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EXPLORING THE APPLICATION OF SOCIAL CONSTRUCTIVIST THEORY IN TEACHING PRACTICES OF SCIENCE TEACHERS IN CAGDIANAO NATIOANAL HIGH SCHOOL

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ABSTRACT

This study investigated how science teachers at Cagdianao National High School applied the social constructivist approach to their instruction and looked at how it affected students' involvement and learning habits. It specifically aimed to ascertain whether teachers' years of teaching experience have a significant impact on the application of social constructivist principles and observed student behavior, as well as the degree to which these principles are applied in classroom instruction. A validated questionnaire created by the researcher was used to gather data from fifteen junior and senior high school science instructors using a quantitative-descriptive study method. The data was analyzed using inferential analysis employing analysis of variance (ANOVA) and descriptive statistics, such as mean and standard deviation. The results showed that teachers made extensive use of social constructivist principles, especially when it came to utilizing real-world examples, promoting introspection, teamwork, and inquiry-based learning. Additionally, teachers saw a high degree of positive student behavior, such as motivation, critical thinking, cooperative learning, and active engagement. Furthermore, the findings showed that there was no discernible difference in the amount of constructivist application and observed student conduct between teachers' years of teaching experience. Regardless of teaching experience, the study finds that social constructivist pedagogy is successfully implemented in science classrooms and contributes significantly to the development of meaningful, student-centered learning experiences. In order to improve student engagement and instructional efficacy, these findings suggest the ongoing inclusion of social constructivist approaches in science education.

1. INTRODUCTION

Teaching methods varies in every teacher. Each has its own strategies and techniques to make the delivery of the lesson effective and in the best way possible. The constructivist approach to education has substantial benefits. The constructivist method should be used in all scientific classrooms due to its importance, allowing students to develop their minds beyond what is required for their grade. The constructivist approach to education is one of the best ways to guarantee that young brains acquire the abilities necessary to be exceptionally successful in a world that is changing quickly, getting more competitive, and depending on autonomous and creative thought. As educators, it is crucial to support the students' life experiences while gently introducing them to the ideas they need to succeed in our society. Encourage them to apply themselves to the ideas in order to expand and enhance their comprehension while making significant findings. Once more, the constructivist approach to education is the only answer in a world that relies on imaginative thinking. Rhodes and Lund (2015).

Science is a complex field that abstract concepts needs to be experienced hands-on in order for the learners to grasp the ideas. Junruksar and Chuton (2025) assert that constructivism places a strong emphasis on learning as an active process where students develop their knowledge via inquiry and participation. Students gain deeper comprehension and critical thinking abilities by engaging in practical activities and sharing ideas with teachers and classmates. Additionally, by encouraging teamwork, creativity, and problem-solving, this method equips students for lifelong learning and practical application of their information. Additionally. NARST (2018) supported that the goal of most science education reform is to actively engage students in science (we have all heard the call for "hands-on, minds-on science"). By adopting a constructivist perspective, teaching science becomes more like the science that scientists do, which is an active, social process of making sense of experiences, as opposed to what we now call "school science." It is a commendable objective, and employing constructivism as a referent may help achieve it.

Constructivism is an approach that a teacher can utilize as a teaching method. According to the National University (2023) Constructivism is one of many educational theories, but it can encourage students to actively participate in their education by connecting new ideas to real-world situations to enhance their grasp of the material.

Furthermore, McLeod (2025) asserted that Constructivism is an educational theory and philosophy that proposes students actively construct their knowledge via interactions and experiences. This approach suggests that education should emphasize critical thinking and problem-solving skills, enabling students to make connections between new

and existing knowledge. It places a strong emphasis on student-centered learning, in which teachers mentor rather than instruct, encouraging in-depth comprehension and practical application.

The efficacy of social constructivist teaching strategies in fostering student collaboration, critical thinking, and meaningful learning experiences has been progressively demonstrated by research in educational contexts (Pimentel & Abenes, 2024). By giving students the chance to interact, reflect, and negotiate meaning together, constructivist strategies—like collaborative learning frameworks—can enhance student engagement and develop higher-order thinking skills, according to studies conducted in junior high school classes.

