous improvement of quality standards with emphasis on instruction, research and community service to benefit its stakeholders.

QUALITY OBJECTIVES

The objectives of the Emilio Aguinaldo College are to:

- Adhere to all statutory and regulatory standards;
- Provide consistent quality service to the students, parents and other stakeholders; and
- Respond to periodic system review for continual improvement on quality standards.

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The lived experiences of breast cancer patients: journey in curative radiation therapy

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Abstract

This study is focused on the lived experience of breast cancer patients who have undergone radiation therapy. For the researchers to have better understanding about the patient's experience, they chose to determine the following: the participant's emotional response after being diagnosed and before undergoing radiation therapy, their coping mechanisms, their perceived side effects and the impact of radiation therapy. Upon answering the questions, the results will be of great importance for the family and healthcare professionals in terms of understanding the situation of the patients during the treatment. The researchers chose five female breast cancer patients who have had Teletherapy to limit some factors that may affect their experiences. Interpretative data analysis was used in gathering important data needed in this study. Purposive sampling was also used in gathering the five participants who were referred to the researchers by their acquaintances in selected areas in the City of Dasmariñas, Cavite. The therapy had a tremendous impact on the patient's emotional and mental health. After the therapy, some of the patients were affected in terms of financial matters, but a much better and strong bond was established between the patients and their families. Before starting the therapy, all the participants were found to be anxious due to the unfamiliarity of the procedure and the treatment itself. Skin reaction was the most common side effect of radiation therapy perceived by the participants. The researchers recommend that the patients should be more open about what they truly feel so the healthcare professionals will know how to help the patients especially in managing the side effects of the treatment.

Keywords: Lived Experience, Phenomenology, Breast Cancer Patients, Radiation Therapy

INTRODUCTION

Cancer is often thought of as an untreatable, unbearably painful disease with no cure. It is undoubtedly a serious and potentially life-threatening illness. However, it is a misconception to think that all forms of cancer are untreatable and deadly (Evert, 2010). In fact, there are many types of cancer which can, nowadays, be effectively treated, controlled, or reduced. According to Tubeza (2016), breast cancer has overtaken lung cancer as the most prevalent form of cancer in the Philippines. Breast tumors that can be benign or malignant can be treated with Radiation Therapy. Malignant tumors are classified as radiosensitive, in which only a low dose of radiation is required or radio resistant which requires a high radiation dose.

Radiation Therapy is among the 4 approaches in treating cancer. The other 3 are Surgery, Chemotherapy and Biological Therapy. This treatment kills and destroys cancer cells and stops their ability to proliferate through the use of high-energy x-rays, gamma rays and other sources of radiation. According to Gunderson and Tepper (2012, cited in Jaffray & Gospodarowicz, 2015) radiation therapy is used to cure cancers that are localized. It can provide local control or provide symptom relief in cancers that are locally advanced or disseminated.

There are two main types of Radiation Therapy that can be used in treating breast cancer: External Beam Radiation and Internal Radiation. External Beam Radiation Therapy is the most common method wherein the radiation is delivered to a specific area of the body using a large machine similar to an x-ray machine (University of Florida, 2017). The other type is Internal Radiation Therapy also known as Brachytherapy or Seed Implantation.

Despite the benefits that radiation therapy can give, some side effects often occur because this treatment can also damage the normal, healthy cells surrounding the irradiated area. The side effects of Radiation Therapy vary from patient to patient. Most patients have only mild side effects that are easily managed. There are two main types of side effects: acute and chronic. Acute side effects, also called “early side effects”, occur during the treatment phase and typically go away a few weeks after treatment is finished. This includes fatigue, skin reactions, and side effects specific to the area being treated. The other is chronic side effects, usually called “late side effects”, which occur months or years later after the treatment. These two side effects differ according to the area being treated, the total dose of radiation therapy received, and sometimes in the length of time that the side effects last (Abramson Cancer Center, 2015).

According to the American Cancer Society (2016), the most common side effect of Radiation Therapy as used in breast cancer treatment include swelling and heaviness in the breast, skin changes in the treated area and fatigue since applying radiation therapy to any area of the body can make a person feel more tired than usual. But fatigue is more common when larger areas of the body are treated.

Radiation Therapy can be gruelling, especially if it is given every day, 5 days a week, for many weeks. Almost all patients undergoing therapy experience the same side effects such as feeling emotionally upset, feeling anxious, depressed, afraid, angry, frustrated, helpless and experiencing sleep problems. The treatment may affect the patient's emotions and mood indirectly through treatment-related fatigue, but the treatment itself is not a direct cause of mental distress (Steinman et al., 2017). Physical symptoms such as pain, nausea, or extreme tiredness (fatigue) also seem more likely to cause emotional distress. People might also fear death, suffering, pain, or all the unknown things that may lie ahead because of the sickness (American Cancer Society, 2015).

It is with these precepts that the authors attempt to explore the patients' insight, perspective and lived experience regarding their treatment using Radiation Therapy.

RESEARCH METHOD

Research Design and Sampling Technique

The researchers used qualitative research as a method in this study. This method used to gain an understanding of underlying reasons, opinions, and motivations related to the phenomena and provide insights into the problem (Wyse, 2011). Specifically, this study utilized phenomenology which refers to a person's perception of the meaning of an event. According to Morse (1989 cited by Petri & Berthelsen, 2015), phenomenology is about interpreting and understanding experience rather than observing and explaining behavior.

In choosing participants, this study used purposive sampling which involves identifying and selecting individuals or groups of individuals that are especially knowledgeable about or experienced with the phenomenon of interest (Cresswell & Clark, 2011). Therefore, five breast cancer patients in selected areas in the City of Dasmarinas Cavite were gathered based on the following inclusion criteria: female breast cancer patients regardless of the stage of their cancer who had undergone

curative radiation therapy and should have undergone Teletherapy (LINAC or Cobalt-60) as a type of treatment. Participants should be adults within the age of 21-60. They should be patients who are willing to participate and share their experiences with the researchers.

Research Instrumentation, Data Gathering and Data Analysis

After the researchers have set an appointment for an interview based on the participant's availability, an informed consent form was provided to them. The form explained the intent of this study. The researchers were able to obtain data from the participants by utilizing a semi-structured interview, sometimes called in-depth interview, which aims to explore the topic more openly and allow the participants to express their opinions and ideas in their own words (Silverman, 2010). The researchers prepared guideline questions, which are open-ended questions that gave the respondents an opportunity to spontaneously respond in their own way. These questions covered the information necessary for data. The responses of the participants determined the flow of the conversation.

The gathered data were then analysed using the method of Colaizzi (cited by Balbarosa et al., 2016). Transcripts obtained were read and re-read to obtain general a sense about the whole content and then any connections to the phenomenon, undergoing radiation therapy, were extracted. Meanings of the significant statements extracted were formulated and then categorized and sorted into clusters of themes. Name codes were used to maintain confidentiality of each patient.

RESULTS AND DISCUSSION

The following Master Themes sum up the lived experiences and the commonalities between and among the breast cancer patients who were undergoing Radiation Therapy. These themes also answered the questions of the research.

Table 1

Commonalities among the Participants’ Lived Experiences

Emotional Response	Perceived Side Effects	Coping Mechanisms	Perceived Impact of Radiation Therapy
Stress	Skin Reactions	Determination	Satisfaction
Fear	Fatigue	Motivation	Contentment
Depression	Pain	Coping	Affection
Anxiety	Depression		Adjustment

The themes that describe the lived experiences of breast cancer patients were identified and presented using the above tables. Although the participants went through the same phenomenon, they still had different perceptions and different experiences. But together with their differences in experiences, they also have matters in common which is the content of the table.

The first few weeks following the cancer diagnosis may be the most difficult for the participants to handle. After the diagnosis of breast cancer, some psychological responses were experienced by the participants. This finding corresponds to the study of Olausson (2016); which specified that receiving a potentially life-threatening cancer diagnosis usually creates a feeling of fear and psychological distress for most patients and their families.

Two of the research participants admitted going through a stage of denial wherein they were not able to accept the truth easily while the other three patients felt depressed. The participants also experienced stress due to financial matters, in connection with undergoing radiation therapy as well as stress due to possible side effects that may happen. But, despite their fears and stress the participants decided to accept the truth and undergo treatment. This data is aligned with what Henderson (2017) stated in her article, that the common emotional responses to cancer diagnosis are denial, fear, stress, sadness or depression and anger.

Prior to radiation therapy, the participants were anxious about the procedure because the treatment was unfamiliar to them and they have never heard of it before. This fear is referred to by Kristjanson et al (2007) as “fearing the unknown”.

Another physical side effect that is the most common among the participants is skin reaction or sunburn-like skin condition which varies

from patient to patient. Three of the participants experienced this skin reaction on their third week of therapy. The second participant merely experienced a darkening of skin on the treated area. The first participant's chest part was burnt so she had to stop treatment for one week. The fifth participant experienced the same condition so she had to stop until her skin recovers. The third participant's skin reaction occurred after a week. Her skin went dry and her left breast had a burnt appearance. Similarly, Kalbasi (2016) stated that it radiation therapy produce a light sunburn effect. Others will have more significant darkening of the skin of the breast. These changes can be associated with an itching or burning sensation as well. Lastly, the fourth participant's experience which occurred on the fourth week of therapy was the worst because her skin was peeled off creating a wound. This is similar with the study of Balbarosa et al (2016) in which one of the participants suffered from skin reactions such as itchiness, reddening of the skin and irritations that led to wounds and darkening of the burned skin. Due to these skin reactions two of the participants got depressed. All of the participants applied cream on the affected area and rested as a way of coping with the physical side effects.

In managing the emotional distress, the participants stayed determined and motivated every time they think of the purpose of their treatment and the fact that they are with their family. After they have finished undergoing Radiation Therapy almost all of the participants were satisfied with the treatment despite of the side effects that took effect. Also, perceived impact, like changes and adjustments, happened to some of the participants. For instance, the source of income of two of the patients was affected. One of them stopped working while the other one sacrificed her second work because they claimed that they were not able to work while undergoing Radiation Therapy. The one good thing though that happened is the participants were able to build much better relationship and a stronger bond between them and their children and family.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings, it was observed that the participants experienced emotional distress and were in denial at first when they were diagnosed with breast cancer. They felt depressed and before undergoing Radiation Therapy, there was a tendency to experience anxiety and fear due to the unfamiliarity of the treatment itself, the procedure and its possible side effects. The common side effect of the treatment that occurred among all of the participants is a skin reactions, particularly in the chest part or the area being treated. After the therapy,

almost all of the participants were satisfied with the treatment despite the struggles that happened and the side effects that were manifested.

With this, the researchers encourage the breast cancer patients to be more spontaneous and vocal about what they experience and to be more expressive about their feelings and emotions so that the professionals would know how to help them. The family of the breast cancer patients should give and show more support so that the patients would not lose hope and will be more determined to undergo therapy.

REFERENCES

- Akhtari, M., & Teh, B. S. (2016, March 24). Accelerated partial breast irradiation: advances and controversies. Retrieved October 07, 2017, from <https://cjcjournal.biomedcentral.com/articles/10.1186/s40880-016-0095-1>
- American Cancer Society. (2016, August 18). Radiation for Breast Cancer. Retrieved September 24, 2017, from <https://www.cancer.org/cancer/breast-cancer/treatment/radiation-for-breast-cancer.html>
- Anxiety, Fear, and Depression. (2017). Retrieved February 22, 2017, from <https://www.cancer.org/treatment/treatments-and-side-effects/emotional-side-effects/anxiety-fear-depression.html>
- Baskar, R., Lee, K., Yeo, R., & Yeoh, K. (2012, February 27). Cancer and Radiation Therapy: Current Advances and Future Directions. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3298009/>
- Belle, E., & Bryman, A. (2007, March). The Ethics of Management Research: An Exploratory Content Analysis. Retrieved February 23, 2017, from https://www.researchgate.net/publication/227792535_The_Ethics_of_Management_Research_An_Exploratory_Content_Analysis
- Bellon, J. R. (2017, February 15). Radiation Side Effects. Retrieved October 04, 2017, from <http://www.lbbc.org/learn/treatments-and-research/radiation-therapy/radiation-side-effects>
- Cañal, J. P., & Limkin, E. J. (2016). Radiation Therapy in the Philippines: A Challenge in Resourcefulness. *International Journal of Radiation*

- Oncology*Biology*Physics. Retrieved February 23, 2017, from https://www.researchgate.net/publication/286524833_Radiation_Therapy_in_the_Philippines_A_Challenge_in_Resourcefulness
- Dutta, P. & Vachani, C.(2006, December 4). Internal Radiation Therapy (Brachytherapy).RetrievedFebruary 22, 2017, from <https://www.oncolink.org/cancer-treatment/radiation/treatment/internal-radiation-therapy-brachytherapy>
- Etikan, I.,Sulaiman A. M., Rukayya S. A., (2016, January 1). Comparison of Convenience Sampling and Purposive Sampling. American Journal of Theoretical and Applied Statistics. Vol. 5, No. 1, 2016, pp. 1-4. doi: 10.11648/j.ajtas.20160501.11
- Halkett, G., O'Connor, M., Aranda, S., Jefford, M., Merchant, S., York, D., Schofield, P. (2016, April 21). Communication skills training for radiation therapists: preparing patients for radiation therapy. Retrieved March 05, 2017, from <http://onlinelibrary.wiley.com/doi/10.1002/jmrs.171/full>
- Henderson, W. (2017, May 08). 10 Common Emotional Responses to a Cancer Diagnosis. Retrieved January 06, 2018, from <https://breastcancer-news.com/2017/05/08/10-common-emotional-responses-cancer-diagnosis/>
- Hilderley, L. J. (1996). Cancer Nursing: Principles and Practice. Jones and Bartlett Publishers Inc.
- Kalbasi, A. (2016, March 21). Types of Radiation Therapy for Breast Cancer Treatment. Retrieved October 04, 2017, from <https://www.oncolink.org/cancers/breast/treatments/radiation-therapy/types-of-radiation-therapy-for-breast-cancer-treatment>
- Lamszus, K., Verres, R., & Hübener K. (1994 , March). [How do patients experience radiotherapy?]. Retrieved February 23, 2017, from <https://www.ncbi.nlm.nih.gov/pubmed/8160097>
- Langhorne, M., Fulton, J., & Otto, S. (2007). Oncology Nursing. St. Louis, Missouri: Elsevier Inc.
- Petri, S., & Berthelsen, C. B. (2015). Lived experiences of everyday life during curative radiotherapy in patients with non-small cell lung cancer: A phenomenological study. International Journal of Qualitative Studies on Health and Well-Being, 10, 2939. DOI: 10.3402/qhw.v10.29397

Schnur, J. B., Ouellette, S. C., Bovbjerg, D. H., & Montgomery, G. H. (2009, May). Breast Cancer Patients' Experience of External-Beam Radiotherapy. Retrieved October 08, 2017, from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3743665/>

Smith, J. A., Larkin, M., & Flowers, P. (2009). Interpretative phenomenological analysis: theory, method and research (Vol. 6). Los Angeles, CA: SAGE

Wyse, S. (2011, September 16). What is the Difference between Qualitative Research and Quantitative Research? Retrieved February 24, 2017, from <https://www.snapsurveys.com/blog/what-is-the-difference-between-qualitative-research-and-quantitative-research/>

Diagnostic utilization of absorption-elution assay in detection of ABH antigens in selected body fluids

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Abstract

The study aims to determine the diagnostic utilization of absorption-elution technique in the detection of ABH antigens in selected body fluids and to analyze whether the agglutination reaction in the blood produces the same result in urine and semen considering the saliva as a screening sample to detect if a person is a secretor or non-secretor. Furthermore, sensitivity, specificity, and predictive values were assessed in the study. Absorption-elution technique was performed by the combination of antigen-antibody and formation of complexes at lower temperatures and then removal of unbound antibodies by washing and elution of bound antibodies at higher temperatures. Indicator cells or particulate antigens were then added. If the person was a secretor, agglutination would be present for it is an indication that the antigen on the body fluid has the same specificity with the indicator cells. Findings showed that absorption-elution method gave a sensitivity of 80%, specificity of 86%, positive predictive value of 87%, and negative predictive value of 79% in detection of ABH antigens in urine. Sensitivity of 73%, specificity of 91%, positive predictive value of 91%, and a negative predictive value of 74% were obtained in detection of ABH antigens in semen. A and B antigens detected in urine ($p=0.002$) and B antigen in semen ($p=0.000$) implied significant association between the ABH antigens in body fluid and ABH on erythrocytes. On the other hand, A antigens in semen ($p=0.325$) implied that through absorption-elution, A antigens detected in semen is not significantly reflected across ABO blood groups. Absorption-elution assay of urine samples obtained an area under curve (AUC) of 0.829, while semen obtained an AUC of 0.82, which were both interpreted as excellent. The improvement of the study was that the diagnostic capability of absorption-elution was determined by computing and presenting the sensitivity, specificity, positive predictive values, negative predictive values, and likelihood ratios. Therefore, absorption-elution was indeed diagnostic capable in detection of ABH antigens both in urine and semen samples.

Keywords: absorption-elution, secretor status, ABH antigens

INTRODUCTION

ABO blood grouping is the most common blood grouping system across the globe. It was discovered by an Austrian physician Karl Landsteiner around 1900s (Criswell, 2008). This blood group system consists of two antigens – A and B antigens, which lead to four phenotypes – A, B, AB, and O. These blood types refer to the presence of either A or B antigen, both, or neither on the surface of the red blood cells. Yet if a person possesses the secretor gene or *Se* gene, the person becomes a secretor. Secretors have the ability to secrete blood group antigens in their bodily secretions, and these antigens are according to their respective ABO blood groups.

The structure of ABO blood group antigens is all oligosaccharide chains, and two precursor chains are present. The type 1 precursor chains are present in secretions and body fluids, while the type 2 precursor chains are present on the surface of red blood cells (Letendre, 2010). Presence of these blood group antigens are all dependent on genes. *H* gene allows the production of an enzyme which converts the type 2 precursor chain to an H antigen. On the other hand, the *Se* gene initiates the production of an enzyme which transforms the type 1 precursor chain to become an H antigen. The formed H antigens are converted to become A and B antigens in the presence of another respective gene – the *A* gene, which produces an enzyme that converts H antigen to A antigen; and the *B* gene, which produces an enzyme that converts H antigen to B antigen (Harmening, 2012). People having type AB blood group both have *A* and *B* genes, while people with type O blood group do not have either.

Secretors secrete these ABH antigens in saliva, sweat, tears, semen, and serum. These soluble substances are also present in urine, milk, bile, digestive juices, amniotic fluid, pericardial fluid, pleural fluid, and peritoneal fluid. These soluble antigens are secreted according to a person's ABO blood group. Type AB blood group people secrete A, B, and H antigen; type A blood group people have A and H antigen; type B blood group people secrete B and H antigen; and type O blood group people only have H antigens.

Of all the body fluids mentioned, saliva is the most common specimen used in detection of ABH antigens in body fluids, while the first known method utilized is the agglutination inhibition or absorption-inhibition (Sen et al., 2015). Yet another method called absorption-elution is a highly sensitive assay (Li, 2015) and is markedly more sensitive than agglutination inhibition or absorption-inhibition (Kumar et al, 2016).

Determination of ABH antigens in body fluids is an alternative way and sample to determine the ABO blood group of vulnerable patients wherein blood draw is so ordeal like geriatric, pediatric, and critical care patients if they are secretors. Furthermore, the said method can be used in performing indirect ABO blood grouping using body fluids as a confirmation if in any case a person has weak reactions on routine ABO typing. Determination of secretor status is also relevant for susceptibility to infections, and some diseases are now correlated with the presence or absence of ABH antigens in body secretions. Duodenal ulcer, gastro-esophageal reflux, and gastritis are common among non-secretors (Ansari et al., 2015). In addition, the absence of blood group antigens in secretions could be a risk factor for developing oral disorders (Rai et al., 2015). Lastly, the presence of ABH antigens is very relevant in forensic sciences as well. Investigators use this for the identification of an individual involved in a crime scene, for blood group antigens are specific to a person and do not change over time (Cecilia et al., 2017).

Previous studies detected the presence of these soluble antigens in saliva and urine using agglutination inhibition and in semen using radiolabeled globulin assay and enzyme-linked immunosorbent assay. Absorption-elution was used in the detection of blood group antigens in saliva and sweat. In the present study, the diagnostic utilization of absorption-elution analysis was evaluated with its capability to determine the secretor status of a subject using urine and semen, the capability to detect ABH antigens in urine and semen, and if these detected ABH antigens give matching results with one's ABO blood group.

METHODOLOGY

The research study was conducted at the Medical Technology Skills Laboratory of Emilio Aguinaldo College – Cavite. A total of 25 blood, 25 saliva, 25 urine, and 25 semen samples were obtained from pre-screened healthy male individuals who are all 18 years old and above (n=25). The researchers conducted a two-phase screening with the subjects. The first phase of screening is ABO blood grouping and Rh typing. Subjects who are type A+, type B+, and type O+ proceeded to the second phase of screening which is the determination of secretor status through saliva. Subjects who are secretors were included in the final phase of the study.

Sample Collection

Blood samples for ABO blood grouping and Rh typing were extracted through closed system blood collection, placed in an EDTA tube, and centrifuged at 3500 rpm for 5 minutes. For the collection of saliva, subjects were asked to rinse mouth with distilled water and have no meal 2 hours prior to collection. Unstimulated whole saliva was collected by either spitting method or passive drooling method in a sterile plastic container. Urine samples were collected in a sterile, wide-mouthed container. For the semen, the pre-screened subjects were instructed to obtain semen by masturbation and place it into a wide-mouthed, sterile container. Labelling of all samples was done right after the collection. Blood samples were processed immediately while saliva, urine, and semen samples were stored between 2°C – 6°C, for body fluid samples were processed by batch.

Preparation of Samples

The saliva was prepared by transferring the sample to a sterile test tube and centrifuging it at 2000 rpm for 10 minutes. Supernatant was transferred into another glass tube and placed in a water bath at 56°C for 30 minutes to inactivate the salivary enzymes. The tube was cooled and re-centrifuged at 2000 rpm for 10 minutes. The supernatant was transferred again into another sterile test tube labelled as “(subject number) saliva H.”

For the urine, samples were transferred equally to three separate test tubes labelled as “(subject number) urine A,” “(subject number) urine B,” and “(subject number) urine H” and were centrifuged at 3000 rpm for 20 minutes. Tubes were decanted to obtain urinary sediments. On the other hand, semen was prepared by transferring the samples equally to three separate test tubes labelled as “(subject number) semen A,” “(subject number) semen B,” and “(subject number) semen H” and were centrifuged at 2500 rpm for 8 minutes to obtain sediments. Supernatant were decanted.

Data Gathering Procedure

Three percent red cell suspensions were prepared from the blood samples and were used for ABO forward typing and Rh typing, while the plasma obtained from the blood sample were used for ABO reverse typing.

The determination of secretor status in saliva and detection of blood group antigens in urine and semen both followed the same procedure of absorption-elution.

200uL of anti-sera A, anti-sera B, and anti-sera H were added to their respective test tubes. Tubes were shaken thoroughly and incubated for 3 hours to allow adequate antigen-antibody reactions during absorption. Following the incubation, excess antibodies were removed by cold saline washes for five times. Spin for cold saline washes were 2000 rpm for 1 minute. Test tubes were placed in a hot water bath maintained at 56°C for 5 minutes to elute or break the bond between the antigens and antibodies. A single drop of freshly prepared suspensions of known A cells to A tubes, known B cells to B tubes, and known O cells to H tubes were added and shaken well. Tubes were further incubated at 37°C for 15 minutes. All test tubes were centrifuged at 2000 rpm for 1 minute. Presence of agglutination was noted microscopically. Figure 1 shows the appearance of a positive result under the microscope while Figure 2 shows the microscopic appearance of a negative result.



Figure 1. Microscopic appearance of a positive result under 100x magnification



Figure 2. Microscopic appearance of a negative result under 100x magnification

All data were tabulated and processed using SPSS. Likelihood ratio was used to determine the significant association between the

blood group antigens detected in body fluids and the blood group antigens detected in red blood cells. Determination of sensitivity, specificity, positive predictive values, and negative predictive values of absorption-elution were done using a 2 x 2 table while the ROC curve was obtained from a web-based calculator for ROC curves from Eng (2017) of Johns Hopkins University School of Medicine.

RESULTS AND DISCUSSION

Frequency of H Antigen Detected in Urine and Semen among A, B and O Blood Groups

The research had a sample size of 25 composed of 10 type O blood group subjects, 10 type B blood group subject and 5 type A blood group subjects. Figure 3 shows that type O blood group had 9 subjects wherein H antigen was detected in their urine, followed by type B blood group subjects which had 8, and type A blood group subjects which had only 3. Type O blood group gave the most number of subjects wherein H antigen was detected in their urine, followed by type B blood group. Type A blood group gave the least number of subjects most probably due to the small number of samples that were in the study.

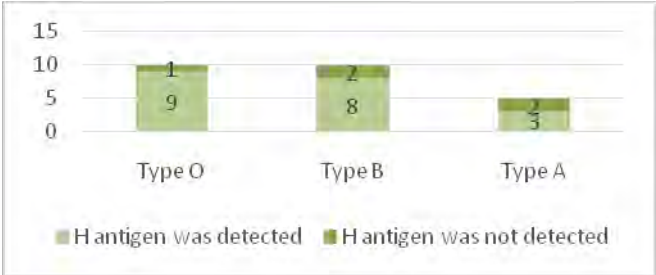


Figure 3. Frequency of H antigen detected in urine

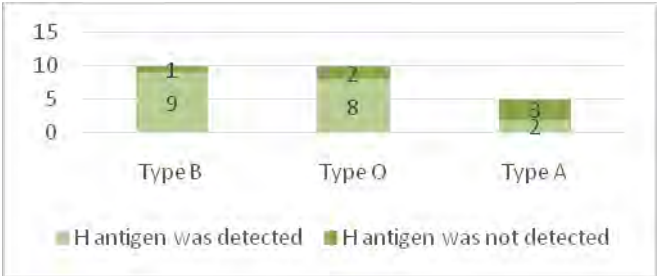


Figure 4. Frequency of H antigen detected in semen

On the other hand, Figure 4 shows that type B blood group had 9 subjects wherein H antigen was detected in their semen, followed by type O blood group subjects which had 8, and type A blood group subjects which had only 2. Type B blood group gave the most number of subjects wherein H antigen was detected in their urine, followed by type O blood group. Type A blood group gave the least number of subjects most probably due to the small number of samples that were in the study.

Determination of Secretor Status in Urine and Semen Using Absorption-Elution

During the second part of screening, the secretor status of all subjects was determined through absorption-elution using saliva. H antigen was present in the saliva of all the subjects, implying that they were all secretors. Table 1 shows that using urine, 20 out of 25 samples were positive for secretor status. On the other hand, Table 2 shows that if semen was used to determine the secretor status of subjects, 19 out of 25 samples were positive.

The findings of the research showed no false positive results as well as true negative results for the presence of H antigen in urine and semen. Based on Sen et al., (2015), determination of secretor status prior to testing of blood group antigens in body fluids is important for it is only in secretors that these ABH antigens are present. All subjects must be secretors because testing of ABH antigens from the body fluids of non-secretors would lead to false negative results. Hence, only the sensitivity of absorption-elution in determination of secretor status using urine and semen can be computed.

The results of Olorunshola and Audu's (2013) study supported the findings that urine can be used to determine a person's secretor status. Absorption-elution obtained 80% sensitivity in determination of secretor status using urine, which meant that absorption-elution correctly identified 80% of the subjects who were secretors, while 20% of the subjects went undetected. On the other hand, spermatozoa and seminal plasma both comprise the semen. Landsteiner and Levine discovered that ABH antigens are present in spermatozoa while Edwards, Ferguson and Coombs discovered that ABH antigens are also present in seminal plasma (as cited in Cossu, Lantini and Migliari, 1994), and these supported the results that secretor status can be determined using semen. Absorption-elution obtained 76% sensitivity in determination of secretor status using semen, which meant that absorption-elution

correctly identified 76% of the subjects who were secretors, while 24% of the subjects went undetected. A test obtaining sensitivity near 100% is indeed of diagnostic potential. Thus, absorption-elution assay is diagnostically capable in determination of secretor status both in urine and semen samples.

