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THE EFFECT OF THE SNOWBALL THROWING LEARNING MODEL ON STUDENTS' LEARNING OUTCOMES IN THE SCIENCE SUBJECT OF GRADE IV

Rini Novianti Gultom[1], Osco Parmonganan Sijabat[2], Emelda Thessalonika[3]
[1]Universitas HKBP Nommensen Pematangsiantar, Indonesia
[2]Universitas HKBP Nommensen Pematangsiantar, Indonesia
[3]Universitas HKBP Nommensen Pematangsiantar, Indonesia
Corresponden E-mail: rinigultom592@gmail.com, sijabatpieter01@gmail.com

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ABSTRACT
This research aim for know The Effect of the Snowball Throwing Learning Model on Learning Outcomes Students in the Social Sciences Subject of Class IV of UPTD Sd Negeri 122299 Pematangsiantar. Study Design utilized is design experimental pre-test post-test group Because in design This there is test in pre- test form is given before treatment and post-test were given after treatment utilizing the model. Snowballing method Based on the discussion in this chapter, the reviewer explains the study output obtained along with the formulation of the problem and the proposed hypothesis, then all study activities are discussed regarding the impact of the teaching model. The application of the Snowballing method by the learning output of the science subject in Class IV UPTD SD N 122399 Pematang Siantar is as follows: Based on the study output by the subject in Class IV UPTD SD N 122399 Pematang Siantar, the average pre-test score in the science subject "Biodiversity" is 85.43 Not reaching the KKTP score of 70. The use of teaching tools by the natural science subject about snowball throwing, class IV, UPTD SD N 122399 Pematang Siantar, achieved an increase in learning output and an average post-test score of The figure reached 85.43, while the KKTP was 70. Based on the test output and data analysis, the hypothesis testing output in this study indicated a significant influence. The tested data showed a calculated T-value of 23.661. And the T table is 1.701, so the calculated T > T table, meaning that Ha is accepted and Ho is rejected. So it can be concluded that there is an influence by the teaching model. UPT DSDN 122399 Snowball Throwing by the Learning Output of Fourth Grade Students in Pematang Siantar.

Kata Kunci
Model Pembelajaran, Snowball Throwing, Hasil Belajar Siswa

ABSTRACT
Penelitian ini bertujuan untutk mengetahui Pengaruh Model Pembelajaran Snowball Throwing Terhadap Hasil Belajar Siswa Pada Mata Pelajaran Ipas Kelas Iv Uptd Sd Negeri 122299 Pematangsiantar. Desain kajian dimanfaatkan ialah desain eksperimental pre-test post-test kelompok karena dalam desain ini terdapat tes dalam bentuk pre-test diberikan sebelum perlakuan dan post-test diberikan setelah perlakuan memanfaatkan model tersebut. Metode snowballing Beralaskan pembahasan dalam bab ini, pengkaji menjelaskan output kajian diperoleh beserta perumusan masalah dan hipotesis diajukan, kemudian seluruh kegiatan kajian dibahas terkait dampak model pengajaran. Penerapan metode Snowballing oleh output belajar mata pelajaran IPA dalam Kelas IV UPTD SD N 122399 Pematang Siantar ialah sebagai berikut:Beralaskan output kajian oleh mata pelajaran di Kelas IV UPTD SD N 122399 Pematang Siantar, nilai rata-rata pre-test dalam mata pelajaran "Keanekaragaman Hayati" IPA ialah 85,43 Tidak mencapai nilai KKTP sebesar 70.Penggunaan sarana pengajaran oleh mata pelajaran ilmu pengetahuan alam tentang lempar bola salju, kelas IV, UPTD SD N 122399 Pematang Siantar, mencapai peningkatan output belajar serta nilai rata-rata post-test sebesar Angka tersebut mencapai 85,43 dan KKTP sebesar 70.Beralaskan output pengujian dan analisis data, output pengujian

hipotesis dalam kajian ini menunjukkan adanya pengaruh signifikan. Data diuji menunjukkan nilai T terhitung sebesar 23,661. Dan T tabel ialah 1,701, maka T hitung > T tabel, artinya Ha diterima dan Ho ditolak. Jadi bisa disimpulkan bahwa ada pengaruh oleh model pengajaran. UPT DSDN 122399 Pelemparan Bola Salju oleh output Belajar murid Kelas Empat Pematang Siantar

