INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

****

INNOVATIVE TEACHING METHODS USED IN PHYSICAL SCIENCE IN PUBLIC AND PRIVATE SENIOR HIGH SCHOOLS: BASES FOR MUNICIPAL IN-SERVICE TRAINING FOR TEACHERS

ROSELLE B. BUCANA
Teacher II
Pagdugue National High School
rosellebucana@gmail.com

ABSTRACT

The study determined the innovative teaching methods used in Physical Science in both public and private senior high schools. It was found out that the common innovative teaching methods used by teachers in teaching Physical Science are Hands on Learning, Multimedia Approach, Powerpoint, Inquiry Based Learning, Activity-Based Teaching on Science Principles, Project Based Learning, Social Media, Video Clips, ICT Enabled Learning, Research Books, Mobile Apps for Science, Interactive Science Journal and Lessons, Guided Discovery Problems, Observation Stations, and Science Exhibition. Teachers viewed it as bridging to assess their level of knowledge, innovativeness in using technology, information accessibility and convenience, effective learning approach and engaging and relevant to the teaching and learning process. Their experiences were Revealing the usage of the different platforms, Different Platforms in Teaching is Useful, Supplemental Learning Options, Discovering the Capabilities of the Learners was Realized, Integration of Innovative Methods in Learning and Teaching Becomes Clear, and Bridging the Gap.

Keywords: *Innovative Teaching Methods, Physical Science, Senior High Schools, In-Service Training, Teachers*

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

****

INTRODUCTION

Teaching is a personal undertaking that refers to teachers' essential role in involving students in activities that will help them develop valuable values and attitudes while gaining knowledge and skills.

In education, techniques refer to a teacher's distinct approach to introducing a subject to students, which is marked by skill in carrying out procedures with the highest level of care to guarantee the achievement of learning strategies.

Different methods and means are devised for the teacher to pass the message to the student in a formal setting. The conventional approach to learning has always been the face-to-face method of talking and writing on boards, also called the "talk and chalk method." In another way, the students listen to the lecture while the teacher presents the material. As a result, learners participate little in their learning process, and the learning mode is typically passive.

According to research (Nwaeze et al., 2016), the conventional lecture approach in the classroom is of limited effectiveness in teaching and learning because students assume a purely passive role, and their concentration fades off after 15-20 minutes. Effective concentration leads to improved learning outcomes. Thus, there is a need for alternative and innovative teaching methods that will entail students' active participation in the teaching and learning process, removing the element of passivity. The method should also be able to effectively pass across the message and ensure that the objective is achieved.

****

****

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

The researcher, who teaches Physical Science in the Senior High School, believes that all science teachers need to know the different innovative methods and how to use them effectively to improve the teaching-learning process. This will improve the quality of learners' academic performance in science and bring positive change in the lives of the people in the community.

In addition, education has great importance in building strong and developed societies. The success of the educational process depends on educators' continual professional development. Therefore, it is always an urgent educational need that teachers should receive adequate educational and professional training to possess knowledge and teaching skills. Thus, in-service training is recognized as a vital component in improving the education process among teachers. Courses are planned to improve instructional and professional knowledge, interest, and skills. Most importantly, the training and professional development have to be introduced, mentored, and evaluated, regularly covering all educational needs, by experts in the field (Alfaidi & Mohamed, 2020).

The need for teachers' in-service education cannot be underestimated. Enhancing teachers' work performance and motivation in the field is necessary. The lack of in-service training will hamper teachers' professional development, and there will be "missing gaps" between expectations and actual success levels (Osamwonyi, 2016).

Therefore, this paper focuses on providing an overview of the different innovative teaching methods used by teachers and how to develop in-service training relevant to their

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

needs and update their knowledge, expertise, skills, and competence in the teaching profession.