Table1

2 x 2 table of secretor status determined using urine

	Outcomes	Saliva	
		Positive	Negative
Urine	Positive	20	
	Negative	5	
	TOTAL	25	
	Sensitivity	80%	

Table2

2 x 2 table of secretor status determined using semen

	Outcomes	Saliva	
		Positive	Negative
Semen	Positive	19	
	Negative	6	
	TOTAL	25	
	Sensitivity	76%	

Likelihood of A and B Antigens Detected in Urine and Semen Across A, B, and O Blood Groups

Likelihood ratio of A and B antigen detected in urine samples across A, B, and O blood groups are presented in Table 3. A and B antigens detected in urine obtained a likelihood ratio of 12.542 and 12.071, respectively, which implied that through absorption-elution, A and B antigens detected in urine was significantly reflected ($p = 0.002$) across A, B, and O blood groups.

Table 4 presents the likelihood ratio of A and B antigen detected in semen samples across A, B, and O blood groups. An antigen detected

in semen obtained a likelihood ratio of 2.250, which implied that through absorption-elution, an antigen detected in semen was not significantly reflected ($p=0.325$) across A, B, and O blood groups. The said result could be due to the limited number of samples collected from the type A blood group present in the study. Also, Mudd (1989) discovered that the detection of blood group antigens in semen depended on the behavior of some monoclonal reagents. On the other hand, B antigens detected in semen obtained a likelihood ratio of 16.161, which implies that through absorption-elution, B antigens detected in semen was significantly reflected ($p=0.000$) across A, B, and O blood groups.

The results of the study were parallel with the results of Sen et al., (2015), yet they utilized a different statistic tool called Cohen's kappa coefficient. Significant association was evaluated by measuring the agreement between blood group antigens detected in saliva across ABO blood groups. Using the previous method agglutination-inhibition, a coefficient of 0.77 was obtained, while 0.84 was the measure of agreement for absorption-elution. Absorption-elution had a greater measure of agreement than agglutination-inhibition, indicating that ABH antigens detected in body fluids using absorption-elution had a greater significant association across ABO blood groups. Therefore, absorption-elution is diagnostically capable in detecting A and B antigens both in urine and semen samples. Moreover, A and B antigens detected in urine through absorption-elution has a strong likelihood across A, B, and O blood groups, while A and B antigens detected in semen through absorption-elution has a variable likelihood across A, B, and O blood groups.

Table 3

Likelihood of A and B antigens detected in urine across A, B, and O blood groups

Antigen	Outcome	"A"	"B"	"O"	df	LR	P value	Decision	Interpretation
A	Positive	80% (4)	20% (2)	0% (0)	2	12.542	0.002	Reject H_0	Significant
	Negative	20% (1)	80% (8)	100% (10)					
B	Positive	0% (0)	80% (8)	30% (3)	2	12.071	0.002	Reject H_0	Significant
	Negative	100% (5)	20% (2)	70% (7)					

Table 4

Likelihood of A and B antigens detected in semen across A, B, and O blood groups

Antigen	Outcome	"A"	"B"	"O"	df	LR	P value	Decision	Interpretation
A	Positive	40%	10%	10%	2	2.250	0.325	Do not reject H ₀	Not Significant
	Negative	60%	90%	90%					
		(2)	(1)	(1)					
B	Positive	0%	80%	10%	2	16.161	0.000	Reject H ₀	Significant
	Negative	100%	20%	90%					
		(0)	(8)	(1)					
		(3)	(9)	(9)					
		(5)	(2)	(9)					

Detection of ABH Antigens in Urine and Semen Using Absorption-Elution

ABH antigens were present and detected in the urine and semen of the entire sample size (n=25). The results of the study are in parallel with Foresto et al., (2000), which used the method agglutination-inhibition that healthy individuals who were secretors expressed blood group antigens in urine sediments, and also in agreement with Haas and D'Cruz (1988), which used the method radiolabeled antiglobulin assay that ABH antigens were detected in the semen of men who were secretors. On the other hand, the study of Graves (as cited in Metgud et al., 2016) tested for the female counterpart of semen which was the vaginal sample. Using absorption-elution method, the study found out that blood group antigens were detected in the vaginal samples of females who are secretors.

Table 5 shows that absorption-elution method gave a sensitivity of 80%, a specificity of 86%, a positive predictive value (PPV) of 87%, and a negative predictive value (NPV) of 79% in detection of ABH antigens in urine while Table 6 shows that absorption-elution method gave a sensitivity of 73%, a specificity of 91%, a PPV of 91%, and a NPV of 74% in detection of ABH antigens in semen.

Table 5

2 x 2 tables of ABH antigens detected in urine

Urine	Outcomes	Blood		TOTAL	PPV and NPV
		Positive	Negative		
	Positive	32	5	37	87%
	Negative	8	30	38	79%
	TOTAL	40	35	75	
	Sensitivity and Specificity	80%	86%		

Table 6

2 x 2 tables of ABH antigens detected in semen

Semen	Outcomes	Blood		TOTAL	PPV and NPV
		Positive	Negative		
	Positive	29	3	32	91%
	Negative	11	32	43	74%
	TOTAL	40	35	75	
	Sensitivity and Specificity	73%	91%		

Predictive values of absorption-elution in urine showed that if an ABH antigen was detected, there was an 87% probability that the subject carried that antigen on the surface of his red blood cells. Moreover, if an ABH antigen was not detected, there was a 79% probability that the subject did not carry that antigen on the surface of his RBCs. On the other hand, predictive values of absorption-elution in semen showed that if ABH antigen was detected, there was a 91% probability that the subject carried that antigen on the surface of RBCs. Furthermore, if ABH antigen was not detected, there was a 74% probability that the subject did not carry that antigen on the surface of his red blood cells.

Sensitivity and specificity values showed that if a subject carried an ABH antigen on the surface of his RBCs, there was an 80% probability that the same antigen would be detected in urine by absorption-elution. Moreover, if a subject did not carry an ABH antigen on the surface of his red blood cells, there was an 86% probability that the same antigen would not be detected in urine by absorption-elution.

For the semen, values obtained showed that if a subject carried an ABH antigen on the surface of his RBCs, there was a 73% probability that the same antigen would be detected in semen by absorption-elution. Furthermore, if a subject did not carry an ABH antigen on the surface of his red blood cells, there was a 91% probability that the same antigen would not be detected in semen by absorption-elution.

The 80% sensitivity of absorption-elution method in urine and 73% in semen were near the findings of Sen et al., (2015) that the sensitivity of absorption-elution in detection of blood group antigens in saliva was 86% and the study of Guriender et al., (as cited in Metgud et al., 2016) that the sensitivity of absorption-elution in detection of blood group antigens in sweat was 96%. This can be explained by the statement of Whitlock (2010) and Harmening (2012) that the concentrations of blood group antigen in body fluids were highest in saliva, followed by sweat, urine, and semen, indicating the higher sensitivity obtained in saliva and sweat.

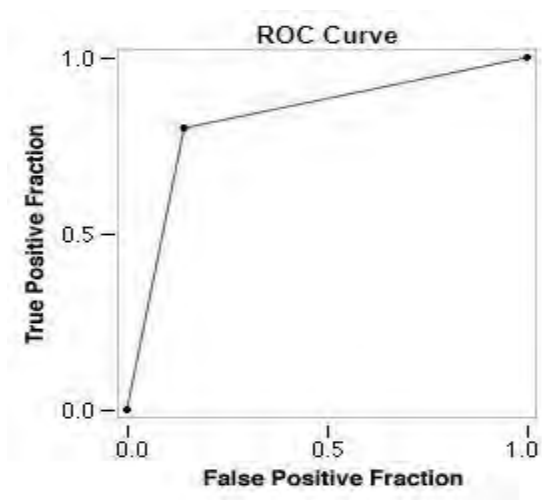


Figure 5. ROC curve of absorption-elution in detection of ABH antigens in urine

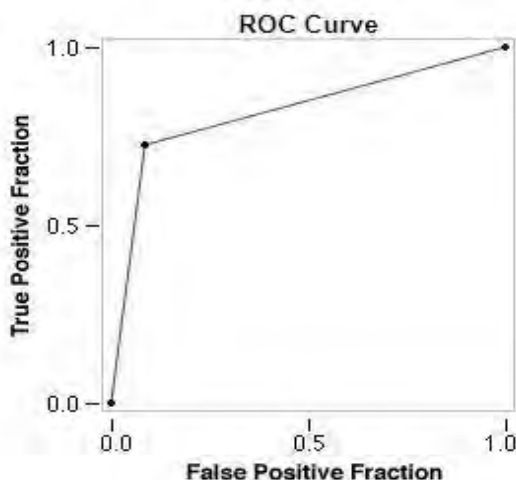


Figure 6. ROC curve of absorption-elution in detection of ABH antigens in semen

The comparison of sensitivity and specificity values were achieved using receiver operating characteristic (ROC) curves. Figure 5 presents the ROC curve which reflects the performance of absorption-elution in detecting blood group antigens in urine while Figure 6 presents the ROC curve for semen. The area under the curve (AUC) is an effective way to assess the performance of a test. An AUC of 1.0 is interpreted as a perfect test, while an AUC of 0.5 tells that a test is weak (Ekelund, 2012). In the study, absorption-elution obtained an AUC of 0.829 in detecting ABH antigens in urine while the same method got an AUC of 0.82 in detecting ABH antigens in semen. An AUC between 0.80 – 0.90 interprets a method as an excellent test (Mandrekar, 2010). Therefore, absorption-elution is diagnostically capable in detecting ABH antigens both in urine and semen samples.

CONCLUSIONS

The study showed that absorption-elution method is sensitive in determining the secretor status of a subject using both urine and semen. In addition, the A and B antigens detected in body fluids were significantly reflected across A, B, and O blood groups. Absorption-elution is sensitive and specific in detecting ABH antigens in urine and semen. The method was evaluated as an "excellent test" in detecting ABH antigens in body fluids and was assessed using AUC. These

findings prove the diagnostic capability of absorption-elution analysis in detection of ABH antigens in body fluids.

RECOMMENDATIONS

The researchers recommend that: (1) There must be equal number of subjects for type O blood group, type B blood group, and type A blood group. Include type AB blood group as well as Rh negative persons; (2) Non-secretors should be included for future studies to determine the specificity, positive predictive values, and negative predictive values of the absorption-elution method in determination of secretor status using urine and semen; (3) Absorption-elution method must be used in detection of ABH antigens in other body fluids that can be collected in a non-invasive manner like milk, tears, and sweat and determine if the A and B antigens detected in those fluids will be significantly reflected across ABO blood groups; (4) Absorption-elution assay must be performed at varying incubation hours and varying amounts of antisera to determine the optimum number of hours and optimum amount of antisera to standardize the assay; and (5) Perform absorption-elution assay using fresh urine and semen samples.

REFERENCES

- Ansari, S. A., Khan, A., Khan, T. A. Raza, Y., Syed, S. A. Akhtar, S. S., Kazmi, S. U. (2015). Correlation of ABH blood group antigens secretion with *Helicobacter pylori* infection in Pakistani patients. *Tropical Medicine & International Health*, 20(1), pp. 115-119.
- Cecilia, S., Lakshya, L., Charumathy, R., Divyarani, S., Balagopal, S., Chandran, C. (2017). Evaluation of the possibility of identification of ABO blood group from saliva stained tooth under different conditions. *International Journal of Advanced Research in Medical Sciences*, 1(1), pp. 14-18.
- Cossu, M., Lantini, M. S. and Migliari, R. (1994). ABH and Lewis antigens in human male accessory sex glands. In Riva, A., Riva, F. T. & Motta, P. (Eds.), *Ultrastructure of the male urogenital gland* (pp. 177-185). Massachusetts, USA: Kluwer Academic Publishers.
- Criswell, D. (2008). ABO Blood and Human Origins. Retrieved from <http://www.icr.org/article/abo-blood-human-origins/>

- Ekelund, S. (2012). ROC curves – What are they and how are they used. Point of Care: The Journal of Near-Patient Testing & Technology, 11(1), pp. 16-21.
- Eng, J. (2017, March 23). *ROC analysis: Web-based calculator for ROC curves*. Retrieved from <http://www.rad.jhmi.edu/jeng/javarad/roc/JROCFITi.html>
- Foresto, P., Biondi, C., Brufman, A., Yaber, Fe., Yaber, Fa., Solis, E.,...Valverde, J. (2000). Deletion of ABH antigens in urine sediment cells from patients with prostatic adenoma. ArchivosEspañoles de Urología, 53(9), pp. 770-773.
- Haas, G. &D'Cruz, O. (1988). ABH blood group antigens in human semen. American Journal of Reproductive Immunology and Microbiology, 16, pp. 28-36.
- Harmening, D. (2012). Modern Blood Banking and Transfusion Practices (6th ed.). Illinois, USA: F.A. Davis Company.
- Kumar, P. V., Vanishree, M., Anila, K., Hunasgi, S., Suryadevra, S. S. &Kardalkar, S. (2016). Determination of ABO blood grouping and Rhesus factor from tooth material. Journal of Oral and Maxillofacial Pathology, 20(3), pp. 540-544.
- Letendre, P. (2010). ABH Antigens. Retrieved from <https://sites.ualberta.ca/~pletendr/tm-modules/abo/70abo-abhags.html>.
- Li, R. (2015). Forensic Biology (2nd ed.). New York, USA: CRC Press.
- Mandrekar, J. (2010). Receiver operating characteristic curve in diagnostic test assessment. Journal of Thoracic Oncology, 5(9), pp. 1315-1316.
- Metgud, R., Khajuria, N., Mamta& Ramesh, G. (2016). Evaluation of the secretor status of ABO blood group antigens in saliva among Southern Rajasthan population Using absorption inhibition method. Journal of Clinical and Diagnostic Research, 10(2), pp. 1-3.
- Mudd, J. L. (1989). The detection of soluble ABH blood group substances in semen and saliva using monoclonal blood grouping reagents. Journal of Forensic Sciences, 34(5), pp. 1082-1089.

- Olorunshola, K. V. & Audu, L. (2013). ABO (H) secretor status of sickle cell disease patients in Zaria, Kaduna State, Nigeria. *Nigerian Journal of Physiological Science*, 28(1), pp. 29-34.
- Rai, P., Acharya, S. & Hallikeri, K. (2015). Assessment of ABO blood grouping and secretor status in the saliva of the patients with oral potentially malignant disorders. *Journal of Oral and Maxillofacial Pathology*, 19(2), pp. 164-169.
- Sen, M. P., Vanishree, M., Hunasgi, S., Surekha, R., Koneru, A. & Manvikar, V. (2015). A comparison of absorption inhibition and absorption elution methods for estimation of ABO blood groups in saliva. *Journal of Medicine, Radiology, Pathology & Surgery*, 1(1), pp. 1-4. Retrieved from http://www.jmrps.net/eJournals/_eJournals/1_ORIGINAL%20ARTICLE.pdf
- Whitlock, S. A. (2010). *Immunohematology for Medical Laboratory Technicians*. New York, USA: Delmar.

English only policy in improving the English communication skills of selected Senior High School Students

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Abstract

The purpose of this study is to determine the effectiveness of the English Only Policy (EOP) in improving the English communication skills of selected senior high school students in the context of four (4) macro skills namely: listening, speaking, reading, and writing. In order to attain this objective, the study utilized the quantitative method of research and specifically used the descriptive-correlational type as its research design. This study was conducted in Emilio Aguinaldo College – Cavite (EAC-C) among senior high school students. Specifically, 106 students from the subject Oral Communication in Context participated in answering the questionnaire prepared by the researchers. Thorough analysis of data revealed that there were more female respondents than male respondents; there were more respondents who graduated from public schools than private schools; among the four macro skills, listening ranked first and EOP is effective in this macro skill; and there was a weak positive correlation between gender and school of origin of the respondents and their perceptions on EOP in improving their English communication skills. Moreover, the relationship that existed between the two was significant. With the aforesaid findings, it can be concluded that the respondents perceived EOP as effective in the context of the four (4) macro skills. Hence, the researchers recommended to the institution where this study was conducted to practice EOP in its programs in order to enhance the use of the English language.

Keywords: Effectiveness, English Only Policy, Macro Skills, and Perceptions

INTRODUCTION

English is the universal language (Mastin, 2011). Since it is universal, it is expected that everyone, not only mere individuals, from all walks of life must know and be able to speak it. There are many languages; however, because the universal language is English, one has to set aside non-English language to communicate in the global community. –The world would be a better place if everyone spoke a common language” (Dascalescu, 2014).

Many academic institutions are implementing the English Only Policy (EOP) to enhance the English communication skills of their students. This policy is believed to be able to upgrade the English fluency and eloquence of the students into a higher level. The improvement can be in the context of four macro skills, namely: listening, speaking, reading and writing. –Listening and reading are receptive skills; they only require understanding. Speaking and writing are productive skills; they require the learners to produce something. Learners master skills by practice” (Hadfield, 2011).

EOP aims to develop the students’ abilities with the integration of speaking, listening, reading and writing programme. Through the implementation of EOP, students will have opportunities to utilize knowledge and affirmation towards English, either spoken or written.

Students, mandated by this policy, are required to speak in English whenever they are inside the school premises. As a result, consistency and continuity in using this language are observed even when they are outside the school. Students, then, get used to it – Law of Exercise, states that people learn and become skilled in a certain thing by continuously doing or practicing it. In other words, if a response is practiced for a certain number of times, it will tend to be permanently established. Any repeated response gathers some strength. As a result, it becomes easier to repeat. It is important to study the English Only Policy as implemented in the classroom in a way that studying this will explain how effective it is based on the perceptions of selected senior high school students.

The researchers involved themselves into this topic for four main reasons: first, English only policy was also applied to the researchers as part of the training by their English professor; hence, they can relate to the experience; second, since they are prospective English teachers, they can implement and recommend it in the field of education once studied; third, the institution where this study was conducted is not currently implementing EOP even though it was already adapted by

many academic institutions for a long time; thus, the results of this study can serve as a written evidence and basis for the researchers to advocate at least the implementation of the said policy in the institution at least; and lastly, the researchers want to know the particular macro skill this policy is most effective in.

Hence, the researchers looked into the effectiveness of English Only Policy in improving the English communication skills of selected senior high school students based on their own perceptions.

METHODOLOGY

Research Design

This study used the quantitative research, specifically the descriptive-correlational type. Descriptive research seeks to provide information about one or more variables. On the other hand, correlational survey is designed to determine the relationship of two variables (X and Y) whether the relationship is perfect, very high, high, marked or moderate, slight or negligible (Calmorin & Calmorin, 2007). This method was the best to use for this study.

Research Locale

This study was conducted in Emilio Aguinaldo College – Cavite (EAC-C); it is a private, non-sectarian, co-educational academic institution. It is located at Congressional East Avenue, Burol Main, City of Dasmariñas, Cavite. EAC-C has 25 program offerings including the Senior High School Program. In addition, this senior high school program offers six (6) strands, namely: Science, Technology, Engineering, and Mathematics (STEM), Accountancy, Business, and Management (ABM), Humanities and Social Sciences (HUMSS), and Technical Vocational with specializations in Home Economics (HE), Information and Communications Technology (ICT), and Industrial Arts (IA).

Currently, EAC-C has 3,609 students; specifically, 2,163 College students and 1,446 Senior High School students.

Research Participants

The respondents of this study were from the Senior High School program of Emilio Aguinaldo College – Cavite. Particularly, the respondents were from the Oral Communication in Context (OCC) classes of one of the faculty members of Emilio Aguinaldo College

Senior High School (EACSHS) who was implementing EOP in the said subject classes. The said Faculty member had three (3) sections of OCC namely: Mahusay, Masipag, and Mapayapa. There were a total number of 106 students from these sections.

This study used total enumeration. Total enumeration requires the entire population to participate in the study. As a result, there were many respondents participating in this study which meant getting better results (Shruti, 2015). Since the total number of students from the said three sections was 106, therefore, the numbers of respondents of this study were 106 as well.

Research Instrument

The researchers made a literature review of the topic and objectives to make a questionnaire. The questionnaire was structured as it involved sole objective entries. The items in the questionnaire were in positive statements to avoid ambiguity from the respondents' end (Cohen, Manion & Morrison, 2007). The form had two parts. Part 1 is the Demographic Profile of the Respondents and Part 2 is the Perceptions of the Respondents Towards English Only Policy (EOP). Part 2 is composed of a four-point scale table. In the four-point scale table, 4 is for "Very Effective", 3 is for "Effective", 2 is for "Somewhat Effective", and 1 is for "Ineffective." Simple English was used to guarantee that the respondents will understand the whole composition of the questionnaire.

The questionnaire that was used in gathering relevant data for this study underwent validation process from the experts in the field of research and English. The reliability of the questionnaire was determined using Cronbach Alpha in which the result was 0.78 and interpreted as highly reliable.

Data Gathering Procedure

After the questionnaire was validated and tested for reliability, the researchers asked the permission of the Officer-in-Charge (OIC) Directress of EACSHS for its distribution.

The next thing that the researchers did was to distribute the validated questionnaire to the respondents. The respondents were given five minutes to answer the survey form.

After five minutes, the researchers collected all the accomplished questionnaires which were tabulated, tested statistically and interpreted.

Statistical Treatment of Data

The profile of the respondents was determined using percent-frequency in terms of gender and school origin. A percentage frequency distribution is a display of data that specifies the percentage of observations that exists for each data point or grouping of data points (Lavrakas, 2008). The formula for this is $f = x/N$ where x is the number of sample and N is the total number of sample. On the other hand, mean score of the perception on the level of effectiveness of EOP was tabulated and analyzed using cross tabulation. Cross tabulation is a statistical tool that is used to compare the relationship between two variables and analyze categorical data. Categorical data are data or variables that are separated into different categories which are mutually exclusive from one another (Williams, 2015). Furthermore, relationship between the demographic profile of the respondents and their perceptions on the effectiveness of EOP was analyzed using Pearson correlation coefficient through the use of Statistical Package for the Social Sciences (SPSS) v.21. Pearson correlation coefficient is a measure of the strength of the linear relationship between two variables (McCallister, 2015).

RESULTS AND DISCUSSION

Table 1

Profile of the respondents in terms of gender

Gender	<i>f</i>	%
Male	46	43
Female	60	57
Total	106	100

There were a total number of 106 respondents in this study. Of these, 46 or 43% of the total number of respondents were male. On the other hand, the remaining 60 or 57% of the total number of respondents were female. Thus, figures showed that there were more female respondents than male respondents.

The table clearly showed that there were more female respondents attending the class than male respondents. This was supported by the fact that females have the higher propensity for staying

in school than males (Palanca, 2015). As a result, there are more females finishing college than males (Quismundo, 2012).

Table 1.1

Profile of the respondents in terms of school of origin

School Type	<i>f</i>	%
Public	59	56
Private	47	44
Total	106	100

Out of 106 respondents, 59 or 56% of the total number of respondents graduated from public schools. On the other hand, the remaining 47 or 44% of the total number of respondents graduated from private schools.

Obviously, there were more respondents who graduated from public schools than private schools. The main reason for this is because, education in public schools is free since it is run by the government, unlike in private schools which require the payment of school fees from their students (Pascual, 2016).

Table 2

Perceptions of the respondents on the effectiveness of EOP in the context of listening

	Indicator	Mean	Interpretation	Ranking
1	I understand English language.	3	Effective	4
2	I understand the message of a single statement the first time I hear it.	3.3	Very Effective	1
3	I understand the overall message of my English teacher during lecture.	3.1	Very Effective	3
4	I create a mental picture of what I am hearing.	2.5	Effective	5
5	I feel the emotion of the speaker based on how he/she speaks the words (intonation of the speaker).	3.2	Very Effective	2
	Ave. Wt. Mean	3	Effective	

Among the five indicators for listening, indicator number 2 ranked first. It obtained a weighted mean of 3.3 and was interpreted as ~~very~~ effective". The second in ranking is indicator number 5. Its weighted mean is 3.2 which are interpreted as ~~very~~ effective". The third is indicator number 3; with a weighted mean of 3.1 interpreted as ~~very~~ effective". The fourth in the ranking is number 1 which gained a weighted

mean of 3.0 and interpreted as “effective”. The fifth which is the last in the ranking is indicator number 4; with a weighted mean of 2.5 which is interpreted as effective. All in all, there were three indicators which were interpreted as very effective namely: indicator numbers 2, 3, and 5. On the other hand, indicator numbers 1 and 4 were interpreted as effective.

For indicator number 2, listening requires concentration that helps listeners comprehend and evaluate what they hear (Adolfo Jr., 2012). Thus, listening to a single statement does not require a long period of concentration. It is definitely suited to the average attention span of humans which is approximately 8 seconds (Gausby, 2015). Hence, EOP was very effective in this indicator. Next is indicator number 5. Listening is a cognitive process of recognizing and decoding sound waves, and storing their meaning in memory (Adolfo Jr., 2012). Recognizing and decoding sound waves were said to be the basic phases of listening before going to the complex phases which are the comprehension and the memory retention. In addition, listening is part of the process of oral communication which is the sound representation of a language. It is denoted that listeners hear not only words but also the voice quality, pitch, intonation, stress and word junctures, and notices the gestures and facial expressions (Language and Oral Communication). Hence, merely listening to the way the speaker delivers the words (intonation of the speaker) and feeling the emotions based on it are not that complex. Thus, EOP is very effective in this indicator.

Next is indicator number 3. The respondents might be utilizing top-down listening during their lecture. As defined by Adolfo (2012), top-down listening focuses on the general picture of the message. With this definition, it was clearly understandable that what the respondents were actually doing (top-down listening) is significantly related to indicator number 3, which was marked with the word “overall”. As a result, EOP was very effective in this indicator. When it comes to indicator number 1, as cited by Adolfo (2012), listening is a cognitive process of recognizing and decoding sound waves and storing their meanings in memory. As mentioned earlier, recognizing and decoding sound waves were said to be the basic phases of listening; while comprehension and memory retention were the complex ones. Indicator number 1 is categorized under the complex phases since it primarily stresses understanding English language. Thus, EOP in this indicator was just effective and not very effective unlike the other indicators. Another reason behind this result could be in the fact that, the respondents were L2 learners or L2 speakers of English. Thus, non-English is their native language and they may be having difficulty in understanding English. Lastly, for indicator number 4, Mahoney (2010) stressed that when readers lose their mental picture, comprehension is lost as well. This could also be true in listening

as it is a cognitive process (Stern, 2012). In connection, in order for the respondents to take the full understanding of what their English teacher is discussing, they tend to create a mental picture or representation of it in some cases. This was the reason why EOP is effective in this indicator.

Table 2.1

Perceptions of the respondents on the effectiveness of EOP in the context of speaking

	Indicator	Mean	Interpretation	Ranking
1	I speak English confidently.	2.7	Effective	2.5
2	I speak English fluently.	3.3	Very Effective	1
3	I pronounce English words correctly.	2.6	Effective	4
4	I express my thoughts in speaking using appropriate English words.	2.7	Effective	2.5
5	I speak with awareness to avoid mistakes in my English grammar and pronunciation.	2.2	Effective	5
	Ave. Wt. Mean	2.7	Effective	

Among the five indicators for speaking, indicator number 2 ranked first. It obtained a weighted mean of 3.3 and was interpreted as ~~very~~ effective". The second in ranking were indicator numbers 1 and 4. They both obtained 2.7 weighted means and were interpreted as ~~effective~~". The third in ranking was indicator number 3. Its weighted mean was 2.6; interpreted as ~~effective~~". The fourth, which is the last in the ranking, is indicator number 5. Its weighted mean was 2.2 and interpreted as effective. In summary, only indicator number 2 was interpreted as ~~very~~ effective". The rest of the indicators were interpreted as ~~effective~~".

For indicator number 2, as said by Mayor (2007), there was a need to elicit students to participate orally in English class as language learning demands utilizing and practicing the target language itself. As practiced in an English class, the respondents were not given positive feedback whenever they speak in a non-English language. This strategy was used to encourage them to practice the target language, for them to become fluent speakers of it. In addition, Myong (2008) stated that the application of Teaching English through English (TETE) helped the students to develop their oral skills. The respondents' English teacher discussed the subject Oral Communication in Context with the English language as a medium. These two scenarios might be the reason why

the respondents became fluent speakers of English and why EOP was effective in this indicator. Indicator numbers 1 and 4 are the next. For indicator number 1, in the study of Wong (2010) entitled, *The Effectiveness of Using English as the Sole Medium of Instruction in English Classes: Student Responses and Improved English Proficiency*, there were two classes observed. A student from the second class that was observed responded that the reason why he did not speak in English was because of the possible comments or responses of his classmates. This response showed peer pressure as the main obstacle to in-class English usage. Moreover, the Affective Filter Hypothesis which is the sixth hypothesis proposed by Stephen Krashen (Johnson, 2013) stressed that emotional variables like fear, anxiety, and pressure can affect students' paths towards language acquisition and learning. The respondents may have felt the pressure and became badly self-conscious in speaking in English. As a result, the effectiveness of EOP in this indicator was just effective and not very effective like the other indicators.