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1. INTRODUCTION

Education is a vital activity and a basic human need. Education takes place not only in schools but also in families and communities. Education is also a process that enables teaching and development (Sirt et al., 2023). According to Kusumavati (2017), education is a conscious and planned effort to create a learning environment and learning process so that students actively develop religious spirituality, self-discipline, personality, intelligence, noble ethics, and skills needed by themselves and society. Education plays a very important role in the life of the nation and state, namely, ensuring the sustainability of life and development of the country, namely, ensuring the sustainability of life and development of the nation (Samuseer et al., 2023) . Thus, education is a planned effort to guide and shape individuals to develop optimally in mental, moral, and skill aspects so that they can live independently and responsibly (Kurniawati et al., 2021).

National education is expected to enhance skills and shape the character and civilization of a dignified nation (Rosidah 2017). In achieving these educational goals, the government must make maximum efforts to improve various aspects of education, both in terms of quality and quantity, especially improving the teaching process. One effort made by the government is to add to the curriculum (Dewi Diyantari et al., 2020). The curriculum is a set of plans and arrangements regarding objectives, content, and teaching materials, as well as methods used as guidelines in organizing teaching activities to achieve certain educational goals (Diyantari et al., 2020). Curriculum reforms that have been carried out to date include upgrading the 2013 curriculum to an independent curriculum. According to Rama and Kaptia (2023), an open curriculum is one effort to revive teaching after the Covid-19 pandemic and aims to increase high-quality and highly competitive human resources in facing the global challenges of the 21st century. According to Rahiyo and Fitiraza (2021), an open curriculum focuses on student independence and creative thinking and has been implemented in restructuring Indonesia's national education system to better respond to changes and developments in the country and adapt to changing times. Open curriculum instruction is also student-centered, with teachers acting as learning resources and facilitators who must design effective and enjoyable instruction so students can achieve their desired goals (Samusir et al., 2023).

Learning is a system that includes various interconnected components (Marsad et al., 2021). Teaching activities in elementary schools consist of various subjects, one of which is natural and social sciences (IPAS), which is the science of studying living and non-living things in the universe and their interactions, as well as examining human life as individuals and social beings interacting with their environment (Ram and Kaptia, 2023). IPAS teaching not only focuses on the knowledge aspect, but also focuses on critical thinking skills and a deep understanding of the relationship between humans and the environment in increasing learning output (Novi et al., 2025) .

According to Kusumawati (2017), learning output is the changes that occur in students, both in cognitive, affective, and psychological aspects, as an output of learning activities. Learning output can be seen from report card grades obtained each semester or every year, while overall learning output can be seen through behavioral changes (Julyanti, 2019), namely changes in mindset, such as from not knowing to knowing, from not understanding to understanding, from being unable to being able, and so on (Thessalonika et al., 2023). However, the reality on the ground shows that the learning output of science and knowledge in various educational units has not yet fully improved. Based on survey data from *the Program for International Student Assessment* (PISA) 2023, Indonesia is ranked 68th out of 81 countries in terms of basic education achievement (Madjianto et al., 2024). This classification reflects differences in learning quality, including aspects of content mastery and student participation in the learning process (Ceyhan et al., 2025).

Based on the observation output conducted by the reviewer, in Class IV UPTD SD Negeri 122399 Pematangsiantar, there are several problems related to science teaching, namely teaching is still done traditionally where the teacher is always active in teaching while students are passive, and the use of less interesting teaching models (Dewi Diyantari et al., 2020). This makes students bored in learning, often playing with deskmates, or looking for other activities related to the lesson (Kurniawati et al., 2021). Another impact of this teaching is low student learning output as shown in the table below.

