



The Utilization of Jigsaw Strategy in Teaching Health among Grade 3 Students

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Abstract:

In this quantitative quasi-experimental research, the researchers attempted to discover the effectiveness of the Jigsaw strategy, a kind of cooperative learning, to the 25 Grade 3 students, with 16 male and 9 female, at College of San Benildo – Rizal in enhancing their learning process especially in familiarizing and understanding concepts of a particular topic (Factors that Influence Consumer's Choice of Goods and Services) in Health, one of the components of their MAPEH subject, for the fifth week of the fourth quarter this school year 2022-2023. The researchers administered a validated 15-item pretest prior to the implementation of the Jigsaw strategy to measure their background knowledge about the said topic. During the face-to-face implementation of the Jigsaw strategy, the researchers grouped the students into two sets of groups (expert group and home group). There were five home groups and five expert groups, with five members each. Each member of the expert group was assigned with a sub-topic to study with their group mates and share what they have learned to their group mates in the home group. After two days of face-to-face Jigsaw strategy implementation, the researcher administered a validated 15-item posttest to measure the knowledge and understanding of the Grade 3 students about the topic with the use of the Jigsaw strategy. Results revealed that both male and female students' mean scores in the posttest increased. Based on the paired t-test results, there was a significant difference between the pretest and posttest scores of the Grade 3 students with the P value of $< .00001$. In conclusion, based on the findings presented, the Jigsaw strategy is effective in improving the Health test scores of the Grade 3 students of this study.

INTRODUCTION

One of the industry's most severely impacted by the COVID-19 pandemic is education. During the time of the pandemic for the past two years, majority of nations have temporarily closed their educational institutions to slow and cut down the spread of infections due to COVID-19 virus. More than 1.2 billion students worldwide, including more than 28 million students in the Philippines, were impacted by this closure (UNESCO, 2020). Online learning platforms have been made available as a result of responses like community lockdown and community quarantine in a number of different nations (Crawford et al., 2020). But for both teachers and students, implementing online learning came with a variety of risks, issues, and difficulties (Bao, 2020). In a study from Barrot, et.al. in 2021, findings revealed that students' greatest challenge in online learning was connected to their learning environment at home. The study also showed that the COVID-19 pandemic had a significant negative impact on students' mental health and the standard of learning.

One of the last nations in the world to resume full-time, in-person instruction is the Philippines, which has prompted warnings that the prolonged closure of classrooms has exacerbated the nation's education crisis (VOA News, 2022). Therefore, leaders in education made the decision to adopt the new norm in response to these circumstances. In her first executive order, Vice President and Education Secretary Sara Duterte-Carpio directed all public and private schools to resume face-to-face instruction last November 2, 2022 (Lugtu, 2022). Vice President Sara Duterte also signed DepEd Order No. 44 allowing private schools nationwide to continue the implementation of blended learning modality beyond November of 2022 last October 17, 2022 (Manila Bulletin, 2022). Blended learning modality is the combination of face-to-face classes and online learning (three days of face-to-face classes and two days of online classes per week).

Moreover, one of the principles of the K–12 program being implemented by the Department of Education is the use of 21st century skills by students and teachers to keep up with global educational standards. Since the Philippines was one of the last nations to adopt a 12-year basic education cycle, the country's teaching and learning in the 21st century appears to be

less advanced than elsewhere in the world. The K-12 program, however, provides a greater level of assurance that the nation is currently moving in the direction of achieving this goal (Sabado, 2016). To achieve this goal and to compete in today's global society which is to teach students the necessary skills that they haven't much developed yet during the 2 years of online classes because of the pandemic, schools, administrators, and especially teachers need to employ teaching strategies that would make students become great communicators, creators, critical thinkers, and most importantly, collaborators ("the Four Cs"). Among all the "Four Cs" of the 21st century skills, collaboration may be considered as the hardest, yet important skill students must have as it achieves meaningful and effective results in the learning (Chiruguru, 2020).

College of San Benildo – Rizal was one of the schools in Rizal that followed the blended learning as their official learning modality last school year 2022-2023. During the first quarter of the school year, College of San Benildo - Rizal's schedule for face to face and online classes were done alternately. Students in the primary level (Grades 1 to 3) attended face to face classes on the second, fourth, sixth, and eighth week of the quarter while students in the intermediate level (Grades 4 to 6) attended on the first, third, fifth, and seventh week. Before the school year started, the school also conducted a survey to parents to identify the number of students who would like to stay learning online at home and students who would like to attend limited face to face classes. Since there were a great number of responses from the parents stating that they wanted their children to continue having pure online classes, the school allotted one section for each grade level to address this concern and cater these students. In accordance with DepEd Order No. 44 (allowing private schools to continue the implementation of blended learning modality beyond November of 2022), College of San Benildo – Rizal made changes in the schedule for the remaining quarters (second to fourth quarter). All students were required to attend three days of face-to-face classes and two days of online classes in a week. The school's official learning management system (LMS) for online classes was Microsoft Teams. As students came back to school again to attend in-person classes, problems in our educational system persist, and one of it is the outdated teaching method that teachers use to teach students in the classroom (VOA News, 2022).

College of San Benildo-Rizal, the school in which the researcher chooses to conduct this study, is a Catholic institution that is guided by the ideals and charism of Saint Brother Benilde Romançon. The school was named back then as San Benildo Integrated School. Mr. Rodrigo Ko, the main incorporator of the school, had this deep desire to build a legacy that will become a constant reminder of his gratitude for being given a new lease in life. This gave him the purpose to build this school. Mr. Ko felt the need to seek help from Dr. Judith Aldaba, who was then the Director of De La Salle – Zobel. After a series of requests and preparations, the school was successfully registered. On June 2, 1997, the school first opened its doors to 313 boys and girls who composed the first batch of pupils in Junior Prep to Grade 4. The school was supervised before by the Lasallian Schools Supervision Office (LASSO) and “graduated” from being a De La Salle Supervised School in 2009, changing its name from San Benildo Integrated School to College of San Benildo – Rizal in 2010. In our present time today, the school caters Kinder to Grade 12 students, and is now offering TESDA training.

College of San Benildo – Rizal continues to envision itself as a center of excellence both in teaching and learning that offers a quality, human, and Christian education. One of the missions of the school is to promote a culture of excellence among the students coupled with strength of character, sound values formation, sincerity in purpose, and service to the society. To develop these to students, College of San Benildo – Rizal’s instructional program includes the following subjects: Christian Life and Values Education, English, Mathematics, Science, Filipino, Mother Tongue, Araling Panlipunan, EPP (Edukasyong Pantahanan at Pangkabuhayan), and MAPEH (Music, Art, Physical Education, and Health), with the aim of providing a strong foundation for its learners to hone their intellectual capabilities that they may be thinkers and positive contributors of national and global changes (College of San Benildo – Rizal Student Handbook for School Year 2022-2023).

As College of San Benildo – Rizal transitioned to blended learning, assessments done during the pre-pandemic, like the quizzes and quarterly examinations, were given again to the students. Assessments during online distance learning before were just more on Activity Sheets and Performance Tasks only. For the first time in two years, the school held its in-person

quarterly examinations. To identify which skill or concept the students had difficulties with, the teachers got the frequency of errors (FOE) from the students' examination results. The results showed that students really have skills and concepts they need to improve more, especially when it comes to enhancing their knowledge and understanding in a particular subject area. The facts, theories, principles, methods, skills, terminologies, and modes of reasoning that are required for more advanced or independent learning in an academic discipline are referred to as foundational knowledge (Logan & Angel, 2014).

