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Remote School Students' Perspectives on Endemic and Endangered Animals: Knowledge, Reasons, and Solutions Approach

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ABSTRAK

Degradasi lingkungan yang sebagian besar disebabkan oleh perilaku manusia telah mengakibatkan meningkatnya jumlah satwa endemik yang terancam punah. Sangat penting untuk mengidentifikasi implikasi pendidikan di sekolah menengah pertama melalui pendekatan KRS. Penelitian ini bertujuan untuk menganalisis pengungkapan perspektif siswa melalui angket terbuka dengan alasan, dan wawancara terkait pengetahuan, alasan, dan solusi dalam melindungi EA yang dapat diterapkan dalam Conservation-based Education (CBE) di sekolah terpencil. Populasi dalam penelitian ini adalah siswa sekolah terpencil di sekolah negeri yang berjumlah 434 siswa. Sampel yang terlibat adalah 25% dari total populasi yang mengisi angket EA, kemudian 25% dari total siswa yang mengisi angket yaitu 26 siswa dijadikan sampel dalam wawancara semi terstruktur. Analisis data dilakukan dengan menggunakan tabel tabulasi dalam bentuk lembar Excel, dan pengolahan dilakukan dengan bantuan SPSS untuk memperoleh informasi tentang skor total, mean, CPR, dan kategori dari setiap item pernyataan. Hasil penelitian ini menemukan bahwa peran pendekatan KRS pada EA merupakan upaya pembentukan. Conservation Based Education (CBE) di sekolah terpencil berbasis perspektif siswa yang dirancang dalam RPP dengan mengutamakan outcome berupa peningkatan pengetahuan tentang keberlanjutan keberadaan EA, deskripsi strategi dan tahapan perlindungan EA, dan terbentuknya kelompok pecinta EA bekerjasama dengan dinas pariwisata sehingga memiliki arah perkembangan yang jelas mengenai keberadaan EA.

ABSTRACT

Environmental degradation, which is mostly caused by human behavior, has resulted in the increasing number of endangered endemic animals. It is very important to identify the implications of education in junior high school through the KRS approach. This study aims to analyses reveal student perspectives through open questionnaires with reasons, and interviews related to knowledge, reasons, and solutions in protecting EA which can be implemented in Conservation-based Education (CBE) at remote school. The population was comprised of remote school students at a public school consisting of 434 students. The sample involved was 25% of the total population who filled out the EA questionnaire, then 25% of the total students who filled out the questionnaire, namely 26 students were sampled in semi-structured interviews. Data analyses is carried out using tabulation table in the form of an Excel sheet, and processing was carried out using SPSS to obtain information about the total score, mean, CPR, and category of each statement item. The result of this study found that the role of the KRS approach on EA is an effort to establish. Conservation-based Education (CBE) in remote schools is based on the perspective of students which is designed in lesson plans by prioritizing the outcomes in the form of increasing knowledge of the sustainability of EA's existence, description of strategies and stages of EA protection, and the formation of an EA lover group in collaboration with tourism office so that it has a clear direction of development regarding the existence of EA.

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1. INTRODUCTION

The province of West Kalimantan has a very unique biodiversity and endemicity of animals which is a mixture of flora and fauna typical of Asia and Australia (Ginoga et al., 2019; Saroyo et al., 2019). Several areas that store the endemic biodiversity of West Kalimantan have the status of conservation areas (Freund et al., 2020; Rentschlar et al., 2018). Unfortunately, much of the biodiversity in West Kalimantan is facing extinction due to hunting for consumption and habitat destruction. Therefore, conservation education activities for secondary school children in special areas are a very important effort and must be carried out. Students are not enough just to know but must be educated to care and be able to provide solutions regarding the preservation of these endangered species (Ajidayanti & Abbas, 2019; Saroyo et al., 2019).

Research that emphasizes the role of students to participate in providing solutions to animal conservation in their environment is still rarely done. This is the main reason why it is important to conduct this research (Ajidayanti & Abbas, 2019; Ginoga et al., 2019; Sada et al., 2019). Developments in certain areas that damage natural habitats, construction of recreational parks, and global warming as well as illegal logging have caused a decline in the population of EA and had a global impact on the decline in environmental quality (Chadès et al., 2011; Cornelisse & Duane, 2013; Liordos et al., 2017). The direct impact resulting from the decline in environmental quality is the loss of the EA population (Muslimah et al., 2020; Page et al., 2015). In this case, the Local Government through various opportunities has reiterated that the local community including students must help overcome not only through actions but also thorough knowledge about the sustainability of EA. The relationship between humans and EA can have a negative impact, especially for EA if humans do not understand the importance of EA in the ecosystem.

