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Diversity, Uses and Economic Value of Ferns: An Instrument for Epistemological Perception

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ABSTRACT

This paper is an avenue to elevate awareness among people and give value to ferns which rapidly grow anywhere but being deracinated because of its low livelihood potential. It aimed to generate a theory that can shed light on how the participants develop awareness without formal education and their knowledge on ferns come into being. To properly meet the aims of the study, the researcher utilized a grounded theory combined with axiomatic approach and descriptive research design to which, the verification used was in-depth interview in semi-structured type given to the eighteen farmers. Corollary, the study revealed that research participants has no formal education but they are able to distinguish the different members of the fern family, and tend to develop indigenous knowledge from the practiced of their ancestors, these lead to Epistemological Perception theorized by the researcher that, an indigenous knowledge and informal education is not enough, it must be transformed to scientific facts. As such, the researcher recommends that the local government unit (LGU) of the research environment together with the provincial office of the Department of Environment and Natural Resources (DENR) must come up with a program that will divert indigenous knowledge into scientific facts through formal education. With that collaboration, the rapid growth of ferns in the place will turn to an opportunity to form a new livelihood. This is one way to recognize the diversity, uses and economic value of ferns.

KEYWORDS
Mustacisas' epistemological model, indigenous knowledge, informal education, ferns, and theory

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Introduction

Based on published materials and herbarium specimens, Philippine ferns were identified to have various ethnobotanical uses which could either be for food consumption, medicine and aesthetic value (delos Angeles, 2012).

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Ferns are found to provide food, fiber, crafts and building material, abrasives and of course decoration (Srivastav, 2016).

In the current station of the researcher where she is working as science instructor, she noticed that along the vicinity of Paranas, Samar which is found at the central part of the Philippines have endemic ferns. She also observed that these were not given importance by the people living in the community which driven her to validate prior information they had about fern and help them to elevate what were known.

It leads her to a question, why things come to existence but its value are depreciated? This paper is an avenue to explain how existence come to being and inculcate to people that indigenous knowledge should be replaced with scientific facts.

Literature Review

The Pteridophytes which include the ferns and its allies comprises 305 genera and about twelve thousand species all over the world. They are usually found in tropic countries and occur most in terrestrial habitats and also in some aquatic communities however, they are thought by most people to be useless members of the plant kingdom. The harmful effect if its bout rapid growth are well publicized but their useful aspects are largely ignored (Yatskievych 2003; Parihar & Parihar 2006, & Srisvastava 2016).

> *According to Aristotle, there are four causes of why a thing exist, first its material cause, second its efficient cause, third the formal cause then the final cause. Aristotle described material cause as what composes a thing while the agent responsible why a thing exist is the efficient cause. He interpreted formal cause in relation to the essence of a thing it answers the question "What is this thing or object?" The term final cause in the Aristotelian sense is the purpose of a thing which ask question "What is it for?"* (Tiempo, 2015:20). *If we will take into account his view, a thing is important if you know its structures, beginning, features and the purpose of its being. Meaning, fern could be appreciated by people more than any other type of plants if we know its essence of existence.*

Align with its diversity, it was found that fourteen endangered species of economic ferns were also revealed in the field collections of pteridophytes in Mt. Pangasaugan. These include Angiopteris palmiformis (Cav.) Chr., Dicranopteris linearis (Burm.) Underw., Cyathea contaminans (Wall.) Copel., Drynaria quercifolia (Linn,) J.Sm., Davalia denticulata (Burm.) Mett., Acrostichum aureum (Linn.), Asplenium nidus Linn., Blechnum

orientale Linn., Stenochlaena palustris (Burm.) Bedd., Diplazium esculentum (Retz.) Sw., Ceratopteris thalictroides (Linn.) Brongn., Lygodium circinatum (Burm.f.) Sw., Lygodium flexuosum (Linn.) Sw., Lygodium auriculatum (Willd.) Alst. et Holtt (Buot 1999). In the recently conducted investigation of Quimio & Patinuol (2015) on Samar Island Biodiversity project, six genera of ferns were found, to wit: Cyathea contaminans, Cylea merrilli, Dicrapnopteris linearis, Lygodium japonicum, Asplenium nidus, and Lycopodium cernum.

> *The work of Buot (1999) and Quimio & Patrinuol (2015) are proofs that there are many species of ferns that really exist. However, the questions that remained hanging is "Why do people do not give attention to it?" Generalist Bertrand Russell (2009) affirmed the distinction between appearance and reality. We often do not give attention to a thing because of we do not know the distinction between the appearance of a thing and the way they really are. In this paper let us use fern as an example, fern exist but what we see is not the real fern but the appearance of fern as experience through sense- data. Russell define "sense data" to the things that are immediately known in sensation such as colors, odors, texture, and so on. He also give the name sensation to the experience of immediately aware of these things. Thus, what we merely see and feel is merely appearance but we go behind the appearance, such as its importance, uses, or value then we are seeing reality.*

Many studies have shown the uses of ferns, the whole plants of Pterisenformis are used for food (Mannan, et al., 2008). Aside from that, *Microsorum* genus like "*Metuapua'a*" is good for aesthetic medicine. Its pharmacological effects concern very different diseases, but the major effects are in purgative, antibacterial, gastric and renal infection treatment, diuretic, pain killer (to treat headache, stomachaches, gastrointestinal aches), and anti-inflammatory areas. Some fern allies such as Ophioglossum vulgatum, Botrychium. Virginianum, Adiantum lunulatum, Gleichenia linearis, Nephrolepis cordifolia, and Selaginella flabellate were used for wounds, cuts, sores, snakebites and fever (Ho et al. 2010; delos Angeles 2012 & Buot 2007).

Along economic value, it was documented that in Carbon Cebu City, four species of pteridophytes namely Lycopodium cernuum L., Gleichenia truncata (Willd.) Spr. Nephrolepis exaltata (L.) Schott and N. cordifolia (L.) Presl frequently sold at the market and are used in flower arrangement for various occasions, there are also pteridophytes sold at small stores in Sinoloan, Laguna and Real, Quezon from year 2000 to 2003 as form of livelihood by some local people. Another highly ornamental fern commonly known as giant staghorn fern was also found in Mindanao that

have been widely utilized for dyes, fibers, crafts , and building materials (Amoroso & Amoroso 1998; Amoroso 2003 & Catapang 2012).