The researcher aimed to address this concern by attempting to enhance the learning process of the Grade 3 students, particularly in one of the components of their MAPEH (Music, Art, Physical Education, and Health) subject, which is Health, the subject that the researcher was teaching for the fourth quarter of school year 2022-2023. In College of San Benildo – Rizal, MAPEH subjects are taught to the students to develop positive health and fitness attitude to achieve a good quality of living and to hone one's love and appreciation for music, art, and sports, through various activities that will enhance students' talents and skills geared towards holistic human formation (College of San Benildo – Rizal Student Handbook for School Year 2022-2023). Each MAPEH subject was taught accordingly per quarter. Music was taught in the first quarter, Art in the second quarter, Physical Education in the third quarter, and Health in the fourth quarter. In this research, the researcher utilized the Jigsaw strategy, a type of cooperative learning, in teaching concepts in Health.

As the term, "cooperative learning" suggests, students aid one another in learning, share information and resources, and cooperate to decide what to study and how to study (Sharan & Sharan, 1987). It is also referred to as a set of instructional methods in which students are encouraged or required to work together on academic coursework (Slavin, 1987). Cooperative procedures are created for the students to actively take part in the learning process through exploration and discussion with their peers in small groups. The group work is meticulously organized and structured in order to encourage the participation and learning of all group members in a cooperative environment (Davidson and Worsham (1992).

One of the strategies of cooperative learning method is Jigsaw. This applies the effort of working in teams for the students to achieve favorable results (Halimah & Sukmayadi, 2019; Morera-Fernandez *et al.*, 2020; Qiao & Jin, 2010; Vijayan *et al.*, 2016). This strategy is established when each student in a team takes the responsibility of teaching their peers about the materials they have learned. This also decreases the hesitation of the students to participate in the discussions, which results in active learning (Ledlow, 1996). The Jigsaw strategy can be compared to a workplace where everyone is regarded to have a role to attain a common goal. It is a strategy which makes students experts and knowledge receivers. The learning experience is divided into stages or sections by the teacher. He or she then assigns sub-topics to individuals in a group. Students from various groups who are studying the same subject come together to discuss it between groups. Each group has been given a different subtopic to research (Chukwu & Arokoyu, 2019).

According to Hidayah *et al.* (2017), cooperative learning techniques like the jigsaw model can significantly boost students' engagement in a third-grade classroom. To support this, Garcia *et al.* (2017) discovered that students favored unconventional teaching and collaboration strategies because they produced high-quality learning. According to numerous researchers, the Jigsaw method of teaching is effective for teaching a variety of subjects, mostly in Science (Verma, 2019; Mohammad & Hamadneh, 2017; Jainal & Shahrill, 2021; Arokoyu, 2019; Omokorede & Siyelenen, 2021). No up-to-date research about the use of the Jigsaw strategy in teaching Health in the Philippine setting is found. The researcher considered this as a research gap that needed to be filled in through this study.

The foundations required for success in school and in life must be laid in the Early Grades (Grades 1 to 4). To be fully prepared for the big transition to middle school, children must master foundational skills in the elementary grades (Southern Regional Education Board, 2020). To discuss this further, the researcher included in this part the related literature and studies which gave support to the important variables for this research.

In the K to 12 Basic Education Curriculum, one of the required learning areas for schools, both for public and private, is for them to include the health subject in their instructional

program. The goal of the health curriculum is to help the Filipino learners achieve, maintain, and promote lifelong health and wellness. The learning experience provided by the program allows students to develop health literacy competencies and improve their overall well-being. From Kindergarten to Grade 10, health education focuses on the physical, mental, emotional, social, moral, and spiritual dimensions of holistic health. It encourages learners to gain necessary information, attitudes, and skills for promoting good nutrition, preventing, and controlling diseases, preventing substance misuse and abuse, reducing health-related risk behaviors, and preventing and controlling injuries with the goal of maintaining and improving personal, family, community, and global health (K to 12 Health Curriculum Guide, 2016). College of San Benildo – Rizal’s Subject Matter Outline in Health is aligned in the K to 12 Health Education Curriculum of the Department of Education. With the help of the school’s administrators and subject team leaders, a revised Subject Matter Outline in Health was created last 2020. The school made sure that the lessons target the most essential learning competencies that will develop the learners’ practical and lifelong skills for learning despite a crisis, like the pandemic, and for students to attain a successful life in time.

In teaching health in the classroom, one of the highly encouraged developmentally appropriate learner-centered teaching approaches that teachers can do is the use of cooperative learning activities that would engage students in learning. With this being said, the researcher gave focus on improving the teaching instruction in Health in the Grade 3 level with the use of the Jigsaw strategy. The grade level standards of Health in Grade 3 focus on making students demonstrate understanding and knowledge of the following topics: nutrition; disease prevention and control; consumer health; and community and environmental health - all of which aid in the development of healthy habits and practices. Figure 1 below shows the Subject Matter Outline of Grade 3 Health in College of San Benildo – Rizal.

Figure 1. Subject Matter Outline of Health Grade 3 in College of San Benildo - Rizal

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER	FOURTH QUARTER
<i>Nutrition</i>	<i>Personal Health</i>	<i>Consumer Health</i>	<i>Injury Prevention, Safety, and First Aid</i>
A. Characteristics of a Healthy Person	A. Common Childhood Diseases and their Effects	A. Introduction to Consumer Education and its Components (Health Information, Products, and Services)	A. Road Safety <ol style="list-style-type: none"> 1. Road Safety Practices as a Pedestrian <ul style="list-style-type: none"> - Crossing Safely Using a Pedestrian Lane (with an Accompanying Adult or Cross in Groups) - Following Road Crossing Procedure: Stop, Look, and Listen - Obeying Traffic Rules/Signals and Road Signs - Walking Facing Traffic (Best Chance to See Approaching Vehicles) - Walking on the Sidewalk - Being Aware of Bikers and Runners while Walking 2. Road Safety as a Passenger <ul style="list-style-type: none"> - Choosing a Safe Spot to Sit On - Using the Designated Loading and Unloading Zones 3. Road Hazards and Accident Prevention <ul style="list-style-type: none"> - Road Hazards such as Open Manhole, Slippery

			Surface, Crowded Sidewalk, Uneven Surface, Poor Lighting, etc. - Self-Management Skills for Road Safety
B. Malnutrition and its Forms (Under Nutrition and Over Nutrition)	B. Risk Factors for Diseases - Heredity - Environment - Lifestyle	B. Factors that Influence the Choice of Goods and Services 1. Personal (Interest, Preference) 2. Economical (Budget) 3. Psychological (Emotion) 4. Ethical (Values) 5. Environmental/Social (Family, Peers, Media, Trends)	B. Community Safety 1. Hazards in the Community A. Natural Hazards (Landslide, Volcano, Earthquake, Typhoon, Tsunami, etc.) B. Safety Guidelines - Participating in Family/Community Disaster Drills - Being Vigilant (Do not Talk to Strangers: Do not invite a stranger to the house; do not accept anything from a stranger) - Reporting to a Trusted Adult or Authority any Suspicious Looking Person or - Suspicious Actions - Using Safe Routes for Walking in the Community - Knowing Places/ People to Go When Seeking Help
C. Characteristics, Signs, and Symptoms, and Effects	C. Preventive Measures for Common Childhood Diseases 1. Proper Hygiene 2. Environmental Sanitation	C. Skills of a Wise Consumer 1. Budgeting 2. Bargaining (Negotiation) 3. Data Collection (Collecting Data or	

	<p>3. Building Up One’s Body Resistance through Healthy Lifestyle</p> <p>A. Proper Nutrition and Hygiene</p> <p>B. Adequate Rest and Sleep</p> <p>C. Regular Physical Activities</p> <p>4. Specific Protection through Immunization</p> <p>5. Regular Health and Dental Check-Up</p>	<p>Learning More about the Products through Literature, etc.)</p> <p>4. Comparison Buying</p> <p>5. Communication and Assertiveness (Writing or Reporting a Complaint Regarding Defective or Fraudulent Goods/ Services)</p>	
<p>D. Nutritional Problems</p> <p>1. Protein – Energy Malnutrition (PEM)</p> <p>2. Micronutrient Deficiencies</p> <ul style="list-style-type: none"> - Vitamin A (Night Blindness) - Vitamin B (Beri Beri) - Vitamin C (Scurvy) - Vitamin D (Rickets) - Iron (Anemia) - Iodine (Goiter) - Calcium (Rickets/Osteoporosis) <p>3. Overweight and Obesity</p>		<p>D. Consumer Rights</p> <ol style="list-style-type: none"> 1. Right to Basic Needs 2. Right to Safety 3. Right to Information 4. Right to Choose 5. Right to Representation 6. Right to Redress 7. Right to Consumer Education 8. Right to a Healthy Environment 	

The researcher found it necessary to teach students these lessons with a strategy that would make them acquire and retain information easily, most especially in their topic about Consumer Health, particularly the factors that influence consumer’s choice of goods and services.

