

## Awareness and Acceptance of Secondary School Teachers on the Concepts of Indigenous Knowledge

Roosevelt Thomas S. Asejo<sup>1</sup> & Teresita R. Doctor<sup>2</sup>

<sup>1</sup>Cervantes National High School, Cervantes-Quirino District, Division of Ilocos Sur, Philippines

<sup>2</sup>Faculty of Education, St. Theresa International College, Ongkarak, Nakhon Nayok, Thailand

Correspondence: Roosevelt Thomas S. Asejo, Cervantes National High School, Cervantes-Quirino District, Division of Ilocos Sur, Philippines.

Email: rooseveltasejo@gmail.com

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**Abstract:** This research was conducted to assess the awareness and acceptance of teachers on the concepts of Indigenous Knowledge and the correlation between awareness and acceptance of teachers on these concepts. The study was conducted in the Secondary Schools in Cervantes, Ilocos Sur, Philippines. The study employed the descriptive method of research. Data were gathered through the use of questionnaire corroborated by informal interviews. Questionnaires were distributed to 67 respondents who are teaching Junior High school students in the three selected schools in Cervantes, Ilocos Sur. Data gathered were analyzed using descriptive statistics and frequency count. F-test was used to determine the differences on the perceptions of the respondents while Pearson-product moment correlation was used to determine the relationship between variables. Results showed that there is a moderate awareness and acceptance of teachers on the concepts of indigenous knowledge. Likewise, there is a high correlation between awareness and acceptance of teachers on the concepts of indigenous knowledge. Consequently, there is no significant difference on the perceptions of teachers on their awareness and acceptance on the concepts of indigenous knowledge when grouped according to ethnic affiliation. It is concluded that teachers do not have full awareness and acceptance on the concepts of indigenous knowledge since they have varied understandings of Indigenous Knowledge. Moreover, their awareness on the concepts of Indigenous knowledge greatly affects their acceptance on these concepts. Hence, there is a positive parallel relationship between the two variables.

**Keywords:** Indigenous Knowledge, Secondary School Teachers, Awareness, Acceptance, Cervantes, Ilocos Sur

### 1. Introduction

The preservation of Indigenous Knowledge and Practices (IKSP) is challenging nowadays due to the influence of modernity. In order to be able to preserve this knowledge, there is a move to incorporate these IKSP in the teaching learning process. This has been a move all over the world because modern man wants to preserve essential IKSPs which are still valuable until today. Generally, indigenous peoples are actors of their knowledge; hence, separating indigenous knowledge from its socio-cultural context is dangerous

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for its understanding as it becomes meaningless and may lead to misleading interpretations (UNESCO, 2009; McCall, 1995 in Sillitoe, 1998).

As mentioned by Mawere (2015), indigenous knowledge can only be completely realized if it is properly integrated into educational curricula and its relevance is widely publicized. Ronoh (2017) mentioned that Indigenous knowledge is now widely regarded as a crucial body of information that may be included into school curricula to make teaching and learning more contextual and responsive to society's changing demands. IK products vary by community and can be categorized in a variety of ways, including technological, scientific, cultural, environmental, and so on. The inclusion of these elements of indigenous knowledge in the mainstream curriculum has sparked discussions between researchers who say that indigenous knowledge has been marginalized and others who question if the current curriculum meets the changing requirements of society in this millennium. There have been claims that there is no commitment to integrating and implementing IK in the modern, western-dominated curriculum (Ronoh, 2017).

The values that privilege the interrelationships among spiritual, natural, and self, a sacred orientation to place and space, a fluidity of knowledge exchange between past, present, and future, and an honoring of language and oral transmission of knowledge are the foundations of indigenous knowledge (Greenwood & de Leeuw, 2007).

Another point worth mentioning is that, aside from the tight connection to local reality, indigenous knowledge has been observed in several parts of the world with similar characteristics. According to Sillitoe (1998), there were two types of interests in studying indigenous knowledge in the past: academic and development. The former, which includes anthropological and ethnography study, and the latter, which is primarily concerned with land management and participatory development (Agrawal, 2002; Sillitoe, 1998).