MATERIALS AND METHODS

Research Methodology

This chapter presents the research method, research design, participants of the study, data-gathering procedures, research instrument, and data analysis used in this study. The purpose of this study was to determine the different innovative teaching methods used by teachers and how to develop in-service training relevant to their needs and update their knowledge, expertise, skills, and competence in the teaching profession.

Research Method

The research method used in this study was descriptive, using a questionnaire checklist and in-depth interviews.

The participants were provided with a questionnaire checklist from which they could choose the innovative teaching methods they used in Physical Science. During the interview, the interviewer sat and thought about a series of questions regarding a particular issue. The aim was to obtain the participants' central or necessary views on a specific issue in a social context through their responses to the questions.

This study used a descriptive survey design for the quantitative aspect and phenomenology under the qualitative research design.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

A descriptive survey is an approach to descriptive study that blends qualitative and quantitative information to provide the researcher with relevant and accurate information. It is a time-efficient research method that engages the people at the center of the research objective (Vetter et al., 2021).

Phenomenology can be considered a philosophical approach to undertaking qualitative research. Phenomenology aims to understand how other individuals see the world and how this viewpoint may deviate from commonly held ideas by focusing on an individual's subjective interpretations of her experiences. Phenomenology is done by interviewing the subjects to learn their impressions and is frequently used in such fields as psychology, sociology, and social work (Fraenkel & Wallen, 2007).

The study involved all public and private senior high school teachers assigned in the Municipality of Dumangas, with 10 participants from public schools and eight (8) from private schools.

Research Method

The research method utilized in this study was descriptive, using a questionnaire checklist and in-depth interviews.

The participants were provided with a questionnaire checklist to choose from a list of innovative teaching methods they used in Physical Science. During the interview, the interviewer was allowed to sit and think about a series of questions about a particular issue.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

The aim was to gather the participants' central or necessary views on a specific issue in a social context through their responses to the questions.

Research Design

This study used a descriptive survey design for quantitative and phenomenology under qualitative research design.

Descriptive Survey Research is an approach to Descriptive Research that blends quantitative and qualitative data to provide relevant and accurate information. A time-efficient research method, Descriptive Survey Design engages the people at the center of the research objective (Vetter et al., 2021).

Phenomenology, according to Smith (2013), is the study of consciousness structures as they are experienced firsthand. Since an experience is of or about an object, its intentionality—its direction towards something—is its fundamental structure. The substance or meaning of an experience—which represents the object—as well as the proper enabling conditions focus it on the object.

Smith (2013) defines phenomenology as the examination of the structures of consciousness as they are experienced from the first-person perspective. The intentionality of an experience is its fundamental structure, as it is a directional experience of or about a specific object. An experience is directed towards an object by its content or meaning (which represents the object) and the appropriate enabling conditions.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

Phenomenology can be considered a philosophical approach to qualitative research. By concentrating on an individual's subjective interpretations of her experiences, it seeks to comprehend how others perceive the world and how this perspective may differ from widely accepted beliefs. Phenomenology involves interviewing the subjects to learn their impressions and is frequently used in fields such as psychology, sociology, and social work.

Participants of the Study

The study participants were public and private senior high school teachers assigned in the Municipality of Dumangas: ten (10) from the public schools and eight (8) from the private schools.

Research Instrument

The research instruments utilized in this study were a questionnaire checklist and a researcher-made interview schedule.

The questionnaire checklist contained 65 items, each representing different innovative teaching methods in science. Participants were asked to check which methods they used in teaching Physical Science. The interview schedule included three (3) questions. A voice and video recorder were used for data gathering and documentation based on the participants' consent.

Validity of the Research Instrument

Before determining the validity of the questionnaire checklist and interview schedule created by the researcher, they were reviewed by the adviser, the Dean of the Graduate

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

School, and a panel of experts in research, testing and assessment, and English. Each question was submitted for review and possible modification.