Teachers' application of social constructivist concepts varies greatly, depending on their training, pedagogical ideas, and instructional experience, according to research on classroom practices (Taylan & Rabago, 2025). These differences may also have an effect on how students participate, engage, and connect with one another during constructivist-focused activities. Therefore, a crucial topic of research for enhancing teaching methods and learning outcomes in secondary education is comprehending the degree to which teachers implement social constructivist principles—and how this connects to both student conduct and teachers' years of experience.

This study intends to examine the application of social constructivist pedagogy in the particular educational setting of Cagdianao National High School in the context of an increasing amount of evidence supporting it. It will primarily focus on teacher practices, student behavior, and the relationship between constructivist implementation and teaching experience.

2. RESEARCH PROBLEMS

The study aims to investigate the application of social constructivism as an approach to teaching science by the teachers in the field. Specifically it seeks to answer the following questions:

1. To what extent do teachers apply social constructivist principles in their classroom instruction?
2. What is the level of behavior of the students observed by the teachers upon applying social constructivism approach?
3. Is there a significant difference between the years of teaching experience with the extent of the application of the principle and the extent of the behavior of the students observed by the teachers?

3. RESEARCH DESIGN

The researcher will utilize Quantitative-Descriptive Research Design to measure the extent of the challenges the students have encountered during the transition of learning modalities (face-to-face, modular, and online) and the degree of the coping mechanism they have employed. In this study, the researcher will use quantitative approach since the study will involve quantifying and analyzing variables to achieve results using numerical data and statistical methods

4. RESEARCH INSTRUMENT

A validated researcher-made questionnaire was utilized in this study to collect information on science teachers' methods of instruction and how they affected students' conceptual comprehension. To address the study's goals, the questionnaire was divided into three sections.

Part 1 is the demographic profile of the respondents including the age, gender, and the years of teaching experience. Part 2 is a 5-point likert scale that includes 10 statements of Application of Social Constructivist Principles in which the respondents may rate as 5-Always, 4-Often, 3-Sometimes, 2-Rarely, and 1-Never. Meanwhile part 3 is also 5-point likert scale for the Influence on Student Engagement and Attitude in which the participant may rate as 5-Strongly Agree, 4-Agree, 3-Neutral, 2-Disagree, and 1-Strongly Disagree. The research instrument underwent validation with 2 exeperts.

5. RESEARCH PARTICIPANT

The participants of this study are the science teachers of Cagdianao National High School in the municipality of Cagdianao, province of Dinagat Islands, Philippines. There were 4 Senior High School science teachers and 11 Junior High School science teachers across all grade level. To ensure fairness and representativeness, the participants were randomly selected using the simple random sampling technique that allowed each member of the target population to have an equal chance of being included, minimizing selection bias and enhancing the reliability of the findings.

6. DATA GATHERING PROCEDURE

A structured questionnaire generated by the researcher was used to collect data for this investigation. In order to ensure appropriate collaboration with the science professors and their students, the researcher obtained authorization from the Cagdianao National High School administration prior to performing the actual survey. Following approval, a

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simple random sample process was used to present the questionnaire to the chosen respondents, which included science professors and their matching pupils. In order to guarantee careful and accurate responses, the respondents were given ample time and clear instructions on how to complete the questionnaire. In order to answer any queries or provide any clarifications required by the participants, the researcher personally oversaw the survey's administration. Following the respondents' completion of the survey, to protect anonymity and avoid data loss, the researcher gathered the forms right away.

7. DATA ANALYSIS

The data gathered from the questionnaires were analyzed using descriptive and inferential statistical tools to address the objectives of the study. Descriptive statistics, specifically the mean and standard deviation, were employed to summarize and interpret the responses, providing a clear picture of the extent to which Science teachers Apply Social Constructivist Principles and the extent of the behavior of the students observed by the teachers upon implementing social constructivist principle. The mean values indicated the overall level of usage or influence, while the standard deviation showed the degree of variability among respondents' answers.

