

Cultural Ecology and Environmental Education: Lesson Learned from Baduy Indigenous Community

Bagja Waluya¹, Elly Malihah¹, Mamat Ruhimat², Erlina Wiyanarti³

¹Ph.D student in Social Science Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

²Sociology Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

³Geography Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

Received : 2022-08-22

Revised : 2022-09-24

Accepted: 2023-02-22

Key words: Baduy; deep ecology; local wisdom-based education

Correspondent email:

bagjawaluya@upi.edu

Abstract. This research investigated culturally-generated abilities and skills in the frame of human adaptation and environmental education. Under qualitative approach, this research implemented phenomenological research method that seek to understand the situation that occurs locally to certain group. Data collection was done through observation and interview with four key informants involving indigenous community leaders, community members, and formal education practitioner. Additional informants were taken from snowball sampling technique from whose accounts were elaborated until data saturation achieved. Validity and reliability of data were carried through member check and data triangulation. Data analysis process follow three sequential phases, namely data reduction, display, and drawing conclusion. Findings of research were grouped into three sections, namely a) cultural ecology of Baduy indigenous community; b) environmental education based on local wisdom of Baduy people; and c) pedagogical experience on local wisdom-based learning.

©2023 by the authors. Licensee Indonesian Journal of Geography, Indonesia.

This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY NC) license <https://creativecommons.org/licenses/by-nc/4.0/>.

1. Introduction

Interaction between human and environment are shaped by knowledge and perception (Vedwan, 2006). Two of these factors occurred locally in societal landscape. Norms and values prevail in particular community act as basis to act and behave. In the world of today, this argument is presumed for cultural community as resembled in tribes and indigenous communities (Ghate et al., 2013). Strong reference to the transcendental beliefs is a unique characterization of these groups. In the course of human civilization history, the need of supreme being has always been a remarkable heritage. Early settlers of earth made attribution of natural objects as the entities of power (Peoples et al., 2016). In the succeeding millennium, such pattern of human-nature relations was substituted, if not abandoned altogether. However, numbers of scholars noted the significance between these ancient belief system to natural conservation. Environmentalist like Lester Brown et al. (1998) even argued that indigenous communities are the key player and the most effective ones in the effort of protecting the earth. Differs from modern community strongly connected to pragmatic thinking, these local communities marked by their obedience to sets of binding values. Sociologist Jim Ife in Permana (2010) emphasized six dimensions within local community, namely: a) local knowledge; b) local values; c) local skills/competences; d) local rulers; and local solidarity, all of which hugely contributed to the appreciation toward the nature.

Process of human adaptation to their environment occurred in biological and cultural settings (Cajete, 2017).

The way of adjusting to unconquerable challenge of nature results in localities of survival. By this, communities since ancient times developed their creative thinking ability indicated by their lifestyles and way of living. Traditional houses, armaments, and clothing are the clear example of environmental effect to human life (Skinner et al., 2013). As found in the work of Sokolickova et al. (2012), philosophers used the term cultural ecology in reference to way of adapting to the nature in particular kind of environment. Leading figures like philosopher Adam Schäffle and Karl Marx, as well as anthropologist Julian Steward left major contribution to the theorization of cultural ecology. Views of Schäffle and Marx on ecology are widely known through his coined term of 'social metabolism', in which nature and human are interdependent (Padovan, 2000; Sutton & Anderson, 2020). This postulate argued that what human uses of nature consequently affects natural resources itself. Despite to the fact that Marx's view was largely focused on human labors, his thought asserted an idea of human-nature interconnection. In the perspective of Julian Steward, cultural ecology refers to cultural adjustment to specific environmental circumstances (Kerns, 2016). Two aspects that build this concept are environmental constraints and cultural requirement (Fox, 1992). In other words, changes in environment constitutes a vital part in dynamics of technological innovation and production ability.

Perspectives of cultural ecology is related to the fundamentals of local wisdom. Relation between these two concepts is generalized in a view of human creative way upon adjusting to the nature. Singsomboon (2014) introduced

four basic orientations in local wisdom, that consists of conservation, restoration, adaptation, and invention. Prime principle in local community is to ensure that their cultural heritage be not vanished. Way of conserving the culture goes along with the restoration effort. Adaptation and invention are two interrelation aspects, similar to Stewards' view of cultural ecology. Perceiving the natural effect stimulate creative ability to sustain their living. In this way, culture is not merely a tradition. Beyond that, it is a long and dynamic process on the search of philosophical and life reference. Even as culture is viewed as lofty value, rigorous selection process might have occurred before the actualization takes place (Khusniati et al., 2017). Cultural value as local wisdom encompasses three components, namely cognitive integration, concrete action, and positive effect (Yang, 2016). Continuous reinforcement of local values occurred as its society noticed its functionality. A rather applicative perception was stated by Clifford Geertz (2008), in which local wisdom is strongly related to human resources along with source of culture, economic, security, and law.

Geographically and historically, Indonesia is an example of nation with large multiculturalism. In regards to locality, different cultural groups developed their own distinctive identities. Placement of nature within the knowledge and belief systems are differing as well. Baduy is an example of indigenous community with rigorous yet unique local wisdom. As stated by Prawiro & Misno (2013), this group strongly believed that they are the chosen ones to carry a duty on preserving the earth. This value lies on the principle of *tapa dunya* or *tapa mandala* or the obligation of human being as leader on earth (Wahid, 2012). Areas where Baduy community lived is precepted as *pancer jagat* or center of earth, referring to their cultural status as elder relatives of neighboring groups (Sujana, 2020). All of the earth objects are attributed intrinsic value. The nature is seen as spiritual entity that has the potential to release certain effects in response of human deeds. Exploitation of natural resources not in line to its ability to reproduce is the violation of norms. People of Baduy shall take what they need from the nature and treat them carefully (Wahid, 2012; Zidny & Eilks, 2018). Such principles are shown through their preferences in daily activities. Sujana (2020) found the use of hoe in crops cultivation is extremely prohibited due to its potential on land exploitation. Significant temporal pauses are regulated in between of agricultural activities to let the natural process occur. Local education is also held to emphasize the preservation of these cultural values.

Education is a natural and integral process take place within the society (Kulagina, 2015). Indigenous community like Baduy have their version of education. Prime objectives in teaching and learning process is the preservation of cultural norms and values (Stevens, 2008). Though its system and output differ from public schooling, importance of education has been felt by this local community. Term of education in this section might not be used in ambiguity with formal education in general. Broad understanding of education emphasizes continuous process of interaction between human and their physical environment, social environment, society, social-economy, social-politics, and social-cultural. These processes occurred throughout human life since they were born. Tirtarahardja & Sulo (2005) stated the characterization of broadly precepted education as having similar purpose as to

life itself; not limited by space and time (life-long education); occurred in various activities whether it is intentional or not-intentional; affects every human being regardless of age and status both to be educated or self-educated; as well as infiltrated in every part of society. Oftentimes, process of transferring knowledge in indigenous community were embodied in their oral or literary tradition (Van Zanten, 2016). Within the Baduy community, teachings of local belief are the primary reference in the sense of education.