Cooperative learning is perhaps the oldest form of group learning. For example, Hebrew boys used partners to study Talmud a thousand years ago. The word "cooperate" has a wide

range of common usage synonyms, such as working together, cooperating, joining forces, acting jointly, pitching in, working side by side and standing shoulder to shoulder. The word, “cooperate”, comes from the late 16th century based on the Oxford English Dictionary. It is from the Latin word *cooperat* which means, “worked together”, from the verb *cooperari* (*co* means “together” and *operari* means “to work”), in other words, to work together cooperatively to accomplish an educational operation, like activity or project (Davidson, 2014). According to Kagan (1989), the creation, analysis, and systematic application of structures, or content-free methods of structuring social interaction in the classroom, form the foundation of the structural approach to cooperative learning. In most structures, there are a number of steps with predetermined behavior at each one. The distinction between "structures" and "activities" is a crucial tenet of the strategy. An activity is produced when a structure and academic material are combined.

Better student performance is empowered by cooperative learning because it gives students the chance to grow as learners in the classroom by showcasing their skills and competencies among peers (Ransdell & Moberly, 2003). Because cooperative learning uses a variety of learning activities to increase students' comprehension of a subject, it promotes positive learning among students, demonstrating that cooperative learning is an effective teaching strategy (Akinbobola, 2009). To ensure that the method's overall process runs smoothly and that students interact with one another, teachers must take the time to carefully plan each lesson (Barron & Hammond, 2008).

Five key characteristics must gradually develop if cooperative learning is to be successful (Felder et al., 2000). The first key characteristic is *positive interdependence*. As team members depend on one another for their ideas, positive interdependence is fostered ((Jones & Jones, 2008). Therefore, encouraging each member of the group to trust each other is important in achieving successful performance in their marks. Because they understand that each and every team member must succeed for the group to succeed, students grow a sense of responsibility for their learning. This characteristic suggests that members of the group must work together in the learning process. Each team member may struggle if one student fails to demonstrate

understanding of the assigned material to the other team members. This results in a failure of the group project (Slavin, 1996). The second characteristic is *individual accountability*. This involves student's responsibility for their own learning by doing things for their own group (Johnson & Johnson, 1999). They typically engage in group activities to make sure the group produces positive results for their own gain (Jones & Jones, 2008). Giving each student an individual test, choosing one student to represent the entire class, or asking each student to summarize what they learned are just a few ways to organize the students' accountability (Johnson & Johnson, 1999). These give the teacher the evaluation they need to comprehend how the students are learning. The third characteristic is *face-to-face interaction*. It focuses on how students encourage each other's success through discussions, asking questions, and supporting each other as they accomplish the task they need to do (Jones & Jones, 2008). These interactions teach students to value others' opinions, maintain focus, and promote conversation in order to treat everyone with respect (Slavin, 1996). Silent students who don't participate in group learning should be encouraged in order for the learning process to be successful (Johnson & Johnson, 2009). The success of learning in terms of receiving constructive criticism depends on dialogue (Jones & Jones, 2008). The fourth characteristic is *social skills*. Cooperative learning can promote social and interpersonal development as students learn how to collaborate because some students may lack the social skills needed to work well with others (Jones & Jones, 2008). Social skills may include leadership, trust building, decision making, communication, and conflict management (Johnson & Johnson, 2009; Kani, et.al., 2014). And the fifth and last characteristic is *group processing*. This relates to the cohesiveness among team members, which enables them to improve their team building abilities (Slavin, 1996). Students can demonstrate that they are collaborating well to achieve their common objective by participating in the group process, identifying any problems relating to the members, and solving them (Johnson & Johnson, 1999). Their interpersonal relationship quality will improve more as a result of thinking back on their cooperation during the group project (Jones & Jones, 2008).

These five key characteristics of cooperative learning were utilized as the researcher's guide in developing a structured plan for teaching concepts in Health, using one of the strategies of cooperative learning, which is the Jigsaw strategy.

Cooperative learning is the use of small groups in the classroom where students cooperate with one another to increase their learning, which may include both cognitive and social-emotional learning (Johnson & Johnson, 1999; Slavin et al., 2003). Students have numerous opportunities to practice their group work skills through cooperative learning. For instance, all students have the opportunity to use different speech components during cooperative learning, including asking questions, giving answers, making suggestions, and providing critical thought on one another's ideas (Gillies, 2003). In 2004, Gillies showed that giving students the chance to collaborate regularly in structured cooperative learning groups encourages the development of social skills that support participation in the group's activities.

Despite research highlighting the value of cooperative learning, students typically work in groups rather than as a whole in primary schools (Baines et al., 2008; Galton & Hargreaves, 2009; Veenman, Kenter, & Post, 2000). Furthermore, a number of studies show that it's challenging for teachers to incorporate cooperative learning into the classroom. For instance, teachers struggle with time management and preparing students to collaborate (Gillies & Boyle, 2010). It is important to recognize the time and preparation needed by teachers to implement cooperative learning in the classroom (Blatchford et al., 2006; Kutnick et al., 2008). Implementing cooperative learning may be particularly difficult in the lower primary grades where more teacher supervision is required (Battistich & Watson, 2003). Just like in the study conducted by Souvignier & Kronenberger (2007), in which they applied cooperative learning in third grader's jigsaw groups for mathematics and science, low improvement scores between pre- and post-tests were revealed. This study suggests that the implementation of the Jigsaw method must be prepared well ahead of time especially in designing the home group. The use of well-organized materials or the explicit teaching of explaining techniques in addition to questioning training appear to be promising strategies. These literatures and studies give the researcher the idea of making cooperative learning, specifically the Jigsaw strategy, more structured and

detailed. It's critical to improve classroom management procedures for students' high-level achievement. Practices in the classroom are directly related to pupils' academic success (Gage, Scott, Hirn & MacSugaGage, 2018). It is obvious that teachers' classroom management affects student performance. It has been discovered that good classroom management significantly improves student academic performance and lowers behavioral issues (Korpershoek et al, 2016).

Another predictor of student's achievement, especially when cooperative learning strategy is utilized, is their English language proficiency. According to Ulibarri, et.al. (2013) in their study about the relationship of language proficiency and student's academic achievement of grade school students (1st and 3rd graders), the student's chance to perform well in the subjects that are using English as medium of instruction would increase if they were proficient when it comes to listening, reading, writing, and speaking the English language. In this research, since most of the participants were English speakers, it would be easier for them to understand the concepts in Health and learn together as they converse in the English language. That's why the researcher made sure that the study guide's content and the pretest and posttest's instructions were well constructed with English words that were appropriate for the students' age and grade level.

According to Al-Zuhairi (2013), the Jigsaw strategy entails a group of students who are called experts, within the framework of this strategy, with each expert of each learning group meeting jointly in one place to learn about a particular topic then returns to their original groups to impart what they have learned. In 1978, the first one to use the Jigsaw strategy was Areston, and then later developed by Slavin in 1980. The complementary strategy was developed by Elliot Aronson, et.al in 1978. With their contribution in developing the Jigsaw strategy, this is now divided into two types (Ariz, 2010):

A. Jigsaw 1

Each student in a group learns a portion of the course that will be taught to all the students in the group based on the division of the class into groups of members. Each member is in charge of imparting to the other members the knowledge he has learned from the teacher. The group as a whole evaluates the cooperative work while the students take individual tests.