Table 1. Daily test scores for Social Studies subject for Grade IV of SD Negeri 122399 Pematangsiantar

Class	Family Card (KKTP)	Number of students	Number of students have completed their studies	The number of students is not complete.	% Finished	Not finished yet %
Fourth	70	28	10	18	35.72	64.28

Based on the table above, it can be seen that the science learning outcomes in Grade IV of the UPTD of SD Negeri 122399 Pematangsiantar are still low. 18 out of 28 students failed to achieve proficiency (64.28%), and 10 out of 28 students achieved proficiency (35.72%). This means that only 10 out of 28 students were able to achieve the KKTP.

Referring to the student learning outcomes mentioned above, changes in teaching activities are needed through the implementation of new innovations to increase student learning interest. Various efforts can be made to make students more active in the teaching process, one of which is changing the teaching model. In this case, the teacher no longer plays the role of the center of instruction, but rather as a guide, facilitator, and motivator (Nugraheni, 2022). During the teaching process, students need to be more active, so this teaching innovation can increase student learning outcomes (Arsitianda, 2019).

One example of a teaching transformation model is the implementation of a teaching model. The use of a teaching model will influence student engagement in class and increase learning outcomes, ultimately improving the quality of education. A teaching model is a plan or model used as a guide in planning classroom instruction or lessons (Panjaitan, 2023).

One model that can be utilized is *the snowball throwing teaching model. Snowball throwing,* literally meaning "rolling a snowball," can be interpreted as a teaching model utilizing a paper question ball that is rolled into a ball and then thrown to group members in turn (Masriya, 2021). The *snowball throwing teaching* model emphasizes asking questions in a game, where each student throws a paper ball containing a question (Tanjong et al., 2023) . The purpose of this model is to increase student creativity and activity in throwing the paper ball containing the question (Patra & Sofian, 2021).

The snowball throwing teaching model has an impact on student learning outcomes. A study was conducted by Nazifa Hasana Hanifa, et al. (2025), entitled *The Effect of the Snowball Throw Type Cooperative Teaching Model on the Science Learning Outcomes of Fourth Grade Elementary School Students.* Based on data analysis using a simple linear regression test, the calculated F value > F table is 18.13 > 4.20 at a significance level of 0.05, so Ha is accepted and H0 is rejected. This is also reinforced by an increase in the average value of learning output in the experimental class, where the average pre-test value of 58.45 increased to 74.14 by *the post-test, while the average post-test value in the control class was* 66.72. Therefore, it can be concluded that *the snowball throwing teaching model has* a positive influence on increasing the science learning output of fourth grade elementary school students (Fitri & Sylvia, 2020).

The snowball toss method also has a positive impact on improving the quality of teaching on campus, particularly in the Elementary School Teacher Education (PJK) study program. This method creates a more active, interactive, and collaborative learning environment, thereby improving the quality of student education. Furthermore, *the snowball toss method* encourages lecturers to employ more innovative and diverse teaching strategies in delivering course material. Through game-based question-and-answer activities, students become more directly involved in the learning process and are able to understand concepts more deeply (Kurniawati et al., 2021). The implementation of this method on campus also increases student motivation to learn and participate in group discussions. This contributes to improving the quality of graduates, who possess critical thinking skills and creativity, as well as strong communication skills

as prospective elementary school teachers, in accordance with the professional and independent curriculum (Suria Oktaviani et al., 2019).

Based on the explanation above, the researcher *considers the importance of utilizing the snowball throwing teaching model in teaching activities.* Therefore, the researcher is interested in conducting a study entitled "". SD 122399 The Effect of *the Snowball Throwing* Teaching Model on Student Learning Output by Fourth Grade Science Subject in Pematangsiantar

2. METHODS

The type of research used in this study is quantitative. According to Sugiyun (2020), quantitative research methods are based on the philosophy of positivism and are used to study specific populations or samples. Data collection and statistical analysis utilize research instruments used to test predetermined hypotheses (Hisbullah & Firman, 2019).