> *In the afore-cited literature, it portrayed the uses and economic value of fern, but why do people do not make it as their primary source of living? In the view of Socrates, he described knowledge as what completely a thing is, ignorance is set over what is not true about a thing. According to Socrates capacities of a thing can be identified through two criteria, the first criterion is how this thing differ with other, like how a fern differ to other plants. The second criterion satisfied what is real about this thing and what is not, in this paper for example, people could show awareness and their knowledge about how ferns are being used in different aspects but they tend to focus of its gibberish aspect. So its epistemological aspects were hidden (Silverman, 2003).*

This motivated the researcher to further broaden the awareness of people regarding fern, through uses and economic value they may able to give importance on it as much as they give importance to other plants, this could be an avenue to come up with a new livelihood program in which fern plants will be known.

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Methodology

Research: Grounded Theory

This study aimed to generate theory using a grounded theory designed. In order to attain that, a qualitative research method was utilized to explore on epistemological perception on a thing through using the diversity, uses and economic value of fern as the research object or instrument.

Table 1 shows the bases of the theory development. From the axioms a proposition was made, and out of the proposition was an educated guess. There are two hypotheses that were formulated taken from the axioms and

propositions which will be validated using the responses given by the participants and reviews of literature and studies.

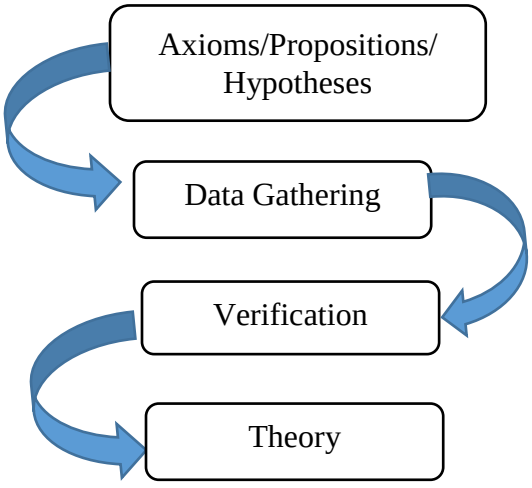
Table 1. Bases of Theory Generation

Axiom	Proposition	Hypothesis
1. A seed plant use for language of bird is a fern, thus a fern is use to feed birds (May, 1978).	The existence of ferns are known for a long time through indigenous knowledge.	If a thing is known for a long time through indigenous knowledge then it exist.
2. Shrinkage of ferns is a long time practice to detect change in climatic conditions, a malfunction environment is one of its indication (Hun, 2010).		
3. Traditionally, ferns are used by the tribal groups in India as treatment of their diseases and ailments. (Srivastava, 2007).		
4. Ferns are typically edible which served as food even the time of the ancient people (Mannan et al., 2008).		
5. A folk medicine is a plant that is orally transmitted and recorded in literature, ferns are plants that is orally transmitted and recorded in literature therefore it is a folk medicine (Jones, et al., 2013).	Knowledge about ferns come to being even without formal education.	If there is formal education, then human will be more knowledgeable.
6. In China, both local and supermarkets are used for food products like dried fronds,		

salted fronds, packaged fronds, fern starch, fern starch cakes and fern leaf tea (Liu et al., 2012).		
7. Since ferns are known as tribal medicine in India, its phytochemists and pharmacologists aspects were examined to identify therapeutic compounds (Srivastava, 2007).		
8. Ferns have play important roles in to retain the moist of soil through determining its morphological and physiological characteristics. (Reudink et al., 2005)		

An approach used for theory generation was inductive method which is reflected in Figure1. From the main point of axioms, propositions and hypotheses, the researcher gathered data which purpose is to verify the prior claims until arrived with a single theory.

THEORY GENERATING-INDUCTIVE METHOD



Research Environment

This study was conducted in Paranas located at the third largest island of the Philippines called Samar.

Research Participants/Informants

The 18 participants of the study are the residents from the Campu uno Brgy. Tenani Paranas, Samar where diversity of ferns were found.

Research sampling

The researcher used a convenient sampling. She conducted an interview schedule in which open-ended questions prearranged to the participants. After which all the observations were be recorded. In selection of the informants, the researcher made a schedule in visiting Campu uno Brgy. Tenani Paranas, Samar.

Research Instrument

This study utilized an in-depth interview via semi-structured type in which the participants are allowed free rein considering that what the participant said is, or might be relevant. The interview guide constructed in two versions: English and Waray-waray in order to easily communicate with the participants. Questions include are the following: Are you familiar with the diversity of fern plants in your place? (Nangingilala k aba han durudilain nga klase han pako?) Can you give me the local names the ferns found in the pictures? (Pwede mo ba maihatag an mga tawag hini na mga pako nga aadi hini nga mga litrato?), Are you aware that these plants belong to one family namely fern? (maaram k aba nga ini nga mga tanom nahimumutang ha usa la nga pamilya?), and Can you enumerate the uses of these plants as well as their economic value? (pwede po ba niyo maihatag an mga gamit ngan kun napapagkakwartahan ba inen?)

For content validity, the instrument undergo expert validation done by the research experts. The instrument was piloted to 10 students of Samar State University Paranas Campus.

Results and Discussion

(Theory Validation)

It is presented in Table 2 the profile of eighteen farmers. There are eleven females and seven males, their ages range from 30 to 64 years with an educational background of elementary level, and who engaged in farming for 6 to 50 years. All the participants are legal residence of Paranas, Western Samar, Philippines whose primary source of income is farming. Their responses regarding diversity, uses, and economic importance of ferns were also included in the table.