For indicator number 4, since the respondents are digital learners, it was not surprising that they have phones and other devices during their study time. Moreover, dictionaries in mobile platform are available for download. Hence, these propositions provided an expanded opportunity for the students to acquire wider vocabulary and precise word choice (diction) so that they can express themselves in speaking appropriately. Next is indicator number 3; dictionaries come in many forms nowadays. As stated earlier, there are dictionaries in mobile platform. These contained not only definitions of words but a pronunciation key that can help students in pronouncing and enunciating English words correctly. For indicator number 5, grammar is the structure and system of a language or of languages (Maddox, 2015), and pronunciation is, indeed, included in its general scope. Moreover, Filipinos are generally grammar conscious (Carillo, 2012). Hence, this was the reason why EOP was effective in this indicator.

Table 2.2

Perceptions of the respondents on the effectiveness of EOP in the context of reading

	Indicator	Mean	Interpretation	Ranking
1	I identify the use of English words in communication.	3	Effective	1
2	I develop a growing vocabulary.	2.3	Effective	4
3	I understand what I am reading.	2.2	Effective	5
4	I create a mental picture of what I am reading.	2.5	Effective	2
5	I easily provide feedback or reaction to what I am reading.	2.4	Effective	3
Ave. Wt. Mean		2.5	Effective	

Among the five indicators for reading, indicator number 1 ranked first. It gained a weighted mean of 3.0 and was interpreted as “effective”. The second in ranking is indicator number 4. Its weighted mean is 2.5 interpreted as “effective”. The third in ranking is indicator number 5. Its weighted mean is 2.4 interpreted as “effective”. The fourth in the ranking is indicator number 2. It obtained a weighted mean of 2.3 and interpreted as “effective”. The fifth, which is the last in the ranking, is indicator number 3. Its weighted mean is 2.2; interpreted as effective. In general, all these five indicators, regardless of their different weighted means, were interpreted as effective.

For indicator number 1, as defined by Adolfo (2012), reading is a multifaceted process that involves word recognition, comprehension, fluency, and motivation. It is perceived to be taught once for all in the first few years in school by many people. As a result, merely identifying the use of words was not that difficult. In addition, Sofsian indicated that reading is an indulgence that enhances the knowledge acquired consistently. The habit of reading also helps the readers to decipher new words and phrases that they come across in everyday conversation. (“The Importance of Reading”, 2006) Hence, the respondents chose to perceive EOP as effective in this indicator. Indicator number 4 is next. Teenagers, like the respondents, are enjoying reading electronic books (eBooks) especially those that are found in Wattpad. The reason for this enjoyment is because of the visualization they employ. “Visualizing brings joy to what we read and allows us to create pictures in our minds that belong only to us” (Huff, 2011). In this case, it is easy to presume that the respondents were actually making use of this reading alternative since then and were used to it. As a result, creating mental pictures of

what they were reading is not new to them. Thus, they chose to perceive EOP as effective in this indicator.

Next is indicator number 5. As mentioned earlier, respondents were said to be applying the visualization reading strategy to enjoy and comprehend the text they were reading. Moreover, as they enjoy and comprehend it, reacting and providing feedbacks become natural. As a result, EOP was said to be effective in this indicator. When it comes to indicator number 2, according to Sofsian (2006), reading offers a productive approach to improving vocabulary and word power. Reading is said to significantly help in developing vocabulary. In addition, Wegman (2016) proposed three tricks to improve one's vocabulary. One of these was stated as "Read, Read, Read." In order for a person to acquire and develop his vocabulary, he must embark in reading books that were written in the target language. Likewise, the subject Oral Communication in Context required the respondents to have more of English readings. Hence, this paved the way to acquiring English words and developing English vocabulary. Thus, EOP was effective in this indicator. Lastly, for indicator number 3, there are a number of ways and strategies that can be used to comprehend the text; some of them were summarizing the text, generating questions, answering questions and monitoring comprehension (Adler, 2017). The suitability and preferences of the respondents when it comes to reading comprehension strategies may vary, but the fact that there were a number of available and suggested ways decrease the respondents' possibility for not understanding the text. As a result, EOP was said to be effective in this indicator. Another scholarly concept to ponder on is that, within the Vygotskian framework, strategic use of language facilitates thinking, understanding, and learning. Parents should provide for the learning and reading needs of their children and let them facilitate their language process. By that means, they become more skilled readers and learners in general.

Table 2.3

Perceptions of the respondents on the effectiveness of EOP in the context of writing

	Indicator	Mean	Interpretation	Ranking
1	I construct sentences using English on my own.	2.6	Effective	2
2	I use the appropriate English words to express.	2.8	Effective	1
3	I use correct punctuation marks.	2.2	Effective	4
4	I observe grammar accuracy in writing.	2.2	Effective	4
5	I easily express my thoughts in writing.	2.2	Effective	4
	Ave. Wt. Mean	2.4	Effective	

Among the five indicators for writing, indicator number 2 ranked first. Its weighted mean is 2.8 and is interpreted as –effective”. The second in ranking is indicator number 1 with a weighted mean of 2.6 and interpreted as –effective”. The third, which is the last in the ranking, were indicator numbers 3, 4, and 5. They all obtained a 2.2 weighted mean and were interpreted as –effective”. In general, all these five indicators, regardless of their different weighted means, were interpreted as –effective”.

For indicator number 2, words are everywhere (Boyle, 2016). Hence, acquiring words is easy and possible due to numerous and varied opportunities to encounter them. Furthermore, the opportunity to express oneself, particularly in English, is substantially possible. As a result, EOP was effective in this indicator. For indicator number 1, Adolfo Jr. (2012) stressed that the skill that must be practiced at all times is writing which by all accounts mean much more than using orthographic symbols. Since writing is the skill that must be practiced at all times, it is easy to presume that students already have learned how to write it on their own. Thus, EOP was said to be effective in this indicator. Next is indicator numbers 3, 4, 5. For indicator number 3, it was implied earlier that students can write by themselves. Thus, it is expected that the micro skills under writing which include making use of correct punctuation marks have already been mastered by the respondents. On the other hand, indicator number 4 is supported by the already cited fact that Filipinos are generally grammar conscious (–Are Filipinos grammar conscious in their English?,” 2012). Thus, the respondents believed that they observed grammar accuracy in writing. Lastly, EOP was effective in indicator number 5 for the reason that many people cannot express themselves in speaking, that is why, they usually tend to do it through writing. It is, indeed, easier in their part to express their thoughts and feelings through writing rather than verbalizing them. Written tasks, on

the other hand, often require accuracy and formal language. Many students feel more pressure when writing. However, when writing, students can proofread what they had written.

Table 2.4

Summary of the perceptions of the respondents on the effectiveness of EOP in the context of four macro skills

	Macro Skill	Mean	Interpretation	Ranking
1.	Listening	3	Effective	1
2.	Speaking	2.7	Effective	2
3.	Reading	2.5	Effective	3
4.	Writing	2.4	Effective	4
	Mean Total Ave.	2.7	Effective	

Among the four macro skills, listening ranked first with a weighted mean of 3.0 which interpreted as effective. The second in ranking is speaking. It obtained a weighted mean of 2.7 and was interpreted as effective. The third in the ranking is reading with a weighted mean of 2.5 interpreted as effective. The fourth, which is the last in the ranking, is writing with a weighted mean of 2.4 and interpreted as effective. In general, all these four macro skills, regardless of their different weighted means, were interpreted as effective. Thus, the English Only Policy (EOP) is perceived to be effective in improving one's English communication skills.

All in all, for listening, the reason behind its rank is because, people spend 70% of their time communicating. Of this, 45% is spent on listening compared to 30% on speaking, 16% on reading, and 9% on writing (Alder, et al., 2001). Thus, the listening skill is the most practiced and developed among the four skills. The next is speaking. Speaking is one of the most active, most used, and most purposeful forms of communication (Adolfo, 2012). As it is one of the most active forms of communication, it only means that habitual practice is observed and done. As a result, EOP was effective in this macro skill. When it comes to reading, it is believed that Filipinos are not fond of reading (Feraz, 2013). Hence, their reading skills are not that fluent in contrast with other language skills. Nevertheless, EOP was still perceived as effective in this macro skill. The last is writing. Writing is said to be the skill that must be practiced at all times. Many people cannot express themselves completely in speaking maybe because of the barrier brought by emotional variables like fear and anxiety which were emphasized in the sixth hypothesis known as Affective Filter Hypothesis proposed by Stephen Krashen (Johnson, 2013). As a result, they rely mostly on

expressing their thoughts and feelings through writing rather than speaking (Adolfo Jr., 2012). Hence, EOP is effective in this macro skill. In general, all these macro skills, regardless of their different weighted means, were interpreted as effective.

Table 3

Relationship that exists between the profile of the respondents and their perceptions on EOP in improving their English communication skills

Pearson R	Mean	P-Value	Remarks	Decision
Gender and Perceptions	0.312	0.01	With Significant Relationship	Reject Null Hypothesis
School of Origin and Perceptions	0.201	0.014	With Significant Relationship	Reject Null Hypothesis

Level of Significance: 0.05

Based on the Pearson R Correlation, tested at .05 level of significance, there was a weak positive correlation ($r=0.312$) between the gender of the respondents and their perceptions on EOP in improving their English communication skills. Moreover, the relationship that existed between them is significant ($p=.010$). On the other hand, there was also a weak positive correlation ($r=0.201$) between the school of origin of the respondents and their perceptions on EOP in improving their English communication skills. Furthermore, the relationship that existed between them is also significant ($p=.014$).

The reason behind these results is because, both male and female respondents perceived EOP as effective in improving their English communication skills. Moreover, the perceptions remained to be the same when taking the school of origin of the respondents into account. The respondents, whether they were graduates from public or private schools, perceived EOP as effective. Therefore, the null hypothesis of this study which stated that there is no significant relationship that exists between the profile of the respondents and their perceptions towards EOP was rejected.

CONCLUSIONS

Based on the findings derived from this study, the following conclusions were drawn:

1. There are more female respondents than male respondents. Moreover, there are more respondents who graduated from public schools than private schools.
2. The respondents perceive the effectiveness of EOP through the four macro skills namely: listening, speaking, reading, and writing as effective.
3. There is significant relationship that exists between the profile of the respondents and their perceptions on EOP in improving their English communication skills.

Since EOP was perceived by the respondents of this study to be effective in improving their English communication skills, it is a realization for researchers who are prospective English educators, to implement this policy once they are already in the field of teaching. By doing so, students in English classes will regularly communicate through English and soon will be used to it. Thus, English language acquisition and learning, and enhancing of the use of English language will take place.

RECOMMENDATIONS

Based on the findings and conclusions presented, the following recommendations are suggested:

1. The educational institution where this study was conducted, Emilio Aguinaldo College – Cavite, should practice EOP in all its programs to enhance the use of English language.
2. English teachers should implement EOP strictly but in a friendly way in the English class, where meaningful positive and negative reinforcements are being applied whenever the students abide or violate this bylaw.
3. Students should fully commit themselves to the strict implementation of EOP.
4. Other researchers are encouraged to use this study as part of the sources of their future studies. In addition, they are also encouraged to replicate this study by modifying the demographic profile of the respondents like adding the age or honors received from previous school or changing the research locale.

REFERENCES

- Adler, C. (2017). Seven Strategies to Teach Students Text Comprehension. Retrieved March 16, 2017, from <http://www.readingrockets.org/article/seven-strategies-teach-students-text-comprehension>
- Adolfo, E., Jr. (2012). Important macro-skills in teaching a particular language. Retrieved March 15, 2017, from <http://guides.wikinut.com/Important-macro-skills-in-teaching-a-particular-language/1ivwnam3/>
- Agalabia. (2015). *English Communicative Competence, Study and Language Skills*.
- Ang, J. G. (2009). *Language and Oral Communication*.
- Anthony, M. (n.d.). Language and Literacy Development in 3-5 Year Olds. Retrieved March 30, 2017 <http://www.scholastic.com/parents/resources/article/stages-milestones/language-and-literacy-development-3-5-year-olds>
- Boyle, M. (2016, November 3). *Our vocab words are everywhere...* [Prezi Online Presentation].
- Brien, J. (2010). *Teaching primary English*. London: SAGE.
- Brzozowski, N. (2013, October). English and Literacy Policy [PDF]. Connecting People Through News. (2012). Retrieved March 16, 2017, from <http://www.pressreader.com/philippines/manila-times/20120414/282140698363619>
- Calmorin, L. P., & Calmorin, M. A. (2007). *Research Methods and Thesis Writing* (Second ed.). Rex Knowledge Center, 109 Sen M Cuenco Sr, Quezon City, 1114 Metro Manila, Philippines: Rex Publishing.
- Carillo, J. A. (2012, April 14). Are Filipinos grammar conscious in their English? Retrieved June 29, 2018, from <https://www.pressreader.com/philippines/manila-times/20120414/282140698363619>
- Cohen, L., Manion, L., & Morrison, K. (2007). *Research Methods in Education* [PDF]. 2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN: Routledge.

- Dascalescu, R. (2014). English as a universal language. Retrieved March 15, 2017, from <https://wiki.dandascalescu.com/essays/english-universal-language>
- Ferraz, E. (2013). Filipinos don't read. Retrieved March 16, 2017, from <http://www.rappler.com/move-ph/balikbayan/voices/46522-filipinos-reading-literature>
- Gaerlan, M. M. (2009). *Social influences on successful learning in a L2: a proposed model from consensual qualitative research* (Unpublished master's thesis).
- Gausby, A. (2015). Microsoft Attention Spans Research Report [PDF].
- Gregory, G., &Burkman, A. (2011). *Differentiated literacy strategies: for English language learners, grades 7-12*. Thousand Oaks, CA: Corwin Press.
- Hadfield, J., & Hadfield, C. (2011). *Introduction to teaching English*. Oxford: Oxford University Press.
- Huff, E. (2011). Visualization as a Reading Strategy for Reluctant Readers. Retrieved March 16, 2017, from <http://athome.readinghorizons.com/blog/visualization-as-a-reading-strategy-for-reluctant-readers>
- Johnson, H. (2013). The Affective Filter Hypothesis: Definition and Criticism. Retrieved March 16 2017, from <http://www.linguisticgirl.com/the-affective-filter-hypothesis-definition-and-criticism/>
- Lavrakas, P. J. (2008). Percentage Frequency Distribution. In Encyclopedia of Survey Research Methods (Vol. 2). Thousand Oaks, California, United States: Sage Publishing.
- Maddox, M. (2015). What is Grammar? Retrieved March 16, 2017, from <http://www.dailywritingtips.com/what-is-grammar/>
- Mahoney, D. (2010). Visualize! Teaching Readers to Create Pictures in Their Minds | Scholastic. Retrieved March 16, 2017, from <https://www.scholastic.com/teachers/blog-posts/danielle-mahoney/visualize-teaching-readers-to-create-pictures-in-their-minds/>

- Mastin, L. (2012). The History of English - English as a Global Language. Retrieved March 15, 2017, from http://www.thehistoryofenglish.com/issues_global.html
- Mayor, M. G. (2007). *Two types of interactional modification and their effect on second language comprehension* (Unpublished master's thesis).
- Medwell, J. et. al (2012). *Primary English: Teaching theory and practice = Achieving QTS linked to the teacher's standards.*
- Miller, E. (2012). Language Development: Theoretical Perspectives. Retrieved March 26, 2017, from <https://www.mindmeister.com/158556180/language-development-theoretical-perspectives>
- Myong, H. (2008). Localizing English-Only Policy at a University English Reading Program in Korea [PDF]. South Korea: The Journal of Asia TEFL.
- Neru, J. (n.d.) Why Should We Read? Retrieved August 10, 2014 <https://www.slideshare.net/BUGLAS/significance-of-reading>
- Palanca, T. (2015, August 27). On Schools and Survival: A look at dropout rates in the Philippines. Retrieved April 02, 2017, from <http://www.gmanetwork.com/news/story/534610/scitech/science/a-look-at-dropout-rates-in-the-philippines>
- Pascual, P. (2016, May 19). Public vs. private vs. charter schools. Retrieved April 02, 2017, from <http://www.greatschools.org/gk/articles/public-private-charter-schools/>
- Quismundo, T. (2012, May 31). CHed: There's gender gap in college, work. Retrieved April 03, 2017, from <http://newsinfo.inquirer.net/204499/ched-theres-gender-gap-in-college-work>
- Ridell, D. (2014) *Teach English as a Foreign Language: Teach Yourself* (New Edition): eBook
- Sebastian, E. L. (2013). *English proficiency I* (2nd ed).
- Shruti. (2015, October 16). Advantages of Sampling over Complete Enumeration in Statistics. Retrieved from

<http://www.economicsdiscussion.net/statistics/sampling/advantages-of-sampling-over-complete-enumeration-in-statistics/11980>

Sofaian, D. (2006). *The Importance of Reading*.

Speak, H. (2015, July 16). Why is communication important to human life? Retrieved March 30, 2017, from <https://www.hopespeak.com/blog/why-is-communication-important-to-human-life-2/>

Stern, C. (2012, January 01). The Listening Skill: Cognitive Processes, the L2 Classroom, and an Authentic Listening Text. Retrieved March 16, 2017, from <http://tesolstudentonline.blogspot.com/2012/06/v-behaviorurldefaultvmlo.html?m=1>

Tanangada, L. O. (2013). A Study of Language use in Secondary school classrooms in the Solomon Islands: Conceptions, Practices, and Proficiencies (Unpublished master's thesis). The University of Waikato.

Theories of Language Development. (n.d.). Retrieved March 16, 2017, from <http://languagedevelopment.tripod.com/id15.html>

Wegman, L. (2016, August 12). 3 Tricks to Improve Your Vocabulary. Retrieved March 16, 2017, from <http://www.quickanddirtytips.com/education/grammar/3-tricks-to-improve-your-vocabulary>

Why English has become the Universal Language of the World. (2014, November 19). Retrieved March 16, 2017, from <https://worldchoice-education-blog.com/2013/08/08/why-english-has-become-the-universal-language-of-the-world/>

Williams, Y. (2015). Cross Tabulation: Definition & Examples. Retrieved June 29, 2018, from <https://study.com/academy/lesson/cross-tabulation-definition-examples-quiz.html>

Wong, R. H. (2010). *The Effectiveness of Using English as the Sole Medium of Instruction in English Classes: Student Responses and Improved English Proficiency* (Unpublished master's thesis). The Hong Kong Institute of Education.

Wyse, D., Wolpert, M. A., Bradford, H., & Jones, R. (2013). *Teaching English, language and literacy*. London: Routledge.

Zaveri, S. (2016, November 04). Laws of Learning: Primary and Secondary | Psychology. Retrieved March 26, 2017, from <http://www.psychologydiscussion.net/learning/learning-theory/laws-of-learning-primary-and-secondary-psychology/2509>

Phenomenological Inquiry on Spirituality of Tarot Readers in Quiapo, Manila

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Abstract

This study aims to comprehend the viewpoint of the Tarot Readers regarding their spirituality aspect. The researchers were able to specify the demographic profile of the participants, their viewpoints about themselves as a Tarot Reader, and how Tarot Reading affects their spiritual aspect. To fully understand and explore the Tarot Readers' spirituality aspect, the researchers made use of phenomenology as a research design and strategies in *Sikolohiyang Pilipino* as a research method. *Pagtatanong-tanong*, *pakikipagkwentuhan*, *pakapa-kapa*, and *pagdalaw-dalaw* were used in this study. Through the use of purposive sampling, six (6) participants from Quiapo, Manila were interviewed in their respective stalls at Plaza Miranda. The researchers found out that the majority of the Tarot Readers that were present in the area are females. These Tarot Readers see themselves as a spiritual medium who are being used by a Higher Being to provide guidance to his people. The participants displayed a deep faith in the Lord as Tarot Reading became a way for them to connect with Him through prayers. In contrast, some of them felt compelled to follow the practices within the religion in order to conform. The researchers recommend to future researchers the use of a full blown *Metodong Sikolohiyang Pilipino* to dig deeper into the participants' experiences as Tarot Readers. Future researchers should also use other research designs like the quantitative method among others to cover a wide range of population and for more conclusive results.

Keywords: Phenomenological Inquiry, Spirituality of Tarot Readers, Quiapo Manila, Sikolohiyang Pilipino, Spiritual Medium, Tarot reading on spiritual aspect

INTRODUCTION

Divination or fortune-telling has been a part of all civilizations. The earliest forms of divination were practiced by the Greeks, Romans, Egyptians, Babylonians, and Chinese. Based Encyclopedia Americana Volume 11, the ancient practice of fortune telling has been condemned by the church since the earliest times of Christianity and more recently has been opposed by Science. It was always associated with demonology and witchcraft as it foretells the future using cryptic methods that even Science cannot explain.

Fortune-telling is very evident in our country. Filipinos are superstitious by nature. Before the Spaniards came and introduced Christianity, Filipino ancestors believed in spirits in the form of *anitos* and have practiced divination through *Babaylans*. Fortune-telling became a part of the Filipino culture and has extended even in the modern times. Astrology and horoscopes can be seen in newspapers, magazines, journals, and in the internet. It has become a practice especially during the New Year as some famous fortune-tellers are invited to appear on the television shows and were asked about their prophecy regarding the incoming year.

Quiapo is the center of religious activities. Quiapo church, adorned with the Black Nazarene, attracts the faithful from all over Metro Manila (Yu, 1981). Fortune tellers reside around Plaza Miranda. They have their own tables, chairs, and a deck of ordinary playing cards as well as tarot cards. They approach anyone in their vicinity to have their fortune told. According to Karl De Mesa in his essay entitled, "Street Magic", in the book "Quiapo: Heart of Manila" published in 2006, "the common methods used by Quiapo's fortune-tellers are tarot decks, ordinary playing cards, numerology, palmistry, crystal balls, automatic writing, automatic sketching, false Ouija boards, face reading, and trance divination (simply closing the eyes, entering a light trance and telling fortunes)." To top all of these fortune-telling methods, the most frequent method that the fortune-tellers use in the area are tarot cards.

The exact origin of Tarot is unknown. It was first known as a card game played in Italy. Tarot cards are generally used by people for divination and at times for focus, while meditating, as they are very effective in meditation, vision, and reading (Dhingra, 2004).

This study aims to comprehend the viewpoint of the Tarot Readers in Quiapo, Manila. This study seeks to find out about how the tarot readers perceive themselves as someone who is able to foretell the

future. It seeks to understand their viewpoint on their spiritual aspect as fortune-telling is often associated with demonology.

METHODOLOGY

This study made use of the qualitative method, particularly phenomenology. Phenomenology is interested in the individual experiences of people. It usually involves long, in-depth interviews with the research participants. Sometimes researchers interview the same participant several times to get a full picture of his experience with the phenomenon (Boyd, 2017). The researchers decided to use this design as the study will revolve around perceptions based on the experiences of the participants themselves. According to Javier Jr., (2012), Filipino Psychology uses phenomenological concepts but puts lesser emphasis on individual experience and greater emphasis on the collective experience.

This study took place at Plaza Miranda, located in Quiapo, Manila. This place is littered with Filipino vendors, peddlers and money-seeking fortune-tellers who tell stories about life in the Philippines in its most naked truth usually tales about constant struggles for survival. Mobs of people flock to this area to have their palms read, their futures foretold, their prayers heard and their sins confessed. This is a venue for spiritual renewal, be it the Catholic way, or, the pagan way (Bustamante, 2011). In addition to this, Quiapo, Manila is currently the center for divination as the place itself is famous for its religious practices and rituals.

Six (6) participants took part in the study. The targeted participants are Tarot Readers in the Quiapo area, particularly in Plaza Miranda. They are selected through the use of purposive sampling. The criteria for selecting these participants are 1) they should be Tarot Readers, 2) they should be practicing the profession at Quiapo, Manila, and 3) they should be at least 5 years in the profession.

The researchers employed *Metodo ng Sikolohiyang Pilipino* (indigenous Filipino method) data gathering techniques such as *pagtatanong-tanong*, *pakikipagkwentuhan*, *pakapa-kapa* and *pagdalaw-dalaw*. *Pagtatanong-tanong* is a Filipino word which means "asking questions". The repetition to *tanong* (question) to *tanong-tanong* indicates apparent casualness when the inquirer is truly determined to get answers to his questions. *Pagtatanong-tanong* is a behavior that Filipinos ordinarily exhibit. Filipinos are used to spending hours chatting and exchanging questions and ideas. Not many Filipinos are exposed to the interview, but definitely, all Filipinos are used to *pagtatanong-tanong*.

Pagtatanong-tanong is sometimes interpreted as an informal interview or at best an “improvisation” that approximates the interview method but, this is not completely correct. Although there are some similarities, *pagtatanong-tanong* is basically different from the interview. Besides, the use of local term *pagtatanong-tanong* highlights the importance of tapping culturally appropriate indigenous research methods without claiming exclusivity to it for the particular culture (Pe-Pua, 1989).

Pakikipagkwentuhan comes from the Spanish term “cuento”, which means “to tell a story”. The researchers sat wit and joined in a story telling or chatting among the participants in order to gather a relatively significant and spontaneous data. *Pakikipagkwentuhan* requires the researcher to motivate the participants to narrate their experiences about an episode or event (Orteza, 1997). Here, the interactions could be between the researcher and a participant or between a researcher and a group of people. Another method is *pagdalaw-dalaw* which means casual but repeated visits (Javier, 2012).

The method of *pakapa-kapa* in Philippine Psychology may be defined as a suppositionless approach to social scientific investigations. As implied by the term itself, *pakapa-kapa* is an approach characterized by groping, searching, and probing into an unsystematized mass of social and cultural data to be able to obtain order, meaning, and directions for research (Torres, 1982).

Data were gathered through semi-structured interviews and informal conversations. Researchers went to the research locale, Quiapo, Manila, and found potential participants. One of the researchers went to her prospective participant and had her fortune told through the Tarot Card method. This served as the aide memoir of the study. During the conversation, the researcher slowly tried to explain to the potential participant the study they are conducting and asked if the individual can be part of the study. Ethical guidelines were given consideration. During the interview sessions, one researcher jotted down notes about gestures and body language as well as important statements from the participants and the other researcher recorded the entire interview session.

After transcribing the interviews, responses were categorized. In line with an existing study that used the method “*Sikolohiyang Pilipino*”, (Castañeda 2015), frequency coding was used to categorize the participants’ statements. Frequency coding is “developing criteria for meaningful units of the response and recording the number of these units in the data”, (Woike, 2007). Similar statements were grouped together and salient themes were generated based primarily on the participants’ responses (Castañeda, 2015). As stated by Castañeda

(2015), this is in keeping with the goal of *Sikolohiyang Pilipino* which is to “generate its own set of hypotheses, theories and body of knowledge” (Pe-Pua & Protacio-Marcelino, 2000).

For validation of the results, the researchers made use of data triangulation. According to Creswell (2014), in order to correctly utilize this method, the researchers should triangulate different data sources of information by examining evidence from the sources and using it to build a coherent justification for themes. If themes are established based on converging several sources of data or perspectives from participants, then this process can be claimed as adding to the validity of the study. Under triangulation, member checking is used to determine the accuracy of the qualitative findings through taking the final report or specific descriptions or themes back to the participants and determining whether these participants feel that they are accurate. This does not mean taking back the raw transcripts to check for accuracy; instead, the researcher takes back parts of the polished or semi-polished product, such as the major findings, the themes, the case analysis, the grounded theory, the cultural description, and so forth. This procedure can involve conducting a follow-up interview with participants in the study and providing an opportunity for them to comment on the findings (Creswell, 2014).

Lastly, peer debriefing is also used in the process of data triangulation. Creswell (2014) added that this enhances the accuracy of the account and this process involves locating a person (a peer debriefer) who reviews and asks questions about the qualitative study so that the account will resonate with people other than the researcher. This strategy—involving an interpretation beyond the researcher and invested in another person—adds validity to an account.

