INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

****

COOPERATIVE-BASED STRATEGIES AND FACE-TO-FACE LEARNING MODALITY: THEIR EFFECTS ON ANALYTICAL SKILLS OF GRADE 9 LEARNERS

THEOPHANE MARIE D. OSANO
TEACHER II
Dingle National High School
osanotheophanemarie@gmail.com

ABSTRACT

The study aimed to find out the effects of cooperative-based strategies and face-to-face learning modality on the analytical skills of the learners. The subjects in this study were the 70 grade 9 learners from the two intact classes of Dingle National High School, for school year 2022-2023. Results revealed that the learners scores increased in the posttest compared to pretest using the cooperative-based strategies which also showed an improvement in their analytical skills. There was a significant difference in the pretest and posttest results of the learners' analytical skills using cooperative-based strategies. There was a significant difference in the pretest and posttest results of learners' analytical skills using face-to-face learning modality. There was a significant difference in the pretest result of learners' analytical skills using cooperative-based strategies and face-to-face learning modality. There was a significant difference in the posttest result of learners' analytical skills using cooperative-based strategies and face-to-face learning modality.

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

Keywords: *Cooperative-Based Strategies, Face-to-Face Learning Modality, Analytical Skills*

INTRODUCTION

Education is a vital component of everyone's life. Education can give individuals the opportunity to learn new things, grow intellectually, and develop skills necessary in succeeding life. It also develops a sense of identity and purpose in life.

Today's education is vital in defining the fundamentals of each person's life and providing opportunities for everybody.

One goal of scientific education is to develop future scientists, not only aid in the advancement of industry but also the advancement of human understanding of nature (Setiawan & Siayah, 2020).

Face-to-face strategy is an effective technique to master information and skills since it often incorporates several learning methods. Due to recent technological advancements and the skills of 21st century learners, however, there are drawbacks to this learning technique. Since their opinions are seen as the only ones, there are few opportunities for debate, questions, or concept collisions.

Students' engagement to the activities inside the classroom vary according to the activities and instructions implemented. According to Barkley and Major (2020) the mental state of

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

engagement is the result of the interaction between active learning and motivation, or the thinking and

feeling sides of engagement. Teachers can do much to promote motivation and active learning, and that when they do so, they can improve student engagement and ultimately student learning outcomes.

According to Antoli and Julia (2015) hands-on learning activities allow to create a learning experience that interests and engages students. That is why engaging students to class activities is an effective way to impart knowledge and skills.

According to Homayouni et al. (2020), the phrase "cooperative learning" refers to a collection of instructional practices that encourage students to work together on academic assignments. It is a method of instruction that works well to engage students in the learning process, boost their motivation, reduce their anxiety, make them accountable for their work, enable them to communicate and express their ideas clearly, increase their self-reliance, and produce a straightforward lesson that is simple to understand (Ermawati & Ghufron, 2018).

Within the scope of this context, the goal of the researcher was to determine the effects of cooperative-based strategies and face-to-face learning modality on the analytical skills of Grade 9 learners. The researcher believes that cooperative learning strategy is one of the approaches that will improve students' comprehension of the lesson. Additionally, this teaching strategy aims to promote learners' overall growth.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

The researcher believes that utilizing cooperative-based strategy can enhance students' analytical abilities, particularly in the collection and evaluation of data, decision-making, and problem-solving, which will enhance their academic performance in science and other learning topics.

The researcher noticed that most of the learners of Dingle National High School have not developed the ability to analyze things and make decisions on some topics in science, especially in the part of genetics. Knowing that analytical skills may affect the learner's life and academic performance, the researcher decided to push through with this research on the effects of cooperative-based learning strategy and face-to-face learning modality on students' analytical abilities.