Table 2. The Profile of the Participants and Their Responses

Par ti-cipa nt	Ag e	S ex	Educational Background	Years Farmi ng	Translated Responses
1	52	F	Elementary Level	36	*"What are familiar to me are pako (Athyrium esculentum), punit (Cyathea contaminans), kuyo-kuyo (Lycopodium cernuum), agsam (Dicranopteris linearis) and naging-saging (Asplenium nidus). There are lot of it here. The Athyrium esculentum is edible, this is mix to sardines for a dish. The body of Cyathea contaminans is use for orchids, it is where the orchids usually grow. This is also use for curing wounds, to cover the wound because of its being cold. While, Lycopodium cernuum it is use to design arcs especially during Sta. Cruzan. The stems of Dicranopteris linearis can be used for native hat (sadok), and the Asplenium nidus is also use for designing chariot of the saints."*
2	52	F	Elementary Graduate	33	*"What are known to me and I usually see are these pako (Athyrium esculentum), punit (Cyathea contaminans), kuyo-kuyo (Lycopodium cernuum), and agsam (Dicranopteris linearis). This Cyathea contaminans is use as fertilizer for orchids, the orchids grow faster when it is*

					attach to the body of Cyathea contaminans. This is quite expensive with a cost of a hundred pesos but the problem is we cannot use it for a living because the DENR always conduct checkpoint. This Athyrium esculentum, it is a delicious dish when sauté with soy sauce. These Lycopodium cernuum and Dicranopteris linearis are used for decoration."
3	48	M	Elementary Level	33	*"I am familiar with these plants but I'm not knowledgeable with its names. What only known to me are the agsam (Dicranopteris linearis), punit (Cyathea contaminans) and pako (Athyrium esculentum). The Dicranopteris linearis is use for house decoration, for soveiner. The Cyathea contaminans is for landscaping. The Athyrium esculentum could be a vege-food when boiled.*
4	40	F	Elementary Level	30	*"I know all these ferns family. We have the so called tree fern in which the orchid is placed, it has two kinds. The first one is called punit (Cyathea contaminans), the other those that grow in the ground is what we called amamangpang (Cibotium barometz). These are called lukdo (Cyalea merrillii), pako (Athyrium esculentum), nito (Lygodium japonicum), agsam (Dicranopteris linearis), kuyo-kuyo (Lycopodium cernuum), and lurog (Asplenium nidus). This Athyrium esculentum is reallyedible especially its stems and leaves. The Cyalea merrillii Dicranopteris linearis, and Lycopodium cernuum are used for*

					decoration and landscaping. This Cyathea contaminans can be a source of income because its trunk cost 3,000 pesos in flower shops but the problem, it is not allow to be exported to other places because the DENR checkpoint are quiet strict. It would be better if there are assistance, marketing in our place for it will help a lot to us."
5	57	M	High School Level	30	*"I commonly see these plants but I'm not familiar with its name, what are known to me are the pako (Athyrium esculentum), agsam (Dicranopteris linearis) and punit (Cyathea contaminans).* *This Dicranopteris linearis can be used for housing roof. This Cyathea contaminans is herbal for carabaos having spasm. For a long time, it was practiced by the farmers here that the whole parts of the plant is boiled then the extract is given to the carabao, it is also be used for human spasm but only the roots are boiled and safe to drink."*
6	62	F	Elementary Level	20	*"What is more known here in our place is the pako (Athyrium esculentum), nito (Lygodium japonicum), lurog (Asplenium nidus) and kuyo-kuyo (Lycopodium cernuum). I am not familiar with the name of others but I always see it here in our place.* *The Lygodium japonicum is use for making basket, native hat (sadok), and tie. The Asplenium nidus is use for decoration same with Lycopodium cernuum.*

7	64	M	Elementary Graduate	50	*"I know all these plants agsam (Dicranopteris linearis), kuyo-kuyo (Lycopodium cernuum), lurog or bird's nest (Asplenium nidus), nito (Lygodium japonicum), punit (Cyathea contaminans), amamangpang (Cibotium barometz), and pako (Athyrium esculentum). The Discranopteris linearis are used in making baskets and ties. This Asplenium nidus also called bird's nest because it is where the birds usually hide to hutch their eggs so they will not be disturbed. Cyathea contaminans wooden body is quiet expensive it ranges to 500 pesos when sell because it where the orchids is being placed so the orchids grow healthily. The Lycopodium cernuum is used for decorating church and during all soul's day. We called it here as plant for dead. The Athyrium esculentum could be a source of food, then the Lygodium japonicum can be an alternative tie use in fire woods because its thread is durable. I'm not familiar with others in terms of their uses they are just uprooted for we consider them here as useless plants."*
8	50	F	Elementary Level	30	*"What are known to me as member of the fern are the pako (Athyrium esculentum), agsam (Dicranopteris linearis), kuyo-kuyo (Lycopodium cernuum), and punit (Cyathea contaminans), punit is of two types those that are with tree and those that are in the ground. Others exist here but I'm not familiar with their names. The body of Dicranopteris linearis is cut then it is use to make a roof,*

					it can also be used as tie as alternative for straw, for windows, it is made into thread. The Cyathea contaminans is use to cure spasm of carabaos, for me it is very useful because its roots can also be a medicine for human spasm. This could also be used for propagating orchids so it will grow healthier. The Lycopodium cernuum is a plant for dead because it is being thrown during the interment."
9	40	F	College Level	27	*"This is what we called kuyo-kuyo (Lycopodium cernuum), I am familiar with this and the agsam (Dicranopteris linearis), punit (Cyathea contaminans) and we called this as naging-saging (Asplenium nidus). There are lot of it here but they are just deracinated because for us it is useless.* *The Lycopodium cernuum is use for church decoration. This Dicranopteris linearis and Asplenium nidus are placed in a pot, it can be sale for house landscaping. The Cyathea contaminans is sale in the market for because it where the orchids are propagated, but it is hard to bring because its body is heavy."*
10	49	F	Elementary Graduate	20	*"The agsam (Dicranopteris linearis), kuyo-kuyo (Lycopodium cernuum), and are the most familiar to me.* *The Dicranopteris linearis and Lycopodium cernuum is good for deration in the yard especially to the arcs and chariot of saints.* *This Cyathea contaminans is use for curing spasm because this was used by my ancestor, it is placed in a jar so it be slightly cold."*

