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Nature Club Activity: Knowledge Exploration on Javan Slow Loris (*Nycticebus javanicus*) and Protected Endemic Animals in Conservation Education Program

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ABSTRACT

Conservation education can increase knowledge about endangered animals, one of which is the Javan slow loris (*Nycticebus javanicus*), and protected endemic animals in Indonesia, and this can be done through the nature club activity as one of the conservation education programs. However, most students are indifferent to conservation or science education. This individual influence is the characteristics and dispositions students bring to learning, such as interest, effort, values, and perceived abilities. This study aims to determine the effectiveness of conservation education programs through nature club activities on students' knowledge of Javan slow loris and protected endemic animals. The research method is the experimental method, with the research design used as one group pretest-postest design; the data collection technique is done by test and observation. The results showed that the activities carried out were effective on students' knowledge of Javan lorises and protected endemic animals, as evidenced by the calculation of the N-gain score indicating that the average N-gain score (mean) was 0.614.

Kegiatan Klub Alam: Eksplorasi Pengetahuan Tentang Kukang Jawa (Nycticebus javanicus) dan Hewan Endemic yang Dilindungi dalam Program Pendidikan Konservasi

ABSTRAK: *Pendidikan konservasi dapat menambah ilmu mengenai hewan yang terancam punah salah satunya yaitu Kukang Jawa (Nycticebus javanicus) serta hewan endemik yang dilindungi yang ada di Indonesia, hal ini dapat dilakukan melalui program klub alam yang ada pada pendidikan konservasi. Akan tetapi mayoritas siswa belum mendapatkan pendidikan konservasi dan hanya menjadi bagian kecil dari pendidikan sains. Penelitian ini bertujuan untuk mengetahui efektivitas pendidikan konservasi melalui kegiatan klub alam terhadap pengetahuan siswa mengenai kukang jawa dan hewan endemik yang dilindungi. Metode penelitian yang digunakan yaitu metode eksperimen, dengan desain penelitian yang digunakan adalah one group pretest-posttest design, teknik pengumpulan data dilakukan dengan tes dan observasi. Hasil penelitian menunjukkan bahwa kegiatan yang dilakukan efektif terhadap pengetahuan siswa mengenai kukang jawa dan hewan endemik yang dilindungi, dibuktikan dari hasil perhitungan N-gain score menunjukkan bahwa rata-rata skor N-gain (mean) adalah 0,614.*

INTRODUCTION

Indonesia is a country that has a high level of biodiversity or is rich in flora and fauna that are protected or live freely in nature. Natural wealth with high biodiversity has many significant and strategic benefits as the primary capital of national development. It is the lungs of the world, which is very important for the present or the future (Susilawati et al., 2017). However, natural resources are over-exploited by humans o the point of diminishing, impacting the extinction of animals and plants in nature. Destructive human behavior can cause living things to become extinct. Therefore, the destruction must be realized and prevented immediately (Von Rintelen et al., 2017). That statement is in agreement with Octariyanti et al., (2022). Humans are the extinction of plants and nature due to damage because they cannot maintain them. Therefore, it is necessary to prepare the youth to understand and can carry out wildlife and nature conservation efforts. These actions can protect threatened and endangered species by preserving their natural habitat.

Government-issued policy as an effort to protect flora and fauna. The government issues a policy or legal basis regarding the conservation of protected flora and fauna regulated in Law No. 5 of 1990 concerning the Conservation of Natural Resources. There is also a regulation of the Minister of Environment and Forestry of the Republic of Indonesia Number P.20/MENLHK/SETJEN/ KUM.1/6/2018, dated June 29, 2018, concerning Protected Plant and Animal species. Wildlife conservation requires a multifaceted approach that often includes establishing protected areas, ongoing monitoring and protection, reliable enforcement of wildlife laws, and community engagement to strengthen awareness and improve the implementation of relevant conservation initiatives. Conservation can be incorporated into education to make conservation education available (Parker, 2018).

Conservation education is a learning process to build a spirit of environmental care. Conservation education is essential to increase knowledge about wildlife and conservation issues, helping to shape or strengthen pro-environmental attitudes that facilitate behaviors that ultimately protect wildlife (Hoffmann, 2022). Conservation education can provide authentic or genuine opportunities for learning and give early childhood students and schools a center to connect with local communities or nature clubs meaningfully (Parker & Prabawa-Sear, 2019). This idea is supported by Khalifah et al., (2021) that conservation education will provide meaningful experiences to students. Teaching conservation education from primary education is essential for students to know and give real-life meaning to their learning.