The study design used is a group pre-test post-test experimental design because in this design there is a test in the form of a pre-test given before treatment and a post-test given after treatment using the model. Snowballing method. and this way, the treatment output can be determined and more accurate because it can be compared with the conditions before treatment. This study will be conducted at UPTD SD Negeri 122399, located on Jl. Mawar, West Siantar District, Pematang Siantar City, North Sumatra. This study will be conducted by the equivalent semester and the 2025/2026 academic year. Sugiuno (Yana, 2019) Population is an area that can be generalized consisting of objects/subjects and certain quantities and characteristics are determined by the reviewer in being studied and then conclusions are drawn. and thus, it can be concluded that the population of the study object is all fourth-grade students of SD Negeri 122399 Pematangsiantar.

According to Sugiyono (2023), a sample is a portion of the population's size and characteristics. If the population is large and the researcher cannot study all of it, for example due to limited funds, manpower, and time, then the researcher can utilize a sample taken from that population. Therefore, the sample utilized in this study is a non-probability sample, where the sample selected is a saturated sample. Saturated sampling is a sampling technique when all members of the population are used as samples. Saturated sampling is carried out when the population is relatively small, less than 30 people. Therefore, in this study, the sample consisted of all 28 fourth-grade students of UPTD SD NEGERI 122399.

According to Sugiono (2019), a study variable is a characteristic, trait, or value of a person, object, organization, or activity that undergoes certain changes determined by the researcher during the study and then draws conclusions. In this study, the variables utilized are the independent variable and the dependent variable.

According to Sugiuno (2019), the independent variable is the variable that influences or causes changes or the occurrence of the dependent variable, represented by the letter X. Therefore, in this study, the independent variable is the snowball teaching model (Efiyanti et al., 2019).

According to Sugiwono (2019), the dependent variable is a variable that is influenced or produced due to the existence of an independent variable symbolized by the letter Y. Therefore, the dependent variable in this study is the science learning output of fourth grade students at SD Negeri 122399 Pematangsiantar.

According to Saharsami Arikonto (Hidayani, 2020)a research instrument is a tool or facility used by researchers to collect data to facilitate their work and produce better output, meaning more accurate, complete, and organized, so that it is easier to process. The test used in this study was a written test, consisting of 30 multiple-choice questions and 4 answer choices. This test instrument was given to students in the form of a pre-test before implementing the snowball throwing teaching model and a post-test. After implementing the teaching model.

Data collection techniques are the most strategic step in the study because the main aim of the study is to collect data. Data collection in this study was carried out in several ways (Syafi'i & Fatmalawati, 2018):

1. Observation

Observation is the activity of recording or observing an event using instruments and recording it for scientific or other purposes. Observation is the process of selecting, modifying, and recording a series of behaviors and related conditions of the organisms being observed according to experimental objectives. Observation is used to explain, describe, and detail events. From these events, researchers can draw general conclusions about what occurred (Hassim Hassanah, 2016).

2. Pre-test

The initial test (pre-test) is a measurement phase carried out before the implementation of the snowball throwing teaching model in assessing the initial skills and benefits of science learning outputs of grade VI students at the UPTD of SD Negeri 122399 Pematangsiantar.

3. Final test (post-test)

The final test (post-test) is the final step used to determine the output of science teaching in class and its benefits after using the snowball throwing teaching model at UPTD SD N 122399 Pematangsiantar.

4. Documentary Films

According to Sugiuno (2020), documentation is a data collection technique used to obtain data from individuals or institutions related to the object of study through notes, archives, written documents, photographs, or memos. Study documents can include videos, photographs, newspapers, magazines, and so on. The documents used in this study were photographs taken during the teaching process using the snowball method (Suria Oktaviani et al., 2019).

According to (Rijali, 2018), data analysis is the systematic effort to find and organize notes from observations, interviews, and other sources to increase the researcher's understanding of the case being studied and present these findings to others. Data analysis in quantitative studies utilizes statistics, namely descriptive statistics and inferential statistics (Heriyaman, 2022).