Deep ecology has strong position in local education of indigenous community (Barnhill & Gottlieb, 2001; Kaushal, 2017). Attribution of magical power to earth objects led to careful treatment toward them. Gratani et al. (2016) argued that pattern of relationship between indigenous communities and the nature are often eco-centric. The way human being treated the nature are strictly controlled. As an example, crop cultivation and land use in most of Indonesian indigenous activity are among of the most regulated (Hidayati, 2017; Prabowo & Sudrajat, 2021). Customary law may have specified type and technique of cultivating crops. In Anak Dalam indigenous community of Jambi Province, there is a habit of planting two or more types of crops prioritizing intercropping (Sulasmi et al., 2012). In a maritime culture of Bajo indigenous community, found throughout eastern part of Indonesia, fishing is allowed only in the designated locations (Hasrawaty et al., 2017). Meanwhile in the case of Baduy, there is a philosophical guidance known as *pikukuh* and *buyut* that touches on local belief, basis of behavior, and customary prohibition (Wahid, 2012). In these communities, environmental education progressed hand-in-hand with socialization process. Involvement of an individual to communal activities formed habituation, directly or indirectly. Major feature in this local environmental education is character building appears in local knowledge and the learned behavior.

2. Methods

This research investigated human-nature relationship in Baduy indigenous community. Two broad concepts that brought into this study are cultural ecology and environmental education. These terms used as perspective to identify customary law and way of living in the studied community. Cultural ecology in local community is indicated by creative works to adjust and survive in the nature. This can be in form of physical or abstract product. Indicators of cultural ecology are basically societal setting in conserving and utilizing/exploiting natural resources (Steward, 1977). Indigenous community like Baduy developed norms and values on human uses of the nature, in which is studied in this research. Preserving the custom across generations takes place through the process of socialization. Transfer of knowledge between older to younger member of society is a process of education itself, whether institutionalized or not. Three indicators of environmental education were taken from the research of Zorrilla-Pujana & Rossi (2016), namely appropriation of information or relation between local knowledge and environmental management action, articulation coherence or relevancy of educational processes to the objectives of conservation, and participative process that indicates involvement of various parties (e.g. stakeholders) in environmental education processes.

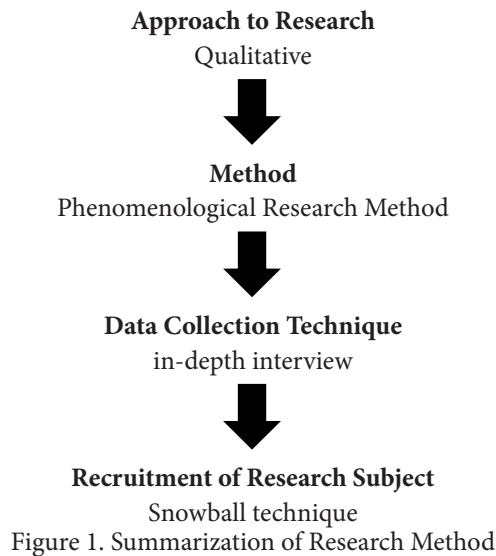


Figure 1. Summarization of Research Method

This research was carried in qualitative approach. Its aim was to study thoroughly and analyze the cultural phenomenon of Baduy indigenous community. Thus, numerical data or statistic generated approaches were considered unsuitable. As stated by Creswell (2007), qualitative researches deal with natural and concrete phenomenon. Flexible way in the process of data collection is the advantage of qualitative approach in research that focuses on socio-cultural analysis. Method used was phenomenological research method. Eckartsberg (1998) defined phenomenological research as an interpretative study to understand phenomena and experience that occurs in everyday life. In relation to the objectives of research, this method allows researchers to closely observe the subjects based on their own experiences. In this way, researcher experiences while conducting study in the studied location were also counted as inputs of data. Technique of data collection was in-depth interview. This technique was selected to allow subjects in giving their own information, compared to the more rigid techniques strongly affected by researchers' objectivity. Involved subjects of this study were members of Baduy Luar (outer Baduy) indigenous community. Selection of informants were based on snowball technique in which continuous tracing of informants takes place until data saturation achieved.

Process of research carried in three phases, namely orientation or description; reduction or focus; and selection

phase (Schensul & LeCompte, 2013). The first phase constituted early observation referencing to books, reports, and other eligible sources. Subsequent to this, researcher set focus of topic and segment of subjects to be studied. In the selection phase, researcher have determined specific problems of research, location of study, and particular information needed. Qualitative research is not without validity and reliability testing. Under systematic and rigorous steps, following steps namely member check and data triangulation have to be conducted (Padgett, 1998). All of these procedures were done to review the quality of information given by research subjects. Therefore, similar subjects were to be interviewed in different times to analyze its validity and reliability. Cross-checking of information were also carried to different subjects and different technique in order to collect more accurate information. Data analysis consists of data reduction, display, and drawing conclusion (Padgett, 1998). Sortation of relevant and suitable information carried so that the analysis process ended up with the needed inputs. Structural and concise findings were the next step to be done after data reduction process, aiming to obtain clear and accurate information. The last step in data analysis is drawing conclusion, where verified data were elaborated in line with facts in the whole research process. Validity and reliability testing may be carried several times within this step to reduce bias and subjectivity.

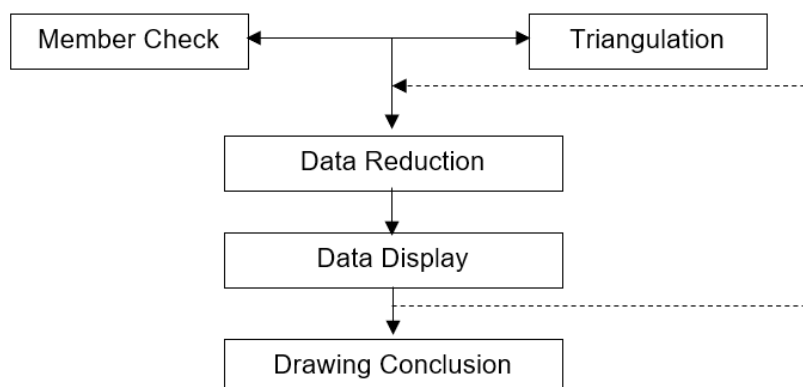


Figure 2. Data Analysis Process (Jonker & Pennink, 2009; Padgett, 1998)

3. Result and Discussion

Findings of research is presented in three sections, namely: a) cultural ecology of Baduy indigenous community; b) environmental education based on local wisdom of Baduy people; and c) pedagogical experience on local wisdom-based learning. All of the collected data were elaborated in each sections' narratives. Numbers of references taken prior or after the research were used to compare and verify the obtained information. Informants involved in research process acted as unit of analysis along with observation and documentation. Formulation of research and discussions were carried through presentation of finding, analytical process, and elaboration of theories to discuss the result. Ethical issues covering presentation of research findings were obtained through the consent and agreement from each of involved subject. Therefore, required anonymity and impartiality along the research process is guaranteed.