RESULTS AND DISCUSSION

Table 1

Demographic profile of the participants

Participants	Age	Gender	Religion	Yrs. of Experience
A	54	Female	Roman Catholic	17
B	49	Female	Roman Catholic	15
C	76	Female	Roman Catholic	35
D	46	Female	Roman Catholic	26
E	64	Female	Roman Catholic	30+
F	55	Male	Roman Catholic	37

The table presented above includes the participants' demographics which include their age, gender, religion, and years of experience as a Tarot Reader. With the data provided about their demographics, the researchers learned that the age range of the Tarot Readers in Quiapo, Manila lies between 46-76 years old. The gender ratio between female and male is 5:1, in which 5 are females and 1 is male. This evidently shows that women are more active in this field of practice than men. Likewise, this could be interpreted that there are men who are interested in open to this kind of practice. Middle-aged women are more dominant in this field. This can be connected to the existence of *babaylans* during the pre-Hispanic times. *Babaylans* were the fortune tellers and faith healers during that time. According to an article posted by Bagong Pinay (2012), *Babaylans* are led by older women. The participants are all Roman Catholics. According to Miller (2017), 86% of the populations in the Philippines are composed of Roman Catholic. The range of the participants' years of experience as a Tarot Reader is 15-37 years.

Viewpoints about Themselves as a Tarot Reader

Different clusters were identified by the researchers in this subsection. The Summary Tables presented consist of the themes which reflect the viewpoints of the participants about themselves as a Tarot Reader. These clusters were based on the different categories of the participants' responses. The themes that were categorized into different clusters are: Sacred, Spiritualist Medium, Spiritualist Coaching, Filipino Values, Means of Livelihood, and Rationalism.

The sacred cluster refers to the things that are awe inspiring and can be discerned only through extraordinary experiences (Palispis & Sampa, 2015). The participants see themselves as someone who is an instrument of a Supreme Being made to do good deeds to others. Palispis and Sampa (2015) added that this also means that Tarot Readers have the capacity to represent shared values, sentiments, power, or beliefs. The concept of holy and sacred is a mental construct. They are symbols. They all are not visible. They symbolize both the unseen and tangible things. It is a belief based on faith rather than evidence. Although their job is considered as deviant in society, the participants still display a positive outlook on their religion. As one of the participants said:

“Sila Mama Mary, nag-ano muna. Bago ako umupo, parang nag... may mga nagpakita sa akin na mga anghel ganon, kaya siguro anak, guide nila. Kumbaga nandito ako.”

The participant believes that angels appeared to her and they served as a guide when she foretells someone's future. These are the ideas which represent man's conviction about the reality of things and served as explanation to understand existence.

The spiritualist medium cluster pertains to being a channel that is used to relay a message from the Tarot cards to the believers. The participants view themselves as a Medium of communication in relation to the reading of the Tarot cards. As a spiritualist medium, they are the ones who use their psychic talent or intuitive abilities to see the future events in a person's life and relay it to the person himself. Their main job as a Tarot Reader is to read and transmit the message from the tarot card to the client. This is in line with Randi's theory of pareidolia in which all kinds of patterns or images have meanings. For ordinary people, images displayed on the tarot cards may be insignificant but with a spiritualist medium, those images may be associated with different stories. The participants claimed that those ideas regarding their clients' fates were not from their own, but from the tarot card itself. As one of the participants said:

"Oo (nods), hindi anak. Wala kaming, wala sa akin kundi sa kanila (refers to Tarot cards)."

This shows that the Tarot Readers sentiments do not come from their own ideas; instead they are just instruments used to read and relay the message to the person according to the images in the tarot cards.

The third cluster is spiritualist coaching. The participants see themselves as a spiritual coach to their clients who provide advice that the clients believe can help them to resolve their daily troubles in life. Tarot Readers believes that they only serve as a guide to the person. A spiritual coach knows how to help others live happy, fulfilling lives based on the practices that have worked for them.

Many people might confuse spiritual coaches with religious leaders, but these two are very different things. One does not have to be religious to work with a spiritual life coach – one just has to be open to deepening one's connection with the non-physical part of oneself, which is the soul. As one of the participants said:

"Kailangan kasi makuha mo yung problema sa tao, kung paano mo sasabihin sa kanya, explain mo ganun, gagawin mo. Parang ganun..."

This means that the participant only gives advice and direction to solve the problems of the person or to help him decide for his life.

The Filipino Values cluster pertains to the values that the participants have as a Tarot Reader. It also connects to the kind of relationship they have with their clients and other professionals around them (e.g. Priests).

The means of Livelihood cluster refers to the Tarot Readers' way of life in terms of their everyday means of securing their financial needs. The participants have made tarot reading as their main source of income. As one of them said:

"Dito lang naman talaga anak hanapbuhay ko."

In addition to that, another participant said:

"...kung wala silang trabaho, pwede nilang pagkakitaan..."

One participant even taught his family members to have knowledge and skills in fortune telling which could serve as their part-time job.

The last cluster Rationalism pertains to the participants' way of studying the art of Tarot reading. Rationalism is man's belief that by systematic planning, studying and training, he can actively control and manipulate his destiny thus; he is greatly responsible for plotting his own success or failure (Cordero & Panopio, 1969). As a rationalist, they base their actions and belief in their knowledge. According to one of the participants:

"Ay hindi inihahalintulad kasi pinag-aaralan yang hula nakikita sa pamamagitan ng baraha yung mga meaning ng salita na maaaring ihayag sa tao."

Fortune telling is learned, they only foretell the future of the person based on the meanings of the symbols in the cards.

Summary Tables

Cluster 1: Sacred

THEMES	SAMPLE RESPONSES
Belief	<i>"...dahil sa kay Amang Nazareno kaya naging matatag ako."</i>
Inspiration	<i>"Sila Mama Mary, nag-ano muna. Bago ako umupo, parang nag... may mga nagpakita sa akin na mga angel ganon, kaya siguro anak, guide nila. Kumbaga nandito ako."</i>
Wisdom	<i>"Humihingi ako ng karunungan sa Kanya (referring to God) bago ako manghula eh."</i>

Cluster 2: Spiritual Medium

THEMES	SAMPLE RESPONSES
Mana	<i>"...kumbaga parang, talent ba. Talent anak yan eh (looking persuasive)."</i>
Fatalistic Medium	<i>"Ako, nararamdaman ko kasi pagka-naiisip ko siya, nangyayari..."</i> <i>"Oo (nods), hindi anak. Wala kaming, wala sa akin kundi sa kanila (refers to Tarot cards)."</i>
Inheritance	<i>"...namana lang ako sa mother ko, sa lola ko."</i>

Cluster 3: Spiritualist Coaching

THEMES	SAMPLE RESPONSES
Role	<i>"Edi pangkaraniwang tao, hindi naman ako propeta."</i>
Psychological Support	<i>"Guidance lang yung mga taong lumalapit sa amin, kausap ganyan lang (smiles)."</i>

Cluster 4: Filipino Values

THEMES	SAMPLE RESPONSES
Optimistic	<i>"pero ang paniniwala naman namin nakakatulong kami (looks persuasive) ..."</i>
Good Interpersonal Relationship	<i>"Di naman kami naninira sa pari."</i>

Cluster 5: Means of Livelihood

THEMES	SAMPLE RESPONSES
Income	<i>"Dito lang naman talaga anak hanapbuhay ko."</i>
Makeshift	<i>"Pero ano ko lang to, sideline ko lang kasi... (points to her small sari-sari store business)."</i>

Cluster 6: Rationalism

THEME	SAMPLE RESPONSES
Rationalist	<i>"Ay hindi inihalintulad kasi pinag-aralan yang hula nakikita sa pamamagitan ng baraha yung mga meaning ng salita na maaaring ihayag sa tao, kasi itong hulang ito halimbawa pag may nakasama yan na seven may perfect number ka kaya hindi nanggagaling, binabasa lang namin yung ibig sabihin ng baraha."</i>

How Tarot Card Reading affects their Viewpoint on their Spiritual Aspect

The Summary Tables presented consist of the themes that serve as an answer to the question: How does tarot card reading affect the participants' viewpoint regarding their spiritual aspect? These clusters were based on the different categories of the participants' responses. The themes that were categorized into different clusters are Non-Rationalism, Compliance, and Mediate.

The non-rationalism cluster pertains to the belief of the participants in the supremacy of nature and forces outside one's self. Non-rationalism is the emotional side of a person to "regard thoughts, objects, person, and events as sacred or as possessed with peculiar virtues and specific powers". This mental perspective will bring about the acceptance, reverence, and protection of certain traditions and rituals no matter how irrational they seem. As a result passiveness and fatalistic behavior will be evident (Juliano, 1995). A non-rationalist believes in supernatural powers, tradition and rituals. As one of the participant said:

"Ganito ang gawin mo, mag-pray lang ibibigay din ni God yan"

Translated, it means with God's right timing, it will be granted; just keep praying. Another participant said:

"lahat ng bagay natin magagawa natin sa pamamagitan ng Diyos".

This means that we can do all things through God who guides us.

The Compliance cluster refers to the belief of Tarot Readers that they are urged to act in a particular way. Filipinos are considered to be very religious and God-centered. Thus, the religious practices used to demonstrate adoration to have become a norm that people with the same belief or religion follow. Other participants feel that they are just doing their part as a Catholic for the sake of their religious label and their rules within the circle of their profession. This statement is proven as one of the participants said:

“Naniniwalaan ko yung Diyos dahil nakilala ko si Kristo sa pamamagitan ng aking pagkakabinyag, sumasampalataya ako sa kaniya at nagkaroon ako ng paniniwala na Siya ang Diyos”.

This means that the participant believes in the concept of a Supreme Being since she was introduced to this belief ever since she was young. As a result, she is obliged to comply with the practices and beliefs of the Catholic religion. Also, through this, her faith with God has been strengthened.

The last cluster, Mediate specifies that tarot card readers act as a mediator between the client and the Supreme Being. Tarot Readers plead for their needs and the needs of others. The Tarot Reader acts as a person who intercedes on behalf of others. As one of the participants said:

“...pag nagkakaroon ako ng kliyente pinagdadasal ko at nagdarasal kaming dalawa...”

Every time the participant has a client, she prays with her client to God asking for guidance so she could see the client's future.

Summary Tables

Cluster 1: Non-rationalism

THEMES	SAMPLE RESPONSES
God-Centered	<i>“...gina-guide din yung mga taong lumalapit sakin na, yung mga nagpapatulong, na kumbaga gina-guide Niya para matupad ,yun”</i>
Reverence	<i>“Kung nandyan si God, siguro naman anak hindi ibibigay sayo ng mga taong lumalapit sakin na hindi kay God. Binigay ni God yun. Yung nasa isip ko anak pag may taong dumating, kay God yun galing.”</i>
Preaching	<i>“Oo (nods) galing parang guidance lang kami.”</i>
Faith	<i>“Ganito ang gawin, mag-pray lang, ibibigay din ni God yan.”</i>

Cluster 2: Compliance

THEMES	SAMPLE RESPONSES
Justification	<i>“...wala pa naman anak nagrereklamo sa mga nagawa (refers to her clients).”</i>
Faith-by-name	<i>“Hindi (shakes head in disagreement). Simpleng pagdadasal lang kahit nasa bahay ako, yun lang.”</i>
Obliged	<i>“Naniniwalaan ko yung Diyos dahil nakilala ko si Kristo sa pamamagitan ng aking pagkakabinyag, sumasampalataya ako sa Kaniya at nagkakaroon ako ng paniniwala na Siya ang Diyos”</i>

Cluster 3: Mediate

THEMES	SAMPLE RESPONSES
Prayer Intercessor	<i>"Pag nagkakaron ako ng kliyente pinagdadasal ko at nagdarasal kaming dalawa. Humihingi ako ng karunungan para masabi ko sa kanya yung dapat niyang kapalaran sa darating"</i>

CONCLUSIONS

The researchers conclude that middle-aged women are more likely to practice fortune telling specifically, tarot reading. The participants' practice of tarot reading usually starts between the age ranges of 20's to 30's. The practice of tarot reading is evidently dominated by women at the present time, but maybe in a few years' time, there will be an equal number in terms of gender as there are male Tarot Readers today who are paving the way for males in the practice.

The researchers conclude that majority of the participants see themselves as a medium who is being used by a Higher Being to provide guidance to His people. Primarily, this practice is their main source of income and that is the reason why they have ventured into this kind of job. However, based on the participants' responses, they view themselves as someone who can always lend a hand to others who face difficult challenges in life. The Tarot Readers have a good intention in performing this kind of profession. As consulting with psychology professionals is not really practiced in the country, troubled people seek the help that they need from fortune tellers as they find this more convenient. Also, fortune telling has become a part of the Filipino culture. Tarot Readers are also ordinary people but what makes them stand out is their ability to predict the future. They believed that they are chosen by God who can spread the good news and also the bad from him.

Lastly, tarot reading made their faith stronger. Although there were also negative points that were observed and discussed, majority of the participants displayed a much deeper faith in the Lord due to tarot reading. They were able to connect with Him more than before. The Tarot Reader's clients asked them to guide them into the positive and brighter side of life and this was done with the help of prayers and belief in God. The participants sought guidance and strength from a Higher Being for them to continue in their profession. Their proximity to a church (Quiapo church) made them follow His will which is to help people. The researchers added through that this scenario is not the same for everyone as there were participants who believe in God just for the sake of belonging in a certain religion, which is the Roman Catholic. Their

belief in God was not that genuine as they merely complied with the practices within the religion because it's their norm. This is also in line with their profession as a Tarot Reader because some of them believed that their ability was not really a gift from God rather, a skill that was enhanced by them from studying the art of tarot reading.

RECOMMENDATIONS

The study could help in understanding the Tarot Readers' perception and viewpoint in terms of their spiritual aspect although they may be considered deviant by society. The following recommendations are offered to the following sectors that will benefit from this study:

The participants' Fellow Tarot Readers are given the recommendation to maintain their good interpersonal relationship to avoid conflicts and for them to continue the practice without relational problems. Aside from the fellow Tarot Readers, the researchers are encouraging those who want to pursue tarot card reading as their profession to fully understand the practice before starting the profession. The researchers recommend for them to ask someone from the field so that they can maximize their resources.

Believers of the tarot reading, the researchers are not against their belief about tarot reading. If they really feel it is more convenient and feel more comfortable to seek help from Tarot Readers, they may do so. But, the researchers are strongly recommending that if they need in-depth assistance about a serious medical or psychological situation, they need to widen their options and seek help from a professional, such as a psychologist.

Psychological Organizations such as Psychological Association of the Philippines or PAP and *Pambansang Samahan ng Sikolohiyang Pilipino* or PSSP are given the recommendation to maximize their resources with this kind of topics as it is very limited as of now. Also, they should focus on making research outputs and encouraging other researchers in the field of psychology to use the *Sikolohiyang Pilipino* method for it to be more established in the near future.

The Society is given a recommendation to broaden their knowledge about the practice of tarot card reading and not see these fortune tellers as "bad people" who just extort money by playing dirty tricks on vulnerable people. These Tarot Readers are making just enough profit to get by every day. With the help of this study, they will be

able to fully understand the viewpoint of the fortune tellers in Quiapo, Manila.

This research can serve as basis for Future Researchers who want to pursue the same study. They can use a full-blown *Metodo ng Sikolohiyang Pilipino* and dig deeper with the participants' experiences in the Filipino context. It is also recommended to future researchers to use Interpretative Phenomenological Analysis or IPA for a deeper understanding and focus on to the lives of the participants as a whole and not just on one particular aspect. Also, future researchers are recommended to use a different research design such as quantitative research as a counterpart to cover a wide range of population and for more precise results. The researchers also recommend for them to maximize their resources by looking for more studies and literature that will be available in relation to this topic.

REFERENCES

- Abesamis, Jun Todoroki, and Franco, M. (2014). *Society and Culture: A Liberal Approach in Understanding Humanity*. Mutya Publishing House Inc. Pg. 83
- Bermudo, Pedrito, Araojo, A., Morales, M., and Yango, A. (2010). *Research Writing Made Simple*. Mindshapers Co., Inc. Pg. 72
- Callaghan, Jane and Lazard, L., (2011). *Critical Thinking in Psychology: Social Psychology*. Learning Matters Ltd. Pgs. 185-186
- Collier's Encyclopedia. *Fortune Telling*. Volume 10
- Cordero, Felicidad and Panopio, I. (1968). *General Sociology; Focus on the Philippines*. In Juliano, Eduardo Miguel and Velasco, R. (October, 1995). *Why Selected Female Students of DLSU employ the service of fortune teller: Cases and trends*. De La Salle University-Manila.. Pg. 8
- Creswell, John W. 2014. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches 4th Edition*. SAGE Publications Inc. Pgs. 251-252
- De Mesa, Karl. (2006). *Street Magic*. In Nakpil-Zialcita, F., (2006) *Quiapo Heart of Manila*. Cultural Heritage Studies Program. Pgs. 125, 138-143

- Dhingra, Guneeta. (2004). *A Little Book of Tarot*. New Dawn Press.
Pg.7 Encyclopedia Americana. Volume 11
- Hunt, Chester and Horton, P. (1984). Sociology. In Juliano, Eduardo Miguel and Velasco, R. (October, 1995). Why Selected Female Students of DLSU employ the service of fortune teller: Cases and trends. De La Salle University-Manila. Pg. 6
- Javier, Jessie D., Costales, Rodrigo D., & Rivas, Dionisio C. (2002). Introductory Sociology & Anthropology A Pedagogy 1st Edition. Rex Printing Company Inc. Pgs. 96, 109-110
- Johnstone, Michael. (2004). The Ultimate Encyclopedia of Fortune Telling. Arcturus Publishing Limited. Pg. 3
- Leaño, Roman D. (2005). Society and Culture for College Students: A Modular Approach. Mindshapers. Pg. 244
- Licauco, Jaime. (1982). The Psychic World and You. In Juliano, Eduardo Miguel and Velasco, R. (October, 1995). Why Selected Female Students of DLSU employ the service of fortune teller: Cases and trends. De La Salle University-Manila. Pg. 4
- Maquito-Colon, Salvacion. (2002). General Sociology: A Simplified Approach. New Galaxie Litographic Arts & Printing Press
- Palispis, Epitacio S. & Sampa, Elias M. (2015). Introduction to Sociology and Anthropology. Rex Bookstore Inc. Pgs. 61, 144, 242-243, & 251
- Smith, Richard J. (1991). Fortune-Tellers and Philosophers: Divination in Traditional Chinese Society (Westview Special Studies on China). Westview Press. Pg. 11
- The Great Dame. (1980). How to be a Fortune Teller Practices and Technics of Prediction. Pg. 4
- Willig, Carla. (2013). Introducing Qualitative Research in Psychology Third Edition. Open University Press. Pgs 106-107
- Woike, Barbara A. (2007). Content coding of open-ended responses. In R. W. Robinson, R. C. Fraley, & R. F. Krueger (Eds.), Handbook of Research Methods in Personality Psychology. New York, MY: Guilford Press. Pg. 297

Philippine National Police (PNP) image based on the implementation of war on drugs in the selected Barangay in Dasmariñas, Cavite

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Abstract

The implementation of war on drugs has led to the deaths of many Filipinos who are addicted to the prohibited drugs and other addicted substances. Killings of drug addicts have been attributed to the Philippine National Police (PNP) who in one way or another is responsible for maintaining the peace and order and bringing the criminals to justice. The current study determined the image of the PNP based on the implementation of war on drugs in the selected Barangay in the City of Dasmariñas, Cavite. Self-made surveys questionnaires were utilized to gather data from 150 purposively sampled participants of 25 to 50 years of age. Data were analyzed through weighted mean, t-test and Pearson Correlation using Microsoft Excel. The implementation of the war-on-drugs was remarkably high in Salitran I and II. The images such as planting evidence, executioner, contract killing and stealing were not evident before the implementation, however, after the war-on-drug was implemented; the image of the PNP has become evident. The $r = 0.8545$ value means there is an association between the implementation and image of the PNP. Significant difference ($p < 0.05$) was observed between the image of the PNP before and after the implementation of war on drugs in the selected barangay in Dasmariñas, Cavite. The negative images of the PNP were greatly affected by the implementation of the war on drugs in the selected barangay in the City of Dasmariñas, Cavite. The PNP should develop a strong relationship in the community for the proper coordination on the implementation of the war on drugs operation.

Keywords: planting evidence, executioner, contract killing, stealing

INTRODUCTION

Police force is responsible for maintaining peace and order in the society and for bringing the criminals to the justice (Ullah and Akhonzada, 2016). The police consistently do task which is to prevent and control crimes, maintain peace and order ensure public safety and internal security with the active support of the community (PNP Mission). People's perception about police changes with their performance in controlling crimes and providing peaceful environment to the people (Ullah, Hussain and Allam, 2016).

Implementation of war on drugs has led to the deaths of over 12,000 Filipinos to date, mostly urban poor. At least 2,555 of the killings have been attributed to the Philippine National Police (PNP) (Kine, 2017). This statement raises an issue with the image of the PNP and how it was perceived by the community. Further, it became a subject wherein the diverse outlook of the community about the image of the PNP was stained.

In today's current trends, one of the concerns of the police operation is the war on drugs, which leads to a specific course of action of the police force and the creation of the police operations named as Oplan Tokhang, Oplan- Double Barrel Project Tokhang, and Barangay Anti-Drug Abuse Council (Jaena, 2017). This operation became a factor that influence PNP image in public through their own experiences, knowledge, and observation (Ulla & Alam 2016).

Based on systematic survey research, individuals who judge the police as less trustworthy are more likely to steal, speed, and drive under the influence of alcohol or drugs (Tyler 2010), and they are less likely to report crimes, work with the police in community policing activities, or report accidents or suspicious behavior to the police (Sunshine and Tyler 2013). The public holds more positive views of the police than any other justice institution and most public institutions.

The public places play a great importance on respectful and fair treatment in their interactions with the police. The amount of disorder and criminal activity in their neighborhood shapes their views of police performance, whereas personal victimization has little effect. Victims and non-victims do not have significantly different views of police performance in most studies (Roberts and Stalans 2010). Whether the police provided a respectful treatment and took the time to listen to their experience, the case was solved at the response time; it shapes victims' evaluations of the police performances (Roberts and Stalans 2010).

The current study determined the image of PNP based on the implementation of war on drugs in the selected Barangay in the City of Dasmariñas, Cavite.

METHODOLOGY

The study was conducted in the City of Dasmariñas, Cavite. It is composed of 75 Barangay and considered as the most urbanized and developed city in the province of Cavite. Three Barangay were selected as the locale of the study; Salitran I, Salitran II and Burol Main. These were selected due to its limited records on the war-on-drugs operations conducted by the PNP Dasmariñas. One hundred fifty (150) individuals with the age ranged from 25 to 50 years old served as the participants of the study which is divided equally in three Barangay. Self-made survey questionnaires were given to the participants, collected and tabulated using different statistical tools such as weighted mean, T-test and Pearson Correlation in Microsoft Excel.

RESULTS AND DISCUSSION

Table 1 presented the implementation of war on drugs in selected Barangay in the City of Dasmariñas, Cavite. The selected Barangay participated in the survey showed an overall weighted mean of $3.41 > 3.36 > 2.66$ arranged in descending order with Salitran 2 as the highest and Burol Main as the lowest. Though the results falls on the decreasing order, all the weighted mean falls on the ranged of $3.26 - 4.00$ with a descriptive interpretation of "Highly Implemented (HI)" except in Burol Main which is "Implemented (I)". This means that the selected Barangay that participated in the survey believed that the war on drugs was implemented in accordance with the procedure of the Philippine National Police (PNP).

However, in Barangay Burol Main, three indicators ranged from $1.76 - 2.50$ and recorded as "Rarely Implemented" showing a mean of 2.07 and 2.09 respectively. These results implied that during the implementation of the war on drugs in the selected Barangay, there were unavoidable incidents that happened resulting into unwanted situations. This finding was supported by Gatchalian (2017) that during the drug operations, there are instances that the suspect neither tried to escape nor repelled.

Table 1

The implementation of war-on-drugs in selected Barangay in the City of Dasmariñas, Cavite

	Statements/Indicators	Selected Barangay			Overall Mean
		Salitran I mean	Salitran 2 mean	Burol Main mean	
1	The Police Officers are in full uniform when conducting Oplan Tokhang or subject visitation.	3.57	3.32	3.01	3.300
2	The Visitation is done in coordination with the local Barangay officials to ensure the safety and peace of mind of the subject.	3.45	3.32	3.01	3.260
3	The visitation is conducted during daytime to minimize the danger of miscommunication, misunderstanding, or misapprehension between the subject and the police officer.	3.24	3.39	3.00	3.210
4	The approach of the police officer is courteous and non-aggressive manner to emphasize that the subject of the visitation is to talk to the subject, not to arrest or subject him or her to any coercive action.	3.45	3.28	3.01	3.247
5	If the subject refuses to talk, he or she cannot be compelled to do so nor can the police enter the premises of the subjects' home without any search warrant or probable cause to justify a warrantless entry.	3.23	3.44	3.02	3.230
6	No aggressive or coercive actions or statements should be taken or made against the subject at the time of visitation.	3.21	3.54	2.07	2.940
7	If the subject wishes to surrender as drug dependent or drug pusher, he or she shall be referred to the nearest police station for further interview and the subject must be assisted by independent counsel, preferably of his or her own choice.	3.36	3.46	2.09	2.970
8	The safety and security of the subject and his rights under the law is protected and respected in full.	3.35	3.52	2.09	2.987
Overall Mean:		3.3575	3.40875	2.6625	3.143
<i>Legend: 4.00-3.26 Highly Implemented</i>		<i>3.25-2.26 Implemented</i>			
<i>2.25-1.76 Rarely Implemented</i>		<i>1.75-1.00 Not Implemented</i>			

The results further concluded that media television and the issue regarding public anger due to killings that have victimized several children and teenagers greatly affects the implementation of war on

drugs in the selected Barangay in the City of Dasmariñas, Cavite. Palatino (2017) reported that the implementation of war on drugs gained approval from the community. The war on drug campaign was a big help for the Philippine National Police (PNP) as they received support from the society. With this implementation of war on drugs in selected Barangay in the City of Dasmariñas, Cavite, the understanding of the community regarding drug operations would be significant to preserved sovereignty and integrity to defend the lives and aspirations of the peaceful citizens (De Guzman, 2017).

Table 2

The image of Philippine National Police before the implementation of war on drugs as perceived by the participants in the selected Barangay in the City of Dasmariñas, Cavite

Image of PNP	BARANGAY					
	Salitran I		Salitran II		Buroi Main	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
Planting Evidence	1.17	Not Evident	1.30	Not Evident	1.48	Not Evident
Executioner	1.33	Not Evident	1.31	Not Evident	1.44	Not Evident
Contract Killing	1.35	Not Evident	1.11	Not Evident	1.57	Not Evident
Stealing	1.48	Not Evident	1.00	Not Evident	1.41	Not Evident
Overall Mean:	1.33	Not Evident	1.18	Not Evident	1.48	Not Evident
Legend: 4.00-3.26 Highly Implemented			3.25-2.26 Implemented			
2.25-1.76 Rarely Implemented			1.75-1.00 Not Implemented			

Presented in Table 2 were the perceived images of the Philippine National Police (PNP) before the implementation of the war on drugs in selected Barangay in the City of Dasmariñas, Cavite. The negative images of the Philippine National Police (PNP) before the implementation of war on drugs were not evident in the surveyed selected Barangay with an overall mean of 1.48 > 1.33 > 1.48 with Buroi Main recorded the highest while Salitarn 2 recorded the lowest.

The results signified that before the implementation of the war on drug operations in the selected Barangay of Dasmariñas, Cavite, it appears that the community trusted the PNP to serve and protect the people. These results agreed with Abuyan, (2014) who stated that the community relies upon the police to serve and protect the people and in return police rely upon the community’s support and cooperation. He

further added that a good relationship with the community will help to obtain their trust and loyalty.

Several literatures supported the results of this study. Wetendorf and Davis (2015) once mentioned that the police who initiated and uphold the law are the “good guys” while Skogan (2006) added that the police are central to effective law enforcement efforts and their image were being measured based on the public trust. Ullah and Akhunzada (2016) further supported that police force is responsible for maintaining peace and order in the society, prevent and control crimes and ensure public safety and internal security with the active support of the community.

