

“Banten” The Balinese Sacred Ceremony Component and Their Implication in Science Learning

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Abstract

Banten is one local wisdom and culture of the Balinese Hindu community. One of banten is banten suci. When examined, the implication of science learning of banten suci, especially in the biotic and abiotic materials. The research aims to explore the banten as a local genius and connect the component inside the science learning process. The methodology used was qualitative by using triangulation contained by observation, interview-questionnaire, and literature study. The data analysis technique contained data collection, data reduction, and drawing conclusion. The results of the research were banten suci not only meaning philosophically and theologically, but also pedagogically. In its component, banten suci has meanings connected to the science learning context and forming the scientific ethic. Banten suci is one of the local geniuses who composed deeply especially the material and symbolical meaning in its component. That the component in the offerings has implications for learning continuity.

Keywords: Banten, science learning, biotic, abiotic.

Introduction

Bali is one of the islands of the Indonesian Republic. Balinese people, in their daily life, cannot be separated from behavior, culture, and Hindu belief. This caused many variants and forms of oral culture and tradition of practice owned by the Balinese. Bali has a strong commitment to preserving the tradition, culture, religious commitment, and sacredness that all of those are preserved today. Religion, culture, and local wisdom based on Hindu teaching were created as a guide in implementing a disciplined life, especially in the context of social-religious. A cultural implementation is an expression form of Balinese Hindu as a response to the empirical reality of the environment. Based on Foucault, each society has unlimited cultural formulation. Same as the Balinese which identified through religion

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and local wisdom. Religion has a focus point in formulating a tradition, and operating the tradition, especially in the discourse context. In the context of discourse, religion, and spiritual practice are not only limited to a religious institution, tradition, or liturgy. However, as guidance of daily life behavior (Corpuz, 2021; Hobart, 2019; Putra, 2021; Stollow & Meyer, 2021; Susandi, 2021; Widyana, 2018). Therefore, it can be explained that the presence of religion and cultural ideas contained, becomes the discourse aspect in constructing individual praxis.

One form of local wisdom of the Balinese is banten. Banten is a form of offering that has the meaning of an offering to God. The form of offerings to God, for the Balinese Hindu community, is called yadnya. Yadnya is an expression of human faith as a form of sacrifice, giving, devotion, and service. Yadnya for the Balinese Hindu is the form the offering for God. God is believed to be the entity that carries out the process of creation and all creation has a strong connection. Yadnya and God is conceived in the religious institution. The fundamental aspects in aspect of offerings, religion, and spirituality are giving a sense of care and sharing experiences among adherents. In the conception of Hinduism, banten is one form of yadnya categorized as offerings to Ida Sang Hyang Widhi Wasa (The Almighty God), namely as Dewa Yadnya. Dewa Yadnya is a concept of yadnya that explains immanent stimulation, which is inherent in humans. The expression of immanence is shown by its implementation in the liturgical form to express gratitude and happiness to God as *causa prima*. Banten and Dewa Yadnya as an expression of joy and gratitude, based on the fundamental reason that the Balinese people who still adhere to the principles of agrarian life, get components to make banten from natural products, and obtained by using their efforts. Banten become one aspect of Hinduism that has a very important position. Religion from an anthropological perspective is an important aspect of cultural life. Religious expressions can only be found in human material culture (Cordero, 2021; Kartika, 2021; Suamba, 2019; Vandenhoeck et al., 2021; Widana, 2019; Yudari, 2018). It can be explained that the existence of offerings is a liturgical, cultural, and symbolic aspect that represents human interdependence with The Almighty God.

Based on the local wisdom characteristics, the context can be used as a source of science learning. Science learning is a nuance of learning that teaches the concept of critical thinking. Critical thinking is a process for concluding various concepts and various search results. Science learning and critical thinking processes are built with various components, one of which is the constructivism paradigm. Constructivism is an effort to build knowledge based on the authentic sensations and experiences of students. The context of learning science is a learning activity that uses an empirical approach and builds

a futuristic paradigm. The futuristic paradigm teaches how to build thoughts about the future and practice to develop something. Science learning does not only stop at the aspect of building a paradigm or theoretical learning. However, trying to provide a view of adaptation for students in the dynamics that occur. Adaptation is a response to pressures that come from within and outside, adaptation provides a perspective on the reality of change from an ongoing process. Learning science that is built on empirical experience can be linked to the reality of local wisdom as one of the cultural expressions of society because this combination will build pedagogical practices. Pedagogical practice is a consistent effort in creating something (Benner, 2021; Beycioglu & Kondakci, 2021; Fenwick & Edwards, 2016; Horn & Veermans, 2019; Wright et al., 2019). In other words, it can be explained that the existence of local wisdom is an attempt to form a constructivist paradigm in the learning process, intending to train students in forming critical thinking patterns.

One of the local wisdom of the Balinese Hindu community is banten. Banten is one of several variants is upakara (offerings tools) in Bali. The type of banten it uses a variety of components ranging from fruit, leaves, seeds, and others. If reviewed, banten is one of the local wisdom, that can be identified as well as having potential if it is implemented into science learning. Linking science learning with the context of banten as local wisdom, will help the learning character of students. The consistency of an application of a value will form a decisive attitude. This local wisdom-based learning is very important because, in the context of education, each individual is required to have skills in designing instruction, expertise in building teaching structures, and transferring a context, this will be useful in strengthening learning concepts and theories. As well, as a very effective tool for developing learning skills. Aspects of science learning contained within banten are very useful in building a learning culture. A learning context like this will provide an authentic learning experience, because it combines local knowledge and life, and contributes to creating new things and meaning. From this context, if it is emphasized, the purpose of the learning process is to provide basic knowledge, thinking skills, and social skills, and develop learning subjects. Banten as the local genius associated with learning science, not only builds academic skills but also internal components banten identified in supporting learning activities. This context means that developing the relationship of learners with learning objects, to support the "learning environment" (Chang & Hall, 2022; Kalogeropoulos et al., 2021; Meixi et al., 2022; Peng et al., 2021; Roumell, 2019). The presence of banten is not seen as an offerings element only, yet identified as a pedagogic element used as the learning medium.

