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RESEARCH ARTICLE

EMPLOYING LANGUAGE STRATEGIES THROUGH BLENDED LEARNING IN IMPROVING STUDENTS' SCIENCE ACHIEVEMENT AND CONCEPT RETENTION

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Abstract

This study aims to determine the effects of language strategies in teaching science in the achievement of students in Science in blended learning approach. It is based in the belief that it has a positive effect on science achievement and retention of previously gained concepts in Biology 1. Following the quasi-experimental design, thirty-three 9th graders were treated as experimental group subjected to the use of different language strategies for teaching Biology1 in blended learning while the control group with another thirty-three participants was taught with the traditional approach in blended learning platforms. Both groups were given pretest and posttest and subjected to posttest re-administration to assess the retention level. Results showed that there is a significant difference between the posttest scores, and pretest and posttest mean scores of the experimental and control groups. In addition, retention of previously gained concept in science was also significant in the lag post-test scores of the experimental group and the control group but both groups recorded an increase in retention level. It is also identified that language strategies improves students' engagement, enjoyment, skills development, critical thinking, comprehension and authentic learning experiences of the student participants during blended learning. Thus, suggesting that teachers may use the different language strategies in teaching science subjects to improve the achievement and enhance retention of previously gained concepts of students.

Introduction:-

When Novel Corona Virus 19 (NCOVID19) pandemic surpass the threshold of every country in the world, one of the most affected parts is the education sectors. Many school functions and activities were terminated, students were not allowed to go to school, and school works were send to students via online platform and printed materials. There were 150 countries fully closed their schools in March 2020 (UNESCO This condition happens across the globe and the Philippines is no exception. The COVID 19 pandemic has critically affected the lives of the Filipino learners. To address the resumption of classes and the quality of education for the learners amidst the occurring effect of COVID19 pandemic, the Department of Education made a paradigm shifts to transition the modality of teaching from conventional "face to face" learning to blended learning. Under blended learning conditions, students are taught using different ways which include online, television, radio and printed materials. The complexities of such

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modalities require suited design and approaches to provide quality education to the learners. Thus it is necessary to access and search for a process that can cover as many media we can used to help learners.

In addition, educators are constantly reminded with our Programme for International Student Assessment (PISA) standing, that requires the teachers to increase our achievement and comprehension of our students. The PISA's objectives includes;

1. To empower school leaders and teachers by providing them with evidence-based analysis of their students' performance.
2. To measure students' knowledge, skills and competencies that will equip them for success in education and the world of work.
3. To provide valuable information on the learning climate within a school, students' socioeconomic background and motivation for learning.
4. To help schools measure a wider range of 21st century skills beyond math, reading and science.
5. To provide opportunities for global peer-learning among teachers and school leaders. (OECD)

Data produce from the PISA results were used to increase the relevance and value of the assessment for school improvement, encourage global peer-learning opportunities, and develop additional performance measures for 21st century skills.

It is very unfortunate that in the 2018 PISA examinations, the Philippines landed among the lowest country in the Southeast Asia. Based on the report

The Philippines obtained an average Scientific Literacy score of 357 points in PISA 2018, significantly lower than the average score of OECD, 489 points. The mean score of Filipino students is within Proficiency Level 1a. Hence, an average Filipino 15-year-old student can use basic science knowledge to recognize or identify explanations of scientific phenomena. With additional guidance, they can do structured scientific inquiries with at most two variables. In comparison, a typical 15-year-old student from OECD countries at Proficiency Level 3 can draw upon moderately complex content knowledge to construct explanations of familiar phenomena. The Philippines fared significantly lower in Scientific Literacy than all the ASEAN countries that participated in PISA 2018. (DEPED-PISA2018 National Report of the Philippines)

Objectives of the Study:-

This study aimed to determine the effect of language strategies in teaching science on the students' science achievement and concept retention in blended learning. Specifically, this study seeks to answer the following:

1. To prepare and validate lesson transcripts based on language strategy.
2. Determine the effectiveness of language strategies in teaching science concepts through blended learning on student's achievement and retention of learning.
3. What are the impacts of language strategy to the students' science achievement during the blended learning?

Statement of Hypotheses

Concerning the above-mentioned problems, the following hypotheses are formulated:

1. There is a significant difference between the posttest mean scores of the experimental and control groups.
2. There is a significant difference between the posttest and pretest mean scores of the experimental and control group.
3. There is a significant difference between the Lag test mean scores of the experimental and control groups.
4. There is a significant difference between the Lag test and posttest mean scores of the experimental and control group.

