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Research Article

Herping: Natural Exploration as Bioeducation of Herpetofauna Animal Diversity

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ABSTRACT

Learning biology is about theory and practice while in the laboratory or environment. Animalia is one of the focuses of Biology and one of the topics that could not practice in the laboratory but should practice in the environment. Learning in an environment would give students any experiences. This study aims to report a case study that explores the experiences of prospective teacher students about learning outdoors through a *herping* activity. This research was taken from a university in Indonesia from June until December 2019. Data retrieval is taken through semi-structured interviews. Data analysis used the phenomenological design of 22 participants to be interviewed. The findings reveal that the challenges found in the field include field mastery, unpredictable weather, and finding the correct object. However, natural phenomena that are open in the wild become an attraction as bio-education develops for prospective teacher students. Understanding science material and science epistemological abilities is likened to a combination of hands-on activities students become complete with minds-on practices. For this reason, it is crucial when the learning process is packaged in frames that can stimulate prospective teacher students to be more active. The findings are how to combine formal learning in the classroom with wild *herping* activities to develop student bio-education.

Keywords*: herpetofauna, herping, prospective teacher on Biology*

Background

The reality of the learning process thus far demonstrates that while learning in the natural environment is valued, it cannot always be applied (Ayotte-Beaudet et al., 2017; Borsos et al., 2018). Numerous reasons were given for the shortage of time available when combining the learning process with practical activity. Additionally, the object or material employed is constrained by the quantity available in the laboratory or surrounding environment. The materials employed are preserved findings, which have several drawbacks, including altered color and structure (Christie et al., 2014).

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Nothing truly supports students' needs during the learning process, particularly when attempting to develop their inquiry abilities (Letina, 2016; Ednie & Stibor, 2017).

The capacity for inquiry is always identical to the requirements of the biology learning process. Particularly with practical activities that place a premium on the discovery process through observation, data gathering, and data analysis to get new knowledge (Boric & Skugor, 2014). The principle of learning by doing, which is utilized as a foundation for actual learning, will be more effective when all components are included as a source of learning (Christie et al., 2014; Thorburn & Marshall, 2014). Additionally, as demonstrated by Vygotsky's learning theory, personal experience can assist students in reformulating new material or reorganizing current knowledge into a broader cognitive structure conducive to deep understanding. According to Vygotsky, while students are building a notion, they must consider their social context. As a result, pupils can create and maintain social relationships with their environment (Thorburn & Marshall, 2014).

By closely connecting students' social relationships to the outside environment, bio-education can be developed. Incorporate the body and senses into the educational process to get personal and real-world experience (Manni et al., 2013). Natural phenomena that can be witnessed and accessible directly from nature are mental activities that can accomplish through various capacities. One way to obtain this information is through wild herping efforts. Herping activities are entered on the herpetofauna group observed in their natural habitat. Herpetofauna is a group of animals classified as Reptiles and Amphibia that live nocturnally (Ortega-berno et al., 2017). Numerous herpetofauna was investigated in China and Brazil. It is means of identification and ascertaining the herpetofauna's distribution in the wild (Battaglia et al., 2015; Holt et al., 2017). However, it is uncommon to establish the concept of natural exploration as a learning development outside of the classroom. Marcinkowski, (2003) similarly emphasizes the need to witness a broader range of diversity in natural or environmental-based learning. The ambiguity continues to be the primary impediment to integrating epistemology and ontology nuances in the development of bio-education to improve students' practical work typically performed in the classroom. This study aims to present a phenomenological case study of a student's experience while herping. The findings demonstrate how to integrate formal classroom instruction with outdoor herping activities to enhance student bio-education.

Methods

This study uses a qualitative interpretive approach from a single case through a phenomenology of participant experience. Case study research is an empirical investigation that investigates contemporary phenomena in-depth and in real-life contexts, especially when the boundaries between phenomena and contexts are not clear (Gomm, R., Hammersley, M., Foster, P., & Stake, 2011). Took this research from June until December 2019. Several semi-structured interviews were conducted with 22 participants to be interviewed. The interview was conducted before the herping activity, during the herping process, and after herping was finished. The questions given during the interview were more directed at analyzing participants' opinions about Bio-education conducted in the wild through Herping activities. Questions are conducted in the form of open-ended so that participants can freely answer them according to their experience. Participants were asked about 1) their experiences and how they carried out herping activities about herpeto-fauna, 2) their views on and justifications for herping as part of bio-education, 3) challenges related to activities carried out in the wild, and 4) best practices obtained when carrying out herping activities.