Using local wisdom in learning is proven to be very effective. Implementation of the ceremony Pacaruan Sasih Kaenem in Pura Pasek Ngukuhin, Desa Pakraman Tonja, has meaning in building educational values, and aligning thoughts, words, and deeds (Sukrawati, 2017). The education of acara Agama Hindu as a local wisdom form teaches the approach of transformational thinking in forming the adaptive attitude and forming behavioral system, thinking, morality, and rationality of the students as a whole and integrated (Sukrawati, 2018). Tri Hita Karana as the local wisdom of the Balinese is presented in drama gong culture, inherited in the formal and informal education atmosphere. The formal learning process applied tiered from the primary education stage to higher education. This is a form of local wisdom connected with the education process (Sugita, 2021). Local education or local wisdom is one source to build values, improve motivation, and tolerance and build students' character in the learning process. Apart from that, local wisdom also teaches the students how to learn and work diligently, respect teachers, and present good behavior (Sudarmiani, 2013). The local wisdom presence becomes important shown by its presence in the traditional community of Cipatat Kolot used as adaptation education towards climate change started from the seed selection on the local paddy, the use of organic fertilizer, and the harvest management traditionally. Additionally, how the community uses organic fertilizer to produce less emission as climate change globally (Bahagia et al., 2021). Then, the informal learning process can be applied through the enculturation process and education in the family environment. The context of research on local wisdom is included in the context of phenomenological research. Phenomenological research concentrates on aspects of awareness, including the focus of a community on internal experiences. This aspect influences building criticism, especially regarding educational theories (Mortari, 2015).

Research conducted by (Sukrawati, 2017), explains the didactical aspects of the procession Pacaruan Sasih Kaenem, by putting the focus point on the didactical value of the ceremony. To get a holistic explanation of the liturgical values, the method used is an observation approach and intensive participation from the author. In the end, an integral and philosophical explanation of the aspects is obtained tattwa, susila, and the educational value of acara. Therefore, (Sukrawati, 2018), by using the methodology of transformational thinking, wanted to view the educational context of acara Hindu to form constructivist learning attitudes, which consist of schemata, assimilation, accommodation, and equilibration. Furthermore (Sugita, 2021), by using the qualitative approach (observation, in-depth interview, and document study) with artists, cultural observers, and spectators, the results obtained that, drama gong Jayaprana, Ni Diah

Tantri, and Cupak Madeg Ratu, essentially has education meaning as the main meaning. The educational value of this performance seeks to internalize the paradigm of Tri Hita Karana as local wisdom that teaches the harmonization of three entities, namely The Almighty God, humans, and the universe. On the other hand (Sudarmiani, 2013), by using the text analysis method, tries to see about efforts to build learning character and student character in schools by internalizing local culture. The idioms used to build these characters include becik ketitik ala ketara, manungso bakhal ngundhuh wohing prakarti, and other. The idiom in the analysis carried out, is seen as having a constructive power in building students' learning will. Then, using an ethnographic approach (Bahagia et al., 2021), sees that education based on local wisdom does not only have pedagogical meaning but also has meaning in an ecological process. This local wisdom education encourages the use of organic fertilizers and aims to reduce emissions that cause global warming. Finally, (Mortari, 2015), by using hermeneutic, critical, pragmatistic, and phenomenological methods, wants to see an educational context that can construct the ability to interpret an action as a learning process.

From some of these studies, no one has used the banten, especially banten as a medium for studying its components. The relevant research context is aimed at comparative analysis, namely to compare previous research of the same type and from previous research to see the novelty aspect of the research carried out. This research examined aspects that have received less attention, especially the synchronization between cultural contexts and pedagogical contexts. Cultural context, in particular, banten is only seen as a mere liturgical element, but if explored further, the existence of cultural elements becomes a component of learning and the construction of students' scientific thinking. Moreover, the cultural context raised was very close or even becomes an element of students' actions in their daily lives. The culture-based educational design will give birth to instructional learning, where students will be stimulated to think contextually, especially in an exploratory setting. On the other hand, culture-based educational and teaching designs also help stimulate the creation of empirical learning structures, because students are invited to participate directly in observing the cultural context that inspires their learning. (Ross & Morrison, 2021; Roumell, 2019). Thus, it can be explained that the cultural linearity of context is directly proportional to the internalization of scientific thinking because students are invited in a participatory way to analyze elements of their culture and its relation to the way they construct knowledge.

Comparison of similar research also serves to see the level and quality of a scientific source. Then, state-of-the-art also aims to see the use of a source and get the best aspects of a reference to build a good

analysis, as well as get scientific values in it. From a comparison with relevant previous research, it was found that the components contained in banten have implications in building the context of science education. Then, as a form of local wisdom that can be used for science learning. Banten also represents intellectual activity consisting of the ability to act, speak and think. Synchronization of thoughts, actions, and speech will be implemented into aspects of creative thinking, critical thinking, problem-solving, and decision-making. The existence of local wisdom also functions in building a stimulus for students in fostering a willingness to learn and building character. Education, learning and the context of local wisdom signify humans as wise and civilized beings. This context is the same as the concept of homo sapiens which states that wise humans are a modern human species (Aulia, 2019; Kraus et al., 2021; Pratiwi, 2017; Ramdani, 2018). It can be explained that comparisons between publications aim to get a new perspective, as well as find points of difference as an aspect of the novelty of the present research. The research aimed to explore aspects of banten that can be implemented in science learning at school, not aiming at observing the philosophical meaning of the banten.

Methodology

The research used a qualitative approach based on qualitative study or interpretative research. Qualitative research aims to form criticism, according to the experimental aspects and also review the traditional aspects. In the education and learning aspect, a qualitative approach is very important. Because the finding interpretation focuses on the implications of the studied problem (Akkerman et al., 2021; Denzin, 2020; Dorans et al., 2021; Mannheimer et al., 2019). The context of the qualitative method used is phenomenology. Phenomenology was used to observe as well as interpret the behavior of the process of making banten, the materials used, and the philosophical meaning of these materials. The method did not stop at that aspect, but how it worked, materials of banten in form of leaves and fruits will be adopted and interpreted in the construction process of scientific learning.