Methodology:-

Participants

The study utilized purposive sampling technique among the participants of the study. Two groups participated in the study. The experimental group was subjected to the treatment while the control group proceeds with the traditional classroom discussion, after the treatment, both groups were subjected to post test, and after fifteen (15) days both groups took the lag-test. Survey questionnaires was given to the experimental groups after the administration of the post-test to identify their experiences in using language strategies in their class activities and discussions.

Three (3) master teachers in science from junior high school evaluates the lesson plans and science achievement test. Their comments and suggestions were considered in improving the quality of the two instruments**.**

Research Design

This study employs a mixed method design specifically the explanatory research design. The quantitative data from the pretest, posttest and lag test scores from both control and experimental group is used to analyze the achievement and retention of science concepts using language strategies in teaching biology. The qualitative data from the survey questionnaires administered to the experimental group was used to reinforce the results of the research findings. The correct answer to the test paper was utilized to match the language strategies used for the specific concept that lead to the correct answers. Using the results of the quantitative and qualitative data, the findings were analyzed and interpreted.

Research Instrument

This study utilized five (5) types of research instruments it includes the evaluation instruments for teacher-made lesson plan, teacher-made lesson plan, evaluation instruments for science achievement test, Science Achievement test and open-ended survey questionnaires.

Ethical Consideration

In relation with the objectives of the study, the researcher secured the safety and protection of the participants and the research locale. Considering the direct involvement of the human participants in the study, potential ethical issues in the data collection stage was considered. The researcher secures the approval of the concerned school before conducting the study to ensure that the study adhere to the ethical standards and guidelines in research of the said institution. Participants are also advised that they could withdraw their participation in the discussion if they find it inconvenient.

Data Analysis

This study utilized descriptive statistic such as mean, percentage frequency distribution and standard deviation. It also utilized one-way Analysis of Variance to partial out the initial differences from the two groups. Significant difference between the means of the pre-test and the post-test of the subjects for both the control and experimental groups were analyzed using this statistical model because this study investigated changes in mean scores over three time points (pretest, posttest and Lag test) and the subjects were used more than once on the same dependent variable.

Results and Discussion:-

This section summarizes the presentation, analysis and interpretation of the data obtained. The research questions were answered and discussed in the order that they were presented in the statement of the problem.

Problem 1. To prepare and validate lesson plans based on language strategy.

Three (3) Learning plans were developed for the duration of the study which are as follows: viruses and its' structure, viral transmission, and Infections and COVID 19 Pandemic. The Learning plans made were reviewed by three (3) experts in the field of science education and teaching using an Evaluation Form for Learning Plans.

The evaluators found out that the develop learning plans that incorporate different language strategies in teaching Biology as "very good" in all domains namely; Objectives (3.00); Materials (2.67); Procedure/Lesson Development (3.00); and Evaluation (2.83) with an over-all mean score of 2.97 (very good).

Problem 2. Determine the effectiveness of language strategies in teaching science concepts through blended learning on student's achievement and retention of learning.

Hypothesis 1. There is a significant difference between the posttest mean scores of the experimental and control groups.

High level scores for both experimental and control groups shows a mean scores of 38.92 and 38.48, respectively. While, average level shows a mean score of experimental and control groups of 28.11 and 27.88, respectively. However, one student from the control group scores lowest with 13 correct answers.

The experimental group has a mean score of 36.09 which is only 0.85 higher than the control group with a mean score of 35.24. The highest and lowest scores of the science achievement scores for both the experimental and the control group is not also significantly different.

When the test of difference was conducted to the means of the groups, table 1 shows the analysis of variance (ANOVA) obtained an F-value of 0.3006, p = 0.5853. Since the p-value (.5853) is greater than the alpha (.05), a null hypothesis is accepted that suggest a no significant difference of two posttest mean scores of the experimental and control group.

Table 1:- Posttest: Experimental vs Control Group.

Group	Mean	SD	Mean Difference [a]	df	F-value		p-value	Remarks
					Observed	Critical		
Experimental	36.09	6.017	0.85	1,66	0.3006	3.986	0.5853	Not Significant
Control	35.24	6.787						

a lExperimental – Controll

Note: This table shows the results of the one –way ANOVA test scores of the posttest.