Even though it has become a topic of ESD, there are only a few studies that have been carried out by students in describing their conception of EA, how to manage its conservation, and the reasons for EA's extinction (Muslimah et al., 2020; Pearson et al., 2011; Wahyudi et al., 2014). For this reason, this research seeks to bring up the concept of remote school students about the existence of EA which is increasingly rare so that it can serve as the idea for policymakers and increase student awareness through Conservation-based Education (CBE) in the remote schools, West Kalimantan. The conservation that is currently highlighted is a process of dominance by humans, but psychologically it shows that human-made conservation is very lacking (Kurniasih, 2018; Nurellah et al., 2018; Thinley et al., 2019). Conservation especially regarding EA requires evaluation with a flexible approach through the use of observation by cultivating and developing a sense of empathy for the existence of EA (Afonso et al., 2016; Kamal et al., 2015; Nekaris et al., 2018; Sofyan & Setiawan. Agus, 2018).

It is in line with previous study by that revealed the knowledge of students in West Kalimantan about endangered species still has misconceptions, especially in terms of definition (9.12%), species of EA (17.04%), and benefits of EA (4.8%) (Duda et al., 2020). In addition, the research by other previous research showed that 3 students are members of WWF Indonesia West Kalimantan Region involved in maintaining the existence of habitats and endangered animals by monitoring and conserving EA's habitat (Pransiska et al., 2017). Even though they have been active outside the school, they have yet to have a forum for disseminating information about EA in their Department.

On that account, we identified that there is a need for Conservation-based Education (CBE) to accommodate students to improve their conceptions, especially about the existence of EA in West Kalimantan. Conservation-based education (CBE) can be one of the themes in educating generations to have 21st-century skills (Fitriansyah et al., 2020; Pearson et al., 2011). As we know in facing the 21st century, people are expected to be aware of the existence of the earth and be able to better manage the environment (Leonard, 2018; Rahayu & Widodo, 2019; Syahmani et al., 2021). The teaching and learning process at school is one of the ways to develop the capacity and the 21st-century potential skills of each student (Ajidayanti & Abbas, 2019; Jamhari et al., 2020). In addition, it is also very important to provide a forum for students who are observing EA to be able to spread actions and attitudes of caring for EA in remote schools.

In this regard, a student in remote schools must have the responsibility of preserving EA through the contribution of ideas that will be of concern to policymakers and the public. The topic of EA is one of the topics discussed in the Education Sustainable Development (ESD) which stresses the importance of the community's (students) participation in decision making (both locally and globally) that will improve their quality of life without damaging the planet or its future (Freund et al., 2020; Ginoga et al., 2019; Sada et al., 2019). This study uses the Knowledge, Reasons, and Solutions (KRS) Approach. The use of this approach is based on a theory, namely a constructivist perspective which states that knowledge is constructed by students when they seek to understand their experiences (Ainsworth, 2006; Hermann & Menzel, 2013). Therefore, students are not empty vessels waiting to be filled but active organisms that seek meaning (Rentschlar et al., 2018; Saroyo et al., 2019). In addition, conceptual change has become a term that indicates the existence of a science learning process from a constructivist approach. In order to understand the conceptual change process, the perspective in this study uses students' terminology on ideas about nature

and science and identifies whether there are misconceptions in interpreting the conceptions. The aims of this study to analyses reveal student perspectives related to knowledge, reasons, and solutions in protecting EA which can be implemented in Conservation-based Education (CBE) at remote school.

2. METHOD

This research used mixed methods with the type of Explanatory Sequential Design. This type of research is a combination of analyzing quantitative and qualitative data sequentially (Almeida, 2020; Cohen et al., 2018). Students who were the population in this study are all remote school students who are currently registered at schools in the academic year of 2020/2021. The population consisted of 329 students in Kayong Utara regency and 105 students in Sambas regency, so the total population in this study was 434 students. The sample involved in this study were students who had certain characteristics. A sample of 109 students filled out a questionnaire about the existence of EA in West Kalimantan with the *Knowledge, Reasons, and Solutions* (KRS) *Approach*. Among the 103 students, 25% were randomly selected or as many as 26 students were interviewed using semi-structured interview sheets. We used the EA questionnaire with 3 indicators (*Knowledge, Reasons,* and *Solutions*) and 12 sub-indicators with a total of 36 statement items, but after validation using Winstep Rasch's model, 6 invalid items were found, so the final number of statement items was 30. Another instrument used was the semi-structured interview sheet. It is believed that questionnaires with interviews can provide a deeper understanding of student perspectives regarding the KRS approach. Table 1 shows the questionnaire instrument content outline.