Conservation education can increase knowledge about endangered animals, including the Javan slow loris *(Nycticebus javanicus)* and protected endemic animals in Indonesia. It can be done through the nature club program in conservation education (Nekaris, 2016). The Javan slow loris *(Nycticebus javanicus)* is a highly protected animal and one of the world's 25 most endangered primate species. Javan slows loris extinction is caused by habitat degradation, fragmentation, illegal trade, and poaching (Karimloo et al., 2023). Therefore, conservation education needs to be applied from an early age as an effort and prevention of extinction factors. The memory received will be stored well in the long term. However, most students are indifferent to conservation or science education (Soenarno & Miranti, 2021). Many youths opt out of science or are indifferent to science education after it is no longer compulsory (Woodward, 2009). According to Langen & Dekkers (2005), there is much-documented evidence for possible reasons for students' loss of interest in science, such as the relationship between learning costs and dropout rates. Other researchers stated that students are highly

interested in eco-literacy or preventing ecological damage (Lestari et al., 2023). Audriansyah et al., (2022) argue that another factor is the lack of students' motivation since the learning material is too broad. Based on the previous research, students must learn sufficient conservation knowledge, especially about wildlife animals such as Javan Slow Loris.

There is a need for a transformative program for students to achieve conservation education goals. One of them is a nature club organized by the Little Fire Pace (LFP) community that conducts education programs for local communities to get them to join the conservation movement. LFP started in 1994 under the supervision of Oxford Brookes University's Nocturnal Primate Research Group and became an independent project in 2011. LFP's current main field project is on the Indonesian island of Java. It studies the ecology of the Javan slow Loris and contributes wherever possible to the conservation and ecology. LFP's current main field project is on the Indonesian Java island to study the Javan slow Loris ecology and contribute wherever possible to the conservation (Nekaris, 2016).

Learners, according to the Law No. 20 of 2003 concerning the National Education system, are members of society who seek to develop their potential through the learning process available at specific paths, levels, and types of education. Therefore, learners can pursue knowledge to their ideals and future expectations. The nature of student's perceptions of school science and other educational sciences depends on the sum of students' extrinsic factors, such as school influences, and intrinsic factors, such as type, gender, self-efficacy, interests, and social and cultural influences (Parker & Prabawa-Sear, 2019). These individual influences are characteristics and dispositions that students bring to learning, such as interest, effort, values, and perceived ability (Ainley, 2006). Therefore, researchers are interested in conducting this study to determine the effectiveness of conservation education through nature club activities on students' knowledge of Javan slow Loris and protected endemic animals.

METHOD

This study employs quantitative research using the experimental method. Experimental research is to find out how much the level of truth of the influence of X on Y (Abell & Lederman, 2013).

The research design employed in this study was a one-group pretest-posttest design (Abell & Lederman, 2013). In this design, a pretest was conducted before the treatment. The researchers wanted to see accurate results of the treatment by having a pretest (before treatment) and a posttest (after treatment).

Table 1. One-Group Pretest-Postest Design

Pretest	Treatment	Posttest
0_1	X	0_2

This study determines the improvement or results of the treatment given. The experiment is to determine the effect of X (nature club activities) on Y (students' knowledge of Javan slow loris and protected endemic animals).

This research was conducted for two months, from October 10, 2022, to December 3, 2022. It was located in Little Fireface Project (LFP) Kukang Conservation, Cipaganti Village, Cisurupan District, Garut Regency, West Java.

The population of this study was all Nature Club participants. The samples were determined through Non-Probability Sampling (purposive sampling) (Nuryadi et al., 2017). Purposive sampling determines respondents based on certain considerations, such as specific characteristics or conditions desired by the researcher. Therefore, the researchers set several reviews or special requirements, namely 1) students aged 9-12; 2) consistent in participating in at least five activities; 3) took the pretest and posttest.

Based on the sampling procedure, the eligible samples were ten nature club participants.

The data collection technique that researchers use in research is observation. According to (Borg, 2014), observation is the observation of systematically recording the phenomena being investigated. Observation is a data collection method in which researchers or collaborators record all information they have seen during the research. Nasution in (Sugiyono, 2013) claims that observation is the basis of all science because the researchers can find facts and data directly in the field.