Table 1 shows that there is sufficient evidence to believe that there is no significant difference between the posttest mean scores of the experimental and control groups. Such result is expected inasmuch as the students are considered among the selected students, Students were selected from the pool of applicants from different public and private elementary schools that meets the criteria of being science high school students.

Hypothesis 2. There is a significant difference between the posttest and pretest mean scores of the experimental and control group.

Table 2 presents the posttest and pretest Science Achievement mean scores of the experimental group. It shows that this group obtained a pre-test mean score of 25.56 and a mean score of 36.09 in the post test. It also indicates that this group obtained a mean difference of 10.53 which means that there was an improvement in their science Achievement mean scores. In addition, analysis of variance (ANOVA) was computed to find out if there was a significant difference between the two tests. As shown in table 2, the result is significant at F = 41.73; p = 0.00001. This means that the use of language strategies in teaching biology has a positive effect on the subjects' science achievement score.

Table 2:- Experimental Group: Posttest vs Pretest.

Group	Mean	SD	Mean Difference [a]	df	F-value		p-value	Remarks
					Observed	Critical		
Posttest	36.09	6.017	10.53	1,66	41.73	3.986	0.00001	Significant
Pretest	25.56	7.358						

a l Posttest – Pretest l

Note: This table shows the analysis of data base from the posttest and pretest scores of the experimental group.

Table3 shows the posttest and pretest science achievement mean scores of the control group. The group obtained a pre-test mean score of 25.82 and a posttest mean 35.29 with a mean difference of 9.47. Table 3 shows the results of the analysis of variance (ANOVA) that there was significant difference between the two test in this group at F = 30.76 at p=0.00001. With this result, the hypothesis stating that there is a significant difference between the science achievement posttest mean score and pretest mean score of the control and experimental group is accepted. Although the results were similar with the experimental variable, the researcher recognized that this finding is normal since both groups underwent the learning process, and the students are independent learners. Other factors like study habits and the students' capability to explore the topic on their own to cope up with the discussion of the science teachers might influence positively to the science achievement scores of the learners. Prior announcement of

examination to both experimental and control group provide opportunities to the control group to self-study and conduct review session on their own or group session.

Table 3:- Control Group: Posttest vs Pretest.

Group	Mean	SD	Mean Difference [a]	df	F-value		p-value	Remarks
					Observed	Critical		
Posttest	35.29	6.753	9.47	1,66	30.76	3.986	0.00001	Significant
Pretest	25.82	7.317						

a l Posttest – Pretest l

Note: This table shows the analysis of data base from the posttest and pretest scores of the control group.

Hypothesis 3. There is a significant difference between the Lag test mean scores of the experimental and control groups.

Table 4. shows the descriptive analysis of the data on Lag test scores of the experimental and control group. The data was gathered after fifteen days of administering the post test of the Science Achievement Test. Table 4 also shows the decline of scores in the control group, in comparison with the experimental group which maintains its' number of participants with high scores. This is an indication that participants in the control group decreases the retention of previously gain concepts after fifteen days while experimental groups exhibit high retention of the previously gained concepts in science.

The science achievement Lag test scores of the experimental group and the control group. It also indicated that the means of the two groups have a difference of 3.23 and revealed the F – value = 3.998, p – level = 0.049677 is significant. Although both the lag test scores demonstrate positive retention of concepts of the experimental and control group, the experimental group shows higher mean scores in their lag test. This is due to the nature of some language strategy applied in their group discussion like profiling which creates conceptual visual representations of the concepts discussed in the activity of the lesson. Hence, focusing only important details of the concepts and eliminating the less important details of the science concepts.

In blended learning, online application in making graphs and other applications that can be used to represent science concepts is really helpful to the students, in creating mind map of science concepts that they need to apply and remember.

Table 4:- Lag Test: Experimental vs Control Group.

Group	Mean	SD	Mean Difference [a]	df	F-value		p-value	Remarks
					Observed	Critical		
Experimental	41.97	7.060	3.23	1,66	3.998	3.986	.049677	significant
Control	38.74	6.259						

a l Posttest – Pretest l

Note: Table 4 shows the quantitative data analysis of the significant difference of experimental versus control group.

Hypothesis 4. There is a significant difference between the Lag test and posttest mean scores of the experimental and control group.