Table 2.1

The image of Philippine National Police before and after the implementation of war on drugs as perceived by the participants in the selected Barangay in the City of Dasmariñas, Cavite

Image of PNP		BARANGAY					
		Salitran I		Salitran II		Buroi Main	
		before	after	before	after	before	after
A	Planting Evidence	1.17	3.43	1.30	3.23	1.48	3.12
B	Executioner	1.33	3.20	1.31	3.43	1.44	3.00
C	Contract Killing	1.35	3.12	1.11	3.40	1.57	3.30
D	Stealing	1.48	3.11	1.00	3.12	1.41	3.20
Overall Mean :		1.33	3.22	1.18	3.30	1.48	3.16
Legend: 4.00-3.26 Highly Implemented		3.25-2.26 Implemented					
2.25-1.76 Rarely Implemented		1.75-1.00 Not Implemented					

Table 2.1 presented a remarkable change on the negative images of the Philippine National Police (PNP) before and after the implementation of war on drugs in the surveyed selected Barangay with an overall mean of 3.30 > 3.22 > 3.16 with Salitran 2 recorded the highest while Buroi Main recorded the lowest. The results exemplified that the implementation of the war on drugs has a sensational effect on the community. It further suggests that policemen were no longer a protector of the people but rather someone who cannot be trusted. The results were also conclusive to support the notion in the community during the survey that there were civilians killed because of drug-related cases and that they suspected a police officer wearing a civilian outfit.

Pazzibugan (2018) noted that there were reports from an officer that confirmed rumors that the police were behind the killings and were paid to kill suspects in a campaign aimed mostly at the poor. In a report, PDG Dela Rosa admitted that PNP suffered tainted image because of the killings in war on drugs and the involvement of policemen in criminal activities (Talabong, 2018). Talabong (2018) further added that the acts resulted in distrust of the community to the PNP.

Several literatures cited supported the findings of the study such as Rayner (2017) and Gonzales (2017) who found out that several policemen falsely acting self-defense to kill the suspected drug dealer, planting evidences after the shooting in an effort to incriminate the targeted individual and involved in contract killing.

Table 3

Relationship between the implementation of war on drugs and the image of PNP after the implementation of war on drugs in the selected Barangay in the city of Dasmariñas, Cavite

	mean	std dev	r-value	Relationship	Decision
War-on-Drugs Implementation	3.14	0.419325	0.8544858	high correlation	Reject Ho ₁ ; Accept Ha ₁
PNP Image After the Implementation	3.23	0.070238			

The relationship between the implementation of war on drugs and the image of the Philippine National Police after the implementation of war on drugs in the surveyed selected Barangay in the City of Dasmariñas, Cavite revealed that there is a high correlation between the the implementation and image of PNP after the implementation of war on drugs with a Pearson correlation value of 0.873. The results accorded with the remarkable shift in the image of PNP before and after the implementation of war on drugs in the selected Barangay. The results further suggest that as the implementation of war on drugs heightened, the image of PNP becomes more negative and negative. Meanwhile, the p-value of 0.004 ($p<0.05$) supported that correlation is significant at 0.01 level.

The researchers analyzed further the data gathered and determined the significant difference between the image of Philippine

National Police before and after the implementation of war on drugs in the surveyed selected Barangay in the City of Dasmariñas, Cavite.

Table 4

Difference on the image of PNP before and after the implementation of war on drugs in the selected Barangay in the city of Dasmariñas, Cavite

Barangay	Implementation	Mean	std dev	p-value	significance
Salitran 1	Before	1.33	0.1271154	0.000801	significant
	After	3.22	0.1488847		
Salitran 2	Before	1.18	0.1512173	9.23E-05	significant
	After	3.30	0.1461734		
BuroI Main	Before	1.48	0.0695222	5.97E-05	significant
	After	3.16	0.1268858		

The results revealed that there is a significant difference ($p>0.05$) between the implementation of war on drugs before and after the implementation, with a p-value of 3.07553E-05 on the selected Barangay in the City of Dasmariñas, Cavite as presented in Table 4. These results suggest that the image of the Philippine National Police was greatly affected by the implementation of war on drugs and the associated killings and crimes during the pursuit of the operations. Moreover, the negative image of the PNP as presented in this study was only after the implementation of war on drugs.

Several studies reported that the image of the PNP was stained only by recent killings of scalawags (Sarmiento, 2017). Roberts and Stalan (2010) also reported that people were becoming distrustful to the police especially those belonging in the minority group. Amidst the crisis on the image of the PNP, PDG Dela Rosa encourages the PNP to bring back the good image of the PNP and continue to serve people with loyalty.

The findings of the study encouraged the Philippine National Police to reflect on the implementation of the war on drugs and image it brought to the entire police force. It is proper that peace and order in the society is maintained as long as there is an integrity and dignity in keeping the orderliness. Based on the findings of the study, the image of the PNP is now compromised due to misunderstanding or perhaps miscommunication in the implementation of the war on drugs.

CONCLUSION

Based on the results of the study, war on drug was highly implemented in the Barangay Salitran 1 and Salitran II in the City of Dasmariñas, Cavite. These implementations greatly affect the image of the Philippine National Police (PNP). The negative images of the PNP before the implementation of war on drugs in the selected Barangay in the City of Dasmariñas, Cavite was not evident. However, the results revealed that after the implementation of war on drugs in the selected Barangay, the negative images of the PNP were highly evident in Salitran II and evident on Salitan I and Burol Main.

The result further shows that there is a significant relationship between the implementation of the war on drugs and the negative images of the PNP after the implementation of war on drugs on the selected barangay. Moreover, there is a significant difference on the image of the PNP before and after the implementation of war on drugs in the selected Barangay in the City of Dasmariñas, Cavite.

RECOMMENDATION

From the findings and conclusion presented, this study recommends that the results of this study served as the baseline information for the local government officials to be aware of the negative images brought about by the war on drugs operation. This study also reaches out the PNP officials and officers to develop strong relationships in the community. For the criminology students, the results will help them to become more sensitive on the issues relating to drugs operations, therefore suggesting open-mindedness on the possible images of the PNP.

REFERENCES

- Abuyan (2014) Police-Community Relations. Retrieved from:
<http://www.angelfire.com/biz4/stopvarriowar/Police-Community-Relations-2010.pdf>
- Carmela Fonbuena (2017) Understanding public support for Duterte's drugs war. Retrieved from:
<https://www.rappler.com/thought-leaders/166092-philippines-drugs-war-pulse-sws-public-perception>

Cecile Suerte Felipe (2008) 2008 better than last year – PNP chief. Retrieved from:
<https://www.philstar.com/headlines/2008/12/19/424866/2008-better-last-year-pnp-chief>

Command Memorandum Circular No.16 (2016, July 1) PNP ANTI-ILLEGAL DRUGS CAMPAIGN PLAN - PROJECT: "DOUBLE BARREL". Retrieved from:
<https://didm.pnp.gov.ph/Command%20Memorandum%20Circulars/CMC%202016-16%20PNP%20ANTI-ILLEGAL%20DRUGS%20CAMPAIGN%20PLAN%20%E2%80%93%20PROJECT%20DOUBLE%20BARREL.pdf>

Diane Wetendorf and Dottie L. Davis (2015) The Misuse of Police Powers in Officer-Involved Domestic Violence. Retrieved from:
http://www.abuseofpower.info/Wetendorf_Misuse2015.pdf

Felipe Calderon (2016) Narco-Terrorism. Retrieved from:
<http://www.dtic.mil/dtic/tr/fulltext/u2/a530126.pdf>

Gatchalian, Win (2017) PNP Urged: Remove rouge cops. Retrieved from
<https://www.pressreader.com/philippines/manila-bulletin/20170828/281487866480452>

Gonzales and Cabigao Jr (2016) WAR ON DRUGS: The Unheard Stories. Retrieved from:
<http://news.abs-cbn.com/war-on-drugs/part4>

Huang and Vaughn (2006) The Encyclopedia of Police Science Third Edition Retrieved from:
<https://books.google.com.ph/books?id=HIE>

Jaena (2017) PNP OPLAN - DOUBLE BARREL PROJECT TOKHANG. Retrieved from:
<http://www.calambamisocc.gov.ph/index.php/home/directory-mainmenu-90/moelci-i-mainmenu-198/60-capital-outlay/411-pnp-oplan-tokhang>

Jun M. Sarmiento (2017) Legarda Encourages PNP to restore public trust. Retrieved from:
<http://www.sunstar.com.ph/article/165311/>

Radalet and Carter (2010) (Poor Police-Community Relations) Retrieved from:
http://samples.jbpub.com/9780763771386/Ross_71386_CH08_115_130.pdf

Sarah Soliven De Guzman (2017) WAR ON DRUGS.
Retrieved from:
<https://www.pressreader.com/philippines/the-philippine-star/20170904/281621010480528>

Sunshine and Tyler (2013) COMMUNITY ATTITUDES
TOWARD THE POLICE. Retrieve from:
<http://what-when-how.com/police-science/community-attitudes-toward-the-police/>

Wesley G. Skogan (2006) Efficiency and Effectiveness in
Big City Police Departments. Retrieved from:
http://www.skogan.org/files/Efficiency_and_Effectiveness_in_Big-City_Police_Departments.pdf

Custom-made Bite-aligning Mouth Guards on Increasing Strength and Power using One Repetition Maximum Back Squat and Vertical Jump for Male Collegiate Basketball Athletes in a Tertiary School in Manila

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Abstract

This study is an experimental research that was conducted to determine the use of custom-made bite-aligning mouth guards that will aid on increasing strength and power using One Repetition Maximum (1 RM) Back Squat and Countermovement vertical jump for male collegiate basketball athletes in a tertiary school in Manila. The subjects (n=15) were divided into groups A (n=8) and B (n=7). On the first day, group A (n = 8) was scheduled to perform pre-test and post-test of 1RM back squat while group B (n = 7) was to perform pre-test and post-test of countermovement vertical jump. On the second day, group A (n = 8) was to perform pre-test and post-test of countermovement vertical jump, while group B (n = 7) for pre-test and post-test of 1RM back squat. The locality is at Emilio Aguinaldo College Sports Physical Therapy and Performance Center with a total of 15 participants. Mann-Whitney U test, a non-parametric test, was utilized and analyzed then interpreted by the researchers and statistician; the study was un-blinded; both the researchers and the respondents were knowledgeable regarding the intervention in order to avoid incorrect usage of the mouth guard. The study was implemented for two days in the afternoon only. The results show that there is a significant increase on muscle strength and power when using custom-made bite-aligning mouth guard after comparing their pre-test and post-test. One (1) RM Back Squat with a p-value of 0.001, countermovement vertical jump with a p-value of < 0.001, 95% Confidence Interval. Thus, the researchers accepted the alternative hypothesis H_a . The results indicate that the use of custom-made bite-aligning mouth guards aids in enhancing an athlete's 1RM back squat and countermovement vertical jump.

Keywords: Mouth Guard, 1RM, Athletes, Athletics, Physical Therapy

INTRODUCTION

The use of mouth guards was first recorded back in 1890 when a dentist from London, Dr. Wolf Krause, developed it specifically for boxers to prevent them from getting debilitating lip lacerations. Since then, the use of mouth guards has flourished and is now being used in all types of contact sports or physical activities. Today, the American Dental Association recommends the use of mouth guards in sports in which collision or contact is likely to occur. Though originally designed to prevent sport-related injuries to the teeth, mouth, tongue and jaw, research has shown that mouth guards also have the capacity to do more than just effectively protect athletes from injuries. Besides minimizing the risks for maxillofacial injuries, a number of evidences showing the influence of mouth guards on enhancing physical performance via concurrent activation potentiation (CAP) have garnered the interests of many researchers. As a result, a number of studies have been conducted to prove the effects of mouth guards on an athlete's physical performance.

Greater muscular strength is strongly associated with improved force-time characteristics that contribute to an athlete's overall performance. Sport scientists and practitioners may monitor an individual's strength characteristics using isometric, dynamic, and reactive strength tests and variables (Suchomel et al., 2016). The one repetition maximum (1RM) test is considered the gold standard for assessing muscle strength in non-laboratory situations (Levinger et al., 2009). It is defined as the maximal weight that can be lifted once with correct lifting technique, is comparatively simple and requires relatively inexpensive non-laboratory equipment (Kraemer et al., 2006). A standardized 1RM testing protocol with a short warm-up and familiarization period is a reliable measurement to assess muscle strength changes regardless of muscle group location or gender (Dong-il et al., 2012). A study by Tagesson and Kvist (2007) reported the reliability of 1RM testing on squat and knee extension, with all studies reporting that each 1RM test was reliable. Another study by Dong-il (2012) examined the reliability of 1RM testing on upper and lower body and large and small muscle groups in both males and females. The results suggested that coaches and clinicians can utilize the 1RM testing to reliably monitor the progress of muscle strength in healthy men and women. It is important for the 1RM to be a reliable measurement due to the wide use of 1RM testing. Major exercises such as the bench press and squat have been shown to be reliable measurements for 1RM testing (Flansbjerg and Lexell, 2010; Levinger et al., 2009; Tagesson and Kvist, 2007). Additionally, vertical jump (VJ) height is one of the most sensitive measures to quantify training-related fatigue and athletic

performance in elite athletes (Loturco et al., 2017). It is a commonly used field test to evaluate an athlete's lower body power output because it is easy to administer and closely resembles sport specific activity (Peeni, 2007).

Basketball, an undoubtedly adored sport in the Philippines, is one of the most widely recognized contact sports as of today. The sport is deeply embedded in the Filipino culture, and the obvious obsession for it can be seen everywhere in the country. Over the years, the passion for the said sport has grown steadily. With that growth, the incidence of injuries has also increased, subsequently leading to the development of various protective equipments such as braces, ankle supports, and mouth guards.

On account of the fact that collegiate athletes, especially those who participate in contact sports, rarely use mouth guards despite its proven benefits, a large emphasis is placed on the use of the said protective equipment in this study. Considering the Filipinos' love for basketball and its steady popularity in the Philippines, the researchers have deemed it necessary to conduct this study with collegiate basketball athletes as the only target population.

The researchers conducted this study with the purpose of determining the positive influence of mouth guards in enhancing an athlete's lower extremity strength and power, using the gold standard for assessing muscular strength which is the 1RM test specifically measuring back squat as well as vertical jump height for assessing lower extremity power.

METHODOLOGY

The researchers used a one-group pre-test–post-test method. The basic premise behind the pre-test–post-test design involves obtaining a pre-test measure of the outcome of interest prior to administering some treatment, followed by a post-test on the same measure after treatment occurs (Salkind, 2010).

The researchers performed the study at the Emilio Aguinaldo College - Sports Physical Therapy Performance Center (EAC-SPTPC) considering the center is equipped with all the necessary facilities and equipment needed in the study.

The respondents of this study are 15 athletes were purposively selected from the identified center which were deemed qualified based on a specific eligibility criteria.

The instrument used was 1RM Testing Protocol, which was utilized to assess an athlete's back squat. Two-dimensional videography of motion in the frontal plane using one camera (Go-Pro) with a frequency of 120 fps and 720p video resolution was used in the study to assess countermovement vertical jump. Furthermore, the video assessment was digitalized using Kinovea 0.8.15. Custom-made bite-aligning mouth guards were utilized instead of store-bought, over-the-counter ones for optimal results. The mouth guards, which were manufactured by a professional dentist, are made of thermoplastic silicon, a mixture of plastics and rubber. The mouth guards used in the study can only last up to a year as stated by the dentist.

The subjects were given their scheduled dental appointments for dental clearance and mouth guard fitting. An impression of their teeth was using dental putty creating an exact mold of their teeth. After receiving all 15 mouth guards, the researchers scheduled the implementation dates.

The study was implemented for two afternoons. For the implementation schedules, the athletes (n=15) were divided into groups A (n=8) and B (n=7). On the first day, group A was scheduled to perform pre-test and post-test of 1RM back squat while group B was to perform pre-test and post-test of countermovement VJ. On the second day, group A was to perform pre-test and post-test of countermovement VJ, while group B for pre-test and post-test of 1RM back squat. Before beginning the pre-test of both 1RM back squat and countermovement VJ, all athletes were instructed to perform a 10-minute-warm up. After performing the pre-test, 4 minute-rest was given to the athletes prior to beginning the post-test. The athletes were then instructed to forcefully clench their teeth while wearing their respective mouth guards during performance of both 1RM back squat and countermovement VJ to complete the post-test. Afterwards, they were instructed to perform cool down exercises for 5 minutes.

The respondents were given an informed consent form which was also thoroughly discussed and includes risks and benefits of the study. The respondents may inform the researchers if they wish to discontinue anytime. The study was approved by the Chair of the EAC-C Institutional Ethics Review Board.

Data was analyzed using descriptive statistics such as mean and standard deviation. Non-parametric statistics in the form of Mann-

Whitney U Test was utilized since the sampling was purposive and the sample size was small.

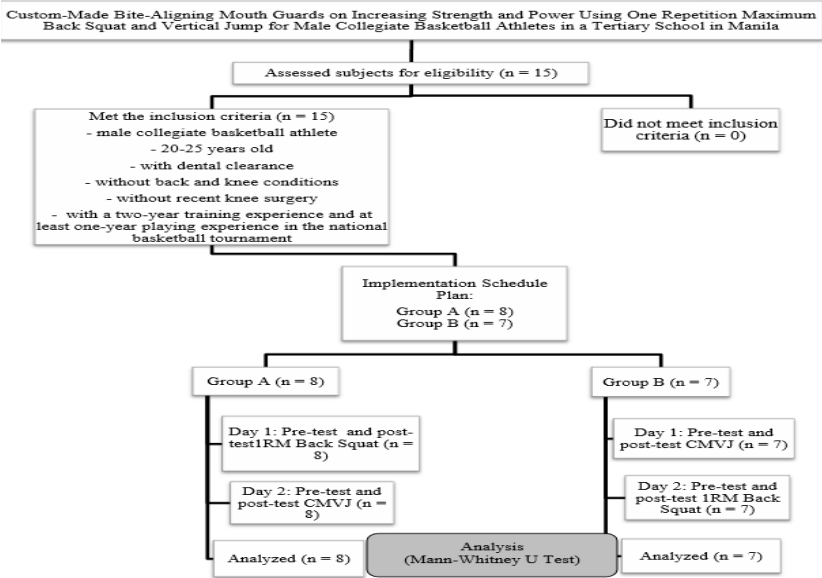


Figure 1.3. Flow diagram outlining the progress of the study.

RESULTS AND DISCUSSION

Table 1

Demographic profile of the respondents as to age

Age	Frequency	Percentage	Rank
20	5	33.33%	1
21	3	20%	3
22	4	26.67%	2
23	2	13.33%	4
24	1	6.67%	5
25	0	0	0

Table 1 shows that most of the subjects are 20 years old with a frequency of 5 (33.33 %) ranked first, 4 of the subjects are (26.67%) 22 years old thus ranked second, 3 of the subjects (20%) ranked third are 21 years old, 2 (13.33 %) are 23-year-olds and ranked fourth, and lastly, a frequency of 1 (6.67 %) and ranking of five was shown for 24-year-olds.

Table 2

Demographic profile of the respondents as to weight

Weight (kg)	Frequency	Percentage	Rank
50-59	0	0.00%	0
60-69	1	7%	4
70-79	7	46.67%	1
80-89	5	33.33%	2
90-99	2	13.33%	3

Table 2 shows that 7 of the subjects (46.67%) weighed 70-79kg ranking first, 5 of them (33.33%) weighed 80-89kg ranking second, while 2 of the subjects (13.33%) weighed 90-99kg ranking third, and only 1 (6.67%) weighed 60-69kg.

Table 3

Demographic profile of the respondents as to height

Height (in.)	Frequency	Percentage	Rank
60 in.-64 in.	2	13.33%	3
65 in.-69 in.	4	27%	2
70 in.-74 in.	8	53.33%	1
75 in.-79 in.	1	6.67%	4

Table 3 shows that most of the subjects have a height between 70-74 in. (53.33%) with a frequency of 8 ranking first, 4 of the subjects are between 65-69 in. (26.67%) ranking second, 2 of the subjects are between 60-64 in. (13.33%) ranking third while only 1 subject has a height between 75-79 in. (6.67%) ranking fourth.

Table 4

Results of pre-test and post-test using custom-made mouth guards in enhancing 1 repetition maximum back squat

Variable	Mean	Std. deviation	P value	Interpretation
Pre-Test1RM Back Squat	100	13.587	0.001	Significant
Post-Test 1RM Back Squat	114.286	15.549		

Table 4 shows that the computed p-value is lower than the significance level $\alpha=0.05$. It shows the confidence interval of 95%. Hence, the decision is to accept the alternative hypothesis H_a . The results indicate that the use of custom-made bite-aligning mouth guards aids in enhancing an athlete's 1RM back squat.

Table 5

Results of pre-test and post-test using custom-made mouth guards in enhancing countermovement vertical jump

Variable	Mean	Std. deviation	P value	Interpretation
Pre-Test CMVJ				
Post Test CMVJ	59.714	1.204	<0.001	Significant

Table 5 shows that computed p-value is lower than the significance level $\alpha=0.05$. It shows the confidence interval of 95%. Hence, the decision is to accept the alternative hypothesis H_a . The results indicate that the use of custom-made bite-aligning mouth guards aids in enhancing an athlete's countermovement VJ.

CONCLUSIONS

The study concluded the following results:

Custom-made bite-aligning mouth guards can aid in increasing lower extremity strength and power and improving athletic or physical performance as it can aid in increasing an athlete's back squat and VJ.

The computed p-value is lower than the significance level $\alpha=0.05$. The result shows that the use of custom-made bite-aligning mouth guards aids in enhancing an athlete's 1RM back squat, indicating an increase in lower extremity strength.

The computed p-value is lower than the significance level $\alpha=0.05$ for the pre-test and post-test of countermovement vertical jump. This shows that custom-made bite-aligning mouth guards aid in enhancing an athlete's countermovement VJ, indicating an increase in lower extremity power.

It has been concluded that the use of custom-made bite-aligning mouth guards aids in enhancing an athlete's 1RM back squat, indicating an increase in lower extremity strength and aid in enhancing an athlete's countermovement vertical jumps, indicating an increase in lower extremity power.

Allen et al. (2017) stated that regardless of the presence or type of mouthpiece used, maximum jaw clenching has an ergogenic effect for force production capabilities, specifically in recreationally resistance-trained men during an isometric exercise. These findings are consistent with previously published research examining the effects of RVCs such as jaw clenching on various force production measures.

Another study by Busca et al. (2015) revealed benefits of clenching customized mouthpieces on force and power development. It stated that CAP promoted in jaw clenching seems to enhance the muscular strength and power in maximal isometric contractions and powerful actions in sport. Moreover, a bite-aligning mouthpiece may promote a more aligned and powerful clench. It showed the positive jaw-

clenching effects of wearing a customized bite-aligning mouthpiece on jump ability and isometric maximal strength tests.

Several limitations were noted in this study; first the sample size was small for a clinical trial which could hinder the generalizability of the results; second, availability of respondents was a major factor in the limitation of this study; and likewise only back squat and VJ was explored further limited by the use of only one camera.

RECOMMENDATIONS

Future researchers could focus on other outcome measures or assessment tools besides 1RM back squat and counter movement VJ to maximize the effectiveness of custom-made mouth guards.

Athletes in different fields of sports should also be considered as target populations considering that mouth guards are not only for basketball athletes.

Furthermore, given that there are still very few studies with female subjects, female athletes should be considered as subjects.

A larger sample size is recommended for the next study to be conducted so as to identify better the effects and for improved data analysis.

For the assessment of vertical jump using Kinovea, it is highly recommended that three cameras are utilized instead of one camera only. This is to obtain more precise results.

Although the study has limited generalizability, it could be a basis of several studies that will further prove the significance of mouth guards applied to strength and power development in Physical Therapy practice.

REFERENCES

- Allen, CR, Fu, Y-C, Cazas-Moreno, V, Valliant, MW, Gdovin, JR, Williams, CC, and Garner, JC (2018). Effects of jaw clenching and jaw alignment mouthpiece use on force production during vertical jump and isometric clean pull.
- Allen, C, Fu, Y-C, Garner, J. (2016). The Effects of a self-adapted, jaw

repositioning mouthpiece and jaw clenching on muscle activity during vertical jump and isometric clean pull performance

American Dental Association. <https://www.ada.org/>

Busca, B, Morales, J, Garcia, M, Solana-Tramunt, M, (2015). Effects of jaw clenching while wearing a customized bite-aligning mouthpiece on strength in healthy young men. *J Strength Cond Res*

Comfort P, McMahon JJ (2015). Reliability of maximal back squat and power clean performances in inexperienced athletes. *J Strength Cond Res*. 29(11):3089-96

Cormack, S, Newton, R, McGuigan, M , Doyle, T (2008). Reliability of measures obtained during single and repeated countermovement jumps. 3(2): 131-144

Dong-il, S, Eonho, K, Fahs, C., Rossow, L, Young, K. et al. (2012). reliability of the one-repetition maximum test based on muscle group and gender. *J Sports Sci Med* 11(2): 221–225

Dunn-Lewis, C, Luk, H-Y, Comstock, BA, Szivak, TK, Hooper, DR, Kupchak, BR, Watts, AM, Putney, BJ, Hydren, JR, Volek, JS, Denegar, CR, and Kraemer, WJ (2012). The effects of a customized over-the-counter mouth guard on neuromuscular force and power production in trained men and women. *J Strength Cond Res* 26(4): 1085-1093

Ebben WP, Petushek EJ, Mckenzie LF, Garceau LR (2010). EMG analysis of concurrent activation potentiation. *Med Sci Sports Exerc* 42: 556–562

Ebben WP (2006). A brief review of concurrent activation potentiation: Theoretical and practical constructs. *J Strength Cond Res* 20: 985–991

Ebben WP, Flanagan EP, Jensen RL (2008). Jaw clenching results in concurrent activation potentiation during the countermovement jump. *J Strength Cond Res* 22: 1850–1855

Flansbjerg U.B., Lexell J.(2010) Reliability of knee extensor and flexor

muscle strength measurements in persons with late effects of polio. *Journal of Rehabilitation Medicine* 42, 588-592

G. Gregory Haff & N. Travis Triplett. *Essentials of strength training and conditioning*, Fourth Edition. Human Kinetics, November 16, 2015. Print.

Golem, DL, and Arent, SM (2015). Effects of over-the-counter jaw-repositioning mouth guards on dynamic balance, flexibility, agility, strength, and power in college-aged male athletes. *J strength Cond Res* 29(2): 500-512

Golem, DL, Arent, SM, McKenna, J (2010). Effects of a neuromuscular dentistry-designed mouthguard on muscular endurance and anaerobic power.

Hayes L.D., Bickerstaff G.F., Baker J.S. (2010) Interactions of cortisol, testosterone, and resistance training: influence of circadian rhythms.

Küusmaa, M, Schumann, M, Sedliak, M, Kraemer, W, Newton, R, et al. (2016). Effects of morning versus evening combined strength and endurance training on physical performance, muscle hypertrophy, and serum hormone concentrations. *Applied Physiology, Nutrition, and Metabolism*, 41(12): 1285-1294,

Loturco, I, Pereira, LA, Kobal, R, Kitamura, K, Cal Abad, CC, Marques, G, Guerriero, A, Moraes, JE, and Nakamura, FY (2017). Validity and usability of a new system for measuring and monitoring variations in vertical jump performance. *J Strength Cond Res* 31(9): 2579-2585

Moir, G, Shastri, P, and Connaboy, C (2008). Intersession reliability of vertical jump height in women and men. *J Strength Cond Res* 22(6): 1779-1784

Nor Muaza Nor Adnan et al. (2018). Biomechanical analysis using Kinovea for sports application. *IOP Conf. Ser.: Mater. Sci. Eng.* 342 012097

Peeni, MH (2007). The effects of the front squat and back squat on vertical jump and lower body power index of division 1 male volleyball players. *All Theses and Dissertations*. 930.