The appropriateness, significance, accuracy, and utility of the researcher's conclusions are referred to as validity. In terms of content-related evidence of validity, the content and format must align with the variables' definition and the sample of subjects being measured, and this process helps validate the items in the questionnaire (Fraenkel & Wallen, 2007).

The comments, corrections, and suggestions from the panel of validators regarding the questionnaire checklist and interview schedule were considered using the appropriate form of Good and Scates (Appendix B).

Data Gathering Procedures

The researcher obtained permits from the adviser, Dean of the Graduate School, heads of offices, and individual participants to conduct the study. The researcher personally visited the schools, community, or any location convenient for the participants to conduct the study. If in-person meetings were impossible, Google Forms and virtual interviews were used.

Before conducting the interviews, the researcher asked participants to sign a waiver or permission form related to the study. During the study, the researcher strictly adhered to the minimum health protocols mandated by the Inter-Agency Task Force (IATF), the Department of Health (DOH), DepEd Orders, local government units, and barangay health protocols, especially in light of the pandemic.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

A voice and video recorder accurately captured the participants' responses during the in-depth interviews. To guarantee their safety and make it easier to gather their opinions about the study, the participants were placed a fair distance away from the researcher. The researcher combined all of the information gathered after the interviews were finished.

Data Analysis

The information gathered during the interview was analyzed using a thematic approach. Finding patterns or themes in qualitative data is known as thematic analysis. The goal of thematic analysis, according to Maguire and Delahunt (2017), is to find noteworthy or intriguing themes in the data and utilize them to address the research or offer insights into a problem. Summarizing, evaluating, interpreting, and making sense of the facts are all steps in this process.

RESULTS AND DISCUSSIONS

This study determined the innovative teaching methods used in Physical Science in public and private senior high schools in the Municipality of Dumangas, Iloilo, as the basis for coming up with a Municipal In-service training of teachers during the school year 2023-2024.

The research method utilized in this study is descriptive, using a questionnaire checklist and in-depth interviews.

The participants were provided with a questionnaire checklist to choose from among the list of innovative teaching methods they are using in Physical Science. During the

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

interview, the interviewer was allowed to sit and think about a series of questions about a particular issue. The aim was to get the participants' necessary views of specific issues in a social context through the participants' responses to the questions.

This study used a descriptive survey design for quantitative and phenomenology under qualitative research design.

Researchers often use descriptive surveys to obtain the most up-to-date and relevant information. These surveys combine quantitative and qualitative data. This time-efficient research method engages the people at the center of the research objective (Vetter et al., 2021).

Phenomenology was considered a philosophical approach to undertaking qualitative research. By concentrating on an individual's subjective interpretations of her experiences, phenomenology seeks to comprehend how others perceive the world and how this perspective may differ from widely accepted beliefs. Phenomenology is done by interviewing the subjects to learn their impressions and is frequently used in such fields as psychology, sociology, and social work (Fraenkel & Wallen, 2007).

The study involved all public and private senior high school teachers in the Municipality of Dumangas. Ten participants came from public schools, and eight (8) from private schools.

The research instruments utilized in this study were a questionnaire checklist and a researcher-made interview schedule.

Depending upon the participants ' permission, voice and video recorders were also used for data gathering and documentation.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

A panel of experts validated both the questionnaire checklist and interview schedule. The researcher considered all comments and suggestions related to the tools' validation.

Permits from the adviser, Dean of the Graduate School, heads of offices, and individual participants were obtained to allow the researcher to conduct the study. The researcher personally went to the schools/community/place convenient on the part of the participants to conduct the study; if not allowed, google form and virtual interviews were done.

Minimum health protocols mandated by the Inter-AgencyInter-Agency Task Force (IATF), Department of Health (DOH) guidelines amidst the pandemic, DepEd Orders on Health protocols, Local Government Units, and barangay, health protocols were strictly observed and followed during the study's conduct.

The information was analyzed and interpreted using frequency count, rank, and thematic approach.