Cultural Ecology of Baduy Indigenous Community

A preface in analyzing Baduy indigenous community is better started by understanding its nomenclature. Several sources put definition based on its origin term of 'Bedouin' or 'Badawī', an Arab term for nomadic tribes. The Baduy people of Kanekes Village, were not entirely nomadic as they reference to their own settlements. Other sources, including the one that is published by Sucipto & Limbeng (2007), documented the use of term 'Baduy' pointing to local community of Banten who moved to the mountainous region of Kendeng due to their deterrence against Islamization that were actively affecting western part of Java. None of these sources were placed more accurate above one another, not by historians or the Baduy people themselves (Ichwandi & Shinohara, 2007). Baduy society of today are known to be separated between inner Baduy known as 'Baduy Dalam'; 'Baduy Tangtu'; or 'Baduy Kajeroan' and outer Baduy known as 'Baduy Luar' or 'Baduy Panamping'. Differentiation of the two groups is based on their adherence to local belief. Member of inner Baduy community that shows inconformity toward the customary law would be sanctioned and moved to outer Baduy. This applied to every aspect of life, such as when an individual chose to attend formal education, commit intermarriage, or use technologies. However, this is not to say that there is a hostile and bitter relationship between the two groups. Connection is made in terms of local governance system (Ngamanken, 2013). Also documented by Sucipto & Limbeng, (2007) Outer Baduy is essentially a 'gate' for the whole community and play crucial role in protecting the existence of inner Baduy.

Indigenous community are known to preserve local belief embraced by their ancestors. 'Sunda Wiwitan' is religion admitted and documented in Baduy indigenous community. Fundamental principle of this belief is the existence of supreme being where human was originated from His realm and shall be returning there. Type of local belief in this group is actually similar to many of indigenous communities across Indonesia (Indrawardana, 2014). Sanctification of certain places or objects is one form of worship held by Baduy people. Philosophical guidance in the community is known as "pikukuh" and "buyut", literal definition to the terms is principles and prohibitions (Sucipto & Limbeng, 2007; Wahid, 2012). The life of Baduy people shall be in accordance with these guidances. Numbers of saying that embodied in *pikukuh* are "lojor teu meunang dipotong, pondok teu meunang di sambung" that can be translated as the long shall not be cut, the short shall not be joined, other example is the guidance to "teu meunang binasa ka sasama" or the prohibition of destroying other creatures. These two sayings are often cited as local wisdom of Baduy people toward the environment. It can be highlighted that intrinsic value on earth objects have been attributed, resembling their appreciation to the nature. Continuity of this custom is under the watch of "Puun" or tribal leader, who is considered as descendant of Gods. The aim of living on earth for Baduy indigenous community is to *tapa dunya* or *tapa mandala* or committed to good deeds.

Cultural ecology is primarily a study on human adjustment to their environment. For Baduy indigenous community, each form of human adaptation is referenced to the custom and tradition. This can be observed on the technique of building houses or traditional barn. In the inner Baduy community, the use of construction technology is prohibited, even the use of hammer and nails (Nuryanto et al., 2021). Houses are made of wood, palm fiber, bamboo, rattan, and leaves. The community applies strict rule on the use of natural resources in building houses. Size of house is around 9 x 12 meters. These houses are facing to the south, to the place of ancestral spirit (Sucipto & Limbeng, 2007). Through architectural study, Susilowati et al. (2020) found that the value of this positioning of houses is also benefited them with proper natural lighting, as electronic lamp is prohibited. Traditional rice-barn or known as "Leuit" is other building form rooted to local wisdom. The existence of rice-barn holds values for conservation and principles in life (Iskandar & Iskandar, 2017). After harvest time, that went through rituals, rice are stored in these barns and not to be used for daily needs. Only at certain occasion and preceded by rituals that rice storage in the barn can be released. Philosophically,

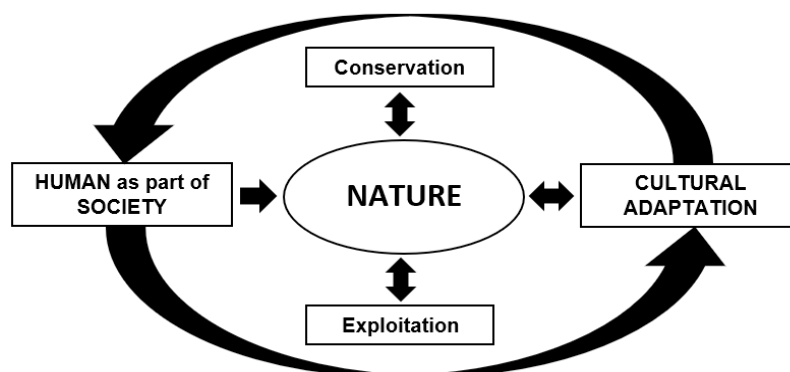


Figure 3. Framework of Cultural Ecology (Steward, 1977; Sutton & Anderson, 2020)

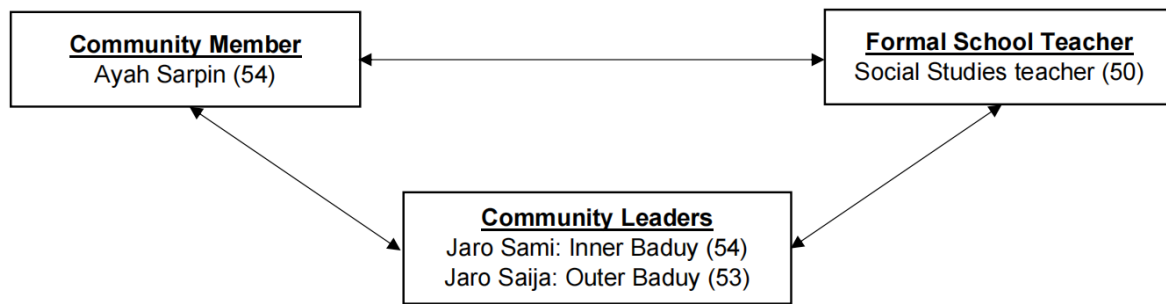


Figure 4. Triangulation of Key Informants

responsibility to guarantee efficient use and sustainability of resources are the essence in the concept of *Leuit*. As studied by Arisetyawan et al. (2021) from ethnomathematics perspective, *Leuit* is the safest place where pests like rats cannot get inside. The slope on the sides of *Leuit* are too slippery to be crawled by rats. Anti-rat or rat-killing technologies are not allowed due to the prohibition of haphazard killing of living creatures.