11	50	M	College Level	15	*"Even at my younger age I can familiarize this agsam (Dicranopteris linearis) and pako (Athyrium esculentum). A native hat (sadok) can be made out of Dicranopteris linearis but no one educate us on how to make such, if only there is a person who will teach us then that would be better. It would be better also if they will give us knowledge about these plants so we can make it as our livelihood.*
12	30	M	High School Level	6	*"These pictures that you have shown the agsam (Dicranopteris linearis), pako (Athyrium esculentum), lurog (Asplenium nidus) or in English bird's nest are familiar to me. This punit (Cyathea contaminans) and the other kind of it, the one which grows on the ground called the amamangpang (Cibotium barometz), their physical appearance are more or less the same especially their leaves even the other is a tree-like and the other is a ground plant. The Dicranopteris linearis is used for house decoration, but this is only in our place. This plant is not allowed to be exported to other places than Samar we cannot sale it because it is avoided and we are afraid to be given penalty or fine. This is also offer during burial. The Athyrium esculentum, this is edible. This Asplenium nidus this is where the birds lay their eggs. Here in our locality, we are very familiar with these plants, where it grows and their different classes but the problem is we see it as useless plants because we do not earn from it."*

13	33	M	Elementary Level	6	*"Lurog (Asplenium nidus), nito (Lygodium japonicum) and pako (Athyrium esculentum) are the plants that are familiar and known to me.* *This Lygodium japonicum is very useful in making baskets, native hat (sadok) and ties because of its durability but the process in making it is not known to us. This Asplenium nidus this is only an ordinary plant. This Athyrium esculentum we cook this for dish, it can be made into soup, placed with soy sauce and some mix in sardines."*
14	44	F	Elementary Level	23	*"What is known to me as family of ferns here in our place are the pako (Athyrium esculentum), kuyo-kuyo (Lycopodium cernuum) and agsam (Dicranopteris linearis), these are really known here.* *This Lycopodium cernuum is very useful to us in terms of decoration during all soul's day, we always use this, and this grow everywhere. This Dicranopteris linearis, its stem is cut, use for windows lock, and curtains. This were hanged, tie then at night it is soften. These are sale in Catbalogan. If there are only orders then it would be better. If there are people who will come to buy for it, I will be the one to get it, I will wear boots for it but the problem is these are only deracinated.*
15	75	M	Elementary Graduate	40	*"I am familiar with pako (Athyrium esculentum), punit (Cyathea contaminans), and amamangpang (Cibotium barometz).*

					The Cyathea contaminans branch is very useful, because it is where the orchids are placed but it is not edible only, the Athyrium esculentum is the only fern that is edible. The roots of Cibotium barometz is an herbal medicine for spasm."
16	71	F	Elementary Level	38	*"What I know and even sometimes I am confused of them are these Cyathea contaminans and Cibotium barometz, the Cibotium barometz has wider leaves. While these are the lurog (Asplenium nidus), kuyo-kuyo (Lycopodium cernuum) and agsam (Dicranopteris linearis).* *This Asplenium nidus is an ordinary plant. This Lycopodium cernuum can be offered during interment, made as crown and placed at the head of the dead body. The Dicranopteris linearis has no use. These have rapid growth but very useless."*
17	45	F	High School Graduate	15	*"Lukdo (Cyalea merrillii), pako (Athyrium esculentum), kuyo-kuyo (Lycopodium cernuum), agsam (Dicranopteris linearis), amamangpang (Cibotium barometz).* *"I'm not too familiar with the uses and value of Cyalea merrillii but many of it grows here. The Lycopodium cernuum for use is useless, people just uprooted it while the Dicranopteris linearis is for roofing. The Cibotium barometz is use for spasm for carabao but its root is also safe for human. The Athyrium esculentum is edible and we are all aware here that it is safe to eat."*

18	56	F	High School Graduate	9	*"What are familiar to me are these kuyo-kuyo (Lycopodium cernuum), lukdo (Cyalea merrillii), and pako (Athyrium esculentum).* *The Lycopodium cernuum is primarily use for decoration. The rest of it are not really familiar to me because I already quitted farming, we have a small workshop (talyer) as source of income.*

Hypotheses Validation

Hypothesis 1: If a thing is known for a long time through indigenous knowledge then it exist.

In the book of Scott (2003), knowledge is a design to foster rather than suppression of critical thinking and social action. Knowledge that is limited, compartmented, and lacking of multidimensional perspective provide little interaction between a person and a thing to be perceived (Shin, 2016).

Taken from the responses showed in table 2, the participants revealed awareness on the existence of ferns for a long time through the stories of their ancestors and practices done by the members of the community.

"*For a long time, it was practiced by the farmers here that the whole parts of the plant is boiled then the extract is given to the carabao, it is also be used for human spasm but only the roots are boiled and safe to drink."*-**Participant 5**

"The Discranopteris linearis are used in making baskets and ties as what my grandparents told us."-**Participant 7**

"This Cyathea contaminans is use for curing spasm because this was used by my ancestor, it is placed in a jar so it be slightly cold."-**Participant 10**

Hypothesis 2: If there is formal education, then human will be more knowledgeable.

According to Modica & Rustichini (1994), you are aware because you know about something, on the other hand you are unaware because you do not know about it. You are aware if you are capable of drawing conclusions from your observations (Matheus et al., 2003).