B. Jigsaw 2

This method was developed by Slavin in 1978 and is an adaptation of Jigsaw I, in which all students read the course material but focused on various topics. Students focus on the same topic then teach them to the members of their group. The team receives the degree earned by the students after passing quizzes in each course they are focused on.

Many research and applied studies prefer merging the two strategies as one under the name, “Jigsaw”. This research will also utilize these two merged Jigsaw strategies as it brings up a growing interest in the importance of cooperative work, and it achieves understanding and perceiving knowledge (Ariz, 2010).

Aronson (2005) created a detailed series of steps to carry out the Jigsaw strategy. The four steps are the Planning and Preparation, Implementation, Observation, and Reflection.

In the Planning and Preparation, the teacher selects the lesson to be taught in the class. Then, the lesson is divided into 5-6 subtopics (depending on the number of students within the group). The teacher must prepare an observation sheet to record the performance of the students individually and as a group. The test or quiz should be prepared in advance to assess the changes in the knowledge of the students. The teacher must prepare clear directions for the students to follow during the implementation. The teacher should explain the critical terminologies for the students to understand the topic easily.

During the Implementation, the teacher introduces the lesson and outlines the sub-topics to be covered. The class is divided into heterogeneous groups or teams. Each group or team consists of five to six students. Each member of the home team is assigned with a sub-topic to learn and master. After the students master the sub-topic assigned to them, they meet with the other homegroups to make expert teams to study and discuss the sub-topics. Thus, these expert groups are made up of students with the same sub-topics. This step is crucial because students must hear the viewpoints of other students. This develops students’ communication skills as well as helps those who have problems in understanding the concept on their own. They may ask questions about the sub-topic from a fellow expert in the group. Then, the experts return to their original home team to discuss and teach their mastered sub-topics to the other members of the

team. In this part, students are responsible for their own learning and at the same time the success of their group.

In the Observation and Reflection, the teacher observes the interaction among students. He/she acts as a facilitator and guide. After that, part of the Reflection is the teacher's way of evaluating the students through assignments and quizzes that will be given to them individually. The teacher also provides feedback on the performance of an individual and whole groups.

Jigsaw strategy is a useful tool for raising student achievement and fostering classroom interaction. Jigsaw teaching techniques are much more effective than lectures because they emphasize cooperation (Verma, 2019). This statement can be supported by numerous related foreign studies about the effectiveness of applying the Jigsaw Strategy to the various subjects of the students in the early grades.

As early as Pre-school, Jigsaw strategy can be used in teaching basic concepts. Just like in the study from Akcay (2016), in which the Jigsaw strategy was applied in teaching the sense organs and their functions to four- and five-year-old children in the nursery class. The data collected led to the conclusion that the cooperative learning model is superior to the traditional teaching approach for teaching children about sense organs.

Because of its impact on students' understanding of scientific concepts, Hamadneh & Salim (2017) advised using the Jigsaw strategy as a teaching method. In their study, they applied the Jigsaw strategy in teaching science concepts to fourth graders. Results showed that students in the experimental group, those who taught with the Jigsaw strategy, produce better results than the students in the control group who were taught in a traditional way of teaching.

Jigsaw strategy is also applied in improving ESL students' reading achievement. Sabbah (2016) conducted a quasi-experimental pre-posttest design research to prove its effectiveness in teaching female students who were enrolled in Level 4 classes. Results revealed significant differences in favor of the experimental group. This means cooperative jigsaw strategy correlates totally with students' reading achievement. This is also supported by the study of Purba, et.al. (2018) which suggests that teaching reading through the Jigsaw cooperative learning method makes it easier for the students to quickly locate particular information in the text, after finding

out a significant improvement in the reading comprehension achievement of the third-grade students.

Hussein & Neamah (2019) investigated the effectiveness of the Jigsaw strategy when applied in teaching Chemistry to Grade 3 students through experiment. Results also showed favor to the students in the experimental group, who were exposed to the Jigsaw strategy, as it shows better scores in the achievement test than the students in the control group who were taught in a usual way.

The findings of these studies support the idea that learning is effective when cooperative learning, specifically the Jigsaw strategy, is used and applied in teaching pupils in the early grades. However, there are no available and updated related studies found about the use of the Jigsaw strategy in teaching pupils in the early grades in the Philippine Setting.

Teachers worldwide utilized the Jigsaw Strategy to improve their teaching styles and academic performance of their students in various subjects. Many related local and foreign studies talk about its effectiveness and the researcher found it necessary to understand how this strategy would be beneficial to all types of students, whether they are studying in the Philippines or in other countries. However, this part only discusses the effectiveness of the Jigsaw strategy to the students in the higher levels.

In a Philippine setting, Charernnit, et.al. (2021) evaluated the effects of the Jigsaw strategy on the Senior High School students' achievement in learning Literature. The study used the quasi-experimental research design with two groups of respondents. The results of this study showed that in addition to raising students' performance in a literature course, using the Jigsaw strategy improves their attitudes toward collaborative learning. Regardless of the students' ability level or gender, Jigsaw as collaborative learning has the same impact on literary achievements. However, they also found out that students who have had more academic preparation will probably gain more from group learning. This conclusion is supported in a study conducted by Acantilado (2012) to first year high school students, in which the research findings suggest that the Jigsaw strategy helps students understand the lesson, encourages active class participation, sustains students' motivation in learning Literature, and improves Literature learning.

Aside from applying the Jigsaw strategy in learning Literature, another study from a Philippine setting is from Tabiolo & Villar (2019) who proved its effectiveness in teaching Science. Using a quasi-experimental research design, the researchers were able to see the improvement of the Grade 9 students' achievement in Science. From “developing” to “proficient” level, the Jigsaw strategy really had a significant effect on the achievement of the students in Science. The study suggests using this instructional approach to improve student performance. In a higher level (tertiary level), the study of Limjuco & Gravino (2012) also confirmed the effectiveness of the Jigsaw strategy when used in teaching first year pharmacy students in their Physics subject. The study's conclusions showed that the Jigsaw strategy significantly enhanced the pharmacy students' ability to solve physics problems. In order to validate the triangulation of the method, the researchers also used a focus group discussion. They found that students who were exposed to the Jigsaw strategy improved in proficiency, responsibility, facilitation, and approachability as learners. The students believed that studying was important for both themselves and their fellow group members.

In foreign classroom settings, the effectiveness of the Jigsaw strategy in teaching science concepts are also evident. Just like in the study of Ojekwu & Ogunleye (2020) in Nigeria, results showed that the students taught using the Jigsaw strategy improved their mean scores more than those taught using the traditional lecture method. They recommended that teachers should utilize the Jigsaw strategy in the classroom practice.

Another one from Nigeria is the study of Amedu (2015) in which the Jigsaw strategy was applied in teaching Biology to secondary students. Amedu (2015) also considered the participants' gender as a factor that would affect their achievement test results. Results showed that the use of the Jigsaw strategy was proven to be an effective way to improve achievement and the male students benefited more from the Jigsaw strategy than the female students. This may be because of the academic subject preferences of the male students. Traditionally, male students do well in science-related subjects because these are perceived to be “masculine/male” subjects (Vleuten, et.al., 2016). Just like in the study of Asante, et.al. (2022), in which male senior high students outperformed the female senior high students in Physics and Chemistry

subjects. This tends to influence male and female learning styles in terms of attitude and approach. These gendered ideologies have an impact on the teaching methods and styles that teachers frequently employ, which benefit males and thus affect their overall performance.

In Indonesia, from the study of Yozza, *et.al.* (2019), they applied the Jigsaw strategy in teaching Mathematical Statistics to undergraduate students. They found out that the Jigsaw strategy worked successfully to improve the learning achievement of the students. This strategy was also found to increase student involvement while improving teamwork and independence in the learning process, as well as improve students' understanding of the material being studied. The findings of the studies mentioned above helped the researcher to gain evidence on the effectiveness of the Jigsaw strategy that is applied in local and foreign classroom settings. The researcher aimed to prove through this study if these results were evident in teaching early grades, particularly the third graders.