Embodiment of cultural ecology in human lives is not only indicated by human adaptation to the natural settings. Hubert Zapf (2016) puts literature as cultural ecology. It is worth noted that scope of literature defined by Zapf is including the ancient mythical story-telling, oral narratives, legends, and fairy-tales. The essential element of literature in cultural ecology is to highlight the interconnection between culture and nature. Most of these accounts pointed to artistic personification of nature in human spirit. It is the unification of human and nature that becomes the values, as in deep ecology, for mutual relationship between the two components. Literature is the 'sensorium' for the disconformity of human and nature relationship in society. Beliefs set in these traditions asserted an idea of interdependency cultural and natural aspects in human and non-human world. The ancient scripts on Baduy describes their way of life. However, it is much easier to observe traditional norms and values in Baduy people daily life. There are limited amounts of scripts that wrote about them. In the study of Hakim (2012), it was stated that even no scripts have ever been found in Baduy. Interpretation of proverbs often recited by Baduy people can be found in the ancient script found in Ciburuy holy site, that is seventy kilometers away.

Environmental Education Based on Local Wisdom of Baduy People

Perception toward formal education among Baduy people are generally negative (Muslim, 2021). Their obedience to the tradition inherited from their *karuhun* (ancestors) are very strong. It is their duty to preserve the existence of these values to the next generations. Therefore, view on education in general is otherwise. Processes of knowledge transfer cannot be narrowed to the term of schooling. Except to numbers of villages in outer Baduy that allows formal education, process of knowledge transfer is done through continuous socialization in inner Baduy. The absence of institutionalized schools within the community does not mean no cognitive knowledge being taught. As an example, Baduy people acknowledge calendar system and beliefs that certain work shall be carried on the designated times (Sucipto & Limbeng, 2007). Calculation of "good day" and "bad day" is not merely based on textual or oral references, unique formula is applied to conclude whether an action is allowed. Knowledge of land cultivation and weaving is also preserved across generation. Not only in

terms of teaching the technique of certain work, philosophy and tradition are transferred as well. Such as in the activity of farming, Ichwandi & Shinohara (2007) found that son of the family is taken to the farmland since the age of 10. Farm works cannot be carried anytime. There are phases in cultivation process in which rituals had to be done in between. Similar to the works of women and girls, weaving may only be carried out in certain days.

Value of education is the topic being investigated in the research process. In-depth interview was carried to the key informants that represents different role in the community. These informants are Jaro Saija (53), one of community leaders that acts as village head in outer Baduy; Jaro Sami (54), village head of Cibeo that situated in inner Baduy; Ayah Sarpin (54), community member that is known for his awareness on education; and social studies teacher (50), teacher and practitioner in *Madrasah Tsanawiyah* Alam Wiwitan (Alam Wiwitan Junior High School). These informants explain the position and content of education in the community. Reviews of literatures and reports prior to the study revealed the significance of environmental education within the socialization process of Baduy indigenous community. Information obtained from these informants were not to be directly accepted. Member check and triangulation process were carried to determine the validity of these accounts. Similar questions were asked number of times in different occasion. In other way that was carried as well, answers from one informant were checked through asking similar question to different informant. Observation was done to verify the obtained information. The data collection process stopped when researcher have achieved data saturation or information given by succeeding informants are similar to the previous one.

Significance of environmental education generated from local wisdom in Baduy community is found from the result of in-depth interview and observation. Primary questions asked to all of the informants were on the education system that occurs in the life of indigenous community, importance on education to their children, methods of transferring knowledge, and content of education. The first informant to respond this was Jaro Saija or village head of Kanekes, the following account was an excerpt from the interview (in Sundanese)

"...Matakna budak rea kanyaho oge jalanna diajar, aya didikan ti kolotna. Aya bedana naon nu diajarkeun ka budak lalaki dibandingkeun ka budak awewe. Nu lalaki mah da pibapaeun jadi sapopoena loba jeung bapana ka huma, nu diajarkeunna oge samodel ngahuma, ngoret, ngasek, nebang jeung kumaha iyeu ngolah alam meh kaala manfaatna saterusna, tapi ulah ngalakukan karusakan-

karusakan nu ngamatakeun rugi ka diri sorangan oge dulur salembur Budak awewe mah lolobana diajarkeun ku ambuna da bakal piindungeun. Nu diajarkeun salain ti ngabantu ngahuma mun keur usum panen lolobana mah di imah jeung dapur, contona diajar masak, nyieun gula aren, jeung nenun kaen. Ngajarkeunna mah ku lisan wae bari langsung praktek meh gancang bisana. Tempatna bisa dimana wae, sakapeung di huma bari prak-prakana, lolobana mah di imah sorangan, imah jaro atawa jeung papadana”.

Based on the interview process, education is perceived to be an important part in society. The information given by Jaro Saija implies education processes occur in Baduy is done through socialization by parents, teaching their children on various aspects relate to the fulfillment of life needs to be habituated as lesson for their mature age. The answers given by Jaro Saija asserted the difference of education between boys and girls. Activities in the farm is carried by the boys who is taught by their father. Meanwhile, girls are taught to do house works. Process of learning are best practiced by example. The excerpt mentions that education can occur anytime and anywhere as the elder taught them by doing their own activity. It is noted from the interview that parents taught their children, particularly their son, to utilize natural resources for their own needs. Jaro Saija continued by saying “the important thing is to not causing any damages on the nature that caused harm for oneself and fellow community members”. Baduy community is known for their wisdom on the nature. There is a philosophy that says “*reureuh tamba cape, hees tamba tunduh, nginum tuwak tamba hanaang, nyatu tamba ponyo, ulah kajongjonan*” that means one shall rest out of tiredness, sleep only to get rid of sleepiness, drink to quenches thirst, eat out of hunger, and shall not do excessively. This value affects the community on strict utilization of natural resources.