In the 1980s, many studies emphasized the value of indigenous knowledge for development. Brokensha, Warren, and Werner (1980, in Agrawal, 1995) discuss "growth from below" as one example. Indigenous knowledge becomes a critical component of this concept because it allows for greater relevance and adaptation of technology to local needs, the preservation of valuable local knowledge, and the use of local skills in monitoring and early warning systems, as well as a greater emphasis on human needs and resources. These scholars hoped to increase awareness among policymakers and neoliberal economists of the relevance of bottom-up viewpoints in developing more regionally suitable and environmentally sustainable solutions through their research demonstrating the utility of indigenous knowledge (Agrawal, 2002; Sillitoe, 1998).

With the importance of Indigenous Knowledge in development, schools provide a natural rallying place for incorporating Indigenous Knowledge into the school curriculum, which can be found in all communities (Batibo, n.d.; Mavhunga, 2008; Chiromo; 2004). Teachers' perceptions of Indigenous Knowledge are crucial if teaching and learning are to accommodate it, because they are the vehicle through which the importance of Indigenous Knowledge can be transferred and recognized by students as a vital component of traditional societies' livelihood. The Alaska Native Knowledge Network (ANKN, 1998) expressed a similar sentiment when they wrote that by shifting the focus in the curriculum from teaching and learning about cultural heritage as a separate subject to teaching and learning through local culture as

a foundation for all education, all forms of knowledge, ways of knowing, and world views will be recognized as equally valid, adaptable, and complementary to one another in mutually beneficial ways.

In 2002, UNESCO recognizes the value of Indigenous Knowledge Systems and Practices (IKSP) globally, which is why the LINKS project was initiated in the Philippines in 2002. This initiative focused on the intersection of local and IK goals for poverty eradication and environmental sustainability, as well as the Millennium Development Goals. It discusses the various ways in which indigenous knowledge, practices, and worldviews are incorporated into development and resource management processes. It also explores the consequences for improving governance fairness, increasing cultural pluralism, and preserving variety.

The use of indigenous knowledge in education is seen as a way to improve learning of life concepts and skills, enriching the cultural background of Filipinos, and adhering to assimilation of concepts by learners in their natural setting, thus conserving and preserving the unique culture and tradition of the various ethnic groups in the country. In her research of the indigenous peoples of Ifugao province, Abayao (2003) discovered that there is a large gap between what is taught in formal schooling and the skills that the indigenous people require. Although Shakespeare is taught in schools, the Ifugaos are unaware of their own epics, such as the *Hudhud* and the *Alim*. They also study mathematics and Egyptian pyramids, but have no idea how their forefathers constructed the magnificent Pajaw Mountains (rice terraces).

The Kiangnan school, the first official schooling for the Ifugaos founded by the Americans, was favorably received by the Ifugaos, but there was a noticeable drop in enthusiasm when kids were presented with the American curriculum (Abayao 2003). Kroma (1995) and Jenista (1995) both discovered similar results (1987).

Hence, the importance of Indigenous Knowledge in any community emphasizes the necessity for educators, particularly teachers, to be not just aware of Indigenous Knowledge but also to possess extensive knowledge of it. It is therefore critical for teachers to first grasp the necessary IK, both in terms of concepts and principles.

### **1.1 Statement of the Problem**

This study aimed to assess the awareness and acceptance of secondary school teachers on the concepts of Indigenous Knowledge in selected schools in Ilocos, Sur, Philippines.

Specifically, the study sought answers to the following questions:

1. What is the level of awareness of teachers on the concepts of Indigenous knowledge?
2. Is there a significant difference on the level of awareness of teachers on the concepts of Indigenous Knowledge when grouped according to ethnic affiliation?
3. What is the level of acceptance of teachers on the concepts of Indigenous Knowledge?
4. Is there a significant difference on the perceptions of the teachers on the acceptance on the concepts of Indigenous Knowledge when grouped according to ethnic and religious affiliations?
5. Is there a significant relationship between the level of awareness and level of acceptance of the teachers on the concepts of Indigenous Knowledge?

## **1.2 Hypotheses of the Study**

The study was guided by the following hypotheses:

1. There is moderate level of acceptance and awareness of teachers on the concepts of Indigenous Knowledge.
2. There is a significant difference on the level of awareness and acceptance of teachers on the concepts of indigenous knowledge when grouped according to ethnic affiliation.
3. There is a significant relationship between the level of awareness and level of acceptance of teachers on the concepts of Indigenous Knowledge.