MATERIALS AND METHODS

Research Method

The study used the quantitative research method. Quantitative research according to Apuke (2017) focuses on analyzing and quantifying variables to produce results. It comprises the use of numerical data and statistical methods to analyze that data in order to respond to questions like who, how much, what, where, when, how many, and how. It also describes how to obtain data in numerical form in order to understand a problem or phenomenon. The study also demonstrates that quantitative methodologies can be divided into survey research, correlational

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

research, experimental research, and causal-comparative research. The data gathered helped the researcher to find out the effects of cooperative-based learning and face-to-face learning modality on the analytical skills of grade 9 learners.

Research Design

The study used quasi-experimental research design. Quasi-experimental research determines the relationship between two (2) variables—the dependent variable and the independent variable (Thyer, 2012). After completing an experimental research study, a correlation between a specific aspect of an entity and the variable being studied is either supported or rejected.

Pretest was conducted at the beginning of the experiment and posttest was given at the end of the experiment. The pretest assessed the extent to which the two groups are similar. The results of the posttest were compared to determine the effectiveness of the intervention which the experimental group was exposed to.

This method of research was considered to be the best fitted in this research activity since the study was conducted to determine the effects of cooperative-based learning and face-to-face learning modality on the analytical skills of Grade 9 Learners of Dingle National High School, Licu-an, Dingle, Iloilo for the first quarter of SY 2022-2023.

The independent variables were the cooperative-based learning and face-to-face learning modality while the dependent variable was the analytical skills of grade 9 learners.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

Respondents of the Study

The respondents of the study were the 70 (seventy) learners of the 9th grade of Dingle National High School, Licu-an, Dingle, Iloilo school year 2022-2023. The respondents were from the two sections out of six sections purposively selected since they had almost the same academic performance by matching their science final grades in grade 8. These sections of grade 9 learners were assigned as the experimental group and control group where they received the intervention.

The data is shown in Table 1.

Table 1

Distribution of the Participants

Section	N
9-SPSTE	35
9-SPA	35
Total	70

The subjects received a pretest and posttest before and after the experiment, respectively.

Research Instrument

Pretest and Posttest

Table of Specifications (TOS) was made prior to the construction of the test to proportionate the number of items to the topics. In doing so, the researcher considered content

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

of the grading, objective or learning competencies, time allotment for each objective, expected number of test items to be constructed and item placement.

The researcher-made questionnaire was used to determine the background knowledge of the learners. This was conducted prior to the experiment. The same researcher-made questionnaire was used for the posttest to determine the effects on the analytical skills of learners after exposure to cooperative-based strategy and face-to-face learning modality. In making the questionnaire the researcher used the learners' module, and other science textbook and references. Questions were categorized according to the skills in data collection, data analysis, problem solving, interpretation of data and integrating data.

The test was composed of 30 items, the research instrument includes the following topics: Incomplete Dominance, Codominance, Multiple Alleles, Sex-linked Traits, Sex-Limited Traits and Sex-Influenced Traits which were based on the Department of Education K to 12 science curriculum guide and was presented to the jury of experts in science and test construction. The validated test was subjected to pilot testing using reliability test.

The researcher made a matrix of activities of cooperative-based strategy and face-to-face learning modality in teaching science that followed during the duration of the research with the following data: topics, time allotment, date intended for the topic, and the methods to be used.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

The initial draft of the test was submitted for face and content validation to a jury of experts in science and test construction. The expert's comments and suggestions were presented to the thesis adviser before the instrument was finalized.

Lesson Plan

In making the lesson plans, the researcher adopted the 7 E's method: elicit, engage, explain, explore, elaborate, evaluate and extend. Lesson plan was based on the Department of Education K to 12 science curriculum guide. Worksheets used in the lessons were also attached to each lesson plan.

Validity of the Research Instrument

The initial drafts of the questionnaire and lesson plans were submitted to the thesis adviser for review and for the face content validation for establishing validity. Item inspection was submitted to experts in science, test and measurement and statistics. Each item was examined by the panel of experts based on its suitability or appropriateness, relevancy, sentence structure, and other factors. In the final draft of the instrument, the changes, comments, and proposals for its improvement were all taken into account.