Skill application and sustainable action played important role in environmental education strategies (Monroe et al., 2007). This can be linked to cultural ecology concept that focus on humans’ creative adaptation to the nature. It is clear that environmental education encompasses on broader definition rather than schooling. Environmental education is not polarized to the age of formal education, it is a continuous process of shaping human responsibility and knowledgeable citizenry (Pooley & O’Connor, 2000). Tomer, (1996) argued

that complete and perfect socialization process led to habituation of ideal values. This is more likely to happen in a community where obedience to norms and values are strongly controlled. The role of *pikukuh* in Baduy tradition resembles command on sustainable action. As indicated in numbers of cited sayings above, there is clear prohibition of committing any harms toward the surroundings. Furthermore, skills or ability to survive in this way is also developed. Baduy people are characterized for their hard-working and simple life. Habituation to these characters construct a kind of mindset that is hard to break. In addition, strict control and social consequences are given to those that violates the shared norms. Younger generation of Baduy would not be attributed to their ancestors’ way of life without the existence of education. It is believed that stronger effect on environmental education will be attained in an informal education or continuous reinforcement within the society (Shin & Akula, 2021). Time spent in schools are only parts of students’ lives and considered to rather form conditioned behavior.

Similar notion on the importance of educating community members on environmental protection were recorded in the words of Jaro Saija, an informant from inner Baduy who is known for his deep loyalty to the tradition. Similar question was asked, which regards to perception on education and how its processed within the community. Compared to the previous informant from outer Baduy, Jaro Saija firmly asserting that the main objective of education is to preserve the custom habituated in the community. Concepts of formal schooling were implicitly rejected. The following quotation below is an excerpt from researchers’ communication.

“...Adat mah teu nitah pinter, lantaran nu pinter mah sok jadi ngaruksak. Tapi nitah jujur, eta nu sabenerna arti didikan adat nu bakal nyalamatkeun. Alam nu nitah jujur ka jelema, pek parake sacukupna ulah sok hayang puas-puas, ngan ulah poho kudu ngajaga jeung ngariksa sakumaha kokolot baheula ngalaman jeung nepikeun. Iyeu didikan adat nu leuwih alus keur masyarakat kiwari, sakumaha dilakonan ku kokolot urang baheula. Euweuh salahna mun ayeuna diteruskeun ku anak incuna. Diajar mah euwuh tungtungna jeung tempatna, dimana wae prakna bisa jeung keluarga atawa jeung masyarakat, diajar kudu jeung papadana, nu sejen mah can puguh alusna keur urang”.

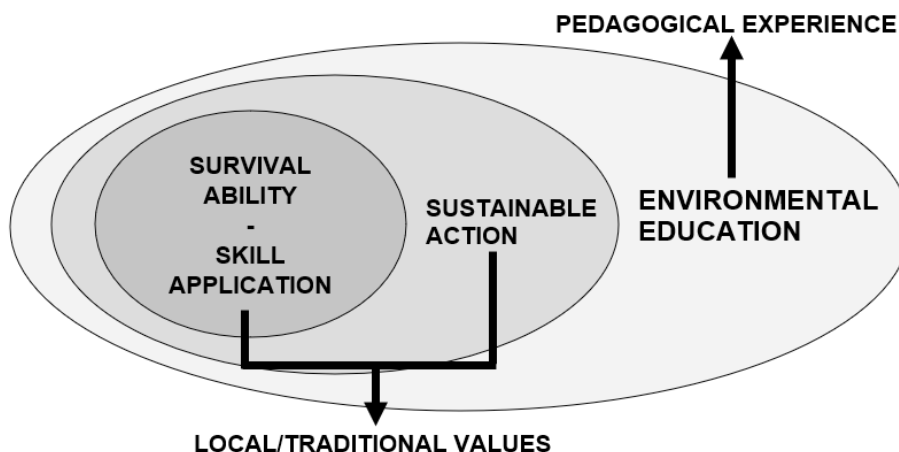


Figure 5. Link between Environmental Education Strategies and Cultural Ecology (Dietz & Stern, 2002; Monroe et al., 2007; Stevens, 2008)

Custom or *pikukuh* and *buyut* held by Baduy community are two primary sources to code of conduct. It explains what shall and shall not be done within community members. This customary law also acts as source of knowledge needed in the life of Baduy people. Guidance and rules on crops cultivation and utilization of any natural resources are include as well. Principally, *pikukuh* positioned human being as the one that inherited the earth and being responsible to protect it. Showing virtue to all kind of creatures is the basic teaching. In spite of isolating themselves from external influences, treating others with respect is how Baduy people were taught. However, as stated in the excerpt, negative perception on formal school was noted. Inner Baduy people believed that formal schooling may create intelligent human yet tend to damage the earth and the custom. Reference to natural conservation was affirmed in the belief that it is the nature who taught human to be truthful and life simply without the desire to satisfy oneself. Taking from the nature should not be apart from conserving and nourishing them. Albeit refusal on the concept of formal schooling, Jaro Sami touches on the importance of lifelong learning. There is no end to the process of learning. Mediums of education can be the family, society, or the nature. As stated by Hamalik (2001), long-life education maximized the potential in adjusting to the nature, a process that will transform an individual to have strong role in societal life.

Pedagogical Experiences of Baduy People on Local Wisdom Based Learning

Indigenous community is known to have their own unique knowledge system. An aspect extremely stressed is human and nature relationship. Due to sanctification of earth objects or recognition of supreme being embodied in the nature, community like Baduy developed strict and controlled utilization of natural resources. These habituations have been passed down across generations through continuous socialization process. Besides than informal education, importance to implement their local wisdom caught the interest of scholars. The study of Khastini *et al.* (2019) studied ethnobotanical aspect of Baduy community that was implemented as learning resource. Another similar example is found in the study of Arisetyawan *et al.* (2021) that used Baduy traditional house as an object of learning mathematics. These

findings emphasized contextual learning aiming to introduce students outside of Baduy to their local wisdom. In different case, instead of using an expository approach in introducing Baduy indigenous community, researchers attempted to integrate values adhered in the tradition to be applied in students' lives. Nurjanah & Sariyatun (2020) conducted a study on the introduction of this local wisdom as an effort to nurture social problem-solving skills. The use of local wisdom as source in civics education was found in the study of Elan & Solihati (2022). The investigation in this section is focuses on the potential of giving pedagogical experiences on Baduy people themselves.

It is not strange to find the case where Baduy local wisdom is regarded as the source of learning for students outside this community. For the community members, especially in the villages where strict control of customary law is formed, participation to formal education is considered taboo. Perception of indigenous people pointed that custom itself is the necessary and ideal form of education. Between all of the informants, there is a difference point of view in terms of formal schooling motives. Both community leaders shared similar view that some of their members aspire to work outside of Baduy, in which formal school diploma is needed. However, it is certain that inner Baduy community would let any of their members to be expelled upon their intention to participate in formal education. In two of the informants who are simply member of society without customary position tend to have progressive perception on education. Informant Ayah Sarpin believed that education is important even to preserve the tradition. He argued that as the world rapidly changes and contact to people outside of community is increased, the existence of their tradition can be threatened. Therefore, education that at least teach how to read, write, and count is necessary in facing challenges of today. Further observation revealed the main concern on formal education is the leaving of community member that may not wish to return or remains with the custom.