Table 1. Questionnaire Indicators based on KRS Approach

No	Variable	Indicator	Statement item Number
1	Knowledge	a. Knowledge of the existence of EA	1), 2), 3), and**4)**
		b. Desire to get more information about EA	5), **6)**, 7), 8), 9), and 10)
		c. Products made from EA	11), 12), and**13)**
		d. Life habits related to EA	14) and 15)
2	Reasons	a. The importance of EA being protected	**16),** 17); 18) and 19)
		b. Belief in EA protection	20), 21), and 22)
3	Solutions	c. Appreciation for EA protectors	23) and 24)
		a. How to protect EA	25) and 26)
		b. Real action in the next year to preserve EA (continuing)	27), 28), and**29)**
		c. Minimizing Products made from EA	30), 31), and 32)
		d. Export and import arrangements related to EA	33), **34)**, 35), and 36)

The questionnaire was provided via google form with a time frame of one week (10 - 17 December 2021). We emphasized that the respondent's personal data information could be left blank. In addition, students were also assured that their responses would be treated confidentially. Based on the results of the analysis of the validation using Winstep Rasch's Model, it was found that items 4, 6, 13, 16, 29, and 34 were invalid so only 30 statement items were used in the study. The semi-structured interview instrument contained 15 statements with reasons, given to 26 students on December 20-28, 2021 via the online platform. The interview instrument was developed based on 3 aspects, namely *knowledge* with 4 statements, reasons with 6 statements, and solutions with 5 statements (Hermann & Menzel, 2013; Shapiro et al., 2016). The selection of 26 respondents constituted 25% of the total sample who had responded to the questionnaire within the predetermined time limit. The quantitative method was carried out first by calculating the score of each item in the questionnaire statement. After the data were obtained, tabulation was carried out using the table in the form of an Excel sheet, and processing was carried out using SPSS. The use of SPSS aimed to obtain information about the total score, mean, CPR, and category of each statement item. The analysis was continued with a qualitative method, namely processing the results of the interview to clarify the qualitative data.

3. RESULT AND DISCUSSION

Result

The knowledge of remote school students about the existence of EA in West Kalimantan is show in Table 2.

Table 2. Knowledge of Remote School Students about EA

No	Statement of Each Indicator	Answer					N	Score	Mean	TCR (%)
		1	2	3	4	5				
Knowledge of the existence of EA										
K1	It is important to know the species of endangered animals in West Kalimantan	0	0	0	22	81	103	493	4,79	95,7
K2	The discussion of endangered species is interesting for me to follow	0	0	0	52	51	103	463	4,5	89,9
K3	I know more than 3 species of endangered animals in West Kalimantan	0	3	18	61	21	103	409	3,97	79,4
The desire to get more information about EA										
K4	Being curious about the existence of endangered animals in West Kalimantan	0	0	0	37	66	103	478	4,64	92,8
K5	Having anticipated in scientific debates or discussions about endangered animals in West Kalimantan	0	0	3	45	55	103	464	4,5	90,1
K6	Interested in getting information about endangered animals in West Kalimantan	0	2	13	64	24	103	419	4,07	81,4
K7	Having looked for information about the animals that are currently becoming extinct through at least 3 media (TV, Radio, HP, Newspapers, Magazines)	0	1	0	52	50	103	460	4,47	89,3
K8	It is important to be an observer of endangered animals	0	0	4	48	51	103	459	4,46	89,1
Products made of EA										
K9	Dislike ornament items made of endangered animals	2	2	10	34	55	103	447	4,34	86,8
K10	There are still handicrafts that are made of endangered animals in my area	12	17	36	31	7	103	313	3,04	60,8
Life habits related to EA										
K11	Endangered animals' body parts should not be used as household ornaments	7	3	3	30	60	103	442	4,29	85,8
K12	Keep using endangered animals' body parts to preserve traditional rituals	14	11	17	30	31	103	362	3,51	70,3