Table 5 presents the Lag test mean score and the posttest mean score of the experimental group. The posttest has a mean score of 36.09 which is lower by 5.88 than the Lag test mean score of 41.97. The test of Analysis of variance (ANOVA) on table 14 revealed that this increase is significant with the observed F= 13.672 and p = 0.000445 value. With this results the hypothesis stating that there is a significant difference between the Lag test and posttest mean score is accepted. This implies that the use of language strategies in teaching science significantly enhanced the learners' retention of science concepts. This is evident with the mean difference of 5.88. However, there are other

factors that might influence the capability of learners to improve their science achievement and retention of science concepts during this blended learning.

Table 5:- Experimental Group: Lag Test vs Post Test Scores.

Group	Mean	SD	Mean Difference [a]	df	F-value		p-value	Remarks
					Observed	Critical		
Lag Test	41.97	7.06	5.88	1,66	13.672	3.986	.000445	Significant
Post Test	36.09	6.02						

a Lag test – Posttest
b Sphericity assumed

Note: This table shows the quantitative analysis of the lag test scores versus the post test scores of the experimental group.

Table 6 shows the Lag test mean score and the posttest mean score of the control group. It shows that the group has a mean score of 38.54 in the posttest which is 3.3 mean difference lower than the Lag test with a mean score of 35.24. Table 6 shows the analysis of variance (ANOVA) of the Lag test mean scores of the control group. This reveals that the Lag test scores are significantly different to the posttest scores of the control group after three weeks at an observed $F = 4.886$, $p = 0.030538$. With this results the hypothesis stating that there is a significant difference between the results of the Lag test and the posttest mean score is accepted.

Table 6:- Control Group: Lag test vs Post Test Scores.

Group	Mean	SD	Mean Difference [a]	df	F-value		p-value	Remarks
					Observed	Critical		
Lag test	38.54	6.26	3.3	1,66	4.886	3.986	.030538	Significant
Post test	35.24	6.79						

a Lag test – Posttest
b Sphericity assumed
Note: This table shows the quantitative analysis of Lag test versus posttest scores of the control group.

3. What are the impacts of language strategy to the students' science achievement during the blended learning?

Table 7 shows the generated themes and the response of the participants (frequency) for building word taxonomy strategy. Building word taxonomy promotes enjoyment in science class online learning. Majority of the students agreed that the use of this strategy increases their enjoyment and they feel happy while they interact with their groupmates in listing down vocabulary words during their online science class activities.

Table 7:- Building Word Taxonomy and its Impact on Learning.

Generated themes	**Theme definition**	**Frequency(f)**
Students' Enjoyment	This refers to the feeling of pleasure caused by doing (Word Taxonomy) educational activities as part of their lesson discussions.	11
Students' Engagement	This refers to the students' level of attention, curiosity, interest and passion that students show to complete the tasked at hand.	7
Promote Positive Output Towards Learning	The students perform well and even exceeds the expectations in completing the activities given by the teacher.	5
Develop Psychomotor Skills	The students were able to learn new skills or enhanced skills in conducting the activities provided by the teacher.	5
Deep Understanding	Existing knowledge was elaborated and enhance through conducting the activities provided by the teacher.	4

Note: This table shows the generated themes, its definition and the number of students' response that are categorized which each themes.

The use of word taxonomy also promotes student engagement, promote positive output, develop psychomotor skills and encourage deep understanding on the subject matter. Thus, this kind of language strategies can be used as a motivational activities or an initial activity to introduce a new lesson and gauge prior understanding of the students about the lesson.

Table 8, shows how composing keywords help the learners develop and enhance their learning process. Majority of the participants agreed that composting with key words promotes engagement among the students. This activity helps the learners recall and associate words to the topic being discuss in the lesson. Difficult words become easy to understand if learners can use it on their own words as well as measures their level of understanding about the terms.

Table 8:- Use of Composing with Keywords towards learning.

Generated themes	Theme definition	Frequency(f)
Engagement	This refers to the students' level of attention, curiosity, interest and passion that students show to complete the tasked at hand.	14
Creativity	This refers to the use of learners imagination to make original works or compositions using keywords	7
Critical Thinking	The use of keywords to organized and understand the concepts or topics being discussed by the teacher	7
Enjoyment	This refers to the feeling of pleasure caused by composting using keywords as part of their lesson activities	3

Note: This table shows generated themes, definitions and the frequency of learners categorized from each themes.