Mainly in outer Baduy, schools are not that hard to find. Formal school like elementary school and junior high school are located throughout the community area. Findings from the observation indicated there has not been harmonization between school systems and customary law or local wisdom.

Table 1. Perception toward Formal Education among Key Informants

Informants	Perception toward Formal Education		Local Community
	Motives	Needs	
Jaro Sami	Aspires to work outside of Baduy and leave the local community.	Unclear intention. Obtain formal school diploma.	Inner Baduy
Jaro Saija	Aspire to work as an urban employee or entrepreneur and leave the community.	Able to read, write, and count. Obtain formal school diploma.	Outer Baduy
Ayah Sarpin	Develop self-quality, start a business, and protect the existence of local community.	Knowledgeable and skilled in land cultivation. Obtain formal school diploma for further education.	Outer Baduy
Guru IPS	Build stronger character, self-potential, and intelligence.	Knowledgeable, educated, acquire life-skills. Obtain formal school diploma for further education and boost on career.	Outer Baduy

Source: primary data processing

This could possibly pose the lack of interest in formal education, especially in the perspectives of elder member. School as institutionalized formal education ought to develop and nourish local potential that have been internalized within the society and their culture (Ihsan, 1997). Zuhdan (2013) even used the term 'local wisdom-based education' to meet the need of schooling among local community. This kind of education aims to implement local values in the process of learning. Schools today are characterized as being too oriented on subject matter, in which burdened students with cognitive information that does not suit the need and level of psychological development (Suharto, 2005). Pedagogical experiences for local community do not have to be similar with general practice of formal education. The provision of conscious and well-planned effort in initiating structural teaching and learning processes is the fundamental background for the need of education. Ethnoscience may used as the core lesson for local community.

During the observation, there is only one lower secondary education established on Baduy customary land. Schooling throughout this local community were generally until the level of junior high. That only school is located in Cikakal Girang village, which is the only Muslim village in outer Baduy community. The establishment of *Madrasah Tsanawiyah Alam Wiwitan* (Alam Wiwitan Junior High School) was not without any debates among members of local community. The name of "Alam Wiwitan" itself was the outcome of a successful approach to the *Puun* (highest tribal leader) and community leaders or village heads (*Jaro*). The school is named after the belief adhered by local people, the Sunda Wiwitan. System of education introduced by the school is to adopt and adjust on the custom. This is indicated in the vision of the institution to shape students that is "knowledgeable achiever, creative and cultured, harmonious living with nature, and behave virtuously". Observation and interview were also carried to the informants regarding on how schooling occurred in MTs Alam Wiwitan. A key informant was social studies teacher. From this account, information on the background of school establishment and the applied education strategies were obtained.

"...Karena selama ini pendidikan yang dilakukan adat merasa dapat mengayomi kehidupan masyarakat sehingga ada pandangan-pandangan negatif jika anaknya bersekolah formal. Misalnya, kekhawatiran anak menjadi pintar, setelah pintar dapat merusak alam juga adat. Hal itu karena tanggung jawab mereka dari leluhurnya untuk menjaga alam dengan tanpa perubahan sedikitpun. Maka anak dilarang bersekolah formal. Mungkin untuk masyarakat Baduy Dalam belum menjadi masalah, tetapi untuk Baduy Luar sudah banyak mengalami perubahan dan berbagai tuntutan. Maka tidak cukup mereka hanya mendapatkan pendidikan adat. Perubahan yang ada di Baduy hendaknya untuk meningkatkan taraf hidupnya sekaligus dapat menjaga adat dan budayanya. Misalnya mereka mendapatkan pendidikan formal tapi yang sesuai dengan budaya dan kearifan lokal yang ada disini"

Isolation may be the only powerful way to sterilize external influence on the local tradition, which is practiced by the inner Baduy. Increasing contact with people and places outside of customary land has changed the knowledge, perspective, and life orientation for people in outer Baduy. As noted by a social

studies teacher above, changes and challenges has put the burden on the life of outer Baduy community. Education is needed not only to preserve the tradition, but also to increase the living standards in order to protect their own existence. For that reason, formal education can be established in accordance to the culture and local wisdom. According to Indy (2019), education processes should be the medium to develop human quality and knowledge as part of society that involves in the undergoing changes. Schools in local community carry the role to enhance internalization of culture. As stated by Ihsan (1997), formal education institutions shall be oriented to nourish and develop the potentials of local or indigenous community, in accordance to the values lies within the society and their culture.

Creative way of knowledge transfer was found in Alam Wiwitan Junior High School. Findings from the observation documented how teacher facilitated the students need in their own unique character. Learning process are generally conducted through Contextual Teaching and Learning (CTL), cooperative, and/or participative learning model. Under this strategy, composition of activities consisting 60% of outdoor activities and 40% of classroom activities. Oftentimes, due to its remote location, teaching and learning is used the available resources and led by key figures in the community. Involvement of village head to teach the students is an effective way to preserve local community. In the other hand, earned supports from community leaders are the important element of the school sustainability. There is currently limited learning sources or teachers' professionalism. Teaching and learning materials are made simple without systematical organization usually found in general. Differ from schools in urban areas where reading is perceived to be less-interested activities. Students in Alam Wiwitan are fond of book that is indeed rarely seen within the indigenous community. The objective of education is eventually to create a comfortable and active learning climate. Sophisticated information technologies mainstreamed in schools today are not necessarily appropriate and useful for students in Baduy local community.

Giving pedagogical experiences through formal education still faces recurring challenges in Baduy indigenous community. Traditions and local values are strongly regarded as main source of education. This is not to say that education per se not important in local people perspectives. Responsibility of community members to preserve the *pikukuh* and loyalty to their conservative leaders determine the way things being accepted or not. As in Alam Wiwitan school, which is the only formal education throughout customary land, teachers' competency, infrastructures, and system of schooling is still an issue. The school does not look into the linearity of teacher's academic background upon appointing them. This is due to lack of staff in the school, with most of them are voluntaries. System that applied in the school cannot be equated to common formal education management. There is no fixed schedule where teaching and learning takes place. All activities are determined by students' situation and infrastructure condition. Locality in Baduy pedagogical experiences can be a firm system distinguished by their own philosophy and local values. There has to be attentive support from multilevel stakeholders on the integration of local wisdom-based education to the social structure in the local community. Thus, formal education played direct role for the community and may not be seen as separated institution.