Theoretical Framework

Social Constructivism Learning Theory

To give more direction to this research, the researchers found Social Constructivism as the learning theory that would give more justifications to the claims mentioned in the related studies about the Jigsaw strategy. The Social Constructivism Learning Theory also guides the researcher's methodology to answer the problems stated in this research.

Lev Vygotsky introduced the social constructivism learning theory in 1968. According to the theory, language and culture serve as the frameworks through which people perceive, share, and comprehend the world. According to Vygotsky, language and culture are crucial for both the intellectual growth of people and how they view the world. This means that language is used to transmit concepts, and experience and interactions within a culture help people interpret and understand those concepts. Knowledge is therefore not only socially constructed, but also co-constructed, since it takes a group of people to have language and culture to create cognitive structures. The social constructivist theory views knowledge as something that students create in

collaboration with other students, teachers, and peers based on the experiences they gather from their environment (Akpan, et.al., 2020).

According to Kelly (2012), social constructivism can be used in the classroom with a variety of teaching strategies, including case studies, research projects, problem-based learning, brainstorming, collaborative learning/group work, guided discovery learning, simulations, and more. Sometimes, the teacher will divide the class into groups or pair the students, and then she or he will direct the groups or pairs by asking them questions, giving them prompts, and pointing them in the direction of learning opportunities that match the goals. Social Constructivism teaching methods can be categorized into two major groups: discussion and activity/group. One of the teaching methods in social constructivism is the Jigsaw strategy.

The researchers find Social Constructivism theory appropriate for this research as it gives support to the claims that the Jigsaw strategy has the potential in improving teaching and learning process. According to Vygotsky, social interaction is essential to human development throughout life and social learning actually promotes cognitive growth. In other words, learners can complete any learning task—no matter how challenging—while being guided by an adult or working together with peers (Akpan, 2020). This theory guided the researcher in developing plans for instruction using the Jigsaw strategy. The responsibility for knowledge is shifted by social constructivism. The student is transformed from a passive listener to an active participant and co-creator of knowledge among co-learners as knowledge is transferred from the teacher to the student.

As the researchers applied the Jigsaw strategy in teaching concepts in Health to the Grades 3 students, theories about the Social Constructivism were reflected as the students gained knowledge and understanding of the topic through conversation, interaction with others, and the application of knowledge. During the implementation of the Jigsaw strategy, the Grade 3 students were encouraged to share what they have learned, ask questions if there were concepts they could not understand, and listen to their group mates from both home group and expert group. According to this viewpoint, students actively construct new knowledge as they interact with their surroundings (Adensaya, 2009). These social aspects of learning that the Social

Constructivism theory recognize are ways of targeting the learning objectives of the topic (Akpan, 2020) and enhancing the learning process of the students.

Research Questions:

This study sought to address the following research questions:

1. What are the pre-test scores of the respondents in Health test?
2. What are the posttest scores of the respondents in Health test after the implementation of the Jigsaw strategy?
3. Is there a significant difference between the pretest and posttest scores of the respondents in the Health test?
4. What recommendations can be made based on the findings of this study?

METHODOLOGY

This quantitative research utilized the quasi-experimental pre-test, posttest design. Quasi-experimental design tests causal hypotheses. The program in a quasi-experimental design is viewed as an 'intervention' in which a treatment, comprised of the program's elements, is evaluated for how well it achieves its objectives, as measured by a predefined set of indicators (White & Sabarwal, 2014). Quasi-experimental design is appropriate for this research as it aimed to investigate the effectiveness of the Jigsaw strategy – the intervention, that served as the treatment in enhancing the learning process of the Grade 3 students, particularly in their knowledge and understanding about a topic in Health, one of the components of their MAPEH subject. The researchers evaluated its effectiveness by administering a pretest (prior to the implementation of the Jigsaw strategy) and a posttest (after the implementation of the Jigsaw strategy) and compared the results to see if there were improvements when it comes to their scores. Descriptors were also included by the researcher to provide clear descriptions of the qualities required for students to demonstrate achievement. In both pretest and posttest, if the students got 13-15, their score was considered to be excellent, 12-9 was proficient, 6-8 needed

improvement, and 1-5 was unsatisfactory. This helped the researcher to identify what performance at a particular level looks like and if it achieved the main objective of this research.

This research took place in College of San Benildo - Rizal Grade School Department which is located in Barangay San Isidro, Marcos Highway, Cainta, Rizal. College of San Benildo - Rizal is a Catholic institution guided by the ideals and charism of Saint Brother Benilde Romançon and a member of the Catholic Educational Association of the Philippines (CEAP), a national association of Catholic Education Institutions founded in 1941 (Catholic Bishops' Conference of the Philippines, 2022). The school was named back then as San Benildo Integrated School and was supervised before by the Lasallian Schools Supervision Office (LASSO). Mr. Rodrigo Ko, the owner and main incorporator of the school, was able to establish San Benildo Integrated School with the help of the La Salle brothers, sister, and director and with the other original incorporators. On June 2, 1997, the school first opened its doors to 313 boys and girls who composed the first batch of pupils in Junior Prep to Grade 4. The school also “graduated” from being a De La Salle Supervised School in 2009, changing its name from San Benildo Integrated School to College of San Benildo – Rizal in 2010. In our present time today, the school caters Kinder to Grade 12 students, and is now offering TESDA training.

In this school year (2022-2023), there are 803 enrolled students. The school is now following blended learning as their official learning modality for this school year in which students in kindergarten are required to attend two days of face-to-face classes (Thursday and Friday) and three days of online classes (Monday, Tuesday, and Wednesday), and students from Grades 1 to 6 are required to attend face-to-face classes for three days (Monday, Tuesday, and Thursday) and online classes for two days (Wednesday and Friday). Only Nursery students are having pure online classes from Monday to Friday. The school's official learning management system or LMS this school year is Microsoft Teams where online classes are held, and where important announcements are posted.

College of San Benildo – Rizal continues to envision itself as a center of excellence both in teaching and learning that offers a quality, human, and Christian education. One of the missions of the school is to promote a culture of excellence among the students coupled with

strength of character, sound values formation, sincerity in purpose, and service to the society. To develop these to students, College of San Benildo – Rizal’s instructional program includes the following subjects: Christian Life and Values Education, English, Mathematics, Science, Filipino, Mother Tongue, Araling Panlipunan, EPP (Edukasyong Pantahanan at Pangkabuhayan), and MAPEH (Music, Art, Physical Education, and Health), with the aim of providing a strong foundation for its learners to hone their intellectual capabilities that they may be thinkers and positive contributors of national and global changes (College of San Benildo – Rizal Student Handbook for School Year 2022-2023).

This research was conducted to the Grade 3 students enrolled in school year 2022-2023. The researchers used a non-probability purposive convenience sampling to identify the participants that were included in the research. This sampling technique relied on the researcher’s judgment in choosing the participants. There was a total of 79 Grade 3 students, divided into three sections. The researchers only chose section C as the experimental group. There are 27 heterogeneous sets of students in this section. Students with different types of personalities and academic background were learning together in a classroom. Most of them knows how to speak and understand English, as this is mostly used by their teachers as their medium of instruction. However, only 25 students (16 male and 9 female) were able join the study. One student did not submit the reply slip of the parental approval letter, and the other one was absent during the implementation of the Jigsaw strategy. The experimental group (section C) was composed of students whose age ranged between 9 and 10 and are living near the vicinity of College of San Benildo-Rizal. These students are living in Cainta, Pasig, Marikina, and Antipolo City.