From the answers and information given by the participants, they reflected common responses on distinctions, local names, uses and economic value of ferns. As depicted in Table 2, eight out of 18 respondents reached elementary levels but able to give awareness on diversity, uses and economic value of ferns how much more if they are given formal education. Their responses were written below:

"What are familiar to me are pako (Athyrium esculentum), punit (Cyathea contaminans), kuyo-kuyo (Lycopodium cernuum), agsam (Dicranopteris linearis) and naging-saging (Asplenium nidus). There are lot of it here. The Athyrium esculentum is edible, this is mix to sardines for a dish. The body of Cyathea contaminans is use for orchids, it is where the orchids usually grow. This is also use for curing wounds, to cover the wound because of its being cold. While, Lycopodium cernuum it is use to design arcs especially during Sta. Cruzan. The stems of Dicranopteris linearis can be used for native hat (sadok), and the Asplenium nidus is also use for designing chariot of the saints."-**Participant 1**

"I am familiar with these plants but I'm not knowledgeable with its names. What only known to me are the agsam (Dicranopteris linearis), punit (Cyathea contaminans) and pako (Athyrium esculentum). The Dicranopteris linearis is use for house decoration, for soveiner. The Cyathea contaminans is for landscaping. The Athyrium esculentum could be a vege-food when boiled. –**Participant 3**

"I know all these ferns family. We have the so called tree fern in which the orchid is placed, it has two kinds. The first one is called punit (Cyathea contaminans), the other those that grow in the ground is what we called amamangpang (Cibotium barometz). These are called lukdo (Cyalea merrillii), pako (Athyrium esculentum), nito (Lygodium japonicum), agsam (Dicranopteris linearis), kuyo-kuyo (Lycopodium cernuum), and lurog (Asplenium nidus).
This Athyrium esculentum is reallyedible especially its stems and leaves. The Cyalea merrillii Dicranopteris linearis, and Lycopodium cernuum are used for decoration and landscaping. This Cyathea contaminans can be a source of income because its trunk cost 3,000 pesos in flower shops but the problem, it is not allow to be exported to other places because the DENR checkpoint are quiet strict. It would be better if there are assistance, marketing in our place for it will help a lot to us."-**Participant 4**

"What is more known here in our place is the pako (Athyrium esculentum), nito (Lygodium japonicum), lurog (Asplenium nidus) and kuyo-kuyo

(Lycopodium cernuum). I am not familiar with the name of others but I always see it here in our place.
The Lygodium japonicum is use for making basket, native hat (sadok), and tie. The Asplenium nidus is use for decoration same with Lycopodium cernuum.-**Participant 6**

"What are known to me as member of the fern are the pako (Athyrium esculentum), agsam (Dicranopteris linearis), kuyo-kuyo (Lycopodium cernuum), and punit (Cyathea contaminans), punit is of two types those that are with tree and those that are in the ground. Others exist here but I'm not familiar with their names.
The body of Dicranopteris linearis is cut then it is use to make a roof, it can also be used as tie as alternative for straw, for windows, it is made into thread. The Cyathea contaminans is use to cure spasm of carabaos, for me it is very useful because its roots can also be a medicine for human spasm. This could also be used for propagating orchids so it will grow healthier. The Lycopodium cernuum is a plant for dead because it is being thrown during the interment."-**Participant 8**

"Lurog (Asplenium nidus), nito (Lygodium japonicum) and pako (Athyrium esculentum) are the plants that are familiar and known to me.
This Lygodium japonicum is very useful in making baskets, native hat (sadok) and ties because of its durability but the process in making it is not known to us. This Asplenium nidus this is only an ordinary plant. This Athyrium esculentum we cook this for dish, it can be made into soup, placed with soy sauce and some mix in sardines."-**Participant 13**

"What is known to me as family of ferns here in our place are the pako (Athyrium esculentum), kuyo-kuyo (Lycopodium cernuum) and agsam (Dicranopteris linearis), these are really known here.
This Lycopodium cernuum is very useful to us in terms of decoration during all soul's day, we always use this, and this grow everywhere. This Dicranopteris linearis, its stem is cut, use for windows lock, and curtains. This were hanged, tie then at night it is soften. These are sale in Catbalogan. If there are only orders then it would be better. If there are people who will come to buy for it, I will be the one to get it, I will wear boots for it but the problem is these are only deracinated.-**Participant 14**

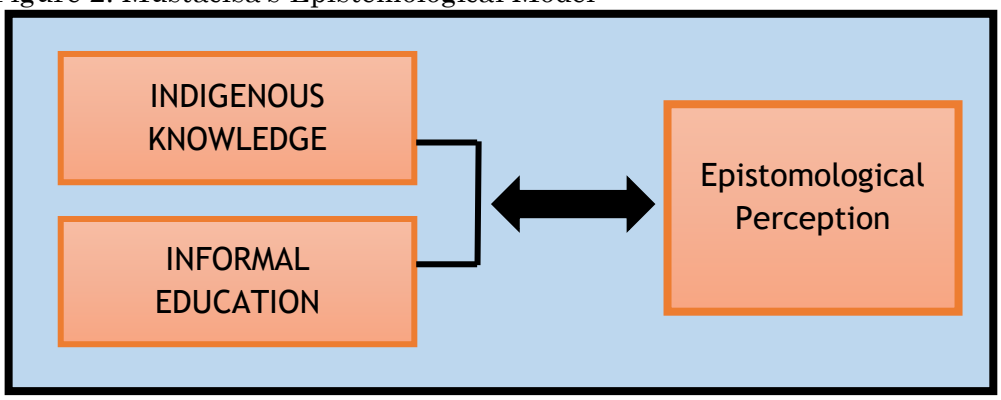
"What I know and even sometimes I am confused of them are these Cyathea contaminans and Cibotium barometz, the Cibotium barometz has wider leaves. While these are the lurog (Asplenium nidus), kuyo-kuyo (Lycopodium cernuum) and agsam (Dicranopteris linearis).

This Asplenium nidus is an ordinary plant. This Lycopodium cernuum can be offered during interment, made as crown and placed at the head of the dead body. The Dicranopteris linearis has no use. These have rapid growth but very useless."-**Participant 16**

Conceptual Model of the Theory

As shown in Figure 2, what is being revealed based from the verifications of the hypotheses is that, the indigenous knowledge of the participants which they learned from their ancestor even without formal education enable them to give lot of importance of ferns. These could be grounds to further validate what are known to them in order to justify whether what they learned are facts or just beliefs, practices and opinions.

Figure 2. Mustacisa's Epistemological Model



Conclusions

Ferns come to being for a long time. People in the research environment has no formal education but they are able to distinguish the different members of the fern family, and tend to develop indigenous knowledge from the practiced of their ancestors, these indigenous knowledge even not yet verified develop awareness on the diversity, uses, and economic value of ferns among the participants. This could only mean that, if there is only formal education then they will be more knowledgeable about the scientific facts of ferns.