The process of collecting data took into account academic ethics, especially in terms of relations with sources. The selected informants were those who have specialized in the manufacturing process banten, famously named sarati. To access the information with the sarati, an intensive discussion was conducted in the environment of griya in Bali (a home of Hindu priests). Since banten and its process are not exclusively made, as a culture that is inherent in the reality of life for the Balinese Hindu community, the symbolization of The Almighty

God, is depicted by this arrangement of fruit and flower offering (a series of coconut leaves), the resource person invited open access from the process of taking pictures, interviews, to literature explaining the meaning banten. Thus, the data collection process was not limited to the principle of exclusivity. As a researcher, to get the desired information and data, a process of creating relationships with the griya and the sarati in Bali. This was very important to do, intending to create a comfortable atmosphere between the resource person and the researcher. The process of creating relationships was carried out intensively, this was because the priest and the sarati took care of many ceremonies, so the researchers asked for a special time to meet and discuss. The position of the researcher was as a local citizen, who wanted to contextualize banten not stop as a means of the ceremony, but as the functional value in building values and scientific ways of thinking for students, in the learning process.

On the other hand, as a researcher, the existence and "safety" of data from informants also needed to be considered. This was done by not including the name of griya, the priest, and the sarati interviewed. Of course, the process for maintaining the privacy of the source has obtained the approval of the person concerned. To obtain specific data, the stages of this research start with determining the subject. Research subjects of research banten such as a) pandhita (the highest ceremony leader of Hindu in Bali) distributed in all griya (a home for pandhita Hindu). More or less, there are 100 griya in Bali, then chosen 30 griya as the research subjects, b) sarati banten (an expert in making the banten), lecturers of Hindu and students of Hindu. Data collection techniques were obtained by observation, questionnaires, interviews, and source analysis. Observation aims to observe the manufacturing process, materials, and uses of banten. The questionnaire aimed at finding banten as a learning medium and its implications for science learning. Interviews were used to explore and explore the techniques and functions of an offering, where the informants or resource persons came from academics, Hindu religious ceremony leaders, traditional leaders, and the community. Meanwhile, source analysis uses the interpretation of aspects banten in science learning.

The analysis method contained several steps. First, data collection, at this stage the researcher carried out the process of observing, interviewing, and distributing questionnaires to research subjects. This is done to find the data needed in research banten and its implementation in science learning. The process of observation, interviews, and distributing questionnaires were carried out in Sekolah Tinggi Agama Hindu Negeri Mpu Kuturan, Singaraja. The data from the lecturer of Agama Hindu and the students of UKM Upakara, the data collected relates to the use of offerings in the context of learning. Then, data collection was also carried out in griya (a home for

pandhita) in Bali. The data was obtained from the pandhita (the Hindu holy person in Bali) and the sarati banten (the banten expert). The data obtained were the offerings, the manufacturing process banten, and the symbolic meaning of each component banten. Second, data reduction, at this stage the researcher carried out the process of selecting, focusing, and simplifying the data obtained in the field. The data obtained was adjusted to the research theme banten and aspects of science learning. The reduced data is data related to the components inside of the banten, the meaning or symbol of each component, the meaning of the symbol of banten relating to the context of science learning, the implications banten in the formation of scientific ethics, and the existence banten in forming the character of the collectivity. Third, drawing conclusions. At this stage, the researcher draws statements to answer the questions "what" and "how" regarding the existence of banten and its implications for science learning. The "what" questions related to any aspect of the story banten related to the context of learning science and the formation of scientific ethics, and "how" related to aspects of how to contribute banten for the formation of science learning contexts, the formation of scientific character and the process of forming collective values.

Research that aims to review the existence of banten and its implications for science education using methodical steps, including determining research subjects, determining data collection methods, and data analysis methods. This step was taken with the aim that the research findings become holistic. Associations of academics, researchers, and professionals state that the ethical process and the form of ethical review are aimed at reviewing the process of forming knowledge and expertise, including in the realm of education. Research ethics in the field of education, is a continuous process, aiming to find the latest results related to pedagogical issues. The pedagogical context seeks to understand various effects. This relates to the context of seeing and understanding the interrelationships between them. Research on education and learning is built by connecting complex viewpoints, using relevant analysis. Complex analysis and viewpoints seek to integrate aspects of deep thought and theoretical frameworks that are applied in action. The qualitative research method is a variant of a research approach that uses several aspects, including conceptual frameworks, theoretical frameworks, paradigms, and epistemology. The qualitative approach, explains that a researcher must focus on recording or writing answers to the questions asked when conducting a survey. A researcher in the research process must be able to find evidence to support the analysis. Therefore, it is important to understand the research location, to get the desired data (Collins & Stockton, 2018; Head, 2020; Jacobson et

al., 2019; Joyce & Cartwright, 2020; Miller et al., 2020; Nestler et al., 2021; Valiveronen & Saikkonen, 2021). In other words, a qualitative approach has a function to assist researchers in forming complex analyses and perspectives, intending to build a paradigm in understanding the object of study.

Results and Discussions

Results

According to the research's findings, it can be explained that the data was empirical. This is based on the findings in the field. The context of banten is not only theologically meaningful but also contains biotic and abiotic elements, as an empirical representation. The meaning of banten in the empirical aspect becomes very important because this will be the starting point in efforts to contextualize the constituent elements banten in the process of scientific learning. The studied elements are not interpreted at a spiritual level but will be interpreted to strengthen the construction of thinking in the pedagogical arena. If identified and explained based on findings in the field, the existence of bebantenan in Bali can be classified into several types, with all constructive aspects. Due to the complexity of the empirical data obtained, the researcher made a specification to see the existence banten suci as one type of banten used as a scientific learning medium. Banten suci is built from several types, such as (a) Ajengan Suci, which consists of several components, including nuts, fish, eggs, sweet potatoes, and others, (b) Suci Sibakan, such as banten suci consisting of fruits, tapai, sugarcane, sandalwood, and others, (d) Suci Laksana, such as banten suci consisting of rice, side dishes, vegetables, fish, meat, etc. (e) Suci Lekah, such as banten suci built from tamas or circular coconut leaves, rice, using fruits, and others, (f) Suci Alit, such as banten suci which consists of sugar cane, bananas, rice cone, side dishes, and others, (g) Suci Krama, such as banten suci which uses white beans, tumpeng rice, bananas, sugarcane, and others, and (h) Suci Gening, such as banten suci consisting of porosan (betel leaves smeared with lime), sugar cane, bananas, fruits, and others.