## **1.3 Importance of the Study**

The findings of this study will be used by curriculum developers to integrate indigenous knowledge and viewpoints into all learning areas as an inherent part of all learning (rather than as a "add-on"). To school administrators, to ensure meaningful integration of Indigenous content, such as developing a learning foundation on local cultural knowledge and experience, and to work in conjunction with local communities. Teachers should be aware that educational systems are not value-neutral. Instead, cultural values are reflected in what is taught and how it is taught. To the community, in order for them to gain a better knowledge of concepts through the usage of local languages, as well as other components of Indigenous Knowledge, and to serve as a foundation work in collaboration with the school. The findings would also serve as a foundation for students to connect what they learn in school with their daily lives.

## **1.4 Scope and Delimitation of the Study**

This study focused on the concepts of Indigenous Knowledge. The study determined the perceptions of teachers on their awareness and acceptance on the concepts of Indigenous Knowledge as well as the relationship between the awareness and acceptance of teachers on the concepts of Indigenous Knowledge. The study was conducted in the District of Cervantes, Ilocos Sur, Philippines during the first semester of school year 2017-2018.

## **1.5 Conceptual/Theoretical Framework**

Culturally relevant and culturally responsive curricula emphasize the need of including indigenous knowledge in all elements of the curriculum. To characterize this process, many experts have invented the terms "culturally relevant" or "culturally responsive" education, and it has been emphasized as a vital component of student achievement (Allen & Labbo, 2001; Gay, 2002; Ladson-Billings, 1995; Young, 2010).

Indigenous knowledge is a wide term that refers to advanced knowledge systems developed over time by a specific group of people in a specific location and passed down from generation to generation. It includes ecological and scientific data. As indigenous knowledge grows and develops, it incorporates both traditional and modern elements. Because Indigenous knowledge is usually referred to as "traditional wisdom," some people perceive it as unchanging information based solely on the past. It is instead a "dynamic, flexible structure built on abilities, competencies, and problem-solving ability."

Indigenous knowledge (IK) refers to a society's understanding of time and space and is a part of the cultural complex. Some of the words used to characterize IK include ethnoscience, traditional knowledge, local knowledge, indigenous technical knowledge, indigenous knowledge systems, people's science, village science, traditional ecological knowledge, ethnoecology, folk ecology, or folk wisdom (Mathias, 1998).

IK is a set of skills that has evolved over time and experience, has been suited to a specific scenario, and has been produced with the assistance of local resources. It includes both technical and non-technical knowledge. It's occasionally based on outlandish ideals, intuitions, and concepts that defy science. In certain cultures, IK is tied to magic or religious belief, as well as ideas about spirits or ancestral ghosts, which are typically dismissed by western-educated scholars. Brouner (1998) distinguishes between traditional and indigenous knowledge systems and formal or western knowledge, despite the fact that traditional and indigenous knowledge are sometimes employed interchangeably, as Thrupp (1988) noted. True tradition, according to Brouwer, is "proven ancient, unique, and distinct traditions, norms, and routines." As a result, tradition is defined as a set of recurrent behaviors based on a shared concept or viewpoint. The actors do not require any indigenous or non-indigenous understanding to successfully carry out and pass on their traditions.

On the one hand, Grenier (1998) defines Indigenous Knowledge as knowledge that people in a given community have developed and continue to develop over time, based on experience often tested over centuries of use, and adapted to the local culture and environment, both of which are constantly changing and dynamic. It is a complex combination of knowledge and technology that have evolved in response to the specific needs of indigenous inhabitants and communities in a given location. Indigenous knowledge is referred to as "traditional," "native," "local," and "ethno-science" (Mapara, 2009). Indigenous Knowledge, as a notion, denotes a cognitive system in which natural and cultural theories and perceptions are conceived (Hobsbawn & Ranger, 1983). Furthermore, Grenier (1998) mentioned that it is the sum total of a group of people's knowledge and skills in a specific area, passed down from generation to generation. This knowledge base enables them to get the most out of their natural surroundings.