Recommendations

Reading the responses of the respondents, the researcher recommend that local government unit (LGU) of Paranas, Samar in collaboration with the provincial office of the Department of Environment and Natural Resources (DENR) shall make a program that will divert indigenous knowledge into

a scientific facts through formal education. With that collaboration, the rapid growth of ferns in the place will turn as an opportunity to form livelihood. This will become an avenue to recognize uses and economic value of ferns.

Disclosure statement

No potential conflict of interest was reported by the authors.

References

Amoroso, C. B. (2003). NBRI Golden Jubilee Volume. In V. B. Amoroso (Ed.), *Pteridology in the New Millennium* (pp. 491-495). Springer Netherlands. doi:10.1007/978-94-017-2811-9_33

Amoroso, C.B. and Amoroso, V.B. (1998). SPORE CULTURE STUDIES ON SOME ECONOMIC FERNS OF MINDANAO, PHILIPPINES. Acta Hortic. 461, 231-236 DOI: 10.17660/ActaHortic.1998.461.24 http://dx.doi.org/10.17660/ActaHortic.1998.461.24

Buot, I. E. (2007). Vulnerable pteridophytes in the forest landscape of Quezon Province, Southern Luzon, Philippines. Retrieved May 29, 2016, from http://agris.fao.org/agris-search/search.do?recordID=PH2009000978.

Catapang, M. L., Reyes, P. D., & Medecillo, M. P. (2012). Factors Influencing Species Diversity of Ferns in Mt. Makulot, Cuenca, Southern Luzon, Philippines. *2nd International Conference on Environment and Industrial Innovation, IPCBEE 35*, 98-102. Retrieved May 17, 2016, from http://www.ipcbee.com/vol35/020-ICEII2012-E30003.pdf

Delos Angeles, M. and Buot, I. 2012. Orders and Families of Philippine Pteridophytes. Journal of Nature Studies. 11 (1&2): 19-33.

Ho, R., Teai, T., Bianchini, J. P., Lafont, R., & Raharivelomanana, P. (2010). *Working with Ferns: Issues and Applications*. doi:10.1007/978-1-4419-7162-3_23 ISBN 978-1-4419-7161-6

Hun, R. (2010, July 19). How does climate change affect ferns and fog on the forest floor? Retrieved June 01, 2016, from http://phys.org/news/2010-07-climate-affect-ferns-fog-forest.html

Jones, M. M., Ferrier, S., Condit, R., Manion, G., Aguilar, S., & Perez, R. (2013). Strong congruence in tree and fern community turnover in response to soils and climate in central Panama [Abstract]. *Journal of Ecology, 101*(2), 506-516. doi:10.1111/1365-2745.12053

Liu, J., Wujisguleng, W. & Long, C. (2012). Food Uses of Ferns in China. *Journal of Acta Societatis Botanicorum Poloniae, 81(14): 263-270.* doi: : 10.5586/asbp.2012.046

Mannan, M. Mannar; Maridass, Muthia; and Victor, B. (2008) "A Review on the Potential Uses of Ferns," *Ethnobotanical Leaflets*: Vol. 2008: Iss. 1, Article 33. Available at: http://opensiuc.lib.siu.edu/ebl/vol2008/iss1/33

Matheus, C. J., Kokar, M. M. & Baclawski, K. A. (2003). A Core Ontology for Situation Awareness. In Proceedings of the Sixth International Conference on Information Fusion, pages 545 –552.

May, L. W. (1978). The Economic Uses and Associated Folklore of Ferns and Fern Allies. *The Botanical Review, 44*(4), 491-528. Retrieved May 26, 2016, from http://www.jstor.org/stable/4353942?seq=1#page_scan_tab_contents

Modica, S. & Rustichini, A. (1994, July). Awareness and Partitional Information. *Journal of Theory and Decision:* 37 (1), 107-124. doi: 10.1007/BF01079207

Parihar, P., & Parihar, L. (2006, August). Some pteridophytes of medicinal importance from Rajasthan. *Natural Product Radiance, 5*(4), 297-301. Retrieved August 23, 2016, from http://14.139.47.15/handle/123456789/7957 ISN 975-1092

Quimio, J.M. & Patinuol, J.A. (2015). Samar Island Biodiversity Project. Post Biological Assessment in Samar Island Natural Park.

Reudink, M. W., Snyder, J. P., Xu, B., Cunkelman, A., & Balsamo, R. A. (2005). A Comparison of Physiological and Morphological Properties of Deciduous and Wintergreen Ferns in Southeastern Pennsylvania. *American Fern Journal, 95*(2), 45-56. http://dx.doi.org/10.1640/0002-8444(2005)095[0045:ACOPAM]2.0.CO;2

Russell, B. (2009). Appearance and reality.

Silverman, A. (2003). Plato's Middle Period Metaphysics and Epistemology. Retrieved September 27, 2016, from http://plato.stanford.edu/entries/plato-metaphysics/#12

Scott, D. (2003). Curriculum Studies: Curriculum Knowledge, p. 55.

Shin, J.C. (2016). Knowledge Studies in Higher Education. New and Forthcoming Knowledge, retrieved September 29, 2016, from http://www.springer.com/series/11778.