The research findings focus on the elements banten suci because the presence of banten has a diverse constituent component, by utilizing the results and natural resources. Utilization of natural resources as an important component bebantenan contains values and considerations based on natural existence. Thus, the fruit or leaves are used as a manufacturing material of the banten, not only as a complement, but have natural educational values, and can be used as an arena for discourse about the existence of these elements. Moreover, inside banten suci it is firmly stated that this means of worship is closely related to the symbolization of the universe. It is based on the

"anatomy" of banten suci which symbolically symbolizes the existence of Bhuana Agung (macrocosms) and Bhuana Alit (microcosms). Furthermore, the learning activities present the introduction of components of banten suci which is interpreted as a symbol or representation of the universe. The data obtained also strengthens existence of banten suci as a symbol of the physical realm and can be used in the learning context. From the questionnaire distribution, it was also found that banten suci has not been implemented as one media to plant scientific learning. Science learning is a learning context that places more emphasis on the existence of elements and supports of life. The data obtained in the field shows that there has never been an interpretation and deepening of the meaning regarding the materials or aspects contained within the banten suci. Because inside of banten suci there are components that symbolize the earth, the universe, stars, lakes, seas, air, humans, animals, and plants. The symbolization shown for each component of banten suci is very good if it is optimized in the learning process, moreover, the Balinese people also have another local wisdom known as Sad Kerti, namely the reciprocal existence, and harmony between living and non-living components. Due to the deepening of the context regarding the understanding of symbols in components of the banten suci representing the universe and all its components, have not been optimized to be used as teaching materials for science learning. Thus, this finding forms the basis that effort is needed to link banten suci as one of the cultures of the Balinese people, which is not only meaningful theologically but its existence can also be implemented in the context of learning, especially in the process of getting to know the various components of life and the components that support life in the universe.

The process of composing the banten suci is standardized. This standard can be seen from several criteria involved, including based on sincerity, great passion in completing each component (related to totality in doing something), guided by the aspect of truth (related to upholding objectivity and not being biased in seeing things), have a clear soul mentally and physically (related to actions that are not driven by certain interests, because the ultimate goal of an action is to complete work and be able to find the truth from what is seen, felt, held, etc. -other). In the context of manufacture, banten suci is known for its term of pingit angna aji wera meaning that banten suci is a symbol of the universe, so the manufacturing process must be based on science that must be owned by each maker so that each component contained therein can be understood properly.

The process of composing banten suci must follow systematic steps, such as, the person who makes it is called jero sarati (the expert of banten making), each person that will make the banten suci is required

to know the components as well as know the philosophical meaning of each component (the most important ingredient is biu or wooden plantain – comes from the root kayun or mind, the process of making banten suci must be done with harmony between thought and action, and be able to arrange each component into something aesthetic and philosophical. Then, not just anyone can make banten suci, This context is based on the terminological meaning of banten suci itself, that only competent people (referred to as the term keparisudha or people who are experts in making banten suci and has knowledge about the banten) that is allowed to make the banten, since the aspect in it should be able to be held accountable. Next, the making of banten has the material complexity and how to manufacture. So instead of that, because of the many components that must be considered, then when banten suci is made by many people. This is inseparable from the concept of humans as social beings. When viewed from the quantity, the people involved in the process of making these ceremonial facilities consist of 3 (three) people or more. This amount depends on the type of banten suci. Because the higher the level and a number of banten suci being made, the people who compose it will be added as well. The involvement of individuals who contribute to making this offering is also caused by the components of banten suci which is very complex, so it requires cooperation in the manufacturing process. For the simplest level, at least a core component is needed, one of which is jaja pecikan (a typical kind of jaja in banten suci), usually from 5-7 types. In the level of madya, the jaja pecikan is needed for 7 to 9 types. Then, at the most complex level, it takes jaja pecikan for more than 9 to 11 kinds. The stages of banten suci making also is very complicated, starting from the preparation of materials consisting of manufacture tamas (circular shaped leaves), special snacks of Bali which are intended for the process of making ceremonial means, sugarcane, manufacture jaja pecikan, the preparation of rerakaan (made from the materials named Panca Pala or 5 fruits consist of 5 colors), the making of jaja lebeng (special snacks in the making of banten must be fried, in yellow and white colors).

The most important components of the banten suci which shows evidence as well as significance from the context of the universe as a source of academic learning, among others: (a) alas bedongan made of coconut leaves and round in shape and made a little long as a symbol of pertiwi (earth element), (b) bedongan made of coconut leaves and circular in shape and made a bit high as a symbol akasa (space element), (c) tampak made from pieces of coconut leaves and shaped like a plus sign (symbolizing the balance between the macrocosm and microcosm, as well as the balance of biotic and abiotic elements), (d) rice as a symbol of the earth and human habitation in the universe, (e) ducks as symbols of 3 places of life namely land, water

and air, (f) bananas and sugarcane, as symbols of humans who inhabit the universe, (g) tingkih or candlenut in the macrocosmic aspect represents the stars, in the microcosmic aspect it represents the male body, (h) pangi or kluwek in the macrocosmic aspect represents the lake, and in the microcosmic aspect it represents the female body, (i) gegantusan is a preparation made from nuts, spices, salt and anchovies, wrapped in old banana leaves as a symbol of land and sea, (j) Papeselan are five types of leaves and have five kinds of colors, which are tied together, as a symbol of the wind and geographic location (north, east, south, west and center). Papeselan which symbolizes the existence of humans and the humans-universe, (k) pis bolong or Uang Kepeng, as a symbol of the universe, (l) grains, nuts, as symbols of biotic life, (m) benang tebus or threads typical of the Balinese Hindu community in white and rice (air), (n) daksina, a coconut with a pointed tip is a symbol of the earth, in the context of the macrocosm it symbolizes pertiwi/earth, akasa/space, whereas in the context of the microcosm as a symbol of the human head, (o) tamas, such as the arrangement of leaves made in a circle as a symbol of the head – ulu/top, (p) ceper namely the arrangement of leaves made in the form of a square as a symbol of the human body - madya/middle), and (q) ituk-ituk such as the arrangement of leaves made in the form of a triangle as a symbol of the human leg – teben/bottom), the context of the literature mentions that banten pinaka ragan tetui or banten as human body symbolization.