Indigenous agricultural practices, global challenges, soil conservation and water management techniques, animals and animal diseases, botany, human health, and artisan skills are all covered by traditional knowledge systems, which have curriculum and pedagogical consequences (Mapara, 2009; Grenier, 1998). Indigenous Knowledge, according to Grenier (1998), provides strategies for transmitting subject knowledge, such as story-telling, anecdotes, improvisation, indigenous games, and the employment of professional resource individuals. Indigenous knowledge is clearly relevant from a pedagogical and curriculum content standpoint. Weeks (2003) cites Demmert (2001) as arguing that teachers should involve students in authentic and meaningful problem solving and investigation of fundamental concepts integrated in culturally relevant information and assignments.

Indigenous knowledge is socially desirable, economically feasible, and sustainable, according to Kothari (1995). Indigenous knowledge is currently an untapped resource in development operations, according to Scoones and Thompson (1994), and it has to be thoroughly and comprehensively investigated. Similarly, Viriri (2009) quotes John Madeley (2004), who said, "Indigenous Knowledge is the largest single knowledge resource not yet deployed in the development effort." This means that all societal institutions,

including schools, must be aware of the critical role Indigenous Knowledge can and should play in community and national development.

When native pupils' cultural identity is encouraged in the classroom, motivation for learning is highest, according to Demmert (2001). As a result, incorporating Indigenous Knowledge into the curriculum may help students learn more effectively. Indigenous knowledge (in the form of curriculum, resources, pedagogy, and so on) serves a variety of functions in schools. It recognizes that Indigenous peoples have a rich and diverse knowledge base that has been either overlooked or marginalized in the past.

In the Philippines, the IPRA Law implements the 1987 constitution's mandate that the state develop a policy "to recognize and promote IP rights within the framework of natural unity and development" and "to protect cultural communities' rights to their ancestral lands to ensure their economic, social, and cultural well-being" (Asian Development Bank 2002). The IPRA Law also lays the groundwork for the creation of Indigenous schools. "The state shall, through the National Commission on Indigenous Peoples (NCIP), provide a complete, adequate, and integrated system of education, relevant to the requirements of the children and young people of ICCs/IPs," according to Section 28 of the IPRA Law. "The state shall offer equitable access to the various cultural entities, scholarships, grants, and other incentives without prejudice to their right to establish control over their educational systems and institutions," says Section 30.

Similarly, Section 2.4 of Article XIV states: "The state shall foster non-formal, informal, and Indigenous learning systems, as well as self-learning, independent, and out-of-school study programs, particularly those that respond to community needs." "The curriculum should not only concentrate on the fundamental learning competencies, but the learners should also be masters in the community as well as indigenous culture," the mandate states. It is also said that regardless of whether or not they have a degree in education, teachers should teach the essential areas of the curriculum without undermining community interests such as culture, customs, songs, and practices, as long as they are experienced and trained parents. Apart from sports, the Bureau of Physical Education and School Sports (BPSS), in collaboration with the Department of Education, continues to encourage the integration of traditional games and sports programs in elementary and secondary schools.

Science, MAPEH, Filipino, and Araling Panlipunan teachers have begun to use the IKSP in their classes. Araling Panlipunan I and Science are basic topics in the Department of Education's K-12 program. Araling Panlipunan is a key subject that studies the people's way of existence. The fundamental focus of this subject is community, which should genuinely incorporate people's way of life in lessons so that the instructor may carry out the mandate of law and order that was discussed previously. Moreover, Science is also a major topic at all levels of the basic education wherein indigenous knowledge systems can be incorporated.

The use of indigenous knowledge in education is seen as a way to improve learning of life concepts and skills, enriching the cultural background of Filipinos, and adhering to assimilation of concepts by learners in their natural setting, thus conserving and preserving the unique culture and tradition of the various ethnic groups in the country. For example, in her research of the indigenous peoples of Ifugao province, Abayoa



(2003) discovered that there is a large gap between what is taught in formal schooling and the skills that the indigenous people require.

Although Shakespeare is taught in schools, the Ifugaos are unaware of their own epics, such as the Hudhud and the Alim. They also study mathematics and Egyptian pyramids, but have no idea how their forefathers constructed the magnificent Pajaw Mountains (rice terraces). The Kiangang school, the first official schooling for the Ifugaos founded by the Americans, was favorably received by the Ifugaos, but there was a noticeable drop in enthusiasm when kids were presented with the American curriculum (Abayao 2003). Kroma (1995) and Jenista (1995) both discovered similar results.