Ethical Considerations

To ensure ethical procedure, the researcher has identified three parts in conducting the survey.

Pre-Survey

Designing of the survey carefully. The researcher will avoid leading or manipulative questions and design a survey that is focused and as brief as possible to minimize burden on participants.

Informing participants of the purpose. The researcher will clearly state the objective of the study, the procedures of the conduct to the participants as it is included in the survey questionnaire as well.

Ensuring voluntary participation: The researcher will make it clear that the participation of the respondents is voluntary and that they can refuse to participate or withdraw at any time.

During Survey

Protecting confidentiality and anonymity. The researcher will keep the participants' identities separate from their responses. To protect participant privacy, the researcher will implement procedures like anonymity of information and data storage security.

Being transparent. Discuss procedures and results truthfully and with integrity throughout the process.

Post-survey

Reporting outcomes accurately. To uphold academic integrity, the researcher will communicate findings honestly and authentically.

Handling data responsibly. The researcher will Protect the information gathered and make sure it is used solely for the purposes for which permission was granted.

Documenting ethical procedures. The researcher will maintain documentation of all

8. FINDINGS

Table 1. Frequencies of Age

Age	Counts	% of Total
24	3	20.0%
32	1	6.7%
35	2	13.3%
40	3	20.0%
45	3	20.0%
50	3	20.0%

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Teachers in the age ranges of 24, 40, 45, and 50 make up 20% of all respondents, indicating a fairly distributed participants. This suggests that different viewpoints on teaching methods are possible because the participants are from both early-career and more older age groups.

Table 2. Frequencies of Gender

Gender	Counts	% of Total
Female	7	46.7%
Male	8	53.3%

In terms of gender, male teachers make up 53.3% of the respondents, slightly more than female teachers (46.7%).

Table 3. Frequencies of Years of Experience

Years of Experience	Counts	% of Total
1–3	4	26.7%
4–6	5	33.3%
7–10	3	20.0%
More than 10	3	20.0%

In terms of years of teaching experience, the largest group (33.3%) has four to six years of experience, followed by one to three years (26.7%). This indicates that the majority of responders have a fair amount of expertise, with both new and seasoned educators included.

Table 4. The extent of the Application of Social Constructivist Principles

	Mean	Standard deviation	Qualitative Description
1. I encourage students to collaborate in small groups and share ideas during science learning activities.	3.8	0.775	High
2. I design lessons that allow students to construct their own understanding through exploration.	4.13	0.834	High
3. I use real-life examples and experiments to connect science concepts with students' prior knowledge.	4.4	0.828	Very High
4. I guide students to reflect on their learning and express their own ideas.	4.4	0.632	Very High
5. I facilitate classroom discussions that promote critical thinking and peer learning.	4.07	0.884	High
6. I encourage students to ask questions and express different viewpoints.	3.87	0.64	High
7. I provide opportunities for students to learn from one another.	3.73	0.594	High
8. I use formative assessments to adjust instruction based on students' needs.	3.8	0.862	High

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9. I act as a facilitator rather than the main source of information.	4.13	0.743	High
10. I integrate technology to support collaborative and inquiry-based learning.	3.87	0.915	High
P2 AVE	**4.02**	**0.268**	**High**

Legend: P2 AVE: Average of the statements of extent of the Application of Social Constructivist Principles. Qualitative description: Very High (4.20-5.00). High (3.40-4.19). Moderate (2.60-3.39). Low (1.80-2.59). Very Low (1.00-1.79)

With an overall mean of 4.02, which is classified as High, the results show that teachers apply social constructivist ideas to a high degree. Teachers indicated high levels of application in assisting students to reflect on their learning (M = 4.40) and in using real-life examples and experiments (M = 4.40), demonstrating a strong emphasis on encouraging reflective learning and making connections between new information and past experiences. High mean scores were also achieved for other variables, such as creating exploratory lessons, serving as facilitators, promoting teamwork, and incorporating technology, indicating that constructivist methods are regularly used in classroom instruction. Teachers' responses appear to be fairly consistent based on the relatively low standard deviations.