Banten suci is one of the wisdom of the Balinese Hindu community which until now has been preserved. This is because one of these prayer facilities is made with various materials or components. Each material or component used has a certain meaning or aspect of the symbol. Because the components used in banten suci has a symbol, then the symbolic meaning contained in it is interpreted as having a relationship with the context of learning, especially learning science. To understand and know the intensity of banten suci used in science learning, then the data collection process is carried out, using a questionnaire. Questionnaire distribution was carried out in Sekolah Tinggi Agama Hindu Negeri Mpu Kuturan, Singaraja, Bali by involving the students of Unit Kegiatan Mahasiswa Upakara, on Sunday, February 20, 2022. From the questionnaires distribution and the interpretations, the results show that there are banten suci which is very close to the community life in Bali and has not been connected with the learning context. The existence of this prayer facility was only interpreted at the theological and philosophical levels. So, no further in-depth investigation into its pedagogical function was conducted.

Discussion

As Balinese Hindus, researchers aware of the existence of offerings used in the practice yadnya (holy offerings use banten). Banten

becomes one of the tools that acts as the main position representing the universe because the constituent materials consist of elements taken directly from the environment, such as the use of leaves, fruits, vegetables, nuts, leaves, water, and so on. The use of materials directly taken from nature shows the synchronization of human existence with their physical environment, including the existence of humans with the constituent elements of the environment itself, namely biotic and abiotic elements. However, researchers do not know that banten Each has various specifications, has various functions, meanings, and uses. Type diversity banten this is because the Balinese Hindu community has various ceremonies, starting from the level of the ceremony, the type of yadnya do, and the function banten of the ceremony being held. This aspect is the main factor, the researcher has an interest in studying banten specifically, specializing in one aspect of the ceremony, to explain about banten can be explained in detail, for later interpretation of the above banten can be contextualized with the learning process. Regarding to the research of banten, the researcher picked had same theme (Sukrawati, 2017). Researchers both discuss the existence of banten, but there is a fundamental distinction. This distinction can be seen from the study and research location, (Sukrawati, 2017) conducted a study of banten in a liturgical context or a religious focus, without contextualizing it with a scientific learning process. The aspect that is given a lot of attention is how banten can build religious character in social life. Research locations are also limited to one pura (Balinese Hindu temple). However, the researcher provides another study focus, the research focus does not focus on the liturgical or religious aspects, but the research focus is placed on the pedagogical conception, that the existence banten can be used to build scientific learning character in the learning procession. Next, the context banten studied is also specific, that is banten suci. Banten suci was chosen as a research object because not many researchers have studied it, as well as connecting it with learning constructs. Then, the researcher's research theme is also the same as that carried out by (Sukrawati, 2018), In his research, he uses banten to build learning character but focused on character construction based on Hinduism. In another case with researchers, existence banten is not used in character construction based on Hinduism, but uses banten (especially banten suci) as a way to build scientific learning character in learning activities.

In obtaining data and efforts to explain findings, the research had a limitation. Research limitations were caused by the number of griya, priests, and the sarati banten in Bali. The griya was distributed in each regency causing researchers unable to access information from each priest. Therefore, to overcome these limitations, researchers have provided anticipation by using a purposive sampling technique. The

technique of sampling was used for mapping griya, priests, and the sarati banten who will serve as informants. In addition, to map the information and data to be extracted, the researchers also included students from the Unit Kegiatan Mahasiswa Upakara, Sekolah Tinggi Agama Hindu Negeri Mpu Kuturan, Singaraja, Bali as a source's representative from the academic community. By using purposive sampling, the need for banten suci can be accessed, and at the same time used as an effort to overcome the limited time in the data mining process in the field.

Furthermore, based on the results of data collection about banten suci, revealed two things that can be implemented in science learning, such as:

Banten Suci as a Medium to Teach Biotic and Abiotic Concepts

Banten suci is one form of culture of the Balinese. Culture is an aspect that affects human life, both in material and non-material aspects that evolutionarily take place. Culture is a collective expression of each individual, which affirms interrelated life. This explains that individuals or humans are creatures that have the instinct of dependence, dependence is a very human nature. Culture is a "social fact" that guides the behavior and act of individuals in carrying out their lives. The sacred existence of banten suci as a culture has multidimensional aspects, especially in the learning process. If associated with learning existence banten suci can be categorized as contextual learning. The combination of cultural aspects and pedagogical aspects is a strategy for teachers to combine various contexts and processes to increase students' understanding. The learning process integrated with local wisdom will provide a stimulus for students in the understanding process and implementing moral knowledge, as well as learning about local cultural values that exist around students. Because the link between the education system and pedagogy is to stimulate individuals to build alternative possibilities. As well as building skills to think, speak, act, and feel (Bauto, 2016; Clarke et al., 2022; Fajriah, 2017; Prabowo, 2017; Ramdani, 2018; Wijaya, 2016). In conclusion, the presence of banten suci becomes a constructive aspect in the nuances of learning, because it builds a perspective on aspects of contextual learning. As well as, assisting students in building their thinking and acting skills.