3. RESULTS AND DISCUSSION

Explanation findings study

This paper presenting student learning output in eye lesson science through use of teaching models. Throwing snowballs. study This carried out in April. by 2026 among class students four UPTD of Public Elementary School 122399 Pematangsiantar. The purpose of the study This is in know the influence of teaching models snowball throwing on student learning output. Instrument study utilized namely pre-test and post-test in measure ability beginning and end of the student in understand material after given treatment (Wardani et al., 2016). Study sample This totaling 28 people, while the other 28 students utilized in test instrument so that amount participants to 56 students.

Instrument study arranged Based on questionnaire consists of of 30 items. After validation, 25 valid items were obtained. The instrument the Then tested validity, reliability, level difficulty, and item discrimination test. Instruments in accordance in utilized Then given to students. Data is collected is pre-test and post-test scores, analyzed in a way descriptive, and tested utilize normality tests and hypothesis tests (t-tests) in determine increased learning output.

Instrument Test Output

Instrument the given to class students four at UPT DSD Negeri 122355 GL. Instruments the consists of of 30 questions choice double covers diversity life. After the students complete test, data collected processed in evaluate validity every questions. After evaluation, questions proven valid to be used as instrument in study This. Validity is size show level validity something instrument. Valid instrument have level validity high. validity test output done utilise SPSS 24 application. A grains question is said to be valid if calculated r value > r table as well as level significance of 5% or 0.05, and vice versa If calculated r value < r table so grains question the it is said invalid. In determining the calculated r, the product moment r can seen from table and N = 25 then obtained = 0.374.

Based on the table above, it can be seen that there are 25 questions true and 5 false questions. Questions Correct utilized in pre-test and post-test. After testing validity questions, steps furthermore is conduct a reliability test. This test done in determine reliability instrument study in data collection and in determine whether instrument is valid. in test reliability instrument, Cronbach's alpha value must be more big from 0.60.

Based on the table above, found that Cronbach's alpha value is 0.963 as well table rate of 0.374 and obtained that 0.963 > table rate of 0.374. Therefore it can concluded that instrument utilized in study This Can reliable and fulfilling criteria reliability high. Test difficulty done in determine level difficulty instrument utilized. Test difficulty based on the number students answer something questions (Makhfud & Imron, 2020). The more Lots students answer as well as right, the more easy question said. Test This done utilizing SPSS 24.

Based on the table above, can concluded that of 25 questions tested, 6 questions including in category easy, 14 questions including in category medium, and 5 questions including in category difficult.

The purpose of the power test discrimination in study This is in evaluate ability grains question in differentiate between able students high and capable students low power output discrimination classified as bad, fair, good, and very good in every grains question. Based on Table Based on power test output discrimination, found that there are 6 questions in category OK, 2 questions in category enough, and 17 questions in very good category. Therefore those are the questions This in accordance in testing.

From the table above, we can concluded that amount students do not who completed the pre-test were 28 students, meanwhile when treatment given and the post-test was carried out, the number of students who completed the pre-test was 28 students.