This research utilized a teacher-made pretest and posttest to measure the effectiveness of the Jigsaw strategy in the learning of the Grade 3 students. Both pretest and posttest had the same content with a total of 15 items containing three objective type of tests: matching type for test I, multiple choice for test II, and true or false for test III, about the concepts in their topic in Health which is Consumer Health, particularly the Factors that Influence Consumer’s Choice of Goods and Services. The pretest measured the students’ prior knowledge while the posttest measured

the students' acquired knowledge and understanding from the said topic after being exposed to the Jigsaw strategy. The tests went through series of validations before it was implemented. First, both pretest and posttest's content and format were checked by the principal, vice principal, and subject team leader of MAPEH in the primary level of College of San Benildo-Rizal. Then, the pretest and posttest were validated by four professional teachers. The first validator was a college professor in Our Lady of Fatima University teaching College of Education students major in early childhood education, and he was a master's degree holder major in Curriculum Design Development and Supervision. The second validator was the program head of College of Education, handling particularly the college of education students major in Early Childhood Education and Special Education in Our Lady of Fatima University, and she was a Doctor of Philosophy in Educational Management. The third one was the vice principal in academics and research in College of San Benildo – Rizal Grade School Department and she was a master's degree holder major in English studies and instruction. The fourth one was a graduate school professor in FEU Roosevelt – Cainta and she was a candidate graduate of master's in education major in teaching early grades. In the evaluation form that was given to the validators, both pretest and posttest met all the required criteria of a good instrument which includes the clarity of the instructions and language, comprehensiveness of the content, and convenience to the respondents. Items in both pretest and posttest also measured the target construct. The researcher also considered the validators' comments and suggestions to enhance the pretest and posttest that was utilized in this research.

The researchers followed the timeline presented in figure 2 below in preparing and conducting the research.

Figure 2. Timeline of Activities Before, During, and After the Jigsaw Strategy Implementation

Week No.	Date	Activity/ies
Second	March 8, 2023 (Wednesday)	The parental approval letter to conduct the study was released to the parents via MS Teams Assignments.
	March 22, 2023 (Wednesday)	The deadline of submission of the parental approval letter to conduct the study reply slip.
Fourth	March 24, 2023 (Friday) 7:45 AM – 8:30 AM (45 minutes)	The Jigsaw strategy online orientation with the participants of the study (Grade 3 section C students) via MS Teams meeting during their Home Room Period (HRP).
Fifth	March 27, 2023 (Monday) 8:00 AM – 8:30 AM (30 minutes)	The administration of the pretest to participants of the study (Grade 3 section C students) during their Home Room Period (HRP).
	9:40 AM – 10:25 AM (50 minutes)	The first day of the Jigsaw strategy implementation to the participants of the study (Grade 3 section C students) during their face-to-face Health class.
	March 28, 2023 (Tuesday) 7:50 AM – 8:40 AM (50 minutes)	The second day of the Jigsaw strategy implementation to the participants of the study (Grade 3 section C students) during their face-to-face Health class.
	9:50 AM – 10:20 AM (30 minutes)	The administration of the posttest to the participants of the study (Grade 3 section C students) during some of their time from other subject (face-to-face class).

In the preparation and planning phase of this study, the researcher asked permission from the president-chancellor and the principal of College of San Benildo – Rizal by sending a letter of request to conduct the study through email. Once the researcher received their approval, a parental approval letter was then sent to the parents of the Grade 3 section C students. The

researchers made sure that the parents submitted first the reply slip of the letter before the student can join the study. After the deadline, only one student did not submit the reply slip.

The researchers also conducted an orientation to the participants of the study (Grade 3 students of section C) during their Home Room Period (HRP) online via Microsoft Teams meeting. In College of San Benildo – Rizal, the time for Home Room Period was allotted for morning assembly and giving of reminders done by the adviser, it may be during online or in face-to-face classes. The researchers was allowed by the school principal to use this time to conduct the orientation to explain what Jigsaw strategy is, its benefits, and procedures. The researchers gave them their groupings ahead of time but did not give the topic yet for the students to avoid studying it in advance and to show fairness and authenticity for this study. The members of each group were selected based on their personalities and academic background. The purpose of this method was for the students who academically excel and have a good leadership and communication skills to help those students who are struggling academically and cannot speak confidently to others. During the orientation, only one student was not able to attend, but the researchers advised that student to watch the recorded video of the orientation. The researchers also prepared learning materials to be used like the instructional design or lesson plan, study guide or handout, and PowerPoint slides.

The Grade 3 students attend face to face classes in Health every Monday and Tuesday and online classes every Wednesday and Friday. In this research, the administration of the pretest and posttest and the implementation of the Jigsaw strategy were only conducted during face-to-face classes for two days. Before the implementation, the Grade 3 section C students was given a pretest, consisting of 15 items, for 30 minutes that measured Grade 3 students' prior knowledge in their lesson in Health about Consumer Health, particularly the factors that influence the consumer's choice of goods and services. The researchers used some of the Home Room Period (HRP)'s time to administer the pretest to the students. Changes in the groupings were also made by the researchers because one student was absent during the days of the implementation. This made all groups to have 5 equal members.

In the first day of the implementation phase of this study, the researchers conducted the following procedures during Health face-to-face classes of the Grade 3 section C students for 50 minutes:

- The students were asked first to meet and be familiar with their groupmates in the home group. Then, the teacher gave them their assigned sub-topic to study and to teach to their group mates in the home group.
- The students also recall important terms from their previous lesson about the introduction to Consumer Health discussed by their teacher during their last meeting in Health. They reviewed about the meaning of the consumer, consumer health, health products, health services, and health information. This helped the students to understand better the concepts about the lesson that they learned using the Jigsaw strategy which was the Factors that Influence Consumer's Choice of Goods and Services. The researchers also asked them to be familiar with the meaning of the unfamiliar words like, "factor" and "influence".
- The researchers gave each student a study guide or handout to use as they study their assigned sub-topic. They were given 15 minutes to study on their own first by reading and familiarizing important concepts from their sub-topic. After that, the students were asked to meet their group mates in the expert group. In this group, the students were expected to study together and help each other in familiarizing and understanding the concepts in their assigned sub-topic. Their goal was to make all their group mates learn the sub-topic.
- During their expert group discussion, the students were asked to discuss what they have understood from their sub-topic. The students were also asked to think of sample situation related to the factor that influence consumer's choice of goods and services assigned to them.
- The students were also reminded to listen to one another, ask questions to their teacher or to their group mates about the concepts they can't understand, share their thoughts and ideas, and have a sense of responsibility not on their own learning but also to the learning of their group mates. The researchers monitored each group during the process and made sure that each student had the chance to speak for 3 to 5 minutes.

Figure 3 below shows how the designation of sub-topics was done.

Figure 3. Designation of Sub-topics in the Expert Group

Expert Groups	
Sub-Topics	Assigned Members
Personal Interest	Member 1
Emotion	Member 2
Budget	Member 3
Values	Member 4
Environment	Member 5

In the second day of the implementation phase of this study, the researchers made some adjustments in the schedule. The researchers made the time of the Health face-to-face class earlier. The following procedures were done for 50 minutes:

- Before the students went to their home groups, the expert groups were asked first to help one another in reviewing the important concepts about their assigned sub-topic for 10 minutes.
- After that, the students were asked to meet their groupmates in the home group. During their home group discussion, the students were asked to teach their group mates the sub-topic they have learned by answering the questions, *“How is personal interest/emotion/budget/values/environment influences the consumer’s choice of buying goods and services?”* and *“What sample situation can you think of that shows a consumer’s decision is influenced by his/her personal interest/emotion/budget/values/environment?”*
- Same with what they did during their expert group discussion, the students were expected to listen to one another, ask questions to their teacher or to their group mates about the concepts they can’t understand, share their thoughts and ideas, and have a sense of responsibility not on their own learning but also to the learning of their group mates. The researchers monitored each group during the process and made sure that each student had the chance to discuss for 5 minutes.

- When all members of the home group were done doing their part, they check one another’s understanding by asking questions related to the topic.

Figure 4 below shows who discussed the sub-topic in the home group.