Reliability of the Research Instrument

To determine the consistency of the items, the validated questionnaire underwent reliability testing. The researcher conducted a pilot test at Tabugon National High School and administered the instrument to students not part of the final set of respondents.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

Their responses were subjected to appropriate computer-processed statistics in the Statistical Package for Social Sciences (SPSS) and will be analyzed using Cronbach's Alpha.

Data Gathering Procedures

The study was experimental in nature, thus treatment was done for 2 weeks during the school year 2022-2023.

The study determined the effects of cooperative-based strategies and face-to-face learning modality on the analytical skills of Grade 9 learners. The data needed for this study was obtained through a researcher-made questionnaire during the pretest and posttest.

The data gathering procedure was divided into three stages: pre-experimental, experimental and post experimental done with full supervision of the thesis adviser.

Pre-Experimental Stage

After preparing all the instruments, the researcher secured a permit from the office of the Schools Division Superintendent and from the office of the Schools District Supervisor to conduct pilot-testing and conduct the study. After that the researcher also secured a permit from the school head of Tabugon National High School to conduct pilot-testing and permit from the school head of Dingle National High School to allow her to conduct the study.

The researcher made a matrix of activities of cooperative-based strategy and face-to-face learning modality in teaching science that was followed during the duration of the research. A Table of Specifications (TOS) was made prior to test construction to proportionate number of test

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

items for each topic. It was submitted to the thesis adviser for review and to the panel of experts for face and content validity and was pilot tested to Tabugon National High School grade 9 learners.

Purposive sampling technique was used to determine the respondents of the study.

Experimental Stage

The subjects have the same lessons, materials, and reference. The teaching sessions were based on the class program of the Junior High School Department during the first quarter of the SY 2022-2023.

The subjects have lessons on living things and their environment under Module 2 (Heredity: Inheritance and Variation) which include the topics: Incomplete Dominance, Codominance, Multiple Alleles, Sex-linked Traits, Sex-limited Traits and Sex-influenced Traits which are based on the Department of Education K to 12 science curriculum guide.

Post Experimental Stage

At the end of the two-week period, posttest was administered to the learners.

The data gathered were organized, tabulated, computer-processed, analyzed and interpreted using the appropriate statistical tools.

Data Analyses

The number of the research instrument was reproduced according to the number of the subjects in the study.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

The data gathered in the study was organized, tabulated, computer-processed, analyzed and interpreted using the Statistical Package for Social Sciences (SPSS**)** software**.**

RESULTS AND DISCUSSIONS

The study aimed to find out the effects of two methods of teaching analytical skills among the Grade 9 learners. The two instructional approaches used in the study were the cooperative-based strategies (Experimental Group) and the face-to-face learning modality (Control Group). The study was conducted at Dingle National High School, Licu-an, Dingle, Iloilo during the first grading of the school year 2022-2023. The respondents of the study were the 70 (seventy) learners of the 9th grade of Dingle National High School who were purposively selected based on their science final grades in grade 8 and randomly assigned using the toss-coin method.

The teacher utilized the cooperative-based strategies in teaching the experimental group and face-to-face learning modality in the control group on the topics living things and their environment under Module 2: Heredity: Inheritance and Variation based on the Department of Education K to 12 Science Curriculum guide. To gather the data, the researcher used a researcher-made questionnaire which had been validated and pilot tested to establish its reliability. Experimental design was utilized as the research design. The data obtained were tabulated, analyzed, and interpreted using mean descriptive statistics. To determine the significance of the

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

difference among the means, the researcher used the Wilcoxon Signed Ranks test and Mann-Whitney U test. The differences were tested at a 0.05 level of significance.

The findings of the study revealed that:

The learners' analytical skills before exposure to cooperative-based strategies was "satisfactory" and after exposure to cooperative-based strategies was "outstanding". With the use of cooperative-based strategies, the analytical skills of the learners improved. The posttest mean score shows that the analytical skills of the experimental group increased from satisfactory in the pretest to outstanding in the posttest.