Banten suci as one of the local wisdom of the Balinese Hindu community can be studied, from the aspect of its components and has implications for learning science. Specifically, the components contained within banten suci have implications for aspects of learning that discuss biotic and abiotic components. The components in question include: alas bedongan made of coconut leaves and round in shape and made a little longer as a symbol of pertiwi (earth); bedongan made of coconut leaves and circular in shape and made a

bit high as a symbol of akasa (space element); tampak made from pieces of coconut leaves and shaped like a plus sign (symbolizing the balance between macrocosm and microcosm, as well as the balance of biotic and abiotic elements); rice as a symbol of the earth and human habitation in the universe; Duck as a symbol of three places of life, which are land, water, and air. The context of biotic and abiotic learning is an empirical learning component. This learning concept will directly create a valid and actual learning process. The concept of actual learning is also useful for motivating students in an active learning process, especially in seeing things objectively. Learning is a process that is carried out consistently in forming a learning mentality. The concept of the process dimension seeks to apply focus on building reciprocal quality, between educators and students. Education, the learning process and efforts to think critically are an attempt to improvise as well as an effort to develop personal abilities. Component analysis banten suci associated with learning science is the process of developing students' analytical abilities. The purpose of this learning is an effort to stimulate as well as open the cognitive horizons of students so that they can think holistically, critically, and down to earth. (Alkhudri, 2012; Gao & Wang, 2021; Kujik et al., 2021; Mahmudah & Putra, 2021). The component contextualization contained in the sacred banten into the learning aspect explains the meaning of the symbols contained therein. The meaning of these symbols opens up space for discourse, that the components of offerings build students' cognitive horizons.

In addition to the above components, components banten suci which are also related to science learning (biotic and abiotic), including bananas and sugarcane, as symbols of humans who inhabit the universe; tingkih or candlenut in the macrocosmic aspect represents the stars, in the microcosmic aspect it represents the male body; pangi or kluwek in the macrocosmic aspect represents the lake, and in the microcosmic aspect it represents the female body; gegantusan are preparations made from nuts, spices, salt, and anchovies, wrapped in old banana leaves as a symbol of land, sea, and prosperity; papeselan are five types of leaves and each has different kinds of color, tied up together, as a symbol of the wind and geographic location (north, east, south, west, and center). Papeselan becomes the symbol of Tri Hita Karana, namely the concept of balance between human-God, human-human, and human-universe. Component banten suci above can be used as an effort to build integration between the learning process and the wisdom of the local community. Banten suci that use components from nature has an important meaning for the learning process of science. This is based on the benefits of nature which reinforce the practice of educational improvisation and introduces important aspects of the scientific learning process. By interpreting the

components of banten suci where all of its aspects contain biotic and abiotic meanings, the learning process will run well, between educators and students. Because the learning process is an effort to transfer knowledge and knowledge sharing. The transfer of knowledge and knowledge sharing is an attempt to create reciprocity. In a broader context, reciprocity is not just a student's response to educators, but an effort to improve students' abilities, build study habits and motivate themselves. The transfer of knowledge that happens between educators and students is a marker of achieving the concept of education. The concepts contained in education include building values and ethics. The learning process is an activity that shows the relationship of an educator in building emotional closeness, aspects of social development, and the spirit of cognitive development (Henderson et al., 2021; Ikramatoun et al., 2021; Ross & Morrison, 2021; Slavin et al., 2021; Tackie, 2022). The banten suci and its components also represent the existence of the macrocosm and microcosm, as elements that inhabit environmental entities. The meaning of this symbol is a contribution to scientific learning, especially regarding biotic and abiotic aspects.

Other components in banten suci which have implications for the process of learning science, including pis bolong or Uang Kepeng, as a symbol of the universe; grains, nuts, as symbols of biotic life; benang tebus or threads typical of the Balinese Hindu community in white and rice (air); daksina namely a coconut with a pointed tip is a symbol of the earth, in the context of the macrocosm it symbolizes pertiwi/earth, akasa/space, whereas in the context of the microcosm as a symbol of the human head; tamas namely the arrangement of leaves made in a circle as a symbol of the head – ulu/top; ceper namely the arrangement of leaves made in the form of a square as a symbol of the human body - madya/middle); ituk-ituk namely the arrangement of leaves made in the form of a triangle as a symbol of the human leg - teben/bottom), in the literary context mentioned banten pinaka ragan tetui or banten as a symbol of the human body. In the learning context, banten suci and its components are forms of cultural experience for learners. Cultural experience is included in the aspect of humanitarian pedagogy, which includes students' experiences as learning subjects, and supports them to understand and create something from their environment, both the physical environment and the social environment. Inner components of banten suci which symbolizes biotic and abiotic elements play a very central role. This is because education is important. After all, with education students can understand a "spectrum of opinion", and build critical thinking, especially now that there have been significant global changes, especially those related to climate change and its impact on the environment. Component banten suci contains values that can be

utilized by learners in supporting their learning activities. The existence of values has a strategic position because a value guides each and social action. The reason banten suci has implications for science learning is because this type of presentation has value. A value will help the learning transformation process, learning transformation based on a focus on cultural values (Andrews, 2021; Kalogeropoulos et al., 2021; Pinto, 2021; Wong & Mishra, 2021). The contribution of banten suci and its elements help students shape cultural experiences. Cultural experience which pedagogically contains aspects of scientific learning and becomes part of the aspects of students' lives, will be easily internalized because cultural experiences and culture are aspects that are close to the lives of learners. So, the planting aspect of learning is easy to do.

In conclusion, the elements of banten suci which have implications for learning, especially discussing biotic and abiotic aspects, are closely related to the local wisdom of the Balinese people known as Sad Kerti, namely the concept that explains the harmonization of humans with the universe. Sad Kerti consists of Jana Kerti (the human concept of balance), Atma Kerti (the spirit concept of balance), Wana Kerti (the concept of balance and sustainability of mountains and forests), Danu Kerti (the concept of balance and sustainability of water sources, such as lakes, rivers, swamps, and others), Samudra Kerti (the concept of balance and sustainability of the sea, fish, beaches, etc.) and Jagat Kerti (the concept of balance between all biotic and abiotic components in the universe. Banten suci contains the concept of Sad Kerti be a marker that there are elements of life support that must be known, studied, and understood. This is the only way each creature can survive. That nature which consists of biotic and abiotic components are two components that have a reciprocal relationship. Because it has a reciprocal relationship, the process of meaning becomes very important, to create a harmonious relationship. Understanding and knowledge related to the environment is an effort to create eco-literacy. This reality makes learning a means to create continuous action from students in adding knowledge, balanced with practical actions. Inner components banten suci which contains elements of science learning, especially those that discuss biotic and abiotic aspects is an effort to build critical thinking skills. His criticism lies in trying to understand the environment, nature, and the relationships between them in depth. This critical thinking ability is useful in understanding life situations, especially the current environment and environmental situations in the future. And as an effort to deal with and solve problems that have the potential to continue to arise. Criticism as a thinking skill must be owned by every learner. The existence of critical thinking is an effort to maintain an orientation of curiosity (Cheung & Xie, 2021; Horn & Veermans, 2019;

Muttawakkil & Kusumah, 2020; Pirrie & Fang, 2021). The existence of banten suci also provides other aspects of scientific learning, namely providing the principle of eco-literacy, that the existence of biotic and abiotic elements is an interdependent relationship.