Figure 4. Designation of Sub-topics to be Discussed in the Home Group

Home Groups	
Personal Interest	Member 1
Emotion	Member 2
Budget	Member 3
Values	Member 4
Environment	Member 5

After the implementation of the Jigsaw strategy in the second day, the Grade 3 section C students were given 15-item posttest and answered it for 30 minutes. This measured what the students learned from their group mates in the home group on their topic about the factors that influence consumer’s choice of goods and services. This also served as the reflection/evaluation phase of this study. Recommendations will be made after careful deliberation of results.

DISCUSSION

Problem 1: Pretest Scores of Grade 3 Students in Health Test

The pretest results indicate the students’ prior knowledge about a lesson in their Health subject before the implementation of the Jigsaw strategy. The results of which are shown in Table 1.

Table 1. Pretest Scores of the Grade 3 Students Before the Implementation of the Jigsaw Strategy.

Score	N	Percentage
15	1	4
14	1	4
13	3	12

12	3	12
11	2	8
10	3	12
9	5	20
8	1	4
7	1	4
6	2	8
5	1	4
4	2	8
Total	25	100
Group Mean	9.64	
SD	2.96	

Descriptors: 15–13 points (Excellent), 12–9 points (Proficient), 8–6 points (Needs Improvement), and 5 points and below (Unsatisfactory).

Before the implementation of the Jigsaw strategy, the Grade 3 students were given a 15-item pretest which measured their prior knowledge in a lesson in their Health subject. The highest score of 15 points was solely obtained by a student which covered the 4% of the experimental group while the lowest score of 4 points was obtained by two students which covered the 8% of the experimental group. When it comes to their performance rating following the descriptors, 5 students got scores that are excellent, 13 students got scores that are proficient, 4 students got scores that need improvement, and 3 students got scores that are unsatisfactory. The group mean was 9.64 and has a standard deviation of 2.96.

The pretest results revealed that despite of not learning the topic yet, most of the Grade 3 students' scores were proficient. In this light, the students' skills in reading and understanding English texts helped them to answer the pretest just like what Ulibarri, et.al. (2013) stated in their research that the language proficiency of the students has something to do with their achievement. Since the pretest's content was age-appropriate for the students, they have encountered familiar words that helped them answer the pretest correctly.

Problem 2: Posttest Scores of Grade 3 Students in Health Test

The Grade 3 students were given a 15-item posttest after learning a lesson in Health, particularly about the factors that influence the consumer’s choice of goods and services, using the Jigsaw strategy. The posttest measured their knowledge and understanding of the given lesson. The results of which are shown in Table 2.

Table 2. Posttest Scores of the Grade 3 Students After the Implementation of the Jigsaw Strategy.

Score	N	Percentage
15	6	24
14	2	8
13	5	20
12	3	12
11	3	12
10	1	4
8	3	12
5	2	8
Total	25	100
Group Mean	11.84	
SD	1.84	

Descriptors: 15–13 points (Excellent), 12–9 points (Proficient), 8–6 points (Needs Improvement), and 5 points and below (Unsatisfactory).

After the implementation of the Jigsaw strategy, the Grade 3 students were given a 15-item posttest which measured their knowledge and understanding of the lesson in their Health subject. The highest score of 15 points was now obtained by 6 students which covered the 24% of the experimental group while the lowest score of 5 points was obtained by two students which covered the 8% of the experimental group. When it comes to their performance rating following the descriptors, 13 students got scores that are excellent, 7 students got scores that are proficient, and 5 students got scores that need improvement. The group mean was 11.84 and has a standard deviation of 1.84.

The researchers observed that there was an increase in the mean scores of the Grade 3 students from their pretest to posttest results. The students’ scores in the posttest were now

mostly in the excellent level compared from their pretest result which was only in the proficient level. This observation was found similar to the study of Tabiolo & Villar (2019) in which after the Grade 9 students were exposed to the Jigsaw strategy in learning concepts in Science, the academic achievement of the students turned from “developing” to “proficient”.

The posttest results also implied the findings of Huseein & Nemah (2019) in their research which stated that the Grade 3 students, who were exposed to the Jigsaw strategy, showed better scores in their achievement test in Chemistry than those students who were taught in traditional way of teaching.

Problem 3: Significant Difference Between the Pretest and Posttest Scores of the Grade 3 Students

In this part, the researchers compared the pretest and posttest results that the Grade 3 students obtained before and after the implementation of the Jigsaw strategy. The results of which are shown in table 3.1, 3.2, 3.3, and 3.4.

Table 3.1. Pretest and Posttest Frequency of Correct Response

Item No.	Pretest Correct Responses	Posttest Correct Responses
TEST I		
1	18	21
2	10	22
3	17	21
4	16	22
5	8	19
TEST II		
6	5	14
7	11	15
8	20	20
9	8	12
10	17	18
TEST III		
11	23	22
12	20	21
13	21	21

14	24	24
15	21	23

The pretest and posttest were constructed by the researchers in such a way that the knowledge and understanding of the Grade 3 students about the topic about the factors that influence the consumer’s choice of goods and services that they have learned using the Jigsaw strategy were targeted. The items in both pretest and posttest are all objective type of tests: matching type in test I, multiple choice in test II, and true or false in test III.

Table 3.1 presents the total number of students who got the correct response in each item. In both pre-test and posttest results, with the total of 24, item number 14 has the highest number of students who answered it correctly. This item measured the students understanding of the importance of knowing the factors that influence the choice of goods and services in carefully choosing a product that will best meet their needs. 24 out of 25 students correctly answered TRUE in their pretest, meaning to say, even without learning this concept yet, the students already had a prior knowledge about this.

A noticeable improvement of the students’ response is shown in item number 2. From a total of 10 students who answered the item correctly in the pre-test results, it increased up to 12 students, making it 22 in total in the posttest results. This item measured the students’ basic knowledge about a factor that influence the consumers’ choice of goods and products called environment. Another noticeable improvement is shown in item number 5. From a total of 8 students who answered the item correctly in the pre-test results, it increased up to 11 students, making it 19 in total in the posttest results. This item measured the students’ basic knowledge about a factor that influence the consumer’s choice of goods and products called values.

This gives the researchers the idea that the students who are part of the group who are assigned to learn and discuss to their groupmates the sub-topic about environment and values did a great job in doing their tasks. This idea is supported by Limjuco & Gravino (2012) wherein in their study, they found out that students who were exposed to the Jigsaw strategy improved their proficiency, responsibility, facilitation, and approachability as learners. The students believed that studying is important for both themselves and their fellow group members.

In general, all items in test I, compared from pretest to posttest, shows improvement. The Grade 3 students were able to make themselves familiar with the important concepts that they need to learn from the topic using the Jigsaw strategy. This supports the conclusion of Omokorede & Siyelenen’s (2021) study that the Jigsaw strategy can improve students’ retention of knowledge about the concepts they have studied.

Table 3.2. Paired T-Test Result of Grade 3 Students

Mean: 2.2 $\mu = 0$ $S^2 = SS/df = 88/(25-1) = 3.67$ $S^2M = S^2/N = 3.67/25 = 0.15$	$SM = \sqrt{S^2M} = \sqrt{0.15} = 0.38$ T-value Calculation $t = (M - \mu)/SM = (2.2 - 0)/0.38 = 5.74$
The value of t is 5.744563. The value of p is < .00001. The result is significant at $p < .05$.	

Based on the paired t-test result presented in Table 3.2, the value of p is less than .00001 which means that the result is found to be significant at $p < .05$. The intervention made by the researchers, which is the implementation of the Jigsaw strategy in the classroom instruction, is effective when it comes to Grade 3 students who participated in the study.

Table 3.3. Paired T-Test Result of Male Grade 3 Students

Mean: 2.5 $\mu = 0$ $S^2 = SS/df = 52/(16-1) = 3.47$ $S^2M = S^2/N = 3.47/16 = 0.22$	$SM = \sqrt{S^2M} = \sqrt{0.22} = 0.47$ T-value Calculation $t = (M - \mu)/SM = (2.5 - 0)/0.47 = 5.37$
The value of t is 5.370862. The value of p is .00008. The result is significant at $p < .05$.	