There was a significant difference between the pretest and posttest results of the learners in the experimental group using the cooperative-based strategies. The analytical skills of the learners using the cooperative-based strategies was very effective in improving the analytical skills of the learners as evident in the results of the Wilcoxon Signed Rank Test.

The learners' analytical skills before exposure to face-to-face learning modality was "fairly satisfactory" and after exposure to face-to-face learning modality was "very satisfactory". With the use of face-to-face learning modality, it would reveal that there was an increase in the learning of the learners using the face-to-face learning modality. The posttest mean score shows that the analytical skills of the control group increased from fairly satisfactory in the pretest to very satisfactory in the posttest.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

There was a significant difference between the pretest and posttest results of the learners in the control group using the face-to-face learning modality. The face-to-face learning modality was an effective method to enhance the learners analytical skills as evident in the results of the Wilcoxon Signed Rank Test.

There was a significant difference in the pretest result of analytical skills mean scores of the learners between the experimental group (cooperative-based strategies) and control group (face-to-face learning modality) as evident in the results of the Mann-Whitney U Test.

There was a significant difference in the posttest scores of analytical skills mean scores of the learners between the experimental group (cooperative-based strategies) and control group (face-to-face learning modality) as evident in the results of the Mann-Whitney U Test.

CONCLUSIONS

Based on the findings of the study, the following conclusions were drawn:

The use of cooperative-based strategies is an effective teaching strategy in improving the analytical skills of the learners.

Cooperative-based strategies significantly increased the analytical skills of the learners. The learners' active learner to learner interactions in the group and the sharing of ideas while carrying out the activities as instructed by the teacher were responsible for the improvement of the learners' analytical skills in cooperative-based strategies.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

The use of face-to-face learning modality is also an effective teaching strategy in improving the analytical skills of the learners.

Face-to-face learning modality also increased the analytical skills of the learners. Thus, science lessons can still be effectively taught using face-to-face learning modality.

The use of cooperative-based strategies actively engaged the learners in their learning, challenged and questioned one another, shared and debated their thoughts and internalized what they had learned. While in face-to-face learning modality, the teachers thorough and in-depth discussion of the lesson with the learners in a face-to-face setting also led to an improvement in the students' analytical skills.

Both cooperative-based strategies and face-to-face learning modality can enhance the learners' ability to collect and analyze information, problem-solve, and make decisions.

RECOMMENDATIONS

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

The use of cooperative-based strategies is more recommended to use in the learning process because it increases the performance and skills of the learners.

Science teachers may devote more time and effort to instruct utilizing the cooperative-based strategies in order to boost student performance.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

The cooperative-based strategies should be used by science teachers to develop their learners' analytical skills and for more productive, active, and meaningful learning encounter.

The performance of the learners' in science can be improved if science teachers who are accustomed to utilizing face-to-face learning modality switch to cooperative-based strategies.

Teachers are also encouraged also to utilized various models of cooperative-based strategies and not to limit themselves to only these models.

Learners should make an effort to actively participate in class by helping out other students through social interactions.

Learners should strive for active class involvement to increase their science performance by learning from other learners.

Learners should be encouraged by their parents to learn from other learners and develop their social skills. Parents should be more effective at leading their children, be able to prepare them for active peer to peer science activities and encourage them to learn more science topics.

In-service trainings at the school should include orienting teachers to new teaching techniques and other teaching approaches. Additionally, the school ought to hold seminars and training sessions on the correct techniques for applying various teaching strategies. They should invite specialists and lecturers in science teaching pedagogy, particularly in the area of cooperative learning strategy.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

Supervisors in the Department of Education should approve and put into effect initiatives that have been created to support teaching advances. In order to ensure that learners will have a meaningful learning, they should promote new teaching approaches like the cooperative-based learning.