The research instruments used in the study were pretest-posttest and inter-rater reliability. Pretest and posttest are tools to measure the ability of each student. A pretest is an initial test to measure the extent of a student's initial skills before participating in learning activities or treatment. At the same time, the posttest is a test conducted after students participate in learning activities or after treatment. Thus, it can be known accurately if there is a change in participants' knowledge during activities or learning.

The study also uses inter-rater reliability. According to Sundayana, (2018), the reliability of a research instrument is a tool that provides results that remain the same (consistent, steady). The measurement results must stay the same if given to the same subject even though different people, times, and places carry it out. A reliable instrument is an instrument that produces the same data when measuring the same object several times. If the instrument produces fixed measurement results, it can be said to have high reliability.

Inter-rater reliability is reliability seen from the level of agreement between raters. Inter-rater reliability (IRR) will provide an overview in the form of a score about the extent of the level of consensus or agreement the expert or rater gives. This study involved two experts or raters as assessors. The researchers employed the Cohen Kappa (k) agreement coefficient with the following formula:

$$K = \frac{Po - Pe}{1 - Pe}$$

Description:
K = Cohen Kappa coefficient
Po = Observed proportion of agreement
Pe = Expected proportion of agreement
(1) = Constant

The Kappa Agreement Interpretation is shown in Table 2.

Table 2. Classification of Inter-Rater Reliability

Kappa Value	Description
≤0,20	Poor
0,21 – 0,40	Low
0,41 – 0,60	Moderate
0,61 – 0,80	High
0,81 – 1,00	Excellent

Based on the calculation of Inter-rater reliability with the SPSS (Statistical Program for Social Science) v.22 for Windows, the classification of Inter-Rater reliability interpretation K (Cohen Kappa value) on the pretest (0.55) is between 0.41-0.60. Therefore, the reliability coefficient is in the moderate category. The pretest assessment of the two raters can be reliable, or the level of agreement or reliability of the two raters is intermediate. The async standard error value is 0.159, which is less likely an error occurs. The interpretation of inter-rater reliability on the posttest score from two raters (assessors) is 0.767 in the high category. The posttest assessment of the two raters can be reliable, or it can say that the level of agreement or reliability of the two raters is high. The async standard error value is 0.144, making an error less likely to occur. Therefore, the pretest and posttest reliability can be said to be reliable.

Data analysis was done by organizing data, breaking it into units, synthesizing it into patterns, choosing what is essential and what will be studied, and making conclusions that can be told to others (Sugiyono, 2013). The data analysis in this study is descriptive statistics and the Normalized Gain Test. Descriptive statistical analysis is part of a

statistic that studies a tool, technique, or procedure used to describe data collection or observations. The forms of data presentation are generally divided into two aspects: (1) data preparation which includes the process of editing, coding, and data entry, and (2) the preliminary analysis, including sorting, examining, and compiling (Walpole et.al, 2012). In comparison, the Normalized Gain test according to (Sundayana, 2018), provides an overview of the improvement in learning outcomes between before and after learning. The normalized gain formula developed by Hake (1999) (Sundayana, 2018) is as follows:

$$g = \frac{\text{Posttest score} - \text{pretest scoreskor pretes}}{\text{ideal score} - \text{pretest score}}$$

The normalized gain score can be categorized into five categories, as presented in Table 3.

Table 3. Normalized Gain Category

Normalized Gain Score	Interpretation
-1,00 ≤ g < 0,00	Decreased
g = 0,00	Fixed
0,00 < g <0,30	Low
0,30 ≤ g ≤ 0,70	Moderate
0,70 ≤ g ≤ 1,00	High

RESULTS AND DISCUSSION

The effectiveness of conservation education through nature club activities on the knowledge of nature club participants can be seen from the pretest and posttest results. The pretest and posttest questions have been tested for reliability using the inter-rater reliability test.

The pretest and posttest scores were calculated using the normalized N-Gain test. This test provides an overview of the improvement in learning outcomes between before and after learning. The results of calculations using SPSS v.22 programs are as follows:

Table 4. N-Gain Test Results using SPSS V.22

	N	Minimum	Maximum	Mean	Std. Deviation
N-Gain_score	10	.27	.88	.6140	.17381
N-Gain_percent	10	26.67	88.06	61.3957	17.38069
Valid N (listwise)	10				

Table 4 shows that the average N-gain score (mean) is 0.614, which is moderate. Therefore, there is an increase in learning outcomes between before and after learning. Researchers assume that there is an increase in learning outcomes because the media activities provided can stimulate the students to think concretely. The students can remember the learning provided continuously, and the activities are not monotonous.