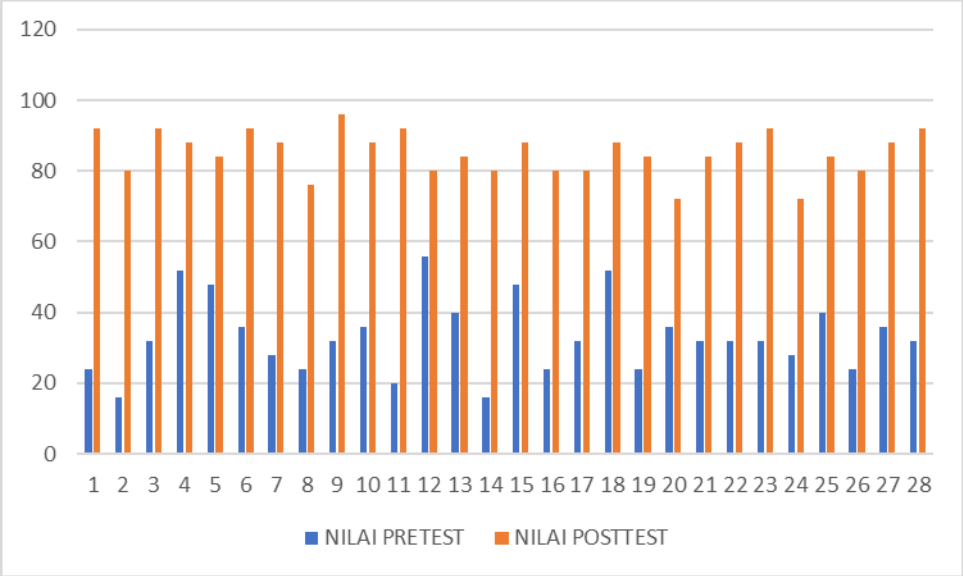

Figure 1. Pre -test and post -test diagram

The diagram above show comparison of students' pre - test and post-test output. that there is improvement score significant after utilizing teaching models snowball throwing. by the pre-test output, 28 students obtained score below Criteria Achievement of teaching objectives (KKTP), as well as score lowest 16 and score highest 56. The average pre-test score shows that understanding initial student towards material Still low. After teaching finished, changes positive seen by the post-test output. All students have output get scores above KKTP, as well as the highest post-test score was 96 and the score lowest 72. All students experienced improvement score, shows effectiveness of teaching models throw snowballs.

Data Analysis Techniques

Data Normality Test

After conducting the pre-test and post-test at the UPTD SD Negeri 122399 Pematangcenter, the steps furthermore is a normality test in determine whether data

collected normally distributed or no. The Shapiro-Wilk method was utilized in study this. Data retrieval decision utilized in testing This is :

If > 0.05 then the data is distributed normal. If < 0.05 then the data is No normally distributed. The following This is a test of the normality of the learning output data of grade IV students at the UPTD SD Negeri 122399 Pematangsiantar.

Table 2. Normality test of pre -test and post -test data

	Kolmogorov-Smirnov			Shapiro-Wilk		
	Statistics	DF	Sign.	Statistics	DF	Signature
Pre-test	0.155	28	0.082	0.944	28	0.140
Post-test	0.176	28	0.026	0.935	28	0.082

Based on the data above, the value significance First is 0.14>0.05, meaning the data is obtained normally distributed and the post-test output is 0.08>0.05, so Can concluded that the data normally distributed.

Testing hypothesis (three testing)

Following is the output of the hypothesis test conducted at the UPTD of State Elementary School 122399 Pematangsiantar.

Table 2. T-test output

	Meaning	PMS Deviation	Stand. Error Meaning	95% confidence interval of the difference Under	Over	three	DF	Sign (2 tails)
Pair 1 Pre-Test Score - Post-Test Score	51.85714	11.59730	2.19168	56.35411	47.36018	23,661	27	0,000

Based on the table above, the value t is calculated obtained as = 23.661 and level significance (2-tailed) 0.000 probability significant <0.05, t count > t table = 23.661 > 1.701 then Ho is rejected and Ha is accepted. Explanation This show that there is the influence of teaching models snowball throwing towards learning output science in Class IV UPTD SD Negeri 122399 Pematangsiantar.

Discussion of study output

Based on analysis data is done, validity instrument test first tested by 28 students using the SPSS 24 program. Validity test output show that Of the 30 items tested, 25 items were valid and value above 0.374. Item meets criteria validity Then considered appropriate and utilized as pre-test and post-test instruments in study this. After the instrument validated, reliability test done in ensure consistency instruments, as well as Cronbach's alpha value of 0.963 shows that instrument is very reliable (Ananda et al.,

2020). and valid and reliable instruments this study Can Keep going measure student learning output effective. Next, test the level of difficulty of the item being performed in determine level difficulty question utilized. From the analysis output, 6 questions were found in category easy, 14 questions in category medium, and 5 questions in category difficult (Hujaemah et al., 2019). Distribution This show instrument balanced and capable measure student's abilities in general overall (Apriyanto et al., 2018). In addition, the power test discrimination show that part big question have Power discrimination good, and 6 questions assessed OK, 2 questions assessed Enough good, and 17 questions rated very good, indicating that ability question in differentiate students as well ability different functioning as well as Good (Masruroh, 2019).