May (2002) claims that teaching culturally appropriate curriculum entails cultivating culturally relevant concepts, conversation, and critical thinking about how people believe and experience culture, rather than simply tossing a few good ethnic literatures at them. Bull (2010) explains that through cultural integration, pupils will be able to grasp a sense of location and what it meant to be a people. She went on to say that by including culture, they are able to undertake acts of decolonization by restoring kids' access to their tribal knowledge rather than taking something away from them and leaving a void in their lives.

The study also revealed that knowing that culture is a multilayered experience and that exploring culture in a structured educational context is an imperfect and incomplete experience is a component of the process. She distinguished between two types of cultural integration: spontaneous and intentional integration. She believes that the most effective cultural integration in the classroom and in the field occurs when it occurs naturally as a result of students' existing knowledge and the connections they create in their learning.

The alternative method of cultural integration is known as planned cultural integration, which can occur both in the classroom and through field experience. Mini-immersion, place-based field excursions, and institutional programs are among the activities suggested by Bull (2010) for deliberate cultural integration. The study's paradigm is depicted in Figure 1. The independent variables are instructors' awareness and acceptance of Indigenous Knowledge concepts, as well as the link between teachers' perceptions of awareness and acceptance of Indigenous Knowledge concepts. The dependent variables are instructors' level of awareness and acceptance of Indigenous Knowledge concepts, as well as the substantial link between teachers' perceptions of awareness and acceptance of Indigenous Knowledge concepts. Ethnic affinity is the moderator variable.

Indigenous knowledge is consequently critical for the preservation of a group's historical and cultural history, as it "forms the backbone of its social, economic, scientific, and technical identity" (Odora Hoppers, 2001). Indigenous knowledge is a "full knowledge system with its own ideas of epistemology, and its own scientific and logical validity," according to the Principles and Guidelines for the Protection of Indigenous Peoples' Heritage (Battiste, 2002). Its pragmatic and dynamic nature, resulting primarily from contextual and cultural changes, necessitates indigenous peoples to constantly renegotiate with their environment (Sillitoe, 1998), keeping their knowledge system in ongoing evolution (Bates, 2009). "Generations of creative thought and action inside each unique community, as it contends with an ever-changing set of conditions and issues," says indigenous wisdom (Warren, 1996). Because of these strong contextual and cultural connections indigenous knowledge becomes an essential part of indigenous

peoples' lives as it provides the necessary means of survival. Indeed, IK is "motivated by the pragmatic, utilitarian, and everyday necessities of living" (Briggs, 2005), which are influenced by non-indigenous factors such as indigenous responses to innovation (Maurial, 2002).

## 2. Design and Methodology

The study made use of the descriptive method of research employing survey- questionnaire as the main instrument in gathering the data needed. Results were supplemented by interviews, observations, and other printed materials. Descriptive method is a general procedure employed in studies that have for their purpose the descriptions of phenomena. According to Aquino (1995), descriptive method of research is an organized attempt to describe, analyze, interpret, and make report of the present status of an institution, problem, thing, group of persons, or set of condition or any phenomenon. Good (1993) and Travers (1998) refer this to a design which describe the nature of a situation as it exists at the time of the study and explores the course of a particular phenomenon. This method was used to discover facts on which professional judgment can be based in determining the competency of the primary grades in terms of reading performance. Descriptive survey is a research technique in which data are gathered by asking questions of respondents it is directed toward ascertaining the prevailing conditions, that is, that prevail in a group of cases chosen for study. This method is an essential technique for quantitative descriptions of the general characteristics of the group.

### 2.1 Population and Locale of the Study

The study was conducted to the secondary schools in Cervantes, Ilocos Sur. The respondents were composed of secondary school teachers who are teaching High School students. Gathering of data started on the first semester until the end of second semester, 2017.

Table 1: Population of the study

School	Teachers
1 Cervantes National High School	32
2 Quirino National High School	20
3 Cervantes Polytechnic College	15
Total	67

### 2.2 Data Gathering Tools

This study made use of the questionnaire checklist as the primary tool for gathering the data needed. The questionnaire checklist focus on the following: Part I of the questionnaire deals with the personal information of the respondents. Part II is composed of the Level of awareness of teachers on the concept of Indigenous knowledge. Part III consists of the acceptance of teachers on the concept of Indigenous Knowledge. Cronbach's alpha was used to measure the internal consistency of the questionnaire. The result of 0.96 indicates that the set of items in the questionnaire are closely related as a group, hence the instrument is reliable.