Conclusion

Culture is human creative product associated to perceptual and behavioral perception. Inheritance of culture across society involves continuous process of socialization and communication that is crucial in character building process. Customary law, norms, and values are the features of strongly preserved culture. This is embodied through the sustainability of local or indigenous community with deep obedient to their shared beliefs and principles. Within this type of society, education cannot be narrowed only to the process of formal schooling. As exemplified in Baduy community, orientation of life is to fulfill the task in “*tapa di mandala*” or hard working and behave virtuously; “*ngariksakeun sasaka*” or preserving places of worship, and essentially values of worship itself; along with “*ngajaga jeung ngariksa*” or conserving the nature. With these concepts being enforced and socialized intensively, knowledge transfer is taking place as well. Environmental education integrates skill application and sustainable action, the two aspects that is asserted in the principles of Baduy people lives. Regardless of negative perspective toward formal schooling, lifelong education is highly emphasized within the community. Local wisdom-based education is a suitable type of teaching and learning process as exemplified in Alam Wiwitan school system. Main objective of local wisdom-based education is to preserve local tradition while at the same time developing skills needed in modern life

References

- Arisetyawan, A., Taher, T., & Fauzi, I. (2021). Integrating the Concept of Plane Figure and Baduy Local Wisdom as a Media Alternative of Mathematics Learning. *Kreano, Jurnal Matematika Kreatif-Inovatif*, 12(1).
- Barnhill, D. L., & Gottlieb, R. (2001). *Deep Ecology and World Religions: New Essays on Sacred Ground*. State University of New York Press.
- Brown, L. R., Gardner, G., & Halwell, B. (1998). Beyond Malthus: sixteen dimensions of the population problem. *Worldwatch Paper*.
- Cajete, G. A. (2017). Children, myth and storytelling: An Indigenous perspective. *Global Studies of Childhood*. <https://doi.org/10.1177/2043610617703832>
- Clifford Geertz. (2008). *Tafsir Kebudayaan*. Kanisius.
- Creswell, J. W. (2007). *Research Design: Qualitative, Quantitative and Mixed Method Approaches*. SAGE Publications. <https://doi.org/10.4135/9781849208956>
- Dietz, T., & Stern, P. C. (Eds.). (2002). *A Model of Community-based Environmental Education.* *New Tools for Environmental Protection: Education, Information, and Voluntary Measures*. National Academy Press.
- Eckartsberg, R. von. (1998). Existential-phenomenological research. In *Phenomenological inquiry in psychology*. Springer.
- Elan, & Solihati, E. (2022). Potential transformation of baduy local wisdom values in civics education learning in elementary school. *Premiere Educandum: Jurnal Pendidikan Dasar Dan Pembelajaran*, 12(1).
- Fox, J. (1992). The problem of scale in community resource management. *Environmental Management*. <https://doi.org/10.1007/BF02400067>
- Ghate, R., Ghate, S., & Ostrom, E. (2013). Cultural norms, cooperation, and communication: Taking experiments to the field in indigenous communities. *International Journal of the Commons*. <https://doi.org/10.18352/ijc.376>
- Gratani, M., Sutton, S. G., Butler, J. R. A., Bohensky, E. L., & Foale, S. (2016). Indigenous environmental values as human values. *Cogent Social Sciences*. <https://doi.org/10.1080/23311886.2016.1185811>
- Hakim, L. (2012). *Baduy Dalam Selubung Rahasia*. Biro Humas dan Protokol Setda Provinsi Banten.
- Hasrawaty, E., Anas, P., & Wisudo, S. H. (2017). Peran Kearifan Lokal Suku Bajo dalam Mendukung Pengelolaan Kawasan Konservasi di Kabupaten Wakatobi. *Jurnal Penyuluhan Perikanan Dan Kelautan*. <https://doi.org/10.33378/jppik.v11i1.83>
- Hidayati, D. (2017). Memudarnya Nilai Kearifan Lokal Masyarakat Dalam Pengelolaan Sumber Daya Air. *Jurnal Kependudukan Indonesia*. <https://doi.org/10.14203/jki.v11i1.36>
- Ichwandi, I., & Shinohara, T. (2007). Indigenous practices for use of and managing tropical natural resources: A case study on Baduy community in Banten, Indonesia. *Tropics*. <https://doi.org/10.3759/tropics.16.87>
- Ihsan, F. (1997). *Dasar-Dasar Kependidikan*. Rineka Cipta.
- Indrawardana, I. (2014). Berketuhanan dalam Perspektif Sunda Wiwitan. *Melintas*.
- Iskandar, J., & Iskandar, B. S. (2017). Kearifan Ekologi Orang Baduy dalam Konservasi Padi dengan “Sistem Leuit.” *Jurnal Biodjati*. <https://doi.org/10.15575/biodjati.v2i1.1289>
- Jonker, J., & Pennink, B. (2009). The Essence of Research Methodology. In *The Essence of Research Methodology*. <https://doi.org/10.1007/978-3-540-71659-4>
- Kaushal, S. (2017). Deep Ecology and Religio-Cultural Institutions of Kullu Valley: A Study of Two Environmental Value Systems. *Journal of the Anthropological Survey of India*. <https://doi.org/10.1177/2277436x20170109>
- Kerns, V. (2016). Julian Steward in the Field: On the Road to Cultural Ecology. *Journal of California and Great Basin Anthropology*, 36(1).
- Khastini, R. O., Wahyuni, I. W., Saraswati, I., Alimuddin, A., & Nuangchalerm, P. (2019). Ethnobotanical study of medicinal plants utilized by the Baduy tribe used as a learning resource. *Jurnal Pendidikan Biologi Indonesia*. <https://doi.org/10.22219/jpbi.v5i2.7219>
- Khusniati, M., Parmin, & Sudarmin. (2017). Local wisdom-based science learning model through reconstruction of indigenous science to improve student's conservationist character. *Journal of Turkish Science Education*. <https://doi.org/10.12973/tused.10202a>
- Kulagina, M. (2015). Intercultural Education as An Integral Part od Modern Learning Process. *Journal of Foreign Language Teaching and Applied Linguistics*. <https://doi.org/10.14706/jfltal152310>
- Monroe, M. C., Andrews, E., & Biedenweg, K. (2007). A framework for environmental education strategies. *Applied Environmental Education and Communication*. <https://doi.org/10.1080/15330150801944416>
- Muslim, A. B. (2021). Disadvantaged but more resilient: the educational experiences of indigenous Baduy children of Indonesia. *Diaspora, Indigenous, and Minority Education*. <https://doi.org/10.1080/15595692.2020.1839408>
- Ngamanken, S. (2013). Fenomena Keterlantaran Suku Baduy di Pulau Jawa. *Humaniora*. <https://doi.org/10.21512/humaniora.v4i2.3547>
- Nurjanah, W., & Sariyatun, S. (2020). Values of Local Awareness of Baduy As a Source of Social Studies Learning. *Candrasangkala: Jurnal Pendidikan*
- Nuryanto, Dwijendra, N. K. A., Paturusi, S. A., & Adhika, I. M. (2021). Technic and mystics of tukang wangunan in sundanese traditional houses in indonesia (Case study: Baduy tribe community-banten). *Civil Engineering and Architecture*. <https://doi.org/10.13189/cea.2021.090226>
- Padgett, D. K. (1998). *Qualitative methods in social work research: Challenges and rewards*. SAGE Publications.
- Padovan, D. (2000). The concept of social metabolism in classical sociology. *Theomai: Estudios Sobre Sociedad, Naturaleza y Desarrollo*.