Suchomel, TJ, Nimphius, S, Stone, MH (2016).The importance of muscular strength in athletic performance. Sports Med. Oct;46(10):1419-49

Tagesson S.K., Kvist J.(2007) Intra- and interrater reliability of the establishment of one repetition maximum on squat and seated knee extension. Journal of Strength and Conditioning Research 21 (3), 801-807

Screencast: A Tool for Augmenting Assimilated Learning Environment for Selected Grade 11 Students of Emilio Aguinaldo College-Cavite

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Abstract

Screencast presents a digital recorded playback of video narration of actual lecture. The efficacy of modern Educational Technology is determined in this study. The Oral Communication class of Grade 11 students with a topic —Types of Speech Delivery” was chosen. They are randomly selected (n=46) both controlled (n=21) and experimental (n=25) groups were given a content validated test with .718 Cronbach alpha of test reliability. Interventions were applied in traditional and screencast method. Results showed that there is no significant difference between the pre test scores (Mean=9.62; SD=2.27) and the post test scores (Mean=10.52; SD=3.33) of the control group, $t(20)=-1.245, p=.228$. While the pre test scores (Mean=10.72; SD=3.79) of the experimental group are significantly different from its post test scores (Mean=13.92; SD=3.30), $t(3.46)=-3.890, p=.001$. Hence, there is a significant gained in the scores of the experimental group after the intervention was given. Furthermore, there is also a significant difference in the post test scores of the control group (Mean=10.52; SD=3.33) when compared to the experimental group (Mean=13.92; SD=3.30), $t(44)=3.463, p=.001$. The findings indicate that utilizing screencast as intervention could enhance concept acquisition of the learners on the topic —Type of Speech Delivery”.

Keywords: screencast, educational technology, assimilated learning environment

INTRODUCTION

The era of the 21st century is often regarded as an era of Technology that is why students are engaged in its development. Learners can easily access the internet and search their learning needs. Its advancement can be felt in various ways; one would be in the field of education. Lessons are now adapted by the rapid transformation of technology the learners can acquire new schema through the use of technology particularly, screencast.

Screencast is a manner of presenting “digitally recorded playback of computer screen output which often contains audio narration” and visually demonstrating procedural information to students (Udell, 2005). In this manner, the learners can watch the prepared screencast through the use of their gadgets or the instructor will play it to the class during their class discussion. Also, the term screencast has been called “streaming desktop video captures”, “online tutorials” and “screen captures” (Betty, 2008). The instructor can manipulate the computer in order to play it for the students; in that case, the students can take down notes and can focus on the “streaming desktop video captures” or screencast. Changing digital technology has allowed instructors to capitalize on digital tools to provide audio visual feedback. As universities move increasingly toward hybrid classrooms and online learning consequently making investments in classroom management tools and communicative technologies, communication with students about their work is also transforming (Thompson, 2012). Through the integrated power of technology, the students are more competent in their learning environment. Technology increases their ability to understand the lesson and it is conducive in their way of learning. It also affects classroom management which becomes student-centered, because the teacher will let the students grasp the given information from the screencast. As the learners differ in their learning styles, screencast can cope with their various learning schema. Screencast can instruct learners with different learning styles preferably those aural and visual learners (Garwood, 2009). It is beneficial to provide information 24/7 which can be viewed and reviewed when needed (Carr and Ly, 2009). As the teacher made a screencast, they can ask the students to have it in their smartphones or android devices.

Learners in today's generation have generally adapted a new learning schema where traditional teaching is in hybrid with online learning. This type of learning situation is called blended learning environment (Basit et al., 2016). This kind of learning acquisition will lead the students in exploring their skills in using technology. Though it is a trickier task, the learners will experience more integrated learning

environment. In blended learning, the class will minimize the traditional face to face class and will come up through the use of online learning. The role of hybrid education is not only to supplement the learners with technological advancement but also to transform and improve the learning process. Screencast can be used to promote pedagogical enhancement in teaching, especially nowadays that K12 education is taking the lead to improve the quality of education in the country. Teachers can put their lesson in this kind of modality that the learners can cope up with. In order to fulfill the goal of 21st century teaching, teachers must balance the traditional pedagogical methods with the effective use of technology to foster quality education. Teachers can provide student-centered and engagement ambiance for their learning experience to occur in a hybrid online learning and traditional learning settings. Screencast also fosters the definition of flipped classroom which suggests the use of variety of technologies in preparing and posting lessons for students" access prior to class. This also emphasizes the implementation of computer-aided instruction (CAI) that can be used to assess the likelihood of success in a flipped classroom within different disciplines (Roehl et al., 2013).

This paper compares the traditional teaching in to the modern way of presenting the lesson with accordance in to flipped classroom model which particularly used the screencast as a medium of delivering instruction to the participants.

METHODOLOGY

Research Design

This study utilized an experimental research design wherein the screencast served as an intervention of the study. Content validated research instrument was also disseminated to the participants to determine their pre and post test scores before and after the intervention.

Research Participants

This study was done in the Senior High School Department of Emilio Aguinaldo College-Cavite. The researcher used the simple random sampling technique which uses the fish bowl technique to choose participants for experimental and control group. Particularly, the said participants are composed of n=43 from the strand of Humanities and Social Sciences Strand of K12. Moreover, the convenient sampling provided accessibility and proximity to the researcher.

Research Locale

The rapid growth of online learning in the K+12 sector is occurring both remotely through virtual schools and on campuses through blended learning (Singh,2003). This study was done in one private non-sectarian institution in Dasmariñas Cavite particularly Emilio Aguinaldo College-Cavite. EAC-SHS was composed of 1447 enrollees and has four (4) strands (HUMSS, ABM, STEM and TECHVOC).

Reliability and Validity of the Research Instrument

Validity and reliability are two fundamental elements in measuring a test instrument. Validity is concerned with the extent to which an instrument measures and what it is intended to measure. On the other hand, reliability is essential and concerned to measure the consistency of the test instrument (Mohsen and Reg, 2011).

This study conducted a Pilot Study in different set of participants (n=21) (Grade 11 HUMSS-Makatao). The given test questionnaire was validated by the experts (Research Teacher, Research Adviser and Grammarian) and analysed its reliability using the Statistical Package for Social Sciences. However, the test instrument found its test reliability using Cronbach Alpha and obtained .718 test reliability and interpreted as highly reliable test questionnaire. Below, for the conceptual purposes is the formula for standardized Cronbach's alpha

Statistical Treatment of Data

Descriptive statistics was utilized to answer the given problem of this study and to test the hypothesis set forth in this research. t-Test was also used to determine the significant difference in pre and post test scores of the experimental and control group. More so, t-Test for paired sample is used to compare the pre and post-test scores across the two groups before and after the intervention

Lastly, t-Test for independent sample was utilized to compare the post test scores of experimental and control groups.

RESULT AND DISCUSSION

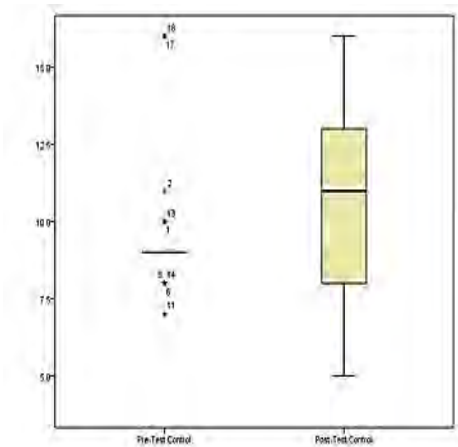


Figure 1. Comparison of Pre and Post Test Scores for the Control Group

Shown in figure 1 is the comparison of pre and post-test scores of the control group who underwent the traditional class intervention with their subject-teacher in Oral Communication in Context. Twelve (12) out of twenty-one (21) students or fifty (50%) of the population of the participants obtained a median score of nine (9) out of twenty (20). As for the intervention, the subject-teacher discussed the Type of Speech delivery and proceeded into post-test. However, fifteen (15) out twenty-one (21) students or seventy-five (75%) of the population of the control group (n=21) obtained a median score of eleven (11) out of twenty (20). Thus, this study hypothesized that there is no significant difference in the pre and post-test scores of the control group. Zang and Cuixia (2012) mentioned in their study that teacher-centered approach noticed that teachers lacked improvements in their way of teaching, It can be denoted that it is one of the factors that affect the academic performance of the students in their exams. Teachers should improve the teaching quality and meet the needs of the learners to enhance the performance of the students. In this study, it showed that the teachers need to use the new teaching models aligned with technology.

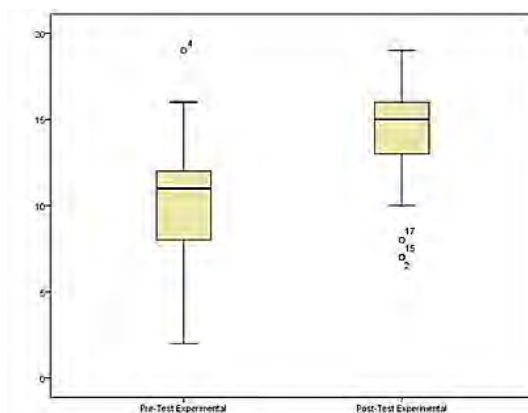


Figure 2. Comparison of Pre and Post Test Scores of Experimental Group

Shown in box plot (figure 2) is the comparison of Pre and Post Test Scores of Experimental group who underwent in the screencast intervention. The screencast served as their teacher that discussed the same topic which was the types of speech delivery. Thirteen (13) out of twenty-five (25) students or fifty percent (50%) of the population of the experimental group obtained a median score of eleven (11) out of twenty (20) in their pre-test. As for the intervention, screencast was played and augmented the obtained median score of the experimental group. It can be seen from the box plot that eighteen (18) out of twenty-five (25) students or seventy-five percent (75%) of the population of the experimental group had a median score of fifteen (15) out of twenty (20) in their post-test. It can be gleaned that there is a significant difference in the pre and post-test scores of the experimental group before and after the intervention.

Zang and Cuixia (2012) mentioned in their study that the new teaching model can be built on modern information technology, particularly the network technology. In this case, English language teaching and learning will be on certain extent free from the constraints of time or place and suitable for individualized students and autonomous learning. This new model of teaching employs the use of information technology in the traditional classroom.

Comparison of Pre and Post-Test before and after the intervention

Table 1

Paired Sample t-test for the Control Group

Scores	Mean	SD	n	t	dF	p Value	Decision	Interpretation
Pre-Test	9.62	2.27	21	-1.245	20	.228	Do not reject Ho	Not significant
Post-Test	10.52	3.33						

Shown in table 1 is the result obtained of control group in using the paired sample t-Test. The pre-test scores of control group obtained 9.62 mean and on the other hand, the post-test scores had a mean of 10.52. However, the paired sample t test revealed that there is no significant difference between the pre-test and post test scores of the control group before and after the intervention, $t(20) = -1.125$, $p = .228 > .05$.

The efficacy of the large lecture format in maximizing student learning is increasingly questioned. Limitations include the failure of the teachers to emphasize the lesson. This study was also congruent to the findings of Piercy et al., (2012). They found out that lectures may not actively involve the students in their own learning, significant failing given the evidence that involves learning process.

Table 2

Paired Sample t-Test for the Experimental Group

Scores	Mean	SD	n	t	dF	p Value	Decision	Interpretation
Pre-Test	10.72	3.79	25	-3.890	3.463	.001	Reject Ho	Significant
Post-Test	13.92	3.30						

Shown in Table 2 is the result obtained of the experimental group in using the paired sample t-Test. It can be clearly seen from the table that the pre-test scores of the experimental group obtained 10.72 mean and had a 13.92 mean in their post-test scores. However, the paired sample t-Test revealed that there is a significant difference

between the pre-test and post-test scores of the experimental group before and after the intervention, $t(20) = -3.890, p = .001 < .05$.

Similar to the findings of Basit (2010) that concepts depicted through computer technology could considerably improve the post test scores of the learners. Carmichael and Hayes (2001) also inferred that observation and exposure to novel exemplars could enhance learners' knowledge acquisition. In this study, the screencast that was administered by the researcher by some means had significantly contributed in the improvement of students' in post-test.

Comparison of Post-Test Scores Across the two Groups

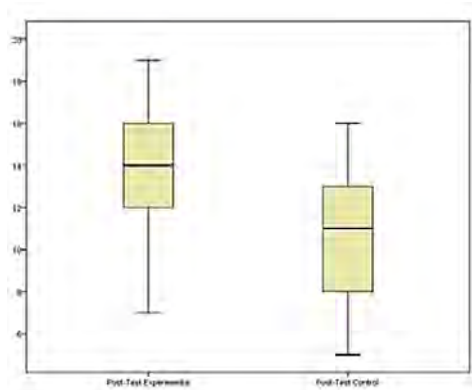


Figure 3. Mean Comparison of Post-test Scores Across Two Groups

Table 3

Mean Comparison of Post Test Between Groups

Scores	Mean	SD	n	t	dF	pValue	Decision	Interpretation
Experimental	13.92	3.30	25	3.463	44	.001	Reject Ho	Significant
Control	10.52	3.33	21					

It can be seen from the box plot (Figure 1) that fifteen (15) or seventy-five percent (75%) of the population of the experimental group obtained the median score of fourteen (14) out of twenty (20). On the other hand, eleven (11) or fifty percent (50%) of the population of control group obtained the median score of eleven (11) out of twenty (20). It can

be clearly assessed that the stimulation of video instruction or screencast can support the knowledge of the learners. The result obtained of the control group did not show any detrimental effect on their learning acquisition. As Oud (2009) mentioned in her study about the guidelines for effective online instruction using multimedia screencasts. An online instruction can help support web-based courses, supplement in-person instruction sessions, reach more students, convince faculty to use integrated instruction even if they cannot give class time for in-person sessions, and help stretch limited staff resources.

The data collected from the questionnaire of this study as shown in Table 3 are the mean comparison of post test scores across the two groups and it can be seen that screencast can augment the knowledge of the participants in experimental group (mean score of 13.92). The experimental group also exhibited $p < .005$ ($p = .001$). It can be hypothesized that there is a significant difference in the post-test scores of experimental and control groups. Prior research on the instructional use of screencasts (video of a computer screen output with a real-time audio commentary) suggests that this technology is perceived by students as beneficial and results in improved course performance. (Green et al., 2012). From the results obtained, it clearly showed that screencast can augment the knowledge of the students. However, the result of the control group showed no detrimental effects on their performance. Moreover, the result presented in this study suggested that screencast can promote efficacy in the learning acquisition of the Grade 11 participants.

This study utilized pre and post-test questionnaire which consisted of twenty (20) questions and disseminated to experimental and control group of this study. The given pre-test aimed to determine the baseline knowledge of the participants regarding the topic. As an intervention, screencast was played to augment the knowledge of the participants in the experimental group. While on the other hand, the control group received the traditional face to face class learning treatment with their subject teacher. The post-test was conducted right after the intervention to know the obtained scores. Similar to the study of Zhang and Han, (2012) they also utilized pre and post-test questionnaire to investigate the significant difference of Blended Learning approach from the traditional classroom learning approach. Zhang and Han also prepared a pre-test questionnaire consisting of thirty-five (35) item test and aimed to know the stored knowledge of the participants in English. Intervention was done through Blended learning particularly in Web Based College English Teaching Platform and the traditional face to face learning approach was done to enhance the knowledge of the

participants and proceeded to post-test to determine the effect of the stimulation of both interventions.

CONCLUSION

Based on the findings derived from this study, it can be concluded that the result of control group in their post-test implies a small enhancement as compared in their pre-test. On the other hand, the post-test scores of the experimental group revealed that there is a great difference in their scores after the screencast was played. It can be also concluded that the results implied of the mean comparison across two groups revealed that traditional teaching method lacks in providing the lectures feedback regarding students' understanding. However, the modern way of presenting the lesson using screencast promotes efficacy in the knowledge acquisition of the Grade 11 participants.

Lastly, the result of the mean comparison of post-test score of experimental and control shows that screencast can augment the learning acquisition of the participants while on the other hand traditional teaching shows a small enhancement in their knowledge acquisition.

RECOMMENDATIONS

From the findings and conclusions presented, this study recommends the determination of the prior knowledge of the students in presenting a lesson before proceeding to the actual lecture or discussion. This study also reaches out the teachers to arrive with the integrated power of technology in presenting a lesson. To maintain the efficacy of screencast, this study recommends the teacher to come up with his or her own made screencast with accordance to their curriculum or lesson plan.

This also recommends balancing the stimulation of traditional teaching and the advancement of technology in the field of education. Lastly, the researcher also recommends other researchers to use this study as a reliable source for their own research.

REFERENCES

Basit, S.A., Lasap MR., G.,Laarni (2016). Exploring students' alternative conceptions and conceptual understanding in immunology

concept maps through a screencast towards a blended-learning Environment.

Basit, S.A., Limjap A.A., M.S Prudente (2010). Fostering cognitive model reasoning and conceptual understanding of immunoglobulin Concepts through computer animation with case-based pedagogy.

Betty. Paul (2008) Creation, Management, and Assessment of Library Screencasts: The Regis Libraries Animated Tutorials Project. <http://www.tandfonline.com/doi/abs/10.1080/01930820802289342>

Betsy Duke., Ginger H., and Mark J. (2013) Connectivism as a digital age learning theory. The international HETL review, special issue, 2013.

Behzad, S., Sadat Z. (2014). The comparison of language learning strategies and reading comprehension of Iranian EFL students taking web-based and face to face instruction. <http://search.proquest.com/pqrl/docview/1535262946/B19804ADA3A4D26PQ/5?accountid=165126>

Carr, A., Ly, P. (2009). "More than words": screencasting as a reference tool. Reference Services Review, 37(4), 408-420. <http://dx.doi.org/10.1108/00907320911007010Lee>.

Carmicheal, C.A. and B.K. Hayes (2001). Prior knowledge and exemplar encoding in children's concept acquisition. Child Development. 72 (4): 1071-1090

Douglas, Arnold., Use of computer aided instruction. <https://www.britannica.com/topic/computer-assisted-instruction>,

Earle, R. The integration of instructional technology into public education: promises and challenges. <http://isites.harvard.edu/fs/docs/icb.topic87187.files/Earle02.pdf>

Edwards, Kirstie., Dujardin, AF., Williams N., Hallam S., (2012) Screencast feedback for essays on a distance learning. journal of academic writing Vol. 2 No. 1 Autumn 2012, pages 95-126

Esgi Necmi., Comparisons of Effects of student and teacher prepared screencasts on student achievement (2014) European scientific journal august 2014 edition vol.10,

- Garwood. Steve (2009) Toward lesson capture: A new approach to screencasting and Lecture capture. Enhancing Instruction with Visual Media: Utilizing Video and Lecture Capture
- Green. Katie R., Tershia PG., Mirecki J. (2012) Impact of screencast technology: Connecting the perception of usefulness and the reality performance. Journal of Engineering Education; Washington101.4 (Oct 2012): 717-737.
- Ghonsooly, B., Zari., S. The comparison of language learning strategies and reading comprehension of Iranian EFL students taking web-based and face-to-face instruction.
- Ghonsooly, Behzad; Seyyedrezaie, Zari Sadat. Theory and practice in language studies; london4.6(Jun 2014): 1296-1302.
<http://search.proquest.com/pqrl/docview/1535262946/B19804ADA3A4D26PQ/5>
- Johnson, S.D., Aragon, Steve., Shaik N., Palma-Rivas.,N. Comparative analysis of learner satisfaction and learning outcomes in online and face to face learning environments.
<http://search.proquest.com/openview/4fa03dae1dfd9155526ac093fd fcaafa/1?pq-origsite=gscholar&cbl=2031153>
- Lee. Mark J.W., Pradhan S. (2008) The effectiveness of screencasts and cognitive tools as scaffolding for novice-oriented programmers. Journal of Information Technology
<http://jite.org/documents/Vol7/JITEv7p061-080Lee332.pdf>
- Linardo,Nick., Steve Garwood., (2013) Effective use oflecture capture in large lecture halls
[www.icicte.org/ICICTE2015Proceedings\(Papers\)/6.1%20Fin%20013_Linardopoulos.pdf](http://www.icicte.org/ICICTE2015Proceedings(Papers)/6.1%20Fin%20013_Linardopoulos.pdf)
- Liu and Reed (2002) , The relationship between the learning strategies and learning styles in a hypermedia environment
<http://www.sciencedirect.com/science/article/pii/0747563294900388>
- Mark J.W., Pradhan S. (2008) The effectiveness of screencasts and cognitive tools as scaffolding for novice-oriented programmers. Journal of Information Technology
<http://jite.org/documents/Vol7/JITEv7p061-080Lee332.pdf>

- Milman., Natalie. (2012). The Flipped classroom strategy: What is it and how can it best be used? 9.3 (2012): 85-87. <http://search.proquest.com/docview/1140334863?q-origsite=gscholar>
- Moore Graham., Toward a theory of independent learning and teaching
- Mullamphy, D., Higgins, P., Belward, S. & Ward, L. (2011). To screencast or not to screencast. ANZIAM J. 51(EMAC2009),pp. C446-C460. <http://www.ascilite.org/conferences/hobart11/downloads/papers/Loc h-concise.pdf>
- Reddy., S., Gayla J., The Flipped Classroom: An opportunity to engage millennial students through active. Journal of Family and consumer sciences; Alexandria 105.2 (Spring2013):44-49. <http://search.proquest.com/docview/1426052585?q-origsite=gscholar>
- Roehl. Amy., Reddy SL., Shannon GJ. (2013) The flipped classroom: An opportunity to engage millennial students through active learning strategies. Journal of Family and Consumer Sciences; Alexandria105.2 (Spring2013):44-49. <http://search.proquest.com/openview/c2a332a868eb2625132263e0fd4268b2/1?pq-origsite=gscholar&cbl=41036>
- Sams, Aaron., Bergman,Jonathan., (2013) Flip your students' learning <http://eric.ed.gov/?id=EJ1015329>
- Schwerdta. Guido., Wuppermann A.C., Is traditional teaching really all that bad? A within-student between-subject approach <http://www.sciencedirect.com/science/article/pii/S027277571000160>
- Scott. Jane., Nieder GL., Anderson MD., (2000) Using quicktime virtual reality in computer assisted instruction of Gross Anatomy https://www.researchgate.net/profile/Gary_Nieder/publication/12446
- Siemens,George Connectivism: A learning theory for the digital age <http://www.connectivism.ca/>

- Singh Harvey (2003) Building effective blended learning programs. Issue of Educational Technology.
http://www.asianvu.com/bk/UAQ/UAQ_WORKS_HOP_PACKAGE/new/Appendix%20B%20-%20blended-learning.pdf
- Strayer Jeremy., (2007) The effects of the classroom flip on the learning environment: A comparison of learning activity in a traditional classroom and a flip classroom that used an intelligent tutoring System.
<https://pdfs.semanticscholar.org/9e36/b63e282e9ab9dd30e1914807e19ee2ec77c6.pdf>
- Stone. Bethany (2012) Flip your classroom to increase active learning and Student Engagement.
http://www.uwex.edu/disted/conference/Resource_library/proceedings/56511_2012.Pdf
- Thompson, Riki ., Tacona Meredith (2012) Talking with Students through screencast: experimentations with video feedback To improve student learning.
<http://jitp.commons.gc.cuny.edu/talking-with-students-through-screencasting-experimentations-with-video-feedback-to-improve-student-learning/>
- Udell, John (2005)., What is Screencast
<http://archive.oreilly.com/pub/a/oreilly/digitalmedia/2005/11/16/what-is-screencasting.html>
- Wang, Tzu-Pu. (2007) The comparison of the difficulties between cooperative learning and traditional teaching methods in college English Teachers. The Journal of Human Resource and Adult Learning Vol. 3, Num. 2, December 2007
<https://pdfs.semanticscholar.org/16bc/64608d5a16358adaf9216f0229a5d2ab7876.pdf>
- Wakefield JA., Frawley., JK., Dyson LE., Tyler JV., Litchfield AJ. (2011) Increasing student engagement and performance in introductory accounting through student generated screencasts
<https://opus.lib.uts.edu.au/handle/10453/19404>
- Zhang., W., Han., C. (2012). A Case Study of the Application of a Blended Learning Approach to Web-based College English Teaching Platform in a Medical University in Eastern China..

Theory and Practice in Language Studies; London2.9 (Sep
2012) 19611970[http://search.proquest.com/pqrl/docview/
1330861369/A6D 3346FFCC345F4PQ/3?accountid=165126](http://search.proquest.com/pqrl/docview/1330861369/A6D3346FFCC345F4PQ/3?accountid=165126)

Susceptibility of carbapenem-resistant *Klebsiella pneumoniae* against extracellular biosynthesized AgNP by *Escherichia coli*

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Abstract

Carbapenem-resistant Enterobacteriaceae such as *Klebsiella pneumoniae* is one of the most commonly acquired nosocomial pathogens that can cause urinary tract infection, pneumonia, bacteremia, wound infection, cholecystitis, and catheter-associated bacteriuria. The use of third generation drugs in combination may cause toxicity to the patient. Microorganisms such as bacteria can reduce metal ions and precipitate metals such as silver at a nanometer scale, thus synthesizing silver nanoparticles (AgNP). This study aims to determine the susceptibility of multi-drug resistant strain Carbapenem-resistant *K. pneumoniae* (CR-Kp) against the AgNP that are biologically synthesized by *Escherichia coli* (*E. coli*), specifically the demonstration of its inhibitory effects when coated with meropenem. One of the mechanisms of AgNP against pathogenic microorganisms is the evident morphological changes upon interaction with the bacterial membrane that can be characterized by cytoplasm shrinkage and membrane detachment that leads to cell wall rupture. Therefore, AgNP can be used as an alternative approach in antimicrobial therapy. In this study, the biosynthesized AgNP by *E. coli* together with meropenem showed bactericidal activity against the multi-drug resistant bacteria CR-Kp. Minimum Inhibitory Concentration (MIC) showed that the AgNP coated with meropenem have a bactericidal activity against CR-Kp. Also, it has been proven that similar to the positive control (Gentamicin), they have the same inhibitory effect against CR-Kp. Thus, Ag NP together with meropenem targeted the cell membrane and demonstrated that at a concentration of 3.5µg/mL, it can inhibit CR-Kp with a zone of inhibition of 26 mm that is deemed susceptible.

Keywords: Gentamicin, Meropenem, Carbapenem Resistant *Klebsiella pneumoniae*, AgNP

INTRODUCTION

Nanotechnology is an emerging advancement in the scientific field of molecular biology. In this technology, sizes are manipulated to be in nanoscale, which automatically increases the object's potential. It is widely used in chemistry, biology, engineering, biomedicine, pharmaceuticals, and in other scientific fields. Nanoparticles is also currently being studied and used to develop safe and cost-effective biocidal materials. Silver nanoparticles (AgNP) are known for its antibacterial and antifungal properties. It is currently being studied for its therapeutic applications, especially in treating Multi-drug resistant and non-multidrug resistant strains.

Carbapenem-resistant *Klebsiella pneumoniae* (CR-Kp) is one of the most common multidrug resistant *Enterobacteriaceae* nosocomial pathogen. According to the study of Yanling et al. (2015), the Philippines is one of the top three Asian countries that has the highest rate of Carbapenem resistant *Enterobacteriaceae* (CRE) with *Klebsiella* being the most common. It causes urinary tract infection, pneumonia, bacteremia, wound infection, cholecystitis, and catheter-associated bacteriuria. Several antimicrobial agents such as penicillin, cephalosporin, and from the name itself carbapenem, do not demonstrate in vitro activity against this agent. (Neuner et al. 2012) Therefore, few treatments are only available for CR-Kp infection such as Tigecycline, Colistin, and Gentamicin (Falagas et. al 2013) and are usually in combination of two or more antibiotics that can cause toxicity to patients that have the said infection.

Due to the emerging multidrug resistant organisms, several formulations and advances are currently being made in the field of nanotechnology. One of them is the use of AgNP as an antimicrobial agent against these multidrug resistant pathogens. Silver is being used since the ancient times because of its antimicrobial potential. With the help of nanotechnology, manipulating size to its nano level will increase its potential. In the study of Morones and co- workers (2005) as cited by Rai et al., (2012), AgNp with the size of 10-100nm showed strong bactericidal activity against both gram positive and gram-negative bacteria. It was also proven that they are powerful weapons against multidrug resistant bacteria such as *Klebsiella pneumoniae*, *Pseudomonas aeruginosa*, ampicillin-resistant *Escherichia coli*, erythromycin-resistant *Streptococcus pyogenes*, methicillin-resistant *Staphylococcus aureus* (MRSA), and vancomycin-resistant *S. aureus* (VRSA).