The data analysis results were transcribed de-naturally and analyzed through thematic analysis by identifying, analyzing, and reporting patterns in the material (Braun & Clarke, 2014). The unit of analysis is a sequence of talks consisting of one or several sentences that form coherent expressions or ideas. The analysis focused on the content of the data, namely, experience and meaning are given for learning in the wild. However, in addition to explicit meanings, it also seeks to identify and interpret

the ideas, assumptions, and conceptualizations generated from participants as a reference in analyzing the development of further bio-education.

Results

The phenomenon of herping experience about herpeto-fauna is presented in several documentation results such as in Figure 1 and Figure 2.

Figure 1. A group of students trying to capture the specimens found

Figure 2. A type of frog found and taken directly

Figures 1 and 2 depict the experience of a group of students attempting to capture and identify specimens. The interview begins with discussing the method of viewing herpetofauna in its native habitat. Participants were asked to discuss their herping experiences. Several quotations from interviews include the following: As I approached the waterfall, I discovered amphibian hiding in the leaves with shining skin; I snapped a photo and escaped identification since the frog suddenly jumped. I was afraid to pursue and apprehend him. After a long trek back, I noticed a variety of more giant frogs lounging quietly near a bamboo bridge. I enlisted the assistance of a male friend to apprehend him. Throughout the journey, we encountered numerous terrestrial amphibians but could not identify their species.

When asked about their perceptions of herping, ninety-two percent of respondents indicated that herping is a beneficial and educational travel activity. The following are extracts from the interview's findings:

> *I was overjoyed not to have my garments soaked but to have obtained the desired frog. A valiant effort with a relatively tiny route that is up and down, slippery, and twisty. I loved it as a source of new information, as this was my first encounter with herping*.

As though singing, I heard a frog's booming sound. It piqued my interest enough for me to approach him. His voice was booming, but we had difficulty hearing it. When directed the light in the source of the sound, the frog instantly fell silent. I attempted to record his voice in that location.

When asked how conducted activities out in the wild, 77% stated that they were fraught with difficulties and necessitated significant preparation ahead. Individual barriers, which may appear to be insurmountable at first, can shift over time if the individual is willing to overcome them. It also occurs in actions that have been completed (Scott et al., n.d.) Factors that are not accustomed to night time exploration with limited lighting force it to concentrate on seeing in the dark. The following is another excerpt from the participant interview:

Cold and dark weather forces me to exercise greater caution when selecting clothing to wear with a raincoat. My group's observations are geared toward rice fields. When I first encountered a frog, I could not capture it because it slipped and fell into a 1.5-meter-high rice field. The following observation revealed the

same frog in the middle of the rice field plot. I attempted to catch him cautiously even though soaked up my legs were to my knee in rice fields.

Found Herpetofauna to be more prevalent in the amphibian group, but just a few snake species were discovered. Numerous kids enthusiastically respond to the most acceptable practices learned through herping activities. On average, 90% of pupils desire to participate in herping activities again. Another element to consider when identifying a Javanese endemic snake is another best practice, as illustrated in Figure 3. The following are excerpts from the results of the interview:

During the nocturnal investigation, my squad discovered only one sort of snake. This snake was discovered near the shore, which was sufficiently clear. I was apprehensive about approaching him, but the instructor accompanying our group assured me that the snake was not venomous. He took the snake and instructed that it be kept gently to prevent it from escaping.

Figure 3. A type of non-venomous snake found

Discussion

Acquainting oneself with and exploring nature for the sake of obtaining material benefits is a cognitive challenge (Maynard, T., Waters, J., & Clement, J., 2013). When explored thoroughly, it can make numerous contributions to education. This discovery is illustrated in Figure 4 through the use of thematic maps.