### 2.3 Data Gathering Procedures

The researcher sought permission from the School's Division Superintendent of the Division of Ilocos Sur to administer the questionnaires to the respondents for both reliability testing and for the data needed for this study. After securing permission, the researcher himself coordinated with the district supervisor and respective principals of the different schools for the administration of the questionnaires. After collecting the questionnaires, the responses were sorted, tallied, and tabulated.

### 2.4 Treatment of Data

For the statistical interpretation of the data, ranking and weighted mean were used.

To determine the level of awareness and acceptance of teachers on the concepts of Indigenous Knowledge, the following Four-point Likert scales was used:

Scales	Statistical Limits	Description	Symbol
4	3.25-4.00	Very Much Aware/Very Much Accepted	VMaw VMAc
3	2.5 - 3.24	Moderately Aware/Moderately Accepted	MAw MAc
2	1.75- 2.49	Slightly Aware/ Slightly Accepted/	Saw Sac
1	1.0 - 1.75	Not Aware/Not Accepted	NAw NAc

To answer problems 1, and 2, weighted mean and ranking were used. The formula for the weighted mean (Oasan, 1995) is:

$$\bar{x} = \frac{\sum fx}{n}$$

Where:  $\bar{x}$  = weighted mean (W.M)

f = frequency

x = weighted value

n = Number of respondents

To answer problem 3, Pearson-product was used. The formula is

The formula (Oasan, 1995) is

$$r = \frac{N\sum xy - \sum x \sum y}{\sqrt{[N\sum x^2 - (\sum x)^2] [N\sum y^2 - (\sum y)^2]}}$$

Where: N = no. of items

$X_d = Y = \text{subjects}$

The hypothesis of this study was tested with the aforementioned statistical measures at 95% level of probability while correlation will be tested at 1.00 level of significance.

To test hypothesis 1, ANOVA through F-test was used. The formula (Subong, 1995) is:

$$F = \frac{SSB}{SSw}$$

Where: SSB = Sum of Squares in between

SSw = Sum of Squares within

To ensure the validity of the results, Analysis Toolpak through Microexcel was used.

### **3. Presentation, Analysis and Interpretation of Data**

The findings and discussion on data processing and interpretation are presented in this chapter. It covers the following topics: teachers' level of awareness and acceptance of Indigenous knowledge concepts, as well as the relationship between teachers' level of awareness and acceptance of Indigenous knowledge concepts.

#### **3.1 Level of Awareness of Teachers on the Concepts of Indigenous Knowledge**

Table 2 shows secondary teachers' understanding of indigenous knowledge ideas. Teachers, as shown in the table, have a decent understanding of indigenous knowledge concepts, with an overall mean of 2.99. The findings show that teachers have a good understanding of Indigenous Knowledge. This is due teachers' beliefs that formal educational processes are founded on a body of information that can be transferred through books and formal training. Scientific knowledge, which is seen by educational practitioners as objective knowledge of the outside world, is knowledge that is exact and acquired from experimentation, as defined by Supnet-Macansantos (2001). To a significant extent, these notions are a byproduct of colonial experience, which influenced instructors' interpretations of indigenous knowledge concepts.

The indicator "Local languages are part of Indigenous knowledge" came in first place, with a mean of 3.8, indicating that it is very aware. This shows that teachers understand that a community's local languages are an important aspect of indigenous knowledge. The United Nations conducted a forum in 2012 called "The Study on the Role of Languages and Culture in the Promotion and Protection of Indigenous Peoples' Rights and Identity." The following quote encapsulates the significance of language.

“Language is an integral aspect of indigenous peoples' ways of life, culture, and identities, and is inextricably related to them. Many indigenous ideals and concepts are embodied in languages, which also contain the histories and evolution of Indigenous peoples. They are

essential indicators of indigenous peoples' distinctness and unity as a people (UN, 2012). Teachers are also persuaded that local language offers learners with a good educational foundation in terms of instruction, according to DepEd's mandate in the implementation of MTB-MLE."