- Peoples, H. C., Duda, P., & Marlowe, F. W. (2016). Hunter-Gatherers and the Origins of Religion. *Human Nature*. <https://doi.org/10.1007/s12110-016-9260-0>
- Permana, R. C. E. (2010). *Kearifan Lokal Masyarakat Baduy dalam Mitigasi Bencana*. Wedatama Widya Sastra.
- Pooley, J. A., & O'Connor, M. M. (2000). Environmental education and attitudes: Emotions and beliefs are what is needed. *Environment and Behavior*. <https://doi.org/10.1177/0013916500325007>
- Prabowo, Y. B., & Sudrajat, S. (2021). Kearifan Lokal Kasepuhan Ciptagelar: Pertanian sebagai Simbol Budaya & Keselarasan Alam. *Jurnal Adat Dan Budaya Indonesia*. <https://doi.org/10.23887/jabi.v3i1.31102>
- Prawiro, B., & Misno, A. (2013). Baduy Pluralism: From Myth to Reality. *Al-Albab*. <https://doi.org/10.24260/alalbab.v2i1.27>
- Schensul, J., & LeCompte, M. (2013). Essential Ethnographic Methods: a mixed methods approach. In *Ethnographer's Toolkit*.
- Shin, H., & Akula, S. (2021). Educators' Perspectives on Environmental Education in India. In R. Iyengar & C. T. Kwauk (Eds.), *Curriculum and Learning for Climate Action*. https://doi.org/10.1163/9789004471818_018
- Singsomboon, T. (2014). Tourism promotion and the use of local wisdom through creative tourism process. *IJBTS International Journal of Business Tourism and Applied Sciences*.
- Skinner, K., Hanning, R. M., Desjardins, E., & Tsuji, L. J. S. (2013). Giving voice to food insecurity in a remote indigenous community in subarctic Ontario, Canada: Traditional ways, ways to cope, ways forward. *BMC Public Health*. <https://doi.org/10.1186/1471-2458-13-427>
- Sokolickova, Z., Lapka, M., Vávra, J., Block, K., Dickel, S., Rödder, S., & Pellow, D. (2012). Cultural Ecology: Contemporary Understanding of the Relationship between Humans and the Environment. *Journal of Landscape Ecology*.
- Stevens, M. L. (2008). Culture and education. In *Annals of the American Academy of Political and Social Science*. <https://doi.org/10.1177/0002716208320043>
- Steward, J. H. (1977). The Concept and Method of Cultural Ecology. In *Evolution and Ecology: Essays on Social Transformation by Julian H. Steward*.
- Sucipto, T., & Limbeng, J. (2007). *Studi tentang Religi Masyarakat Baduy di Desa Kanekes Provinsi Banten*. Direktorat Jenderal Kebudayaan.
- Suharto, T. (2005). Konsep Dasar Pendidikan Berbasis Masyarakat. *Cakrawala Pendidikan*, XXIV(3).
- Sujana, A. M. (2020). Pikukuh : Kajian Historis Kearifan Lokal Pitutur dalam Literasi Keagamaan Masyarakat Adat Baduy. *Historia: Jurnal Pendidik Dan Peneliti Sejarah*. <https://doi.org/10.17509/historia.v3i2.24347>
- Sulasmi, I. S., Nisyawati, Purwanto, Y., & Fatimah, S. (2012). Jernang rattan (*Daemonorops draco*) management by Anak Dalam Tribe in Jebak Village, Batanghari, Jambi Province. *Biodiversitas Journal of Biological Diversity*. <https://doi.org/10.13057/biodiv/d130309>
- Susilowati, D., Budiarto, A. S., Rukayah, R. S., & Dewi, P. (2020). Evolusi Pada Tataan Ruang Rumah Baduy (Studi Kasus Rumah Baduy Dalam dan Baduy Luar). *NALARs*. <https://doi.org/10.24853/nalars.19.2.131-138>
- Sutton, M. Q., & Anderson, E. N. (2020). Introduction to Cultural Ecology. In *Introduction to Cultural Ecology*. <https://doi.org/10.4324/9781003135456>
- Tirtarahardja, U., & Sulo, S. L. La. (2005). *Pengantar Pendidikan*. Rineka Cipta.
- Tomer, J. F. (1996). Good habits and bad habits: A new age socio-economic model of preference formation. *Journal of Socio-Economics*. [https://doi.org/10.1016/S1053-5357\(96\)90043-8](https://doi.org/10.1016/S1053-5357(96)90043-8)
- Van Zanten, W. (2016). Some notes on the pantun storytelling of the Baduy minority group: Its written and audiovisual documentation. *Wacana*. <https://doi.org/10.17510/wacana.v17i3.454>
- Vedwan, N. (2006). Culture, Climate and the Environment: Local Knowledge and Perception of Climate Change among Apple Growers in Northwestern India. *Journal of Ecological Anthropology*. <https://doi.org/10.5038/2162-4593.10.1.1>
- Wahid, M. (2012). SUNDA WIWITAN BADUY: Agama Penjaga Alam Lindung di Desa Kanekes Banten. *El-HARAKAH*. <https://doi.org/10.18860/el.v0i0.1888>
- Yang, S. ying. (2016). Exploring wisdom in the Confucian tradition: Wisdom as manifested by Fan Zhongyan. *New Ideas in Psychology*. <https://doi.org/10.1016/j.newideapsych.2015.11.001>
- Zapf, H. (2016). Literature as Cultural Ecology. In *Literature as Cultural Ecology*. <https://doi.org/10.5040/9781474274685.ch-011>
- Zidny, R., & Eilks, I. (2018). Indigenous Knowledge as a Socio-Cultural Context Of Science to Promote Transformative Education for Sustainable Development: Insights into a Case Study on The Baduy Community (Indonesia). *Building Bridges across Disciplines for Transformative Education and a Sustainable Future*.
- Zorrilla-Pujana, J., & Rossi, S. (2016). Environmental education indicators system for protected areas management. *Ecological Indicators*. <https://doi.org/10.1016/j.ecolind.2016.02.053>
- Zuhdan, K. P. (2013). Pembelajaran Sains Berbasis Kearifan Lokal. *Seminar Nasional Fisika Dan Pendidikan Fisika. Prosiding, FKIP UNS*.