Based on Table 1, Along with the high curiosity about the existence of EA in West Kalimantan, which is 92.8% of the students in Kayong Utara, with 103 students as members, informed that in the last several decades, there had been an increase in people's activities in hunting EA in West Kalimantan. 95.7% of remote school students stated that it is important to know the species of EA, but they knew just a few. The endangered animals they knew (100%) are hornbills and orangutans. The desire of more school students to get information about EA is very high (92.8%) by being involved in debates, scientific discussions, or general discussions about EA in West Kalimantan (90.1%). Regarding students' knowledge about the products made of EA, respondents generally do not like ornaments or accessories made of EA (86.8%) but do not rule out that in their neighborhoods there are still such handicrafts (60.8%). The majority (93%) of remote school students gave a positive response about the importance of protecting EA. Based on the results of interviews, it was found that the decline in the community's empathy for the existence of EA was due to the lack of advertisements about EA in West Kalimantan. There is no private television program that discusses the existence of EA and its current conditions. The results of the evaluation on students' awareness of the existence of EA in their environment are still low (47%). If analyzed from the knowledge he has about EA in his area, it is very high. However, good knowledge does not yet reflect positive actions in conserving EA. With this phenomenon, we need a system or material details that contain feedback in real action in the field, not only in the form of the concept.

Discussion

Remote School Students' Knowledge about the Existence of EA in West Kalimantan

Research suggests that student knowledge processes (like the existence of EA) are associated with age, level of education, and full understanding of the local area (Barwani & Al-mekhlafi, 2013; Gao & Angelo, 2022). These two species have dramatically decreased in number from 2016 until the present (Franklin et al., 2011; Yli-Panula & Matikainen, 2014). In addition, the lack of strengthening education about the role of EA in society. The consequences of the perpetrators of environmental damage and destruction of EA habitat have been determined by the Regional Government, but it is difficult to identify and observe their behavior in the field. Most of the students are unfamiliar with the species of animals that are purchased and sold around their place of residence. But they know that each body part of the two species of EA above has a price of 5 - 10 times the price of other animals.

Their curiosity to explore EA is fully based on self-awareness, not because of encouragement or college assignments (Huang et al., 2019; Tomažič, 2011). This should be appreciated by the Regional Government because the sense of awareness and care for EA must be maintained so that later it will produce real actions or activities that care about EA in their lives that can influence the people around them. Real actions that students can take are to share EA information about its existence and provide examples of forms of conservation that can be done to preserve EA (Cheung & Chow, 2011; Wankoff & Cairns, 2009). There is a value of "honor" felt by users when wearing ornaments made of endangered animals. This is one of the reasons why a lot of illegal hunting is done (Nekaris et al., 2018; Shapiro et al., 2016). There is a transformation of forms and patterns of ornaments that are produced using both simple and modern equipment, from ancient times to the present. In ancient times, every parent had ornamental items made of EA, especially a necklace with a pendant made of one of EA's nails, not only for their use but often for their children as well. Student knowledge becomes the basis for forming learning patterns that will be applied in the learning environment (Eroglu & Erdelhun, 2020; Liordos et al., 2017; Sembiring et al., 2018).

Remote School Students' Perspectives on the Reasons and Solutions for EA Conservation

In the world of education, the coverage of material on EA in remote schools in West Kalimantan is still rare or even non-existent. If traced to the vision and mission of education based on educational units, it is very clear that the Indonesian government expects that each individual will have life skills and one of them being useful for developing local potential in their respective areas, including being good policymakers in conservation. Biological resources, both biotic (including EA) and abiotic. Trust in animal conservationists in West Kalimantan needs to be increased considering that there is currently a very sharp decline in the existence of EA in West Kalimantan. As the staff in charge of maintaining and conserving EA, students hope that they could play an active role in monitoring the existence of EA as the current conditions and situations, both natural disasters and human actions that destroy the balance of the ecosystem, are one of the causes of the extinction of EA on earth. In addition, previous research state that there are 19 cases of orang-utan poaching that occurred in the same period (Muslimah et al., 2020). This is the reason why animal observers, especially EA, must be able to work properly according to clear main duties and functions to regulate community behavior concerning EA. The award from the government will be one reason that can motivate EA patrons to work well. Apart from the reasons that have been stated, there are several solutions from the perspective of biology student teachers in conserving EA. Regarding how to protect EA, the

solution offered can start from the simplest thing to do, namely placing advertisements both online and offline about the existence of EA in West Kalimantan and its life status and habitat that is in danger of being lost. The role of the media is very important in increasing public empathy and reviving a caring attitude about animal conservation in nature (Etobro & Fabinu, 2017; Pearson et al., 2011).

The establishment of *Conservation-based Education* (CBE) in remote schools needs to be initiated with an appropriate approach, one of which is the KRS approach. This approach not only prioritizes the initial knowledge of prospective student teachers but also explores reasons and solutions for conserving EA. Base on previous study state Concerning EA Conservation, Indonesia is one of the countries besides Morocco, Thailand, and India, that already has animal conservation laws but its implementation has not been satisfactory (Segura et al., 2020). The details of the material are expected to be implemented to create CBE in a remote school environment. Ensure the survival of EA, it can be done in several ways, for example recognizing EA's mating period, supporting habitat, and available food sources. In addition, it can also be done in a sequence of procedures that are tailored to the learning objectives.