The following are the findings of the study:

The teacher employed innovative strategies that were very good and applicable in science class. These strategies encourage learners to join proactively and interact with their classmates and you—the teacher—during lessons. However, the lowest results, with zero percent, revealed that the respondents did not utilize these innovative strategies in science classes for senior high school learners.

Teachers commonly use innovative teaching methods in teaching Physical Science, such as Hands-on Learning, Multimedia Approaches, PowerPoint, Inquiry-Based Learning, Activity-Based Teaching on Science Principles, Project-Based Learning, Social Media, Video

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

Clips, ICT-enabled learning, Research Books, Mobile Apps for Science, Interactive Science Journals and Lessons, Guided Discovery Problems, Observation Stations, and Science Exhibitions.

Several views were offered, and the commonalities were identified. These are bridging to assess their level of knowledge, innovativeness in using technology, information accessibility and convenience, effective learning approach, and engagement and relevance to the teaching and learning process.

Teachers described varied experiences in detail. Some have experienced difficulty delivering their lessons, while others find it easy and fun. These are Revealing the usage of the different platforms, Different Platforms in Teaching are Useful, Supplemental Learning Options, Discovering the Capabilities of the Learners was Realized, Integration of Innovative Methods in Learning and Teaching Becomes Clear, and Bridging the Gap.

CONCLUSION

Based on the findings, the following insights were drawn:

Innovative teaching methods, viewed by the teachers in their instruction, were very beneficial in augmenting the teaching and learning process in the class. Capturing the informative and relevant data from the various techniques improves their teaching affectivity and efficiency. Moreover, they can lead their learners to access additional readings and class activities. Other experienced teachers used varied innovative methods to facilitate class

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

discussion, consultation, and submission of requirements, which was positively appreciative and convenient to both teachers and learners.

These teachers' challenges and experiences in utilizing innovative teaching methods serve as a positive and strong guide to enhance their knowledge and expertise in the context of the teaching and learning process; thus, the effectiveness of the teaching and learning will be guided.

In light of the findings and insights arrived at in this study, the following recommendations are forwarded:

The Department of Education should provide more funds to train teachers in innovative methods to increase classroom teaching quality.

The school heads should also consider the encouragement to all teachers to possibly include the use of innovative teaching methods in their instruction to engage the learners in further discovery of knowledge, promote excellent communication and interaction, develop critical thinking on evaluation of the information presented, usher participation in the class and another venue of learning and investigate and organize knowledge.

Therefore, learners should consider the pros and cons they may acquire in utilizing any digital platform, whatever their intended use. Teachers with this concern should remember the need to establish a substantive awareness orientation, knowing that information can be quickly and freely taken online. Taking into account the sources of the

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

information is also one thing to note down. The moral and ethical values at stake to learners should be instilled and emphasized.

Administrative leaders are also encouraged to support innovative teaching methods in DepEd institutions. Supporting the delivery of sustainable quality instruction significantly improves the teaching and learning process.

The importance of in-service training programs for teachers on innovative teaching methods is viewed as necessary. In this regard, in-service training programs for teachers should be conducted to facilitate quality education for 21st-century learners.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

References

Alfaide, S. D. A., & Mohamed, F. A. (2020). The role of in-service training programs in teachers' development. *2020 International Journal of Learning and Teaching*, 6(3), 191-195. https://doi.org/10.18178/ijlt.6.3.191-195

Collins Dictionary. (2022). *Municipal*. Retrieved August 4, 2022, from https://www.collinsdictionary.com/dictionary/english/municipal

Copper, J., et al. (2007). *Educational management*. Manila: Rex National Bookstore.

DepEd Memorandum No. 76, s. 2016. Senior high school manual of operations, Volume one.

Edsys. (2018). 50 innovative teaching methods in science. Edsys Tower, Kamaleswaram, Trivandrum-695009, India. Retrieved July 1, 2022, from https://www.edsys.in/innovative-science-teaching-methods/

Fraenkel, J., & Wallen, N. (2007). *How to design and evaluate research in education* (6th ed.). New York, NY: McGraw-Hill.