Further, related studies are necessary to consider taking into account other variables and factors when applying cooperative-based strategies to different topics and competencies.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

References

Agrawal, A. & Singh, Y.P. (2011). Introduction to Co-operative Learning. Retrieved from https://www.researchgate.net/publication/ 270494960_INTRODUCTION_TO_CO-OPERATIVE_LEARNING on September 4, 2022.

Ambag, R. (2018). Teaching Science In The Philippines: Why (And How) We Can Do Better. Retrieved from https://www.flipscience.ph/news/features news/features/teaching-science-philippines/ on September 4, 2022.

Antoli, J.O. & Julia, C. (2015). Spatial Ability Learning Through Educational Robotics. Retrieved from https://www.researchgate.net/publication/276273257_Spatil_ability_learning_through_educational_robotics on September 2, 2022.

Apuke, O.D. (2017). Quantitative Research Methods: A Synopsis Approach. *Kuwait Chapter of Arabian Journal of Business and Management Review* 6(11):40-47. DOI: 10.12816/0040336.

Barkley, E.F. & Major, C.H. (2020). Student Engagement Techniques: A Handbook for College Faculty, 2nd Edition. Retrieved from https://www.wiley.com/enus/Student+Engagement+Techniques%3A+A+Handbook+for+College+Faculty%2C+2nd+Edition-p-9781119686897 on September 4, 2022.

Bijandi, M. & Nabavi, R. (2012). Bandura's Social Learning Theory and Social Cognitive Learning Theory. Retrieved from

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

https://www.researchgate.net/publication/267750204_Bandura's_Social_Learning_Theory_Social_Cognitive_Learning_Theory on September 3, 2022.

Boumová, V. (2008). Traditional vs. Modern Teaching Methods: Advantages and Disadvantages of Each. Retrieved from https://is.muni.cz/th/f62v8/MgrDiplomkaBoumova.pdf on April 12, 2023.

Bravo, A., Porzecanski, A., Sterling, E., Bynum, N., Cawthorn, M., Fernandez, D.S., Freeman, L., Ketcham, S., Leslie, T., & Mull, J. (2016). Teaching for Higher Levels of Thinking: Developing Quantitative and Analytical Skills in Environmental Science Courses. Retrieved from https://cyberleninka. org/article/n/863152 on September 3, 2022.

Catarino, P., Lopes, J., Morais, E., Silva, H., & Vasco, P. (2019). Cooperative Learning on Promoting Creative Thinking and Mathematical Creativity in Higher Education. Retrieved from https://www.redalyc.org/journal/551/55166997001/ 55166997001.pdf on September 3, 2022.

CHED (2015). Statistics-CHED. https://ched.gov.ph.

Cohen, E.G. (1994). Restructuring the Classroom: Conditions for Productive *Small Groups*. Vol. 64. Issue 1.

Davidson, N. & Major, C.H. (2014). Boundary Crossings: Cooperative Learning, Collaborative Learning, and Problem-Based Learning. *Journal on Excellence in College Teaching, 25*, 7-55. Retrieved from

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

https://www.scirp.org/%28S%28351jmbntvnsjt1aadkposzje%29%29/reference/referencespapers.aspx?referenceid=3104352 on September 4, 2022.

Del Mundo, N.Z. (2020). Understanding the Effect of Distance Learning vs. Face-to-Face Learning Experiences on Students' Engagement in Higher Education. Retrieved from https://www.researchgate.net/publication/346962890_Understanding_the_Effect_of_Distance_Learning_vs_Face-toFace_Learning_Experiences_on_Students'_Engagement_in_Higher_Education on March 7, 2023.

Dela Fuente, J.A. (2019). Driving Forces of Students' Choice in Specializing Science: A Science Education Context in the Philippines Perspective. *The Normal Lights*, 13(2). DOI*:* 10.56278/tnl.v13i2.1393.

Diamond, A. (2022). Game Based Learnings Definition and Examples. Retrieved from https://study.com/academy/lesson/game-based-learning-definition-and-examples.html on March 7, 2023.