Based on tool assessment, pre-test is given to 28 class students four Public Elementary Schools 122399 Pematangsiantar before the teaching process started. The average pre-test score was 33.29 as well standard achievement objective teaching (KKTP) of 70, even though No all students achieved achievement this. this output show that understanding initial student towards content diversity biological Still relatively low. After the implementation of the teaching model snowball throwing, post-test was conducted in measure increase in learning output. post-test output shows improvement significant and an average score of 5.43 where all students achieved or exceeding KKTP (Fitriani et al., 2019).

For measure effectiveness teaching, analysis normality done utilizing pre-test and post-test data and utilizing SPSS 24. analysis output show mark normality 0.14 > 0.05 by t pre-test and value normality 0.55 > 0.82 by post-test (Sutiani et al., 2018). This show that output signal by pre-test and post-test more big of 0.05, so the data is said to be normally distributed (Gustomo, 2015). In addition, the t-test analysis produced t - value amounting to 23,661 and level significance of 0.000. Because the probability significance Far more small of 0.05, namely 0.000 and the calculated t value > t table (23.661 > 1.701), then H1 is rejected and H2 is accepted. This strengthen that teaching model throwing snowballs is very effective in increase student learning output by content diversity life (Mansyur et al., 2019).

teaching model snowball throwing output create environment Study active, creative, and fun environment This enable students in Study more good, produce improvement significant in understanding learning concepts and outputs. as well as Thus, the teaching model snowball throwing play role important in add quality teaching science in class four at UPTD SD Negeri 122399 Pematangsiantar.

4. CONCLUSION

Based on the discussion in this chapter, the reviewer explains the study output obtained along with the formulation of the problem and the proposed hypothesis, then all study activities are discussed regarding the impact of the teaching model. *The application of the Snowballing method by the* learning output of the science subject in Class IV UPTD SD N 122399 Pematang Siantar is as follows:

1. Based on the study output by subjects in Class IV of UPTD SD N 122399 Pematang Siantar, *the average pre-test score in* the subject "Biodiversity" Science was 85.43. It did not reach the KKTP score of 70.
2. The use of teaching tools by the natural science subject about *snowball throwing,* class IV, UPTD SD N 122399 Pematang Siantar, achieved an increase in learning output and *an average post-test value of* The figure reached 85.43 and the KKTP was 70.

Based on the test output and data analysis, the hypothesis testing output in this study indicates a significant effect. The tested data showed a calculated T-value of 23.661. And T table is 1.701, then T count > T table, meaning Ha is accepted and Ho is rejected. So it can be concluded that there is an influence by the teaching model. UPT DSDN 122399 *Snowball Throwing by the Learning* output of Fourth Grade Students of Pematang Siantar.

Suggestion

The study's output suggests that several steps can be taken to increase the success of teaching in schools, including:

1. For school

Schools are responsible for adding and implementing various teaching models to improve the quality of instruction. One model that can be utilized is *the snowball teaching model.*

2. For teachers

Snowball throwing has been proposed as an alternative teaching model to create active interaction between students, especially in science subjects.

3. For students

While this model is inherently motivational, it's still important to prepare well before participating. Reading the lesson material beforehand *will help students participate more meaningfully when implementing the snowball throwing teaching model.*

4. For the reviewers

The reviewers planned this study to add *a structured talking stick teaching model as a reference and consider student learning outcomes throughout the study.* Therefore, it is recommended to expand the study and examine other relevant variables, such as teaching methods, teaching strategies, teaching facilities, learning interests, and student characteristics. This is crucial in identifying factors that influence student learning outcomes better.

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