Srivastava, K. (2007, July 19). Ethnobotanical Studies of Some Important Ferns. *Ethnobotanical Leaflets,* (11), 164-172. Retrieved October 4, 2016, from http://opensiuc.lib.siu.edu/cgi/viewcontent.cgi?article=1017&context=ebl

Srivastava, K. (2016, November 15). Importance of Ferns in Human Medicine. *Ethnobotanical Leaflets,* (11), 231-234. Retrieved May 24, 2016, from http://opensiuc.lib.siu.edu/cgi/viewcontent.cgi?article=1029&context=ebl

Tiempo, A.Y. (2015) Man Undefined: Appropriate in the Philosophical Study of Man. Rokgel Publishing. ISN: 978-971-93214-0-8

Yatskievych, G. (2003, February 26). Pteridophytes (Ferns) [Abstract]. *Wiley Online Library*. doi:10.1038/npg.els.0003679

Appendix A

Pictures of the Different Ferns found in the Research Environment
From the Work of Quimio, J.M. & Patinuol, J.A. (2015)

Punit (Cyathea contaminans)

Pako (Athyrium esculentum)

Lukdo (Cyalea merrillii)

Nito (Lygodium japonicum)

Lurog/Naging-saging (Asplenium nidus)

Agsam (Dicranopteris linearis)

Kuyo-kuyo (Lycopodium cernuum)

Researcher's Guide Questions

Part I- Profiling

Edad (age):

Nataw-an (Sex):

Lebel han Edukasyon (Educational Background):

Pera ka tuig ha pag-uma (years farming):

Part II- Awareness on Diversity, Uses and Economic Value

1. Are you familiar with the diversity of fern plants in your place? (Nangingilala k aba han durudilain nga klase han pako?)

2. Can you give me the local names the ferns found in the pictures? (Pwede mo ba maihatag an mga tawag hini na mga pako nga aadi hini nga mga litrato?)

3. Are you aware that these plants belong to one family namely fern? (maaram k aba nga ini nga mga tanom nahimumutang ha usa la nga pamilya?)

4. Can you enumerate the uses of these plants as well as their economic value? (pwede po ba niyo maihatag an mga gamit ngan kun napapagkakwartahan ba inen?)

Appendix C

Tabular Presentation of the Profile and Responses in Waray-waray of the Participants

Parti-cipant	Age	Sex	Educational Background	Years Farming	Responses in Waray-waray
1	52	F	Elementary Level	36	*"An akon mga kilala amo ini nga pako, punit, kuyo-kuyo, agsam ngan naging-saging. Damo ito dinhi.* *An pako kinakaon ini, ginsusura ngan marasa butangan hit sardinas. An ubod han punit pankupkop ha mga orchids. Gingagamit liwat pagpaupay hn samad, pangtangpos kay mahagkot man it hya. Ini naman na kuyo-kuyo gingagamit pandesign para arko hit sta. Cruzan. An agsam, an ginkakaputan hn dahon gintatanggal ginpapanitan tapos an unod ginbubulad ngan ilalapad naman para paghimu hit sadok. An naging-saging ginhihimu ito panburda hit mga karo."*
2	52	F	Elementary Graduate	33	**"***Ini nga pako, punit, kuyo-kuyo ngan agsam it akon gud agsob nga nahikikit-an dinhi."* *Ini nga punit gingagamit ini nga*

					baga han fertilizer hit orchids kay mas naupay it turok hit orchid basta aada gn tutusok ha punit. Mahal pa gud ini kay kada usa ka ugbos han punit tag 100.00 pesos diri ka la ugaring basta makakuha kay permi nagcheck-point it DENR. Ini nga pako marasa ini gisahon tapos gintutuyo-an. Ini nga kuyo-kuyo ngan agsam pandekorasyon manla ini."
3	48	M	Elementary Level	33	*"Mga pamilyar gad ini nga iba pero an akon la maaram it ngaran hini na mga tanaman inin nga agsam ngan punit siyempre pati ini nga pako.* *An agsam ginhihimo han dekorasyon ha balay. Pan soveiner. An punit naman pan landscaping. An pako kinakaon pwede pakaladkaran pwede liwat ig-utan"*
4	40	F	Elementary Level	30	*"Nangingilala ako hini ngatanan an family ini han fern mayda ngani kita gintatawag nga tree fern kun diin an usa nakatay ngan may puno amo an gintatawag ta nga punit, an usa naman*

					ada la ha ubos narampag an gintatawag nga amamangpan. Ini hira amo ini an at mga gintatawag nga lukdo, pako, nito, agsam, kuyo-kuyo ngan lurog. An pako edible talaga ini it iya dahoon ngan tangway. An lukdo, agsam ngan kuyo-kuyo gingagamit pandekorasyon ngan ha mga landescaping. Ini nga punit it pwede mapagkakitaan, it kada usa nga punit kay tag Php. 3,000.00 pesos it baligya ha mga flower shops kaso diri la napapagawas didi ha amon lugar kay ginchecheck kasi hit DENR. Maupay unta kn may assistance ngan marketing dinhi ha amon lugar kay dako it mahibubulig ha amon."
5	57	M	High School Level	30	*"Ini ngatanan agsub ko mahikit-an dinhi kaso diri ko mga pamilyar it ngaran hini nira bali it akon la kilala an pako, agsam ngan punit. Inin nga agsam gingagamit ini pamumbong hit balay. Ha kinaiha-*

					iha nga panahon, ini nga punit herbal ini han mga may pasma nga karabaw, an bug-os hni nga lawas ginpapakaladkaran tapos an sabaw gnpapainom ha karabaw. Pwede liwat ini pamasma hit tawo pero an ginpapakaldkaran la an ugat ngan an tubig nga ginpapakaladkad asya it ginpapainom ha may pasma."
6	62	F	Elementary Level	20	*"It pinakakilala gud hini dinhi ini na pako, nito, lurog, kuyo-kuyo an iba diri ko na gud maaram it ngaran pero para kita ak hini dinhi. An nito ginhihimu ini nga basket, sadok ngan panhigot. An lurog pandesign pareho hit kuyo-kuyo."*
7	64	M	Elementary Graduate	50	*"Ini ngatanan mga kilala ko ini nga tanum kilala ko. Agsam, kuyo-kuyo, lurog or bird's nest, nito, punit, amamangpang, pako. An agsam ginhihimo nga basket ngan higot. Ini nga lurog gintatawag liwat nga bird's nest kay tungod nga dagko an iya dahon didto nagtatago it mga*