Remote school students' knowledge about the existence of EA is still dominated by issues or events they hear from news on television or on social media such as YouTube and WhatsApp groups. This knowledge is only a fragment of the story that still cannot be held to be true (Rahayu & Widodo, 2019; Shapiro et al., 2016). They even claim that they do not have the power to identify the truth of what they have obtained because the discussion about EA during the lecture has not been explored. This problem also has never become a serious issue, even though their background is student, their discussion for EA is arguably non-existent. In addition to the Orangutan, well-known endemic animals that have experienced a very extreme case of population decline are birds. The number of birds in West Kalimantan decreased sharply from 2017 to 2019 (Kurniasih, 2018; Yli-Panula & Matikainen, 2014). Similar to the case of the Orangutan, the main problem with this decline was identified by the students because their habitat is gone. The balance of the ecosystem is disturbed due to the conversion of forest functions from heterogeneous to homogeneous forests. A decade ago, large-scale deforestation occurred and resulted in the loss of species and bird population reaching 50% (Afonso et al., 2016; Muslimah et al., 2020). The short-term effects may not be felt by humans, but long-term effects are being felt now, with hot temperatures during the day, hotter than usual.

The reason why the students feel it is important to protect EA is that it is expected that EA will not go extinct and can be passed down to the next generation so that they will be able to see it directly. According to result of interview, EA conservation for the last 5 years has been good, especially in zoos, where a little comfort for animals and visitors has been provided. It's just that efforts need to be made to regenerate these animals so that the population can continue to grow. An approach that can be taken is to conduct a Focus Group Discussion (FGD) with zookeepers who are tasked with caring for and protecting EA. It is part of the responsibilities of animal keepers at the zoo. Several solutions can be offered by students to increase public awareness, especially being responsive and observant of the existence of EA around them. The best way to introduce and protect endangered animals is to make posters or displays containing EA information and distribute them to remote villages, for example by displaying them at the village office and doing outreach (if necessary). In addition, students also suggested carrying out activities such as packaging a food product, a logo on a package, a special color code for product packaging, placing advertisements on television, and creating a website about collections of endemic animals. Based on the solutions offered by these students, it was identified that students have a high concern for the conservation of EA but no one can accommodate it.

The researcher have recommendation to support CBE. Students have initiatives in the form of conservation-based education in lectures that are carried out in regulating the export and import of endangered species, by asking to seek laws regarding protected animals, which includes the sale and purchase of protected animals. Things that need to be educated are the criminal acts imposed by those who break the law. In addition, regarding the EA conservation, the solution from students to EA keepers at the zoo is to pay attention to EA's habitat, for example, an area of at least 2 hectares, animal cages, animal clinics and laboratories, visitor service facilities, manpower (veterinarians, conservation experts), all of which must be in place and a state of preparedness. So far, research on students' knowledge of EA is still limited to elementary school students and rarely identified in high school students. Students studied are also still limited to students who are in urban areas, it is still rare to research students in rural areas. The knowledge that has been researched is exploring students' knowledge of rare animals but students are rarely asked to provide solutions so that rare animals can be preserved. In this study, in addition to analyzing students' knowledge, students in remote areas were also asked to provide arguments about solutions and reasons for conserving endangered animals.

4. CONCLUSION

The knowledge of students in remote areas about the existence of rare animals is very minimal. The rare animals they recognize are only those that are hunted. They also still use jewelry from the nails and fangs of rare animals. The students' concern about the existence of rare animals is very high. This is because the culture and stories of their parents that they trust are proven by the activities they do not want to cut down the forest and throw garbage in the forest. The knowledge of school students about the existence of EA in West Kalimantan includes endangered species and also cases of illegal trade that have occurred during the last five years. The perspectives of remote school students on the reasons and solutions for EA conservation in West Kalimantan are very good with two proposed activities, namely conducting field studies to observe endangered animals and forming a community of endangered animal lovers in West Kalimantan. The role of the KRS approach in EA as an effort to establish Conservation Based Education (CBE) in remote schools is designed in the RPP by prioritizing improvement in the form of increasing knowledge about the existence of EA in West Kalimantan, describing strategies and stages of EA protection in West Kalimantan, and forming groups of EA lovers so that students can educate EA by itself and know the existence of EA in West Kalimantan.

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