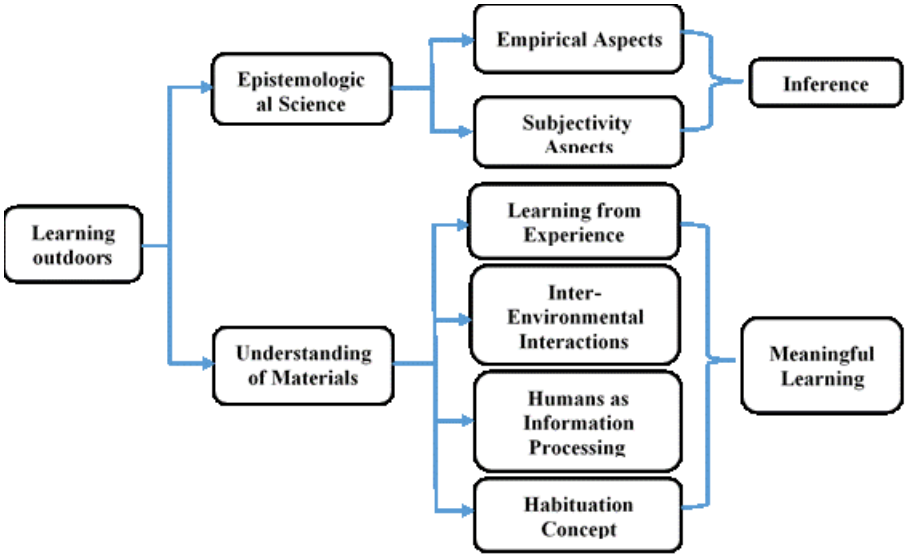

Figure 4. Thematic maps as Visual Representations of Themes and their Relationships

The interaction between education and nature-based learning can serve as a source of reinforcement and memorization. Students will receive additional stimuli, resulting in a more significant response. Herping activities their environmental awareness of the need to protect nature (Hill, 2013) and their understanding of how may protect nature through their experiences (Boric & Skugor, 2014). This experience demonstrates the critical significance of knowledge acquisition in pursuing sustainability (Moorhouse, 2018). For instance,

when a group of students discovered the indigenous Java species Xenodermus javanicus, it was discovered in clean water on a rocky river. They must understand that the discoveries are not exploited but returned to their natural home. Must replace the desire to possess with an understanding of the need to preserve it in its natural state. Directly, this is a bio-educational activity that facilitates knowledge transmission by incorporating mental and physical processes through diverse interactions with students, the environment, and other learning materials. The process of scientific information transfer is defined as the interaction of learning, integration, and the utilization of knowledge sources (Böcher & Krott, 2014). The use of local resources in herping activities directly contributes to developing students' potential as a source of learning.

Herping activities are highly beneficial for developing pupils' sophisticated talents during the learning process. Herpetofauna animals can be identified and solve problems cooperatively when studying in nature (Manni et al., 2013). Animals' presence in nature is a critical sign of the ecosystem's health. As a result, these types of activities are critical for conserving biodiversity. While reptiles and amphibians are significant, they are frequently overlooked in literary science (Christoffel & Lepczyk, 2012). Additionally, students examine ecological issues and the long-term effects of human activity on nature (Woodhouse & Knapp, 2000).

Conclusion

A well-constructed experience will foster new insights, stimulate discussion, and encourage in-depth examination of course material. By causing confusion, intimidation, and inhibiting creative thinking, negative experiences can obstruct learning. This review describes natural exploration, discusses ways for developing excellent questions, and discusses practical aspects of raising student participation and cultivating critical thinking. These themes are applicable both in the classroom and in hands-on learning contexts.

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References

Ayotte-Beaudet, J. P., Potvin, P., Lapierre, H. G., & Glackin, M. (2017). Teaching and learning science outdoors in schools' immediate surroundings at K-12 levels: A meta-synthesis. *Eurasia Journal of Mathematics, Science and Technology Education*, *13*(8), 5343-5363. https://doi.org/10.12973/eurasia.2017.00833a

Battaglia, C. D., Faidley, C. R., Hudson, A. N., Brown, M. D., Pardue, T. M., Reid, M. L., Bass, A. A., Townsend, C. L., & Carr, J. L. (2015). Distribution records for Louisiana amphibians and reptiles. *Herpetological Review*, *46*(4), 579–581.