					tamsi ngan nagbubunay para diri maisturbo. An punit naman it iya heto kahoy mahal kay naabot ada tag 500 it usa ka kahoya kay amo ito it gintutudkan hit orchids para maupay it tubo. An kuyo-kuyo pandekorasyon ha simbahan ngan karo pag andas. Gintatawag it namon dinhi nga tanom para ha mga patay. An pako dako it gamit kay pansura man iton. Tapos it nito ginhihimo pansaliwan hit higot para hit pagbutok hit sungo kay nauuga ngani it nito marig-on it iya heton hibla. An iba diri ako pamilyar hit gamit kay baga ginhaharas manla ito dinhi kay para ha amon sig-ot la iton."
8	50	F	Elementary Level	30	*"It akon kilala dinihi nga family han fern ini nga pako, agsam, kuyo-kuyo ngan punit, it punit mayda duwa ka klase an may puno tapos an aada la ha ubos nagrarabong, an iba nakikit an ko nga natubo dinhi pero diri gud ako pamilyar hit mga*

					gingangarani hini na mga tanom. *An lawas hn agsam gin uutod tapos gintatagik pambumbong, pwede liwat panhigot straw, panbitanan, ginlalara ngan ginbibiribid. An punit bulong it pamasma ha karabaw asya gud ito it dako it gamit dinhi kay it iya lwat heton ugat kun papakaladkaran mo pwede igbulong pamasma ha tawo, tapos gingagamit liwat panbalighot ha orchids para maupay it iya tubo. An kuyo-kuyo tanom panpatay, may minatay ngani amo ito it ginsasabrag hit lubong, amo man it nahigaraan dinhi ha amon."*
9	40	F	College Level	27	*"Amo ini it tinatatawag nga kuyo-kuyo, nakilala ako tapos hit agsam, punit, adi ini naging-saging man it am tawag. Kadamo heto dinhi pero ubos la panharas kay waray gamit.* *An kuyo-kuyo pandesign ha simbahan. Ini naman na agsam ngan*

					naging-saging ginkakada it hya ha masatera, pwede igbaligya panlandscape ha balay. An punit tag syen it baligya kay kinakaputan hit orchid, kaso makuri pagdara kay mabug at it lawas."
10	49	F	Elementary Graduate	20	*"An agsam, kuyo-kuyo ngan punit amo gud it akon pamilyar. An agsam ngan kuyo-kuyo maupay iton pandesign ha libong labi na ha mga arko, karo hit santos. Kun ini lugod na punit bulong it panmasma kay amo ito it gingagamit hit ak apoy ginkakada la ito ha biso para mahuruhagkot."*
11	50	M	College Level	15	*"Bata pala ako it akon gud napapamilyar amo ini nga agsam ngan pako. Nahihimo na sadok it agsam maaram kami nga nahihimo it sadok pero waray may nagtututdo ha amon, kun mayda dawla, maupay kunta. Maupay kunta kun mayda maghahatag ha amon hin hibaro para mahimo nga livelihood."*

12	30	M	High School Level	6	*"Heton na imo mga ginpakita nga pictures an agsam, pako, lurog kun ha English bird's nest an akon napapamilyar. Adi ini nga punit ngan an usa pa hini kalahi nga klase an kuan amamangpang. Puruparehо kasi ini hit ira hitsura labi na it dahon pero an usa nahitaas an usa ada la tuna.*
13	33	M	Elementary Level	6	*"Heton na imo mga ginpakita nga pictures an agsam, pako, lurog kun ha English bird's nest an akon napapamilyar. Adi ini nga punit ngan an usa pa hini kalahi nga klase an kuan amamangpang. Puruparehо kasi ini hit ira hitsura labi na it dahon pero an usa nahitaas an usa ada la tuna. Agsam gamit hini dekorasyon hit balay. Pero dinhi la ha aton lugar. Makuri kasi ini ig-gawas ha Samar pagbaligya kay ginbabawal bangin lugod kami makasuhan ngan makagmulta. Ginbubutang liwat ini hin mayda patay. An pako nakakaon gud ini. Ini nga lurog kay*

					ginpupugaran han tamsi. Pamilyar kami hini na mga tanom kun diin natubo ngan ano an mga lain lain kaso ha amon waray gud iton gamit kay kun baga diri man kami makakakwarta hini."
14	44	F	Elementary Level	23	*"Lurog, nito ngan pako la it ak mga kilala hinin na mga tanum. Ini nga nito ginhihimu hini nga basket, sadok ngan panhigot kay matibay ini nga klase pero an proseso paghimu di kami maaram. Ini nga lurog tanaman la ini dinhi. Ini nga pako ginsusura, ginsasabwan, gintutuyuan an iba gin sasaktan ligo."*
15	75	M	Elementary Graduate	40	*"It akon maaram nga family han ferns dinhi inin nga pako, kuyo-kuyo ngan agsam, kilala kasi ito dinhi nga lugar. It kuyo-kuyo dako ini it gamit ha am pandecorate ha karo ngan andas, amo ini it permi namon gingagamit naturok manla ito bisan diin. Ini nga agsam an lawas gin uutod, pansara han mga bintana, pangurtina. Gintatagik,*

					ginhihigot iton ha gabe tapos nalupyak. Ha Catbalogan may mga baligya heto. Kay kun naorder heton maupay. Kay kun makanhi la heton pamalit magbubutas gud ako pero ginhaharas nala namon."
16	71	F	Elementary Level	38	*"Aw kay pamilyar ako hini nga pako, punit ngan amamangpang. It punit dako it gamit hit palwa heton, kay an lawas ginbubutangan hin tanaman nga orchids, pero dri hya nakakaon baga pako la it nakakaon nga fern. An amamangpang an gamut heton panmasma."*
17	45	F	High School Graduate	15	*"Lukdo, pako, kuyo-kuyo, agsam, amamangpang. Lukdo diri gud ako pamilyar pero kadamo heto dinhi. It kuyo-kuyo waray it gamit ginhaharas la hiya. It gamit hit agsam pambongbong. An amamangpang panhimasma, bulong hit kana karabaw pwede ha tawo an gamut. An pako edible ini, maaram lugod kami heton nga ginkakaon it.*

18	56	F	High School Graduate	9	"*Baga it akon la dinhi kilala kuyo-kuyo, lukdo, pati an pako.* *An kuyo-kuyo number one use for decoration. Iyong iba hindi ko na kilala, I stopped farming kasi, nagkamayda kami guti na talyer.*