Teaches Scientific Ethic

Banten is made by carrying a meaning about sacred offerings to God Almighty or in Bali it is called the term yadnya. Yadnya is classified into five types, among them Dewa Yadnya that is, a sacred offering to God. Rsi Yadnya, offerings to religious leaders, or even to spiritual teachers. Pitra Yadnya such as offerings to the power of the ancestors. Manusa Yadnya that is, offerings to fellow human beings. And, Bhuta Yadnya, namely offerings intended to balance the universe. Existence banten has a broad meaning, in addition to having a theological meaning, banten also has a pedagogical meaning. This context explains that in understanding science each individual must be able to think holistically, and there must be a balance between understanding current material knowledge (*prawrti jnana*) and spiritual science (*nirwrti jnana*). Because the essence of these two sciences complements each other. Science allows students to visualize and capture phenomena that exist in the field, using various analyses. The knowledge gained from the learning process will provide the learner with a point of view. Point of view reveals important things about an experience. Experience will make individuals position themselves in their social environment, where this environment will make them develop (Davies et al., 2021; Ivemark & Ambrose, 2021; Suastika, 2021; Widana, 2018). The presence of banten becomes an important aspect in building scientific ethics because it symbolically depicts the connection between contemporary material knowledge and spiritual knowledge. That is, there is a synchronization of two points of view in science that can improvise a learner's academic abilities.

Yadnya always offers sacrifices or banten, because, in the concept of Balinese Hindu society, upacara (celebration) and upakara (offering) are inseparable. And in the process of making banten, cannot be separated from the purusa (life power) and pradana (material power). The context of banten which cannot be separated from Balinese life is synonymous with the psychological terminology conveyed by Georg Simmel, that two forces create balance, namely the soul and mind. The life force that animates creation banten broadly segmented into two dimensions, namely affection or emotional conditions related to feelings and affection, then eudemonia such as aspects that explain the meaning of life and aspects that support the process of life. Both of these powers are used by humans to create banten. Banten becomes one of the fundamental aspects of Balinese society. The fundamental aspect of Balinese social life is the focus on the relationship between religion and culture and the meaning behind

that culture. This aspect is implemented in daily religious rituals, such as giving offerings or praying to God. This context reminds us of Covarrubias, who made a statement regarding Bali, that after God "gave" an island to humans, everything turned out to be perfect. (Boy, 2021; Hobart, 2017; Puspitasari, 2017; Setyari et al., 2019). Aspects of the formation of scientific character obtained from meaning banten are the affective aspect and eudaimonia as two elements that construct the mentality of a learner in increasing his capacity as a homo academicus.

Appearance of banten is not measured by the size of the offering, but by how banten can present the unity of Bayu, Sabda, and Idep (ability to breathe, power of speech, and power of thought) based on purity and sincerity. In the context of science, this is called scientific ethics. Banten suci in the context of learning has a close relationship. From the etymological aspect, holy consists of roots su means good or true and ci means clean, or referred to by the term kaparisudha dening hening which means that there is synchronization between concentration (related to thoughts), verbal (related to words), and praxis (related to actions) that every learner must have. When the unity of thoughts, words, and actions is synchronized, a learner will be able to maximize his pedagogical method. Maximization of pedagogical methods can be achieved when a learner can manage the distractions that occur in emotions, and imbalances of strength and optimize the concentration they have. The synchronization of the three aspects which consist of thoughts, words, and deeds, will produce intersubjectivity. Intersubjectivity is a conceptual idea that opens an experience, gives meaning to that experience, and creates a performative action. Banten is a medium that originates from the learner's experience and from outside the learner's self, when applied to learning it will be able to increase the learner's internal motivation. In other words, the existence of extrinsic experiences has a role to increase intrinsic motivation. Learning optimization also comes from external factors or from outside a learner. Influential external factors such as the presence of social networks make an individual better (Bray, 2021; Dunlop et al., 2021; Edovald & Nevill, 2021; Webster et al., 2021). Scientific behavior that is also obtained from extracting value from banten is the symbolization of synchronization between Bayu, Sabda, and Idep. This is the pedagogical aspect that stimulates the link between concentration, verbal, and action to be applied in a learning context. With the stimulation and consistency of these three aspects, a learner will be able to optimize himself.

The context of banten suci manufacturing is known as pingit angna aji wera which means that banten suci is a symbol of the universe, so the process of making it must be based based on science that must be owned by every maker. This aspect is also related to the context of

scientific ethics, that every scientist or academic must have a passion for knowledge, expertise as well as methodical skills in uncovering various social phenomena so that the phenomena seen can be explained theoretically and provide a new paradigm in the context of science. Humans are beings of knowledge, combining quantitative and qualitative intelligence. This aspect confirms that scientific ethics requires integrity to create "local wisdom of education". Banten as a form of local practice has implications in the process of scientific ethics. The implications of scientific ethics in the learning process are manifested in the form that a teacher must be able to build academic discipline, a pedagogical approach that strengthens student literacy, and the acquisition of other abilities. Because education standardization always gives priority to emphasizing scientific substance and analytical ability (Housel, 2020; Kahne & Bowyer, 2017; Yan & Yang, 2021). Banten suci must be made by those who know the meaning, materials, and manufacturing processes. This is in line with the scientific formation ethics in science, that a certain discipline is understood and constructed by those who are experts in their fields.