Böcher, M., & Krott, M. (2014). The RIU model as an analytical framework for scientific knowledge transfer: the case of the "decision support system forest and climate change." *Biodiversity and Conservation*, *23*(14), 3641–3656. https://doi.org/10.1007/s10531-014-0820-5

Boric, E., & Skugor, A. (2014). Achieving Students' Competencies Through Research-Based Outdoor Science Teaching. *Croatian Journal of Education-Hrvatski Casopis Za Odgoj I Obrazovanje*, *16*(1), 149-164. https://doi.org/10.1111/j.1521-0391.2014.12143.x

Borsos, E., Patocskai, M., & Boric, E. (2018). Teaching in nature? Naturally! *Journal of Biological Education*, *52*(4), 429–439. https://doi.org/10.1080/00219266.2017.1420679

Braun, V., & Clarke, V. (2014). What can "thematic analysis" offer health and wellbeing researchers? *International Journal of Qualitative Studies on Health and Well-Being*, *9*(1), 26152. https://doi.org/10.3402/qhw.v9.26152

Christie, B., Nicol, R., Beames, S., Ross, H., & Higgins, P. (2014). Outdoor Education Provision in Scottish Schools. *Scottish Educational Review*, *46*(1), 48-64. https://doi.org/10.1111/j.1528-1167.2010.02522.x

Christoffel, R. A., & Lepczyk, C. A. (2012). Representation of herpetofauna in wildlife research journals. In *Journal of Wildlife Management*, *76*(4), 661-669. https://doi.org/10.1002/jwmg.321

Ednie, A. J., & Stibor, M. D. (2017). Motivation and self-efficacy among winter outdoor exercise

enthusiasts. *Leisure/ Loisir*, *41*(4), 491-508. https://doi.org/10.1080/14927713.2017.1399816

Gomm, R., Hammersley, M., Foster, P., & Stake, R. E. (Eds.) (2011). The Case Study Method in Social Inquiry. In *Case Study Method*. 18–26. https://doi.org/10.4135/9780857024367.d5

Hill, A. (2013). The place of experience and the experience of place: Intersections between sustainability education and outdoor learning. *Australian Journal of Environmental Educatio,*. *29*(1), 18-32. https://doi.org/10.1017/aee.2013.13

Holt, B. D., Barger, T. W., Peters, A. S., Taylor, C. T., & Lawrence, E. (2017). One hundred and ninety-four new county records for amphibians and reptiles in Alabama, USA. *Herpetological Review*, *48*(1), 138-144.

Letina, A. (2016). Efikasnost istraživački usmjerene nastave Prirode i društva u razvoju prirodoznanstvene kompetencije učenika. *Croatian Journal of Education*, *18*(3), 665–696. https://doi.org/10.15516/cje.v18i3.1735

Manni, A., Ottander, C., Sporre, K., & Parchmann, I. (2013). Perceived learning experiences regarding Education for sustainable development: –within Swedish outdoor education traditions. *NorDiNa: Nordic Studies in Science Education*, *9*(2), 187-205. https://doi.org/10.5617/nordina.653

Marcinkowski, T. (2003). Commentary on Rickinson's "Learners and Learning in Environmental Education: A critical review of the evidence" (EER 7(3)). *Environmental Education Research*, *9*(2), 181–214. https://doi.org/10.1080/13504620303474

Maynard, T., Waters, J., & Clement, J. (2013). Moving outdoors: Further explorations of 'child-initiated' learning in the outdoor environment. *Education 3-13*, *41*(3), 282-299. https://doi.org/10.1080/03004279.2011.578750

Moorhouse, B. L. (2018). Taking an active role in our pre-service teachers' overseas teaching experiences: a report on an experiential learning project in China. *Journal of Education for Teaching*, *44*(2), 241–242. https://doi.org/10.1080/02607476.2017.1370482

Ortega-berno, A. V., Parish, W. A., & Mali, I. (2017). Twenty Years of Herping : Updated Visual Representation of Species Richness in New Mexico. *Southwestern Naturalist*, *62*(3), 215-220. https://doi.org/10.1894/0038-4909-62.3.215

Scott, G. W., Boyd, M., Scott, L., & Colquhoun, D. (2015). Barriers to biological fieldwork: What really prevents teaching out of doors?. *Journal of Biological Education, 49*(2), https://doi.org/10.1080/00219266.2014.914556

Thorburn, M., & Marshall, A. (2014). Cultivating lived-body consciousness: Enhancing cognition and emotion through outdoor learning. *Journal of Pedagogy*, *5*(1), 115-132. https://doi.org/10.2478/jped-2014-0006

Woodhouse, J. L.-, & Knapp, C. E. (2000). *Place-Based Curriculum and Instruction: Outdoor and Environmental Education Approaches*. ERIC Clearinghouse on Rural Education and Small Schools. Appalachia Educational Laboratory. [https://eric.ed.gov/?id=ED448012]. 4th of February, 2022.