Table 5. The level of the behavior observed by the Teacher

	Mean	Standard deviation	Qualitative Description
1. Students actively participate in group discussions and collaborative tasks.	4	1	High
2. Students show enthusiasm and interest in learning activities.	3.8	0.862	High
3. Students demonstrate critical thinking and problem-solving skills.	4.27	0.799	Very High
4. Students are confident in expressing their opinions during class discussions.	4.07	0.884	High
5. Students engage in peer feedback and cooperative learning.	3.93	0.704	High
6. Students take responsibility for their own learning.	3.8	0.862	High
7. Students show improved motivation when learning through interactive activities.	4	0.655	High
8. The classroom atmosphere fosters mutual respect and teamwork.	4.4	0.737	Very High
9. Students relate lessons to their personal experiences.	3.8	0.775	High
10. Overall, student engagement has increased through constructivist teaching approaches.	3.93	0.884	High
P3 AVE	**4**	**0.285**	**High**

Legend: P3 AVE: Average of the statements of extent of the behavior observed by the teacher. Qualitative description: Very High (4.20-5.00). High (3.40-4.19). Moderate (2.60-3.39). Low (1.80-2.59). Very Low (1.00-1.79)

The results show that using social constructivist techniques has a favorable impact on students' attitudes toward learning and level of involvement. The total mean of 4.00, which is considered high, shows that when constructivist methods are used, teachers regularly witness favorable student behaviors. Students were found to have extremely high levels of critical thinking and problem-solving abilities (M = 4.27), as well as a classroom environment that encourages cooperation and respect for one another (M = 4.40). Constructivist teaching methods appear to improve both the social and cognitive aspects of learning, as seen by the high ratings given to other elements including motivation, peer collaboration, active engagement, and confidence in expressing ideas.

Table 6. The relationship between the years of teaching experience with the extent of the application of the principle and the extent of the behavior of the students observed by the teachers.

	F	df1	df2	p
P2 AVE	1.063	3	5.36	0.439
P3 AVE	0.203	3	4.64	0.890

Legend: P2 AVE: Average of the statements of extent of the Application of Social Constructivist Principles. P3 AVE: Average of the statements of extent of the behavior observed by the teacher.

Both the degree of application of social constructivist concepts ($F = 1.063$, $p = 0.439$) and the observed student conduct ($F = 0.203$, $p = 0.890$) do not significantly differ across years of teaching experience, according to the analysis of variance results. The null hypothesis is accepted since the p-values are higher than the significance level of 0.05. This suggests that teachers use social constructivist techniques at similar levels and see similar student behaviors regardless of how long they have been teaching. The results imply that the adoption of social constructivist approaches may be impacted by other factors such as shared professional training, school culture, or instructional expectations rather than years of experience.

9. CONCLUSION

The study's conclusions indicate that science instructors at Cagdianao National High School heavily incorporate social constructivist ideas into their lesson plans. A learner-centered and interactive teaching method is seen in the teachers' constant encouragement of teamwork, inquiry, reflection, and the utilization of real-life circumstances. Teachers' observations of high levels of engagement, motivation, teamwork, confidence, and critical thinking show that the application of these concepts has a favorable impact on students' conduct. The classroom atmosphere created by social constructivist methods encourages cooperation, respect for one another, and active engagement—all of which are necessary for meaningful science education.

Furthermore, neither the degree of student behavior observed nor the teachers' years of teaching experience were shown to be significantly correlated with their application of social constructivist principles. This suggests that common training, institutional practices, or shared pedagogical aims inside the school may have an impact on the implementation of social constructivist methodologies rather than teaching tenure. Overall, the study confirms that social constructivist pedagogy is useful in improving student learning experiences and instructional delivery in scientific education.

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