Several methods can be used to synthesize AgNP such as

physical, chemical, and biological method. Biological method is widely being studied because it is less toxic and economically friendly. Under this method, bacteria are the most eye-catching living organism being used in synthesizing AgNP. Bacteria are capable of reducing metal ions and have the ability to precipitate metals at nanometer scale. An example of bacteria that can synthesize AgNP is *E. coli*. In the study of El-Shanshoury et al. (2011), they were able to report extracellular biological synthesis of AgNP through the reduction of aqueous silver ions using the said bacteria.

This study aims to determine the susceptibility of Multi-drug resistant strain CR-Kp against the AgNP that are biologically synthesized by *E. coli*, specifically the demonstration of its inhibitory effects when coated with meropenem.

METHODOLOGY

An ATCC isolate of *E. coli* from Department of Laboratory of Emilio Aguinaldo College Medical Center - Cavite was used for the biosynthesis of the AgNP. ATCC isolate of CR-Kp, (BAA 1705) was bought from Fil-Anaserve, Inc. Screening test using Vitek was done to determine that the bacterial species obtained was CR-Kp.

Production of Biomass for Nanoparticle Synthesis

An ATCC strain of *E. coli* was cultivated in an **LB broth** and was incubated at 30-35°C for 24 hours. After incubation, the produced biomass of *E. coli* was centrifuged at 6,000rpm for 10mins. Then, the supernatant and the pellet were separated and collected for the synthesis of AgNP. The researchers used a modified procedure based from the study of Kushwaha et al. (2015).

Biosynthesis of AgNP

Equal amounts of the pellet collected from the biomass of *E. coli*, and of 0.001M of silver nitrate were mixed in a sterile test tube for the synthesis of AgNP. After that, the mixed solution was agitated in a vortex for thorough mixing and was incubated for 24 hours at 36.6°C. Then, a negative control composed of silver nitrate only was used. Finally, the solution was kept in a dark room avoiding any phytochemical reactions during the experiment. Following incubation, a color change from yellow to brown was observed as shown on Figure 1, indicating that the *E. coli*

biosynthesized the silver nitrate. For further characterization of the synthesized AgNP, electron microscopy was done. (Figure 2) (Kushwaha, 2015).

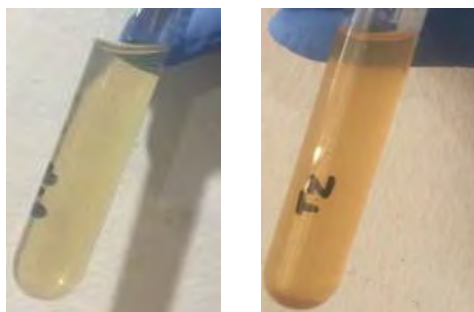


Figure 1. Biosynthesized AgNP before (left) and after (right). The yellow color of the solution on the left side means that no AgNP were synthesized as compared to the brown solution on the right side.

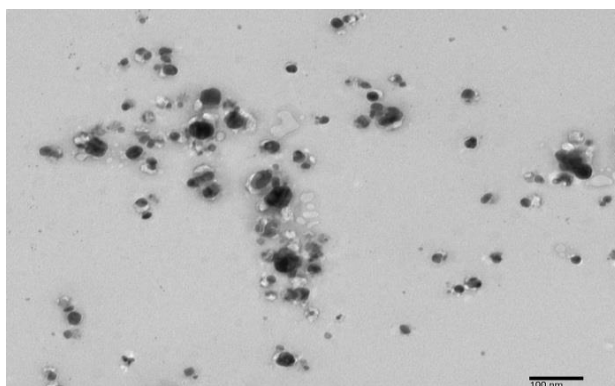


Figure 2. Biosynthesized AgNP image via Electron Microscope. The size in the lower right side indicates that the synthesized material was measured in nano scale (30-50nm) (magnification 20000x).

Antimicrobial Susceptibility Testing

Agar Well Diffusion Method was performed to measure the susceptibility of AgNP that was biosynthesized. The ATCC isolate of CR-Kp was lawn streaked into the Mueller Hinton Agar prepared. Twenty microliters of each of the controls and the biologically synthesized AgNP combined with meropenem were spot-inoculated in the three wells: Gentamicin as the positive control and meropenem as the negative

control. The plate was then incubated at 37°C for 24 hours. Using a Vernier caliper, the zone of inhibition of each well was measured wherein the diameter is directly proportional to the concentration of the tested controls and experiment.

Antibacterial activity of AgNP coated with meropenem

Minimum Inhibitory Concentration (MIC) of Biosynthesized AgNP

To find the Minimum Inhibitory Concentration (MIC) of the biosynthesized AgNP, a two-fold serial dilution was made in 10 tubes. In a tube containing 1mL of **LB broth**, 100µL of AgNP with 100µL of meropenem was suspended creating a total volume of 1 200µL. It was then diluted to a series of tubes containing 1mL of LB broth. Ten microliters of CR-Kp was then suspended on each tube and was incubated at 37°C for 24hrs. After incubation, the MIC is determined visually as the lowest concentration that inhibits growth, as demonstrated by the absence of turbidity (Balaram et al., 2016).

Minimum Bacterial Concentration (MBC) of Biosynthesized AgNP

After the MIC was determined, 10µL aliquot from each concentration was subcultured in the Mueller Hinton Agar through spread plate. The Minimum Bacterial Concentration (MBC), which is the lowest concentration of the AgNP coated with meropenem needed to kill the CR-Kp, was measured through colony counting. The number of colonies on the subcultured plate is compared with the actual number of organisms inoculated in the MIC test tubes to determine the extent of the antibacterial activity at each concentration. Tolerance level was then determined by using the formula $Tolerance = MBC/MIC$ (Balaram et al., 2016).

Microbial Growth Curve of CR-Kp against AgNP

In order to plot the growth curve of the CR-Kp against the biosynthesized AgNP, a modified procedure from the study of Kushwaha et al (2015) was followed. A fresh colony of CRKp was suspended in a 3mL LB broth and was incubated at 37°C for 24 hours. Four tubes with 1 200µL of LB Broth were then prepared and labeled as Control, Negative Control, Positive Control and AgNP with meropenem. All tubes were incubated at 37°C for an hour to check for possible contamination. After the incubation, 250µL of CRKp that was cultivated firsthand was

transferred to each tube. Then, AgNP with meropenem was added to the tube labeled AgNP with meropenem, Gentamicin to the tube labeled as Positive Control, and meropenem in the tube labeled as Negative Control, whereas none on the Control tube. All tubes were then incubated at 37°C and the growth rates were recorded and monitored according to absorbance through spectrophotometry every 4 hours for 24hrs.

RESULTS AND DISCUSSION

Table 1
Mean comparison of MIC across different groups

Group	Mean MIC (µg/ml)	n	df	F Statistics	p-value	Decision	Interpretation
Gentamicin (Positive Control)	3.5a	3					
Meropenem (Negative Control)	1200b	3	2,6	10030057.79	0.000	Reject H ₀	Significant
Treatment1	3.5a	3					

¹AgNP coated with meropenem, ^a Susceptible, ^bResistant.(CLSI, 2017).

Table 1 showed the mean MIC of the AgNP coated with meropenem against CRKp in comparison with the Gentamicin (Positive Control) and meropenem (Negative Control). As shown in the table, the Gentamicin and the treatment (AgNP coated with meropenem) have a lower MIC and were able to inhibit the CRKp. However, the meropenem has a higher MIC and weren't able to kill the said bacteria.

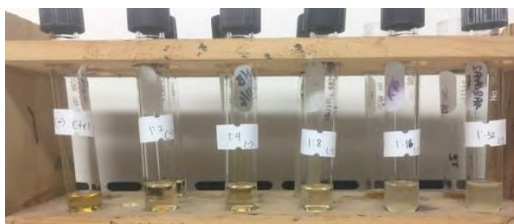
Based on the results of the One-Way ANOVA, there is a significant difference in the MIC of the different groups, F(2,6)= 10030057.787, p=0.000. In fact, the post-hoc analysis using the least significant difference indicates that the treatment is significantly different from the negative control (p=0.000) but is not significantly different from the positive control (p=0.267). Since the AgNP coated with meropenem killed the CRKp at a concentration almost similar to the positive control, it can be a potential alternative approach in antimicrobial therapy.

These findings are similar to the study of Balaram et al., (2017), wherein the test organisms were killed by the treatment at a

given MIC concentration. Also, as the concentration of the AgNP increase, the antimicrobial activity becomes stronger. However, this study used a modified procedure compared to his study. Antibiotic was combined with the biosynthesized AgNP to enhance its effect similar to the article made by Panacek et al. (2015). Different antibiotics such as cephalosporins, carbapanems, and penicillins were used together with AgNP against *E. coli*. Similar to our study, synergistic effect of AgNP combined with these antibiotics were observed at a very low MIC concentration. This specifies that at a given MIC concentration, the AgNP combined with meropenem have an antimicrobial activity that can be used in treating Multi-drug resistant bacteria.



a



b



c

Figure 3. Macrodilution Method. a.) Minimum inhibitory concentration (MIC) of Gentamicin showing clarity from tube 1 until tube 9. b.) MIC of meropenem showing turbidity from tube 1 until tube 10. c.) MIC of AgNP coated with meropenem showing clarity from tube 1 until tube 9.

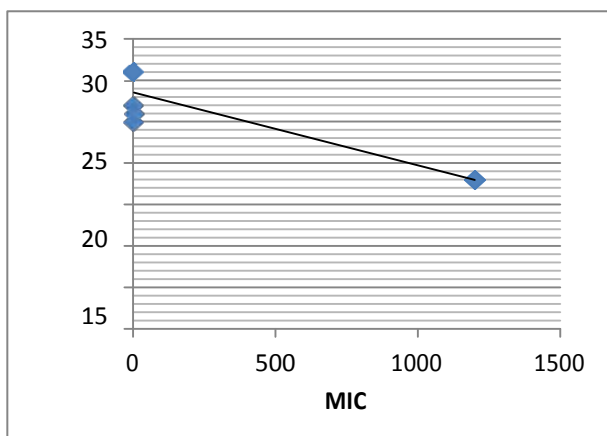


Figure 4. Relationship of the zone of inhibition and minimum inhibitory concentration

Figure 4 showed that there is a significant negative strong relationship between the zone of inhibition and MIC $r(9)=-0.921$, $p=0.000$. It means that as the Minimum inhibitory concentration decreases, the zone of inhibition increases. Moreover, the coefficient of determination between the said variables is $R^2=0.848$. This implies that the variation between the MIC and zone of inhibition can be explained by the 85% of the linear relationship between the aforementioned variables.

Our findings are similar to the study of El- shanshoury et al. (2011) wherein the antimicrobial spectrum of the synthesized AgNP were determined using the zone of inhibition measured in the Agar Well Diffusion method. However, in his study, the zone of inhibition also depends on the test organism used.

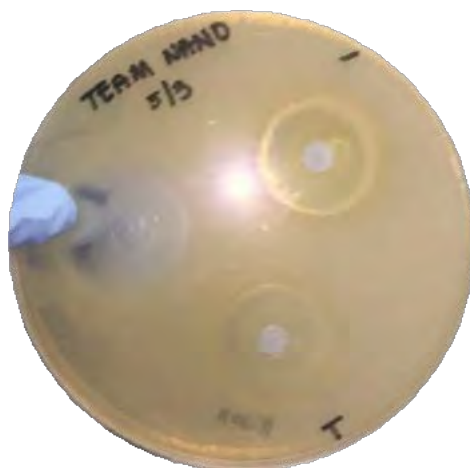


Figure 5. Agar Well Diffusion Method. The first well (left side) was the positive control composed of 20 μ L of Gentamicin showing susceptibility of CRKp at 31mm. The second well (right side) was the negative control composed of 20 μ L of meropenem showing resistance of CRKp at 18mm. The third well at the bottom was the treatment with 20 μ L of AgNP with meropenem showing susceptibility of CRKp at 27mm.

Table 2

Difference of the negative control and treatment in terms of zone of inhibition

Group	Mean Zone of Inhibition (mm)	n	df	t	p- value	Decision	Interpretation
Meropenem	18a	3					
AgNP with meropenem	26a	3	4	- 13.856	0	Reject H ₀	Significant

^sResistant, ^bSusceptible (CLSI, 2017)

Table 2 shows the t test for independent samples and implies that there is a significant difference in the zone of inhibition of the meropenem and the treatment with AgNP coated with meropenem $t(4)=-13.856$, $p=0.000$.

This means that the additional treatment of AgNP with meropenem reduces the viability of bacteria in the presence of the antibiotic. Our findings are quite similar to the findings of the study

conducted by Cunha et al. (2016) wherein the zone of inhibition of the AgNP combined with meropenem is larger compared to AgNP and antibiotic alone.

CONCLUSION

After gathering the following data and results, the researchers concluded that the extracellularly biosynthesized AgNP coated with meropenem can be used as an alternative approach in antimicrobial therapy. The acquired Minimum Inhibitory Concentration (MIC) (3.5µg/mL) showed that the AgNP coated with meropenem have a bactericidal activity against CR-Kp. Also, it has been proven that similar to the Gentamicin, they have the same inhibitory effect against CR-Kp. Therefore, the AgNP coated with meropenem can inhibit CR-Kp.

RECOMMENDATIONS

The researchers would like to suggest the following for those who are planning to perform this kind of study: biosynthesize AgNP using different microorganisms such as different bacteria and even fungi; explore the efficacy of AgNP against other Multi-drug resistant bacteria; determine the concentration of AgNP that will not cause toxicity to patients; and further discover the mechanism of action of biosynthesized AgNP combined with antibiotics. Lastly, further study about the viability of biosynthesized AgNP.

REFERENCES

- Abbaszadegan A., Ghahramani Y., Gholami A., Hemmateenejad B., Dorostkar S., Nabavizadeh M., et al. (2015). The effect of charge at the surface of AgNP on antimicrobial activity against gram-positive and gram-negative bacteria: a preliminary study. *J. Nanomater.* 2015:720654 10.1155/2015/720654
- Asharani P. V., Mun G. L. K., Hande M. P., Valiyaveetil S. (2009). Cytotoxicity and genotoxicity of AgNP in human cells. *ACS Nano.* 3, 279–290. 10.1021/nn800596w
- Athirah Nur Amirulhusni, Navindra Kumari Palanisamy, Zaini Mohd-Zain, Liew Jian Ping, R.Durai Raj(2012) *International Journal of*

- Balaram Dasl, Sandeep Kumar Dash, Debasis Mandall, Jaydeep Adhikaryu, Souraf Chattopadhyayl, Satyajit TTripathy, Aditi Dey, Subhankar Manna¹, Sankar Kumar Dey, Debasis Das, Somenath Roy (2016). Green-synthesized AgNP kill virulent multidrug-resistant *Pseudomonas aeruginosa* strains: A mechanistic study.
- Blecher K. and Friedman A. (2012). Nanotechnology and the diagnosis of dermatological infectious disease. *J. Drugs Dermatol.* 7, 846–851.
- Bush K. and Fisher J (2011) Epidemiological expansion, structural studies, and clinical challenges of new β - lactamases from Gramnegative bacteria. *Annu Rev.* , 65:455–478. 10.1146/annurevmicro-090110-102911
- Center for Disease Control and Prevention (CDC), Division of Healthcare Quality Promotion (DHQP). National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), (2012)
- Çiftçi H., Türk M., Tamer U., Karahan S., Menemen Y. (2013). AgNP: cytotoxic, apoptotic, and necrotic effects on MCF-7 cells. *Turk. J. Biol.* 37, 573–581. 10.3906/biy-1302-21
- Clinical Laboratory Standards Institute (2017) M100: Performance Standards for Antimicrobial Susceptibility Testing 27th Edition
- Das S, Fatima Z, Hameed S, Tanwar J. (2014) Multidrug Resistance: An Emerging Crisis.
- Department of Public Health Conne Deutscher J., Saier M. H. (2005). Ser/Thr/Tyr protein phosphorylation in bacteria - for long time neglected, now well established. *J. Mol. Microbiol. Biotechnol.* 9, 125–131. 10.1159/000089641cticut website (2016)
- Foldbjerg R., Olesen P., Hougaard M., Dang D. A., Hoffmann H. J., Autrup H. (2009). PVP-coated AgNP and silver ions induce reactive oxygen species, apoptosis, and necrosis in THP-1 monocytes. *Toxicol. Lett.* 190, 156–162. 10.1016/j.toxlet.2009.07.009
- Ghosh S., Patil S., Ahire M., Kitture R., Kale S., Pardesi K., et al. (2012). Synthesis of AgNP using *Dioscorea bulbifera* tuber

extract and evaluation of its synergistic potential in combination with antimicrobial agents. *Int. J. Nanomed.* 7, 483–496.
10.2147/IJN.S24793

Guidelines for Antimicrobial Usage. The Cleveland Clinic (2012-2013)

Holt K.B and Bard A.J (2005) Interaction of silver(I) ions with the respiratory

chain of *Escherichia coli*: an electrochemical and scanning electrochemical microscopy study of the antimicrobial mechanism of micromolar Ag⁺. *Biochem* 44:13214–13223

Hsueh Y. H., Lin K. S., Ke W. J., Hsieh C. T., Chiang C. L., Tzou D. Y., et al. . (2015). The Antimicrobial properties of AgNP in *Bacillus subtilis* are mediated by released Ag⁺ ions. *PLoS ONE* 10:e0144306. 10.1371/journal.pone.0144306

Hudecová A., Kusznierevich B., Rundén-Pran E., Magdolenová Z., Hasplová K., Rinna A., et al. . (2012). AgNP induce premutagenic DNA oxidation that can be prevented by phytochemicals from *Gentiana asclepiadea*. *Mutagenesis* 27, 759–769. 10.1093/mutage/ges046

Ko WC, Paterson DL, Von Gottberg A, et al. (2004) Antibiotic therapy for *Klebsiella pneumoniae* bacteremia: implications of production of extended- spectrum β -lactamases. *Clin Infect Dis.* 2004, 1:31-7. 10.1086/420816

Kvítek L, Panacek A, Soukupova J, Kolar M, Vecerova R, Prucek R, Holecova M, Zboril R (2008) Effect of surfactants and polymers on stability and antibacterial activity of AgNP (NPs). *J Phys Chem C* 112:5825–5834. doi:10.1021/jp711616v

Li J., Rong K., Zhao H., Li F., Lu Z., Chen R. (2013). Highly selective antibacterial activities of AgNP against *Bacillus subtilis*. *J. Nanosci. Nanotechnol.* 13, 6806–6813. 10.1166/jnn.2013.7781

Lok C. N., Ho C. M., Chen R., He Q. Y., Yu W. Y., Sun H., et al. . (2006). Proteomic analysis of the mode of antibacterial action of AgNP. *J. Proteome. Res.* 5, 916–924. 10.1021/pr0504079

Manke A., Wang L., Rojanasakul Y. (2013). Mechanisms of

nanoparticle-induced oxidative stress and toxicity. *BioMed. Res. Int.* 2013;942916. 10.1155/2013/942916

Marini M, De Niederhausen N, Iseppi R, Bondi M, Sabia C, Toselli M, Pilati F (2007) Antibacterial activity of plastics coated with silver-doped organic-inorganic hybrid coatings prepared by sol-gel processes. *Biomacromolecules* 8:1246–1254

Morones J.R, Elechiguerra J.L, Camacho A, Holt K, Kouri JB, Ramirez JT,

Yacamán M.J (2005) The bactericidal effect of AgNP. *Nanotechnology* 16:2346–2353. 10.1088/0957-4484/16/10/059

Nikaido H. (2010) Multidrug Resistance in Bacteria.

Paul A., Ju H., Rangasamy S., Shim Y., Song J. M. (2015). Nanosized silver (II) pyridoxine complex to cause greater inflammatory response and less cytotoxicity to RAW264.7 macrophage cells. *Nanoscale Res. Lett.* 10, 140. 10.1186/s11671-015-0848-9

Pérez-Gracia M.T and Suay-García B. (2014) The Antimicrobial Therapy of the Future: Combating Resistances.

Rai M. K., Deshmukh S. D., Ingle A. P., Gade A. K. (2012). Silver nanoparticles: the powerful nanoweapon against multidrug-resistant bacteria. *J. Appl. Microbiol.* 112, 841–852. 10.1111/j.1365-2672.2012.05253.x

Sondi I., Salopek-Sondi B. (2004). AgNP as antimicrobial agent: a case study on *E. coli* as a model for Gram-negative bacteria. *J. Colloid Interface Sci.* 275, 177–182. 10.1016/j.jcis.2004.02.012

Tian J., Wong K. K., Ho C. M., Lok C. N., Yu W. Y., Che C. M., et al. . (2007). Topical delivery of AgNP promotes wound healing. *Chem. Med. Chem.* 2, 129–136. 10.1002/cmdc.200600171

Wu D., Fan W., Kishen A., Gutmann J. L., Fan B. (2014). Evaluation of the antibacterial efficacy of AgNP against *Enterococcus faecalis* biofilm. *J. Endod.* 40, 285–290. 10.1016/j.joen.2013.08.022

Xie H., Mason M. M., Wise J. P. (2011). S.R. Genotoxicity of metal nanoparticles. Rev. Environ. Health. 26, 251– 268.
10.1515/REVEH.2011.033

Effectiveness of promotional advertising materials to Grade 12 Senior High School students of Emilio Aguinaldo College-Cavite

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Abstract

This study is about the effectiveness of Promotional Advertising Materials to the Grade 12 Senior High School Student of Emilio Aguinaldo College- Cavite. The researchers use an experimental approach wherein the respondents of the study have been divided into four groups; a control group and experimental groups which includes print, audio- visual and both print and audio visual group. The objective of this study is to determine the effectiveness of Promotional Advertising Materials, and to know the significant difference of the non AIDA based Promotional Advertising Materials and the AIDA based Promotional Advertising Materials. This study is limited to the personal preference of the Grade 12 Senior High School Students. Throughout the study, the researchers found out that the respondents decision had changed after presenting the enhance Promotional Advertising materials. However, results showed that there is no significant difference on the effectiveness between the non AIDA based Promotional Advertising Materials and the AIDA based Promotional Advertising Materials. Thus, the researchers of this study would like to recommend the readers to use AIDA based Promotional Advertising Materials due to the reason that the AIDA based Promotional Advertising Materials were designed to manipulate the content of message that fits with the attention, interest, desire and action of the students therefore a change in the students' decision was made.

Keywords: Promotional Advertising Materials, AIDA model, advertising effectiveness, Grade 12 Senior High School

INTRODUCTION

In accordance to the Emilio Aguinaldo College-Cavite (EAC-C) School Registrar, 2,163 college students were enrolled during the First Semester of S.Y 2016-2017. However, it was alarming that the population of college students for the second semester dropped at 1,954 – this is based on the December 16, 2016 statistics, resulting in a decrease of 209 college students compared from the First semester. In contrary, the Senior High School Department, has 1,409 students in total, which implies that majority of students enrolled at EAC-C were Senior High School students.

Promotional Materials must be enhanced and be fully disseminated to the students. In doing so, it can help to exceed the number of Senior High School enrollees, which will then exceed the student population of the college in the many years to come. The researchers have also shown interest in a study regarding the most effective type of Promotional Advertising Materials that will be best used as a promotional tool to make the enrolled Senior High-School Students of EAC-Cavite decide that it is best to continue their undergraduate studies with the same college itself, the number for college students will then exceed upon this decision. In order to exceed the Senior High School student enrollees, the researchers conducted a series of tests to identify the effectiveness of Promotional Advertising Materials.

This study focused on the assessment of effectiveness of the Promotional Advertising Materials to the Senior High-School Students of Emilio Aguinaldo College-Cavite based on the Attention, Interest, and Desire and Action (AIDA) model. The information gathered regarding AIDA served as the basis to determine the effectiveness of the Promotional Advertising Materials. The researchers conducted their research and surveys at Emilio Aguinaldo College in Cavite. The Promotional Advertising Materials content only focused on the tuition fee, scholarship grants, faculty members' professional qualifications, facilities and courses offered at EAC-Cavite. The researchers conducted the study last November 21 and 22 third week of November 2017. The only scope of the study was to determine the effectiveness of Promotional Advertising Materials among the participants through the three series of tests, that may help maintain and even exceed the Senior High School population.

The researchers only limited the respondents of the study with the selected Grade 12 Senior High School students of the said institution. Moreover, Grade 12 Senior High School students' parents'

financial capacity as well as their personal preference which school they want their children to enroll when they reach college, were not part of the study. In addition, the relationship between the AIDA model theory and the enhanced promotional advertising materials was likewise not part of the study.

Advertising draws the attention of potential consumers to the product (Ainslie (2015). Thus, the researchers were engaged in a study that will determine the effectiveness of Promotional Advertising Materials through three series of tests from the Control group and the Experimental group. In this way, Senior High School students of Emilio Aguinaldo College- Cavite will pursue their undergraduate studies with the same college itself, the number for college students will then exceed upon this decision.

METHODOLOGY

The researchers used quantitative research design. Quantitative research is a type of an empirical investigation which means that the research focused on the verifiable observation as connection to the theory or logic (Klazema, 2014).

Specifically, experimental research design was utilized in the study. According to Robin Beaumont (2009), experimental designs serve as a blueprint of the procedure that enables the researchers test the hypothesis by reaching valid conclusions about the dependent and independent variables. Moreover, it offers the best method available to researchers to be able to investigate thoroughly with high level of control. The study made use of the experimental research design since the researchers' of the study focused on determine the effectiveness of promotional advertising materials to the respondents' decision.

The participants of the study were the selected Grade 12 Senior High-School Students of the said institution. The researchers got the total of 93 Grade 12 Senior High-School Students that was randomly picked through draw slots from each educational strand namely: 1) STEM 2) ABM and 3) HUMSS 4) TVL. In addition, the researchers chose the Senior High-School Students so that they can pursue their undergraduate studies with the same college itself, the number for college students will then exceed upon this decision.

Moreover, in this study, the respondents were group into four groups. A control group and an experimental group that has sub groups

namely; print group, Audio- Visual group and the combination of Print and Audio Visual group. In addition, the researchers used Slovin's formula to get the sample size of the respondents. Thus, the researchers come up with 93 Grade 12 Senior High School Students. After getting the sample size, the researcher's used a Stratified Sampling to divide the 93 students into four homogenous groups. Thus, there are 24 respondents on the control group, 23 students each on print group, audio visual group and the combination of print audio visual group.

The researchers followed a systematic procedure in collecting the data needed for the study. First, the respondents of the study were grouped into two main groups namely the control and the experimental group. Experimental group is sub divided into three treatment groups namely the Print group, Audio-Visual group, the combination of Print and Audio-Visual group.

As for the control group throughout the series of tests, the researchers gave the same set of survey questionnaires to the respondents and were given 15 minutes break interval before answering each Test.

On the other hand, the researchers handed to the respondents of the treatment groups the existing promotional advertising materials made by the institution. Cardboard flyers were given to the print group. Meanwhile, audio-visual group's respondents were able to watch the promotional video released by the Office of Student Affairs and both cardboard flyer and promotional video released by the Office of Student Affairs were presented to the combination of both print and audio-visual group. After presenting the promotional advertising materials the researchers gave the first set of survey questionnaires to the respondents and were given 15 minutes to answer.

The researchers tabulated the results gathered from Test 1. Statements with low scores were used by the researchers as a guide in enhancing the promotional advertising materials that were distributed on Test 2.

During Test 2, the researchers handed the researcher-enhanced tri-fold flyers to the print group. Graphics version of the promotional advertising video was introduced to the audio-visual group and both tri-fold flyers and graphics version of the promotional advertising video were presented to the combination of print and audio-visual group.

After the presentation of the researcher-enhanced promotional advertising The researchers tabulated the results gathered from Test 2. Statements with low scores were used by the researchers as a guide in enhancing the promotional advertising materials that were distributed on Test 3.

In Test 3, the researchers presented the researcher- enhanced folder style flyer to the print group. While a millennial style promotional advertising video was shown to the audio-visual group and both researcher- enhanced folder style flyer and millennial style promotional advertising video were presented to the combination of print and audio-visual group.

Lastly, all of the data gathered by the researchers through the series of tests were compiled to determine the effectiveness of promotional advertising material.

The researchers gathered, analyzed and interpreted the data with the aid of different statistical treatments such as frequency count, percentage distribution, weighted mean and ANOVA. Frequency Count was used to tally the choice of the respondents in which school they prefer to enroll when they reach college. Percentage Distribution was used to display observation in a percentage data points. Weighted mean was used to obtain and identify the average scores of the respondents' answers to the test statements. Weighted mean helped the researchers in identifying the significant data that greatly helped the analyzation and interpretation of the variables. Moreover, in order for the researchers to be able to interpret the data, 4 point Likert scale was used.