GNU. (2007). *Physical science*. Retrieved August 8, 2022, from https://www.cs.mcgill.ca/~rwest/wikispeedia/wpcd/wp/p/Physical_science.htm

Lortie, D. C. (2002). *Schoolteacher* (2nd ed.). Chicago, IL: The University of Chicago Press.

Merriam-Webster Dictionary. (2022). *Different*. Retrieved August 2, 2022, from https://www.merriam-webster.com/dictionary/different

Nwaeze, E. U. C., Onuoha, R. C., & Ukogo, I. (2016). Innovative teaching methods in science education for junior secondary school basic science students. *Journal of Teacher Perspective*, 11(2), December 2016, 2006-0173.

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

Onwukwe, E. O. (2010). *Combined effects of play-simulations and teaching with analogy on secondary school students' achievement in chemistry* (Doctoral dissertation, Nnamdi Azikiwe University, Awka, Nigeria).

Osamwonyi, E. F. (2016). In-service education of teachers: Overview, problems, and the way forward. *Journal of Education and Practice*, 7(26), 2222-1735. https://www.iiste.org

Osler, M. J. (2022). *Physical science*. Retrieved August 5, 2022, from https://www.britannica.com/science/physical-science/Ancient-Middle-Eastern-and-Greek-astronomy

Oxford Dictionary. (2021). *Oxford English Dictionary*.

Rowlands, T., Thwaites, A., & Jared, L. (2011). Triggers of contingency in mathematics teaching. In B. Ubuz (Ed.), *Proceedings of the 35th conference of the International Group for the Psychology of Mathematics Education* (Vol. 4, pp. 73-80). Ankara, Turkey: PME.

San Antonio, D. M. (2022). Advisory of the conduct of in-service training (INSET) for teachers 2022. Retrieved August 9, 2022, from https://helplineph.com/deped/advisory/advisory-of-the-conduct-of-in-service-training/

Santos, R., et al. (2006). *Statistics*. Mathematics Department, Centro Escola University.

Schooladvisor. (2021). Public and private schools. Retrieved August 6, 2022, from https://schooladvisor.my/articles/difference-public-schools-private-schools

INSTABRIGHT e-GAZETTE
ISSN: 2704-3010
Volume VI, Issue III
February 2025
Available online at https://www.instabrightgazette.com

Tarantino, F. (2021). Innovative teaching methods for teachers, school, and adult education staff. Retrieved July 6, 2022, from https://www.erasmustrainingcourses.com/innovative-teaching-methods.html

Tran, E. (2022). 15 innovative teaching methods with guide and examples. Retrieved July 2, 2022, from https://ahaslides.com/blog/15-innovative-teaching-methods/

UNESCO Institute of Statistics. (2022). *Service training*. Retrieved August 3, 2022, from http://uis.unesco.org/en/glossary-term/service-training

Vallikat, A. (2020). Innovative teaching methods. Retrieved July 3, 2022, from https://blog.teachmint.com/innovative-teaching-methods/

Vetter, S. (2021). Descriptive survey design. Retrieved August 1, 2022, from https://www.voxco.com/blog/descriptive-survey-design/

Watson, S. (2013). Understanding professional development from the perspective of social learning theory. *CERME8 Proceedings*. Retrieved July 2, 2022, from https://www.educ.cam.ac.uk/people/staff/watson/Watson_CERME8_2013_Proceedings.pdf

Way2College. (2016). Benefits of in-service training programme for teachers. Retrieved July 1, 2022, from https://medium.com/@way2colleges/benefits-of-in-service-training-programme-for-teachers-da0293086472

Wideman, H. H. (2003). *Creating a learning community: Using ICT to enhance constructivist teaching practice at Mount View School, Canada, SITES M2 Case Report York University.*