Doyle, A. (2020). What are Analytical Skills?. Retrieved from https://www.thebalancecareers.com/analytical-skills-list-2063729 on September 2, 2022.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

Elias, S. & Ismail, N. (2006). Inquiry Based Learning: A New Approach to Classroom Learning. Retrieved from https://www.researchgate.net/publication/261914217_Inquiry Based_Learning_A_New_Approach_to_Classroom_Learning on March 11, 2023.

Ermawati, S. & Ghufron, M.A. (2018). The Strengths and Weaknesses of Cooperative Learning and Problem-based Learning in EFL Writing Class: Teachers and Students' Perspectives. Retrieved from https://www.researchgate.net/publication /328019903_The_Strengths_and_Weaknesses_of_Cooperative_Learning_and_Problem based_Learning_in_EFL_Writing_Class_ Teachers_ and_Students'_Perspectives on September 2, 2022.

Figueroa, C. (2014). Developing Practical/Analytical Skills Through Mindful Classroom Simulations for "Doing" Leadership. Retrieved from https://www.researchgate.net/publication/261134746_Developing_PracticalAnalytical_Skills _Through_Mindful_Classroom_Simulations_for_Doing_Leadership on September 1, 2022.

Fitriani, A. & Ilyas, M. (2021). Characters of Senior High School Students in Cooperative-Based Learning Reviewed from Mathematics Learning Achievement. Retrieved from https://iopscience.iop.org/article/10.1088/17426596/ 1752/1/012061/meta on September 1, 2022.

Galas, C. (2021). Conventional Method with and without arts integration: Their Efforts on Learners Science Achievements. Master's Thesis, University of Iloilo.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

Gholam, A. (2019). Inquiry-Based Learning: Student Teachers' Challenges and Perceptions. Retrieved from https://files. eric.ed.gov/ fulltext/EJ1241559.pdf on March 11, 2023.

Goodman, B. (2010). Project Based Learning. Retrieved from https://www.fsmilitary.org/pdf/Project_Based_Learning.pdf on March 7, 2023.

GSFR (2009). Global Science Forum Report. Retrieved from https://www.oecd.org/sti/inno/globalscienceforumreports.htm on September 3, 2022.

Gumban, M.K.J. (2018). Conventional and Cooperative Learning Strategies: Their Effects on the Science Achievement of Learner. Master's Thesis, University of Iloilo.

Hmelo-Silver, C. (2004). Problem-Based Learning: What and How Do Students Learn?. Retrieved from https://www.brown.edu/academics/medical/sites/brown.edu.academics.medical/files/uploads/Hmelo-Silver,%20Problem-Based%20Learning%20What%20and%20How%20Do%20Students%20Learn_0.pdf on March 7, 2023.

Hoffer, E. (2020). Case-Based Teaching: Using Stories for Engagement and Inclusion. Retrieved from https://files.eric.ed.gov/ fulltext/EJ1263931.pdf on March 11, 2023.

Homayouni, M., Namaziandost, E. & Rahmani, P. (2020). The Impact of Cooperative Learning Approach on the Development of EFL Learners' Speaking Fluency. Retrieved from

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

https://www.tandfonline.com/doi/full/10.1080/23311983.2020.178081 on September 3, 2022.

Kaptan, K. & Timurlenk, O. (2012). Challenges for Science Education. *Procedia–Social and Behavioral Sciences*. 51: DOI: 10.1016/j.sbspro.2012.08.237.

Kapur, R. (2020). Lecture Method: The Comprehensively used Pedagogical Method. Retrieved from https://www.researchgate.net/publication/345893936_Lecture_Method_The_Comprehensively_used_Pedagogical_Method on March 7, 2023.

Kövecses-Gősi (2018). Cooperative Learning in VR Environment. Retrieved from http://acta.uniobuda.hu//Kovecses-Gosi_82.pdf on September 3, 2022.