Based on the paired t-test result of male grade 3 students presented in table 3.3, the value of p is .00008 which means that the result is found to be significant at $p < .05$. The intervention made by the researchers, which is the implementation of the Jigsaw strategy in the classroom instruction, is effective when it comes to 16 male Grade 3 students who participated in the study.

Table 3.4. Paired T-Test Result of Female Grade 3 Students

<p>Mean: 1.67 $\mu = 0$ $S^2 = SS/df = 32/(9-1) = 4$ $S^2M = S^2/N = 4/9 = 0.44$</p>	<p>$SM = \sqrt{S^2M} = \sqrt{0.44} = 0.67$ T-value Calculation $t = (M - \mu)/SM = (1.67 - 0)/0.67 = 2.5$</p>
<p>The value of t is 2.5. The value of p is .03694. The result is significant at $p < .05$.</p>	

Based on the paired t-test result of female grade 3 students presented in table 3.4, the value of p is .03694 which means that the result is found to be significant at $p < .05$. The intervention made by the researchers, which is the implementation of the Jigsaw strategy in the classroom instruction, is effective when it comes to 9 male Grade 3 students who participated in the study.

All the data gathered, both from the paired t-test results of male and female Grade 3 students, evidently rejects the null hypothesis that there is no significant difference between the pretest and posttest results of the respondents after the intervention. Meaning to say, the implementation of the Jigsaw strategy helped the students to become active learners in the learning process. Similar with the study of Hidayah et al. (2017) who claimed that cooperative learning techniques like the jigsaw model, can significantly boost students' engagement in a third-grade classroom which result to high quality of learning (Garcia et al., 2017).

However, even though both the findings in male and female Grade 3 students are found to be significant, it is noticeable that the mean score of 2.5 of male Grade 3 students is higher than the mean score of 1.67 of female Grade 3 students. This means that the male Grade 3 students have performed better than the female Grade 3 students after being exposed to the Jigsaw strategy. The identified results were found similar to the study of Amedu (2015) in which male students gained more from the Jigsaw strategy than the female students. This is because of the reason that concepts in their Health subject are science related. Science related subjects like biology, physics, and chemistry are perceived to be “masculine/male” subjects (Vleuten, et.al., 2016). These gendered ideologies have an impact on the teaching methods and styles that teachers frequently employ, which benefit males and thus affect their overall performance.

In addition, this study acknowledges Lev Vygotsky's accounts about the Social Constructivism Learning Theory in which the students' collaboration with others has something to do with their learning, specifically in acquiring necessary information from their environment. (Akpan, et.al., 2020). According to Vygotsky, social interaction is essential to human development throughout life and social learning actually promotes cognitive growth. In other words, learners can complete any learning task—no matter how challenging—while being guided by an adult or working together with peers (Akpan, 2020). This study supports this idea as the gathered data revealed that the respondents' results in the posttest improved after being exposed to the Jigsaw strategy. The Jigsaw strategy was quite challenging for the students since this was their first time doing it. The respondents were usually taught in a traditional face-to-face set up, wherein the teachers just did pure discussions and did most of the talking. They were not used to learning on their own and explaining what they have learned to their group mates. However, the researchers observed that from the start up to the end of the implementation, although there were conflicts happened like students who are struggling academically can't understand easily his/her assigned topic or some students were shy to express their thoughts, students really did their best in doing their task. What they just needed that time was their teacher's and group mates' assistance for them to be back on track again.

The detailed steps of Aronson (2005) in making the Jigsaw strategy implementation successful were found by the researchers to be effective. These steps include Planning and Preparation, Implementation, Observation, and Reflection. These steps guided the researchers in making the learning materials to be used like the instructional guide or lesson plan, the groupings for both expert and home group, study guide or handout, PowerPoint presentation, and pretest and posttest. This supports the idea of Barron & Hammond (2008) that to ensure that the method's overall process runs smoothly and that students interact with one another, teachers must take the time to carefully plan each lesson.

The researchers also figured out that students, even in their young age, can already develop the five key characteristics for a successful cooperative learning which are positive interdependence, individual accountability, face-to-face interaction, social skills, and group

processing. For these characteristics to develop among the students, the researchers conducted an orientation before the implementation of the Jigsaw strategy and guided them during the entire process.

The students were encouraged to trust each other and have a sense of responsibility not only for their own learning but also for the learning of their groupmates (positive interdependence) (Slavin, 1996). They were informed that each one of them will be given a pretest and posttest, and their results will be compared to check if they have improved or not. That's the reason why they need to do their best in studying their assigned sub-topic with their group mates in the expert group and explain it clearly to their groupmates in the home group so that everyone would get a higher score during the posttest (individual accountability) (Johnson & Johnson, 1999, & Jones & Jones, 2008). The students were also reminded to avoid being absent during the days of implementation. They were also encouraged to ask one another questions if there are concepts that they can't understand. They were asked to show respect by listening attentively to one another (face-to-face interaction) (Johnson & Johnson, 2009). The researchers reminded the learners that all members in the group must show leadership, trust building, decision making, communication, and conflict management (social skills) (Johnson & Johnson, 2009; Kani, et.al., 2014). And finally, the learners were encouraged to show cooperation from the beginning until the end of the implementation of the Jigsaw strategy. Whenever they experienced problems, like when a group mate was not listening, a groupmate who was just playing, or a group mate who did not want to speak, they were reminded again of their goal as a group, which is for all their members to learn from them. They were told that each of them is like a puzzle piece. A puzzle cannot be completed without them (group processing) (Johnson & Johnson, 1999).

Based on the findings of this study, the Jigsaw strategy is an effective tool in enhancing the learning process of the students, particularly in the third grade.

CONCLUSIONS

Based on the foregoing findings, the following conclusions were drawn:

1. Before the implementation of the Jigsaw strategy, the students took a 15-item pretest about the said topic in their Health subject. Only one student got the highest score of 15 points and 2 students got the lowest score of 4 points.
2. After the implementation of the Jigsaw strategy, the students took a 15-item posttest about the said topic in Health. There was a noticeable improvement based on the scores of the Grade 3 students in which six of them got the highest score of 15 points and only 2 of them got the lowest score of 5 points.
3. There was a significant difference between the pretest and posttest results of male and female Grade 3 students. Thus, rejecting the null hypothesis.

ETHICAL CONSIDERATIONS

The researchers properly followed the necessary procedures that made this research ethical. Before gathering the data, the researchers asked first the consent from the president-chancellor and the school principal of College of San Benildo – Rizal Grade School Department to conduct the quasi-experimental research to the Grade 3 section C students.

Then, the researchers asked consent from the parents of the students who were involved in this research through a parental approval letter. In the parental approval letter, the parents were well-informed on the things that they should know about the Jigsaw strategy and the data gathering procedure of this research involving their children. The researchers also asked for the following information from the students: age bracket and grade level, pretest and posttest results, and pictures (without exposing the faces of the students) while participating in class. Aside from that, the researchers assured in the parental approval letter that the results won't affect the students' academic performance in school regardless of the results they got from both pretest and posttest. Also, the identities of the students remained anonymous, and their data were kept confidential. They were not exposed to any physical, psychological or social harm and they can withdraw from the research at any time. The results that were identified were for research

purposes only and the gathered data from the students will be stored for a period of not more than 3 months. Afterwards, the data will be deleted and destroyed without any copies remaining. As the parents signed the reply slip and submit it, they have understood and agreed to all the terms and conditions that the researchers indicated in the parental approval letter. The researchers accepted the responsibility of protecting the privacy, dignity, well-being, and freedom of the participants. In case of any violation from these aspects, the researchers are held accountable.

All the instruments used in this research (pretest and posttest) went through series of validations and were checked thoroughly by the validators before administering them to the participants of this research. This research also went through an anti-plagiarism test and was found to have a low percentage of plagiarism.

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