Table 1

Likert rating scale, mean interval scale and verbal interpretation

Rating Scale (Likert)	Mean Interval Scale	Verbal Interpretation
1	3.50- 4.00	Most Effective
2	2.50-3.49	Effective
3	1.50-2.49	Least Effective
4	1.00-1.49	Not Effective

Moreover, Analysis of Variance or ANOVA was used to know if there is a significant difference between the effectiveness of Promotional Advertising Materials and on the decision among the

group of Grade 12 Senior High School Students in Emilio Aguinaldo College Cavite.

RESULT AND DISCUSSION

Table 2

The initial survey on respondents’ choice before presenting the promotional advertising materials

Group	School	<i>f</i>	%
Control	DLSU-D	9	37.50
	EAC-C	5	20.83
	LPU-C	5	20.83
	TUP-C	5	20.83
Print	DLSU-D	10	43.48
	EAC-C	2	8.70
	LPU-C	9	39.13
	TUP-C	2	8.70
audio-visual	DLSU-D	10	43.48
	EAC-C	2	8.70
	LPU-C	9	39.13
	TUP-C	2	8.70
both print and audio-visual	DLSU-D	9	39.13
	EAC-C	4	17.39
	LPU-C	8	34.78
	TUP-C	2	8.70

Based on the result, De La Salle University-Dasmariñas (DLSU-D) has the highest percentage among the groups with 37.50 % in the control group, 43.48% in both print group and audio-visual group and 39.13 % in the combination of print and audio-visual group.

Moreover, Lyceum of the Philippines-Cavite (LPU-C) was the second highest school with the same percentage of 39.13% in both print group and audio-visual group, 34.78% in the combination of print and audio-visual group then 20.83% in the control group. Followed by Emilio

Aguinaldo College in Cavite (EAC-C) with the same percentage of 20.83% in both print group and audio-visual group, 17.39% in the combination of print and audio-visual group then 20.83% in the control group while Technological University of the Philippines- Cavite (TUP-C) was the lowest school with the percentage of 20.83% in the control group and with the same school percentage of 8.7 in the print group, audio-visual group and the combination of print and audio-visual group. The result implies that majority of the Grade12 Senior High School students' of EAC-Cavite respondents prefer to enroll at De La Salle University.

Mitchell (2013) stated that the retrieval of information to memory after an ad exposure is affected by the increasing intensity if the consumer seeks to identify the advertised brand or product. Thus, a week brand name may affect the ad memory trace when the brand name is used as a cue.

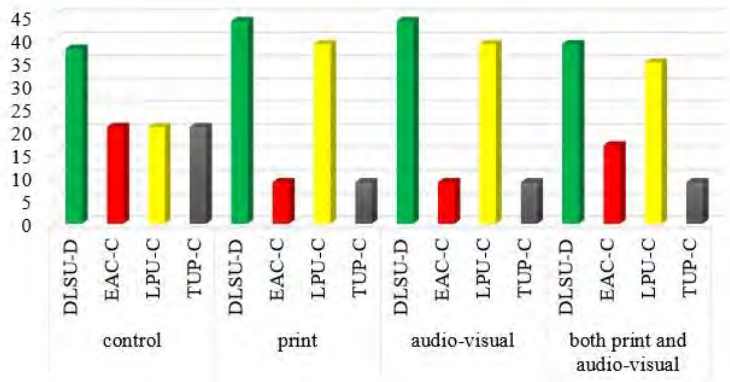


Figure 4 Respondents' choice before presenting the Promotional Advertising Materials

Figure 4 depicts the bar graph of respondents' choice before presenting the promotional advertising materials. The green bar shows the percentage of respondents' who chose DLSU-D. Meanwhile, red bars indicate the percentage of respondents' who chose EAC-C. Moreover, a yellow bar presents the percentage of respondents' who chose LPU-C and lastly, a grey bar shows the percentage of respondents' who chose TUP-C.

Table 2.1

The effectiveness of non-AIDA based promotional advertising materials

Group	Weighted Mean	Interpretation
Control	3.12	Effective
Print	3.13	Effective
audio-visual	3.18	Effective
both print and audio-visual	3.29	Effective
<i>4.00-3.50- Most Effective 3.49- 2.50- Effective 1.50-2.49- Least Effective 1.00-1.49- Not Effective</i>		

Table 2.1 implied that after the series of tests, based on the students' perception on the non-AIDA based promotional advertising materials the combination of both print and audio visual group earned the highest weighted mean with the score of 3.29, followed by the audio-visual group with 3.18. Next, were the print group with 3.13 and lastly, the control group with 3.12. The results showed that all of the enhanced promotional advertising materials were considered effective. Scott (2013) explained that measuring the effect of print ads such as brochures is very hard because it does not show you if how many students will see that advertisement. Thus, in this digital age, advertisers have combined audio visuals and print materials with technologies, so that the student will have an interactive experience with the advertisement. Thus, this gives a measurable result for each advertisement. In addition, United States Department of Labor revealed that 10% of information is recalled when an advertisement is presented orally while 35% of information is retained when information is presented visually. But when audio visual and print materials are combined to create an advertisement, retention and recall increase to 65% (Ireland, 2017).

Thus, the use of audio visual and print materials is a type of communication that helps the organization to attract potential students to consume a product or service (Poonia, Virender 2010).

Table 3

The effectiveness of AIDA based promotional advertising materials

Group	Weighted Mean	Interpretation
control	2.84	Effective
Print	3.16	Effective
Audio	3.09	Effective
both print and audio	3.12	Effective
4.00-3.50- Most Effective 3.49- 2.50- Effective 1.50-2.49- Least Effective 1.00-1.49- Not Effective		

Table 3 revealed that after the series of tests, majority of the respondents' agreed that the enhanced promotional advertising materials were considered effective through the AIDA based promotional advertising materials. In addition, print group earned the highest weighted mean with the score of 3.16, followed by the combination of both print and audio-visual group with 3.12, next was the audio-visual group with 3.09 and lastly the control group with the lowest mean score of 2.84. In addition, AIDA model also suggests that a manipulation to an advertising content and its message will undoubtedly lead to student decisions (Barker and Angelopulo, 2005).

Table 3.1 shows the frequency and distribution of the Grade 12 Senior High School students' choice before and after presenting the promotional advertising materials. Moreover, the table 2 presented that throughout the series of tests, respondents who belong to the three treatment groups namely the print, audio-visual and combination of print and audio-visual group changed their mind after they were exposed to the enhanced promotional advertising materials.

Table 3.1

Final survey on respondents' choice before and after presenting the promotional advertising materials

Group	School	Before		After	
		f	%	f	%
control	DLSU-C	9	37.5	10	41.67
	EAC-C	5	20.83	5	20.83
	LPU-C	5	20.83	4	16.67
	TUP-C	5	20.83	5	20.83

Table 3.1 (*continued*)

Group	School	Before		After	
		<i>f</i>	%	<i>f</i>	%
print	DLSU-C	10	43.48	6	26.09
	EAC-C	2	8.7	9	39.13
	LPU-C	9	39.13	7	30.43
	TUP-C	2	8.7	1	4.35
audio-visual	DLSU-C	1	43.48	7	30.43
	EAC-C	2	8.7	10	43.48
	LPU-C	9	39.13	6	26.09
	TUP-C	2	8.7	0	0
print and audio-visual	DLSU-C	9	39.13	3	13.04
	EAC-C	4	17.39	15	65.22
	LPU-C	8	34.78	4	17.39
	TUP-C	2	8.7	1	4.35

In connection, respondents from the combination of both print and audio-visual group has the highest percentage increase in choosing Emilio Aguinaldo College in Cavite (EAC-C) after they were exposed to the enhanced promotional advertising materials. 20.83% of the respondents who belong to the combination of print and audio-visual group chose EAC-C but after they were exposed to the enhanced promotional advertising materials most of the respondents changed their mind and resulted that 65.22% of the respondents prefer EAC-C. Moreover, audio-visual group showed that there were only 8.7 % of the respondents who are willing to enroll at EAC-C but after they were exposed to the enhanced audio-visual advertising materials, 43.48% of the audio-visual respondents chose EAC-C. Meanwhile, respondent under the print group has 8.7% chance on choosing EAC-C but after they were exposed to the enhanced print promotional advertising materials, 39.13% of the respondents changed their decision and chose EAC-C.

On the other hand, compared to the treatment groups, respondents who belong to the control group did not change their mind. EAC-C earned the same level of 20.83% before and after the survey because they weren't exposed to any form of promotional advertising materials.

According to Burtenshaw, Mahon, and Barfoot (2011), advertising has always played the lead role in terms of communication activity, although that position is being eroded dramatically as the other tools of marketing communications gain more widespread news. Advertising becomes a primary means of achieving marketing goals. Most advertising seeks to promote the sale of a particular good or service. The key role of advertising is about the building of brand preference and to encourage brand switching. The findings showed that the students' attitudes towards advertising are usually more favorable rather than unfavorable.

Through AIDA, the advertisers will be able to prompt action through image, color, layout, typography, size, celebrity that will grab the attention of the customers. In this way, students will be encouraged to information search and will be able to modify their decision and it is also a way of reinforcing attitudes (Glowa, 2002). In addition, AIDA model also suggests that a manipulation to an advertising content and its message will undoubtedly lead to students decision (Barker and Angelopol o, 2005).

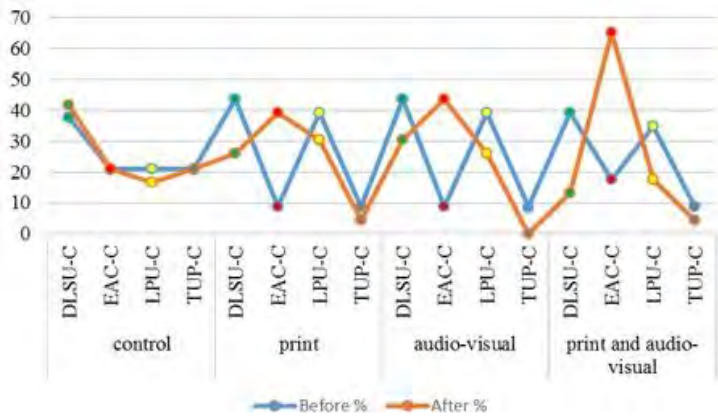


Figure 5 The Frequency distribution of the respondents' choice before and after presenting the enhanced promotional advertising materials

Figure 5 A line graph which presents the respondents' choice before and after presenting the enhanced promotional advertising materials. The blue line indicated the respondents' choice before presenting the promotional advertising materials while the orange line presents the respondents' decision after presenting the promotional advertising materials. Moreover, green dots represent the respondents' who prefer to enroll at DLSU-D, red dots show the respondents' who chose to enroll at EAC-C while yellow dots represent the respondents' who likes to enroll at LPU-C. In connection, respondents' who prefer to enroll at TUP-C were presented by the grey dots.

Table 4

The significant difference on the effectiveness of non-AIDA based promotional advertising materials

Group	p-value	Interpretation
control and print	0.9999	not significant
control and audio-visual	0.9275	not significant
control and both print and audio-visual	0.3752	not significant
print and audio-visual	0.9475	not significant
print and both print and audio-visual	0.4064	not significant
audio-visual and both print and audio-visual	0.6928	not significant
<i>*Significant at $p<0.05$</i>		<i>*not significant at $p>0.05$</i>

Table 4 shows the output of the ANOVA analysis and whether there is a significant difference between the group means of the non-AIDA based promotional advertising materials. Control group means and print group means has a significant value of 0.9999 control group means and audio-visual group means has a significant value of 0.9275 while the control group means and the combination of print and audio-visual group means has a significant value of 0.3752 which implies that there was no significant difference ($p>0.05$) between the control group and the treatment group based on the non-AIDA promotional advertising materials.

On the other hand, print group means and the audio group means has p-value of 0.9475, audio- visual group and the combination of print and audio-visual group has a significant value of 0.6928 while print group and combination of both print and audio-visual group has a p-value of 0.4064 which implies that there was no significant difference ($p>0.05$) among the treatment groups based on the non-AIDA promotional advertising materials.

The Tukey post hoc test was used to support the ANOVA test result which revealed that the p value was 0.3509 and that the effectiveness of the non-AIDA based Promotional Advertising Materials has no significant difference ($p>0.05$) among the control group and the treatment groups of Grade 12 Senior High School Students in Emilio Aguinaldo College Cavite. Hence, the null hypothesis was accepted. This finding implied that even though the respondents are grouped respectably their perspective towards the non-AIDA based promotional advertising materials has no significant difference.

In a research study made by Long Yi-Lin (2011) it pointed out that the creativeness and appeal of an advertisement affects the purchase intentions. Moreover, (Jamieson, 2011) agreed that there should be a good marketing plan inorder to persuade the students' purchasing intentions. Moreover, Sharma (2012) emphasized that creativity makes advertisement popular among the consumers and motivates them to purchase advertisement specific product.

Table 5

The significant difference on the effectiveness of AIDA based promotional advertising material

Group	p-value	Interpretation
control and print	0.0878	not significant
control and audio-visual	0.2041	not significant
control and both print and audio-visual	0.1414	not significant
print and audio-visual	0.9266	not significant
print and both print and audio-visual	0.9856	not significant
audio-visual and both print and audio-visual	0.9927	not significant

*Significant at $p<0.05$

*not significant at $p>0.05$

The table shows the output of the ANOVA analysis and whether there is a significant difference between the group means of the AIDA based promotional advertising materials. Audio-visual group and the combination of print and audio-visual group have a p-value of 0.9927 while print group and combination of both print and audio-visual group has a p-value of 0.9856. Moreover, print group and the audio-visual group have p-value of 0.9266. On the other hand, control group and audio-visual group has a p-value of 0.2041, control group and the combination of print and audio-visual group has a p-value of 0.1414. Lastly, control group and print group have a p-value of 0. 0878. Which implies that there is no significant difference ($p>0.05$) between the control group and treatment groups as well as among the treatment

groups. Due to the reason that, emphasis should be on enhancing goods and services that meet the needs of the students rather than showing them a competitive product. Moreover, promotion should less focus on the product but focus rather on the student needs and wants so that the students will attend to it (Lantos, 2015).

The Tukey post hoc test was used to support the ANOVA test result which revealed that the p value was 0.08 and that the effectiveness of the AIDA based Promotional Advertising Materials has no significant difference ($p>0.05$) among the control group and the treatment groups of Grade 12 Senior High School Students in Emilio Aguinaldo College Cavite. Hence, the null hypothesis was accepted. This finding implied that even though the respondents are grouped respectably their perspective towards the AIDA based promotional advertising materials has no significant difference. Due to the reason that according to studies, students tend to act rationally in their own self-interest when choosing services to buy, there are factors to consider such as change in taste or preferences (Wright, 2006).

Table 6

Significant difference between the effectiveness of non-AIDA based and AIDA based Promotional

Promotional Advertising Materials	Mean	SD	Mean Diff	t	Sig. (2-tailed)
Non-AIDA	3.18	0.07789	0.1275	1.55	0.17139
AIDA based	3.05	0.14454			

Table 6 revealed that there is no significant difference ($p>0.05$) between the effectiveness of non-AIDA based and AIDA based promotional advertising materials on Grade 12 Senior High School students of EAC-C which has a value of 0.17139 therefore, accepting hypothesis.

Wright (2006) stated that the level of student behavior when it comes to needs and wants of services varies from market to market, country to country and continent to continent. Moreover, studies revealed that that students focus not just on the promotion itself, but a student

may regard their own beliefs, aspirations, product benefits and levels of services in choosing a service or product.

CONCLUSIONS

AIDA based promotional advertising materials and non-AIDA based promotional advertising materials are both considered effective. Moreover, AIDA based promotional advertising materials has greater impact on the respondents' decision due to the reason that results from the post-tests survey changed after presenting the AIDA based promotional advertising materials. The result implies Promotional Advertising Materials patterned through the AIDA model affects students' decision making process in a positive way.

In addition, developing school like EAC-C can compete against well-known school like DLSU-D when it comes to marketing their brand with the help of AIDA based promotional advertising materials.

Thus, at the end of the study, findings showed that the students preferred a developing school such as Emilio Aguinaldo College-Cavite rather than a well-known university such as De La Salle University-Dasmariñas. This only shows that a brand identity is crucial and it will be a great help to stand out among other competitors but utilizing AIDA based promotional advertising materials will have a great impact in manipulating consumers' decision due to the reason AIDA based promotional advertising materials were designed to manipulate the content and message that fits with the attention, interest, desire of the consumer may result to an effective outcome.

RECOMMENDATIONS

Based on the results, the recommendations of the study are as follows:

The academic administrators may use AIDA based Promotional Advertising Materials to be able to attract new set of students or even maintain the student population they have in the institution and establish a brand identity so that the students will choose to enrol in Emilio Aguinaldo College- Cavite.

The future researchers may explore further and deeper on the parts of related topics that the researcher of this study were not able to address on this study such as their preference in a promotional advertising material.

REFERENCES

- Ainslie G. (2015). Advertising Management and Sales Promotion Retrieved August 15, 2017 from http://www.superbrands.com/lkc1/presentation/amal_cabraal_presentation.pdf
- Aaker D. (2012). Building Strong Brands ISBN 1471104389, 9781471104381 Retrieved January 5, 2018 from https://books.google.com.ph/books?id=OLa_9LePJlYC&dq=aaker+2012+building+strong+bands&source=gbs_navlinks_s
- Ayanwale, A., Alimi, T., & Ayanbimipe, M. (2005). The influence of advertising on consumer brand preference. Journal of Social Sciences, 10(1), 9-16. Retrieved from [http://pakacademicsearch.com/pdf-files/ech/517/55-65%20Vol%203,%20No%203%20\(2011\).pdf](http://pakacademicsearch.com/pdf-files/ech/517/55-65%20Vol%203,%20No%203%20(2011).pdf)
- Barmola, K., & Srivastava, S. (2010). Role of Consumer Behaviour in Present Marketing Management Scenario. 51(3), October- December 2010. Retrieved January 9, 2017.
- Barfoot, C., Mahon, N., & Burtenshaw, K., (2011). The Fundamentals of Creative Advertising (2nd ed., Fundamentals). Switzerland: AVA Publishing SA.
- Belch (2015) Advertising and Promotion: An integrated Marketing Communications Perspective ISBN-13: 978-0078028977. ... Publisher: McGraw-Hill Retrieved from [https://books.google.com.ph/books?id=0z_loAEACAAJ&dq=Belch+\(2015\)+Advertising+and+Promotion:+An+integrated+Marketing+Communications+Perspective&hl=en&sa=X&ved=0ahUKEwj2tqftn97YAhUDNbwKHTLICvQQ6AEIJTAA](https://books.google.com.ph/books?id=0z_loAEACAAJ&dq=Belch+(2015)+Advertising+and+Promotion:+An+integrated+Marketing+Communications+Perspective&hl=en&sa=X&ved=0ahUKEwj2tqftn97YAhUDNbwKHTLICvQQ6AEIJTAA)
- Chawla C. (2015) Impact of Age on Purchase Decision from Organized & Unorganized \ RACST – International Journal of Commerce, Business and Management Retail Stores – A Research Report in Indian Context (IJCMB), ISSN: 2319–2828 Vol.4,No.2,

Connolly J. Edmonton Journal Connecting p23-24 Retrieved August 18, 2017 from <http://www.edmontonjournal.com/about-edmonton-journal/advertising/pdf/edmonton%20journal%20mk%202011.pdf>

Dibb, S., Simkin L, William M. and Ferrell, O. C. (2012). Marketing: Concepts and Strategies (6th ed.).London: Cengage.

Griffin (2009) A Critique of Maxwell McCombs & Donald Shaw's Theory: Griffin's A First Look at Communication Theory from <http://journals.chapman.edu/ojs/index.php/mc/article/viewFile/902/1052>

Hackley, C and Hackley, R(2012) Advertising and Promotion ISBN 1473909007, 9781473909007 Publisher AGE, 2014 Retrieved September 20, 2017 from [https://books.google.com.ph/books?id=2PWICwAAQBAJ&dq=Hackley,+C+and+Hackley,+R\(2012\)+Advertising+and+Promotion&source=gb_s_navlinks_s](https://books.google.com.ph/books?id=2PWICwAAQBAJ&dq=Hackley,+C+and+Hackley,+R(2012)+Advertising+and+Promotion&source=gb_s_navlinks_s)

Hancock, B.,Ockleford, E.,&Windridge, K. (2009). An introduction to qualitative research NIHR research design service for Yorkshire & the Humber. . Retrieved from https://www.rds-yh.nihr.ac.uk/wp-content/uploads/2017/02/23_Introduction-to-qualitative-research-2009.pdf

Hatch and Schultz (2001, 2008) Corporate Brand Management: Aligning Core Values, Strategic Vision, Corporate Culture and Image from http://essay.utwente.nl/60563/1/MSc_Lorenz,_J.G..pdf

Hernik, J., & Dziadas, A. (2014). The effectiveness of Social Campaigns in the Eyes of Their Receivers, On Campaigns Promoting Safe Driving Example. doi:10.4467/20843968ZP.13.031.1736

Karailieová I. (2012) Impact of Songs and Jingles Used in Advertising on Brand and Product Awareness Retrieved August 19, 2016 from http://www.hitechcentrum.eu/www/_media/de/impact_of_song_s_and_jingles_used_in_advertising_on_brand_and_product_awareness.pdf

Keller K., Lehmann D. (2005) "Brands and Branding: Research Findings and Future `Priorities" Retrieved from

https://edisciplinas.usp.br/.../Brands%20and%20Branding_Re search%20Findings%20a.

Lantos G. (2010) Consumer Behavior in Action Publisher M.E. Sharpe, 2010 ISBN 0765629119, 9780765629111 Retrieved from https://books.google.com.ph/books/about/Consumer_Behavior_in_Action.html?id=JemkYebV5NYC&redir_esc=y

Mitchell A. (2013) Advertising Exposure, Memory and Choice ISBN 113757050 9781134757053 Retrieved from https://books.google.com.ph/books/about/Advertising_Exposure_Memory_and_Choice.html?id=4D0fAQAAIAAJ&redir_esc=y

Maheshwari, P., Seth, N., & Gupta, A. (2014). Advertisement Effectiveness: A Review and Research Agenda . International Scholarly and Scientific Research Retrieved from <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.663.3181&rep=rep1&type=pdf>

McCombs (2004) Setting the Agenda: The Mass Media and Public Opinion from https://books.google.com.ph/books?id=hMxrvXROkHEC&printsec=frontcover&source=gbp_ge_summary_r&cad=0#v=onepage&q&f=false

Mehta, A. (2010). —Advertising Attitudes and Advertising Effectiveness” . Journal of Advertising Research, may-june 2010. Retrieved January 15, 2017, from <http://gandrllc.com/reprints/advertisingattitudesandadvertisingeffectiveness.pdf>

Moriarty, Mitchell, Wells (2009) Advertising Principle and Practice Retrieved from [https://books.google.com.ph/books?id=YbGNAQAAQBAJ&pg=PA327&dq=Moriarty,+Mitchell,+Wells+\(2009\)+Advertising+Principle+and+Practice&hl=en&sa=X&ved=0ahUKEwidl5H-od7YAhWCw7wKHdzRCKQQ6AEINzAD#v=onepage&q=Moriarty%2C%20Mitchell%2C%20Wells%20\(2009\)%20Advertising%20Principle%20and%20Practice&f=false](https://books.google.com.ph/books?id=YbGNAQAAQBAJ&pg=PA327&dq=Moriarty,+Mitchell,+Wells+(2009)+Advertising+Principle+and+Practice&hl=en&sa=X&ved=0ahUKEwidl5H-od7YAhWCw7wKHdzRCKQQ6AEINzAD#v=onepage&q=Moriarty%2C%20Mitchell%2C%20Wells%20(2009)%20Advertising%20Principle%20and%20Practice&f=false)

O'Neill, F. (2003) The Effectiveness of Music in Advertising Theory and Research pp. Oxford University Press

Poonia, Virender S. (2010) Advertising Management Published by Gyan Publishing House,

2010 ISBN9380222297, 9789380222295 Retrieved from

Pricken, M. (2010). *Creative Strategies: Idea Management for Marketing, Advertising, Media and Design*. London: Thames & Hudson Retrieved from [https://books.google.com.ph/books?id=q0c4DwAAQBAJ&pg=PT184&dq=Pricken,+M.+\(2010\).+Creative+Strategies:+Idea+Management+for+Marketing,+Advertising,+Media+and+Design.+London:+Thames+%26+Hudson.&hl=en&sa=X&ved=0ahUKEwjU2-TQo97YAhWCurwKHak9Ah4Q6AEIJTAA#v=onepage&q=Pricken%2C%20M.%20\(2010\).](https://books.google.com.ph/books?id=q0c4DwAAQBAJ&pg=PT184&dq=Pricken,+M.+(2010).+Creative+Strategies:+Idea+Management+for+Marketing,+Advertising,+Media+and+Design.+London:+Thames+%26+Hudson.&hl=en&sa=X&ved=0ahUKEwjU2-TQo97YAhWCurwKHak9Ah4Q6AEIJTAA#v=onepage&q=Pricken%2C%20M.%20(2010).)

Rence, E. (April, 2006) What drives Consumer Behavior: Let's Talk Business Ideas for Expanding Retail and Services in Your Community Issue 116 from <http://fyi.uwex.edu/downtowneconomics/files/2012/08/What-Drives-Consumer-Behavior.pdf>

Roehm, M. L. (2001). Instrumental vs vocal versions of popular music in advertising. *Journal of Advertising Research*, 41, 49-62 Retrieved from https://musicbusinessresearch.files.wordpress.com/2012/04/volume-3-no-1-april-2014_allan_end1.pdf

Schwaiger, M., Cannon, H., & Numberger, S. (2010). Is Two Better Than One? The Impact of Cross-Media Print and Internet Advertising in Germany. *Communicative Business*. Retrieved January 8, 2017, from http://www.vitaepensiero.it/scheda-articolo_digital/manfred-schwaiger-siegfried-numberger-hugh-m-cannon/is-two-better-than-one-the-impact-of-cross-media-print-and-internet-advertising-in-germany-666111_2010_0001_0007-155381.html

Scott D. (2013) *The New Rules to Lead Generation: Proven Strategies to Maximize Marketing ROI* Published by AMACOM (March 20, 2013) ISBN-10: 0814432611 ISBN-13: 978-0814432617

Scrutaru, A., (2010). *Evaluating Advertising Effectiveness: The Case Study of Moldovan Bank Advertising Campaign*. Retrieve January 8, 2017

Sharma, P. (2012). *Advertising Effectiveness: —Understanding the*

- Value of Creativity in Advertising". Online Journal of Communication and Media Technologies, 2(3), July 2012. Retrieved January 9, 2017, from <http://www.ojcmt.net/articles/23/231.pdf>
- Singh A. and Singh S. (2016) Impact of promotional tools on student's decision making; study of private engineering institutions in Delhi NCR from <http://apjor.com/downloads/2601201620.pdf>
- Sorce, P., & Dewitz, A. (2007). The case for print media advertising in the internet age. Printing industry research center, US.
- Terkan, R. (2014). Importance of Creative Advertising and Marketing According to University Students' Perspective.
- Week, M., Vizard, S., Hobbs, T., Roderick, L., Gee, R., Woollen, P., & Joy, S. (2014, October 01). Audio visual advertising the most effective. Retrieved May 10, 2017, from <https://www.marketingweek.com/2006/07/27/audio-visual-advertising-the-most-effective/>
- Writer, L. G. (2016, October 26). Why Is Audiovisual Media Considered a Powerful Tool and Means of Communication? Retrieved March 24, 2017, from <http://smallbusiness.chron.com/audiovisual-media-considered-powerful-tool-means-communication-33541.html>
- Yi, L. L. (2011). The impact of advertising appeals and advertising spokespersons on advertising attitudes and purchase intentions. African Journal of Business Management, 5(21), 8446-8457. doi:10.5897/ajbm11.925
- Zyglidopoulos (2006) Exploring the Moderators on the Branding Strategy-Financial Performance Relationship from https://www.jbs.cam.ac.uk/fileadmin/user_upload/research/workingpapers/wp0613.pdf

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