Langer, E.J. (1989). Mindfulness. Retrieved from https://psycnet.apa.org/record/1989-97542-000 on September 5, 2022.

Lasley, T. II (2022). Bloom's Taxonomy. Retrieved from https://www.britannica.com/topic/Blooms-taxonomy on September 11, 2022.

Main, P. (2021). Jean Piaget Theory of Cognitive Development. Retrieved from https://www.structurallearning.com/post/jean-piagets-theory-of-cognitive-development-and-activeclassrooms#:~:text=The%20Theory%20of%20Cognitive%20Development,world%20(Miller%2C%202011) on September 4, 2022.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

****

Mehta, S. (2014). Implementation of the Cooperative Based Learning in Science: A Developmental-Cum-Experimental Study. Retrieved from https://www.researchgate.net/publication/275069646_Implementation_of_Cooperative_Learning_in_Science_A_Developmental-cum-Experimental_Study on April 12, 2023.

Merriam-Webster's Collegiate Dictionary 10th Edition (2014). Springfield, MA: Merriam-Webster.

Mnanka, G.M. (2017). An Investigation into Causes of Fewer Science Students in Tanzania Secondary Schools: A Case Study of Selected Kinondoni Municipal Secondary Schools. Retrieved from https://academia.edu on September 4, 2022.

Overstake, E. (2003). Developmental Spelling Instruction Through the Word Study. Retrieved from https://scholarworks.uni.edu/cgi/viewcontent.cgi?article=2307&context=grp on September 4,2022.

Panes, J. (2021). Explicit Instruction and Whole Group Instruction: Their Effects on Senior High School Learners' English Performance. Master's Thesis, University of Iloilo.

Politsinsky, E., Larisa, D. & Medvedeva, O. (2015). Ways of Students Training Aimed at Analytical Skills Development while Solving Learning Tasks. *Procedia–Social and Behavioral Sciences*. 206: DOI: 10.1016/j.sbspro. 2015.10.070.

Porras, M. (2017). Effects of Cooperative Learning on Students' Performance: Basis for English Enhancement Program. Master's Thesis, University of Iloilo.

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume V, Issue III
February 2024
Available online at https://www.instabrightgazette.com

Setiawan, A.R. & Siayah, S. (2020). A Brief Explanation of Science Education. Kudus, Indonesia. Retrieved from file:///C:/A%20Brief%20Explanation%20of%20Science%20Education%20(1).pdf on September 3, 2022.

Sunga, D.L. & Hermosisima, M.V. (2017). The Normal Lights Fostering Better Leaning of Science Concepts through Creative Visualization. Retrieved from https://www.researchgate.net/publication/312622990_The_Normal_Lights_Fostering_Better_Learning_of_Science_Concepts_through_Creative_Visualization on September 3, 2022.

Tabiolo, J.L. & Rogayan, D.V., Jr. (2019). Enhancing Students' Science Achievement through Jigsaw II Strategy. *Journal of Science Learning, 3(1)*. DOI: 10.17509/jsl.v3il.17680.

Thyer, B. (2012). Quasi Experimental Research Designs. Retrieved from https://www.researchgate.net/publication/286122828_Quasi-Experimental_Research_Designs on September 5, 2022.

Veer, R. (2020). Vygotsky's Theory. Retrieved from https://www.researchgate.net/publication/339136533_Vygotsky's_theory on September 4, 2022.

Woolfolk, A. (2001). Educational Psychology, Eighth Edition. Boston, Allyn and Bacon.

INSTABRIGHT e-GAZETTE

ISSN: 2704-3010

Volume V, Issue III

February 2024

Available online at https://www.instabrightgazette.com

****

Yakub, P., Puspitawati, R.P. & Bashri, A. (2021). Developing Analytical Skills through Optimizing the Learning Process by Science Teachers in Nganjuk Regency. *Journal of Community Service and Empowerment.* DOI: 10.22219/jcse.v2i2.16750.

****

****