A person who can compose banten suci must be the expert, This context is based on the terminological meaning banten suci, that only competent people (referred to as the term of keparisudha or people who have expertise in making holy offerings and have knowledge about the banten) who is permitted to make the banten, because the aspects contained in it must be accountable. If interpreted in the context of scientific character, this relates to the context of scientific reasoning, that not just anyone has the capacity to find scientific truth and an sich. Only people who have competence in their field have the potential to reveal reality and can account for their findings based on ethics. Scientific ethics in learning is a very important aspect. This is because there are rules regarding commitment. A learner must increase his capacity through the intensity of action. Concerning scientific ethics, a learner must also focus on the learning process with students, have progressivity in developing pedagogical aspects both inside and outside the classroom, provide a spirit of commitment to learning, and support student achievement. Scientific ethics is closely related to self-regulated learning. Self-regulated learning functions to improve the students and their potential to reach achievements, and improve their reflective ability, and responsibilities towards what they learn (Bettez, 2020; Gildersleeve, 2019; Tsang, 2020). The symbolic meaning of banten suci has a role in shaping the scientific character contained in the term keparisudha. In the pedagogical context, it is explained that every learner is required to always teach himself so that at a certain point he can become an expert in his respective field. Expertise and knowledge of the science studied are useful to reveal a phenomenon.

Banten Suci Teaches the Concept of Cooperation

Banten suci is a tool that has high complexity, both in terms of materials, the meaning of each component, and high spiritual value, then the people involved in the manufacturing process banten it must uphold the principles of holiness (because it will be dedicated to God), and social principles (must be based on equality, cooperation, and the desire to uphold human principles). The making process of banten suci in society usually will be divided into several groups with their respective duties, some prepare tamas, prepare leaves, making jaja pecikan, and others. The complexity of the composition practice of banten suci focuses on the aspect that humans as creatures who cannot live alone, always need the presence of other people and in their socio-religious practice implement social desires known as gregariousness. Social relations that are manifested in the form of cooperation in the manufacturing process banten suci, Sociologically known by the term ordinary solidarity. Ordinary solidarity is a context of solidarity based on empathy and a sense of equality. The collaborative relationship that is established is a very important aspect. This is useful in efforts to build and support social life because it is applied through "maintaining social networks". Banten suci is one of the rituals that is considered something that integrates each individual. In the view of structuralism, the presence of rituals can unite the "social actor" (Basaure et al., 2021; Prabowo, 2017; Williams, 2021). The making process of banten suci which is made collectively because of the complex component represents that the learning context has reached both, cognition improvement and emotion also social management ability improvement. In other words, an essential aspect that must be internalized in the context of learning is the maintenance of social bonds between learners.

Additionally, the cooperation value within the composing process of banten suci can also be interpreted as a practice of the concept of task distribution and implementation of cooperation as a form of social interaction, related to the conception of humans in essence as monopluralistic, especially humans as homo socius. Individual and collectivity involvement in the manufacturing process banten suci as an aspect of the socio-religious practice of the Balinese Hindu community, also confirms Emile Durkheim's concept of religion as an institution to create social glue or "social attachment nets. Regarding the concept of social glue or "network of social attachment", in the concept of local wisdom of the Balinese is famously known as asah, asih, asuh. Asah means equal or equal, this implies the process of creating egalitarianism in the context of social space. Asih means to love each other, this implies the implementation of the affection values that appear in relationships between individuals amid the reality of social structure. Finally, asuh means helping each other, this

implies an understanding as a social practice of the individual in essence as homo socius. The composition of banten suci loaded with the values of asah, asih, asuh as a form of the local wisdom concept of the Balinese, is linear with the Hindu religious conception of asih punia bhakti, that the highest offering is to love and bring happiness to all mankind. Individuals are part of the reality of social life, which cannot be separated from personal and impersonal relationships. Banten suci is a manifestation of the socio-cultural activities of the Balinese people. Socio-cultural tendencies always maintain "social roots", and create a balance. As one of the yadnya, in the context of social relations banten suci contains meaning as a process for applying values in real life, these abstract values aim to improvise human life, as social beings or "humanizing humans" (Kurniawan, 2017; Suastika, 2021; Zinn, 2021). The essentialism in banten suci which is represented by the distribution of tasks and the value's existence of the asah, asih, asuh is a form of maintaining social capital among learners with an emphasis on egalitarianism values.

From the discussion above, it can be explained that the implications of this research are composed of several lines. First, educational institutions. The research that investigating banten suci as a ritual representation and its culture, it can be used as the source of teaching used by educators, especially in contextualizing the learning material close to the student's daily life. By connecting empirical and theoretical contexts, understanding and internalization of teaching materials will be better understood by students. Second, education practitioners. In this case, educational relations do not only stop at educators and students but also involve the role of educational practitioners. With the research of banten suci, Education practitioners have a lot of material for study, especially in raising local culture as teaching modules, and as an effort to intensify ideas or ideas regarding certain materials, which are close to students' daily activities. This contextual-based learning is beneficial to the students in that it is not only able to explain something at an abstract level but can create coherence with the empirical context of their lives. Third, the future researcher. The research of banten suci and its relationship with scientific learning has limitations, with this research the next researcher can take aspects that have not been discussed and be able to explain the elements that have not been elaborated from this research.

Conclusion

Banten suci becomes one of the offerings from the Balinese Hindu community that can be related to the context of learning. The components that are inside banten it has the symbolization of

microcosm and macrocosm. In other words, the banten suci contains symbols about the existence of biotic and abiotic elements as elements of life and life support. This aspect has a pedagogical meaning that can be implemented in learning. Besides, banten suci also contains the symbol of life energy, ie Sabda (the ability to talk), Bayu (the ability to move), and Idep (the ability to think). The synchronization of these three elements can form scientific ethics, as a support for the learning process. Aspects of cooperation in the manufacturing process banten suci is a form of the social construction of humans as homo socius. This study has several drawbacks, including the scope of the discussion which is still limited, namely the concentration banten suci in the process of establishing scientific ethics and components banten suci which contains the meaning of biotic and abiotic life. With these limitations, in the future, it is hoped that there will be in-depth studies from other researchers who do more exploration and explanation regarding the existence of banten suci in its implications for the learning process.

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