Elementary school students have different stages of cognitive development. According to Piaget's theory (Suralaga, 2021), 7-11 years old can reason logically about concrete events. They understand conservation laws, classify objects, and sort and understand them (reversibility). According to Piaget's cognitive theory in (Desmita, 2015), the thinking of elementary school-age children is called concrete operational thinking. The meaning of concrete operation, referred to by Piaget, is a condition where children can already function their minds to think logically about something concrete or absolute. At this stage, logical thinking replaces intuitive thinking (instinct), provided that this thinking can then apply to concrete or specific examples (Jhon, W., (2007) (Bujuri et al., 2018).

Elementary school students are at the concrete thinking stage in their intellectual development. In everything conveyed, they must witness with their eyes (Nurmayanti et al., 2019.). This theory agrees with Effendi et al., (2021), where direct observation can produce concrete thinking. Therefore, one way to support students to think concretely is the media used in every activity. Media can make the learning atmosphere more exciting, motivating students to learn. Hamalik in Arsyad, (2009) emphasizes that using media in learning can arouse desires and interests, increase motivation and stimulation, and increase student learning outcomes.

One of the media used in activities is the image. Image is an effective way to stimulate children in learning, with visual symbols to understand and remember information or messages (Swarat et al., 2012). Images can also increase students‘ concentration and motivation to participate in learning. Furthermore, video media tends to be easier to remember and understand a lesson because it does not only use one sense but the sense of sight and the sense of hearing. Then, in addition to using media to support students to think concretely, simultaneous or continuous activities can also improve learning outcomes because students can remember (recall) continuously. Memory is the ability to store and recall sensations, impressions, and ideas. Several processes occur before the information is stored as a memory.

The first is information encoding, which is entering information by converting the information into signals that the brain can process. The second is the process of retaining information for some time. Like a computer, the information received can the stored temporarily or longer. The third is the recalling process, accessing stored information for reuse. This data storage process can be sensory, short-term, and long-term memory (Robert 2007 in (Musdalifah, 2019).

Learning activities are inseparable from remembering (Djamarah, 2003 in Chussurur et al., 2011), especially in children because, at this time, there is a very rapid development of memory, and internal and external factors influence the ability to remember. Internal factors include intelligence, motivation, physical condition, how individuals learn, and the ability to remember what they pay attention to.

At the same time, external factors that can affect a person's remembering process are the environment and the intensity of information (Prado et al., 2022). For example, if the information provided has been listened to, remembering it will be more straightforward (Chussurur et al., 2011). This statement aligns with the activities carried out, which are continuous so that the students can recall the given information. Varied or monotonous activities influence the increase in students’ learning outcomes.

Varied activities are supportive factors for improving students’ learning outcomes (Ching Sing et al., 2020). The purpose of the varied activities is to overcome boredom so that in the teaching and learning process, students always show perseverance and enthusiasm and play an active role in learning. Varied teaching methods will stimulate students' learning (Djamarah et al, 2006). Variations in learning activities are changes in activities that aim to increase student motivation and reduce boredom. Students’ boredom is caused by the presentation of monotonous activities that affect their attention, motivation, and interest in the lesson. Teaching variations are different ways of delivering material, but the media and activities given to students vary. Thus, varied activities can improve student learning outcomes (King et al., 2015).

The research about species loss has gained increasing attention regarding conserving ecological sustainability and conservation education. A related study on this theme suggests that the students should be offered global rather than local examples of endangered animals. The students associated the main reason for the endangerment of the animals with

environmental issues, specifically environmental pollution. It was revealed that the knowledge resources of the students on the endangered animals were mainly the audio-visual media (Dikmenli & Cardak, 2018). The result of this study adds a piece of evidence that aligns with that previous study. Another study reveals students' positive and empowering perspectives on protecting endemic animals, which can be implemented in Conservation-based Education (CBE) at school (Marlina et al., 2022).

This finding may be used to develop another conservation education program to improve student's knowledge and awareness of endangered animals. This study also raises awareness for society about how Javan Slow Loris is Indonesian precious biological diversity.

CONCLUSIONS AND SUGGESTIONS

Based on the data analysis, the results of this study answer the existing problems based on the entire series of activities. The activities carried out are practical, as evidenced by the results of the average N-gain score (0.614), which belongs to the moderate category. Therefore, it can be interpreted that there is an increase in learning outcomes between before and after learning. Based on these results, further research is needed with various methods and more intensive approaches to enhance student knowledge and awareness of endangered wildlife animals, especially those around them.

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