Composting with key words activity also promotes creativity among the learners. They were able to make authentic composition that brings out their ideas and understanding about the lesson. It also enhance critical thinking skills of learners. The ability of the students to relate learned skills from the lesson, concepts learned and their own thoughts about the different events or conditions that occur in their surroundings is an indication of critical thinking.

Student enjoyment is also one the themes identified in the use of the language strategy, this entails the importance of pleasant experiences of the learners while doing the activity.

Table 9 shows the generated themes of categorization activity as a language strategy to harness the ability of the learners to differentiate and classify vocabulary words.

Table 9:- Impact of Categorization Activity on Student Learning.

Generated themes	Theme definition	Frequency(f)
Skills Development	This refers to the new skills or enhance skills of the students that he/she learned from the topic or activities given by the teacher.	11
Increase Classroom Engagement	This refers to the participation of students in group activities during online learning.	10
Critical Thinking	The use of categorization activity to organized and understand the concepts or topics being discussed by the teacher	6
Enjoyment	This refers to the feeling of pleasure caused by composting using keywords as part of their lesson activities	6

Note: The table indicates the number of students classified in the following themes generated from the use of categorization activity.

Most students believe that categorization activity help them in developing their skills in studying science concepts. Enhancing the learners' ability to classify and group vocabulary words are related to the concepts learned by the students during the blended learning. Students also believe that the use of categorization activities increases their classroom engagement. This means that all learners act and participated in the categorization activity to complete the

task. The students also reported that categorization enhances their critical thinking skills. Using categorization activities, they tend to classify each vocabulary words based on their connections and similarities on application or usage of terms.The least among the generated themes is enjoyment. Learners perceived that categorization activities provide them with joy and fun in learning. Some of the excerpts reflects their joy and happiness in the doing the said activities.

Another interesting activity in language strategy use in teaching science subject is the sequence frames. Table 10 shows the influence of sequence frames activities on the science learning of students during the blended learning approach.

In the activity of sequence frames, students perceived that this activity develop their skills as they learn concepts. They were able to learn new skills while doing the activities. The following are the selected statement of learners that suggest skills development themes.

Table 10:- Influence of Sequence Frames on Student Blended Learning.

Generated themes	**Theme definition**	**Frequency(f)**
Skills Development	This refers to the new skills or enhance skills of the students that he/she learned from the topic or activities given by the teacher.	16
Increase Classroom Engagement	This refers to the participation of students in group activities during online learning.	8
Creativity	The use of sequence frames that promotes creative and unique compositions.	5
Enjoyment	This refers to the feeling of pleasure caused by composting using keywords as part of their lesson activities	4

Note: This table identify how sequence frames activity influence the learning of students during blended learning.

Sequence framing also increase classroom engagement among the learners and during the discussion of the activity on sequence framing. Sequence framing activity also improve learners' creativity and promotes enjoyment among learners. This is reflected with their ease in completing the task as well as in their transcript.

Table 11:- Students' perception on the use of Profile Activity during Blended Learning.

Generated themes	**Theme definition**	**Frequency(f)**
Skills Development	This refers to the new skills or enhance skills of the students that he/she learned from the profiling activities given by the teacher.	16
Comprehension	This refers to the learners' ability to understand something or the process of understanding the science concepts through the use of profiling.	8
Increase Classroom Engagement	This refers to the participation of students in group activities during online learning.	5
Enjoyment	This refers to the feeling of pleasure caused by composting using keywords as part of their lesson activities	4

Note: This refers to the generated themes on the impact of profiling activity.

Profiling activity during blended learning enables learners to explain and answer questions in the most comprehensive manner. Table 11 shows students' perception on the use of profile activity during blended learning as well as the generated themes of the researcher.Most students perceived that the profiling activities, promotes skills development. Skills in organizing and delivering the science concepts were enhanced though their engagement in this type of activities.

Research participants also perceived that profiling activity increases the level of comprehension among the learners, increase students' engagement in completing the activities and promote enjoyment among student' participants.

Table 12 shows the summary of themes of students' response in connection with frame activity in blended learning. It involves generated themes and the frequencies of response.

Table 12:- Students' perception on the use of Frame Activity during Blended Learning.

Generated themes	Theme definition	Frequency(f)
Promote Authentic learning	This refers to the meaningful construct of concepts and relationships in contexts that involve real-world problems and projects that are relevant to the learner.	11
Skills Development	This refers to the new skills or enhance skills of the students that he/she learned from the profiling activities given by the teacher.	9
Enjoyment	This refers to the feeling of pleasure caused by composting using keywords as part of their lesson activities	8
Comprehension	This refers to the learners' ability to understand something or the process of understanding the science concepts through the use of profiling.	3

Note: This table shows the students' perception on the use of Frame activity

Frames activity promotes authentic learning. Authentic learning is a meaningful construct of concepts and relationships in contexts that involve real-world experiences. Frame activity also influences enjoyment of students during blended learning. It is important that activities should address the comprehension skills of students. Using frame activity, it enhances the comprehension skills of the students.

Strategy

To improve the PISA's performance is quite a challenging aspects of this time of pandemic. The ability to draw, and construct explanations of familiar phenomenon might be improved in using different language strategies in teaching Science. Language strategies were anchored on activities that trains memory, cognitive, comprehension, metacognition, and affective part of the learners.

Language Strategies includes word taxonomy, composing with keywords, defining format, using profiles, and framing.

Word taxonomy is a language strategy that utilizes the process of collecting vocabulary words use in science concepts. It is necessary for the learners to determine the right usage of words in the scientific context as well as to the literary concept. Wide use of vocabulary in a different context, improves students understanding and scientific literacy. Stahl and Kapinus (2001) stated, "When children 'know' a word, they not only know the word's definition and its logical relationship with other words, they also know how the word functions in different contexts."

Composing with keywords is a language strategy that use selected words from taxonomies or text to compose key ideas in a sentence. It helps the students write and compose freely by touching their independence, creativity and confidence in building their ideas and supporting this idea with factual information.

Defining a format is a language strategy that use three-part template for defining a term by asking a questions, stating the category and listing its unique characteristics. It is focus on the development of constructing meaning and categorizing distinguishing ideas.

Profiles and Frames are language strategies that utilizes templates for outlining information in a broad and complex topic or subject. It is focus on report writing, scientific investigation and oral presentations.

This study will utilize a 7E's learning plan that consist of six (6) language strategies. Word taxonomy can be used in the elicit and engage part of the learning plan to assess the initial understanding of the learners about the lesson. While composing of keywords, defining formats, categorization, formats and frames can be used in the explore and explain part of the learning plan. Formats and Frames can also be part of the evaluation and extend part of the lesson to guide the learners develop and support their ideas and understanding.

From the aforementioned conditions, it is necessary to study the effects of the use of language strategies in teaching science in the blended learning modalities. This provides us an opportunity to improve the skills of our learners in terms of drawing content knowledge to construct explanations of familiar phenomena.

Results:-

After analyzing the data gathered for this study, the following results were revealed:

1. The developed lesson plans were evaluated by experts and rated as very good.
2. There is no significant difference between the post-test mean scores of the experimental and control groups.
3. There is a significant difference between the post-test mean score and the pre-test mean score for both the control and experimental groups.
4. There is a significant difference between the lag-test mean scores of the experimental and control groups.
5. There is a significant difference between the lag-test mean score and the post-test mean score for the experimental group.
6. There is no significant difference between the lag-test mean score and the post-test mean score for the control group.
7. Language strategies positively impact students' engagement, enjoyment, skills development, critical thinking, comprehension, and authentic learning experiences during blended learning.

Conclusion:-

From the results gathered from the research study, the following conclusions were derived:

1. The learning plans developed by the researcher using language strategies can be effectively utilized by science teachers for teaching biology.
2. The use of language strategies in teaching science during online learning significantly enhances students' science achievement, comprehension of lessons, and overall understanding of the subject matter.
3. Language strategies also help improve students' retention of concepts in the subject matter, making them an effective tool for increasing concept retention in science topics.
4. The implementation of various language strategies in the classroom enhances students' involvement in lessons, thus serving as a valuable tool for increasing student engagement.

Recommendation:-

From the conclusions, the following recommendations were made:

1. Language strategies should be integrated into the learning process to enhance students' achievement, increase learner participation in class, and improve concept retention of the subject matter.
2. Language strategies should be utilized both within and across various subject areas to explore other potential impacts of this approach.
3. Language strategies should be given equal consideration alongside other approaches or strategies that aim to increase students' achievement.
4. Teachers' professional development should include training on the use of language strategies to enhance their ability to foster learners' pattern recognition and critical thinking skills.

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