Furthermore, Zengeya-Makuku, et al. (2013) found out that teachers agree that language is part of indigenous knowledge.

The second indicator that obtained a mean of 3.73 is "Indigenous Knowledge is passed from generation to generation by word of mouth or learned by experience" showing that teachers are highly aware on this concept of indigenous knowledge. In many cases, indigenous knowledge has been orally passed for generations from person to person. Some forms of traditional knowledge find expression in stories, legends, folklore, rituals, songs, and laws. Other forms of traditional knowledge are expressed through different means (Wikipedia, 2012)

Moreover, teachers are highly aware that knowledge explanations of Indigenous Knowledge relate to traditional beliefs and lifestyles of people as indicated in the mean of 3.65. Since majority of the teachers are born and raised in Cervantes, they have a better grasp on the beliefs and lifestyles of their pupils. As reported by the International Council of Science (2012), traditional belief is a cumulative body of knowledge, know-how, practices and representations maintained and developed by peoples with extended histories of interaction with the natural environment. These sophisticated sets of understandings, interpretations and meanings are part and parcel of a cultural complex that encompasses language, naming and classification systems, resource use practices, ritual, spirituality and worldview.

Table 2: Level of awareness on the concepts of indigenous knowledge

Indicators	W.M	Descriptive Equivalent	Rank
1. Indigenous knowledge is dynamic knowledge that people in a given community have developed over time.	3.13	Moderately Aware	12.5
2. Indigenous knowledge is the same as traditional knowledge	3.13	Moderately Aware	12.5
3. Indigenous knowledge is a large body of knowledge and skills that has been developed outside formal educational system.	3.47	Highly Aware	7
4. Local languages are part of Indigenous knowledge.	3.8	Highly Aware	1
5. Indigenous knowledge is an important part of the livelihood of people in poor countries only.	1.9	Slightly Aware	24.5
6. Indigenous knowledge is an important part of the livelihood of people in rich countries only.	1.8	Slightly Aware	26

7. Indigenous knowledge is culture-specific.	3.52	Highly Aware	6
8. Indigenous knowledge is a critical part of culture.	3.35	Highly Aware	8
9. Indigenous knowledge is knowledge that is not documented.	2.67	Moderately Aware	20
10. Indigenous Knowledge is adapted to a specific group of people.	3.12	Moderately Aware	14
11. Each ethnic group has got its own Indigenous Knowledge which is different from other ethnic groups.	3.17	Moderately Aware	10.5
12. Indigenous Knowledge is the basis of decision-making in societal issues such as agriculture, education and health.	3.03	Moderately Aware	17
13. Western science and Indigenous Knowledge is one and the same thing.	1.9	Slightly Aware	24.5
14. Indigenous Knowledge is obtained through the scientific method.	1.93	Slightly Aware	23
15. Indigenous Knowledge is documented knowledge.	2.63	Moderately Aware	21
16. Indigenous Knowledge generalizations have rational and logical dimensions.	2.9	Moderately Aware	18
17. Facts within are tested.	2.47	Slightly Aware	22
18. Facts within Indigenous Knowledge are experimental.	3.23	Moderately Aware	9
19. Language is important to the acquisition of Indigenous Knowledge.	3.58	Highly Aware	4
20. All events in Indigenous Knowledge have natural causes.	2.77	Moderately Aware	19
21. Language is an important creative force in Indigenous Knowledge.	3.17	Moderately Aware	10.5
22. Indigenous Knowledge is a wealth of knowledge important for survival.	3.07	Moderately Aware	16
23. Knowledge explanations of Indigenous Knowledge relate to traditional beliefs and lifestyles of people.	3.65	Highly Aware	3
24. Indigenous Knowledge is based on questioning and discovering answers.	3.08	Moderately Aware	15
25. Indigenous Knowledge is passed by societies as accumulated, useful or important knowledge related to their existence.	3.55	Highly Aware	5

26. Indigenous Knowledge is passed from generation to generation by word of mouth or learned by experience.	3.73	Highly Aware	2
Average	2.99	Moderately Aware	

Other indicators in which teachers are highly aware of are “language is important to the acquisition of Indigenous Knowledge (3.58), “indigenous knowledge is passed by societies as accumulated, useful or important knowledge related to their existence (3.55) and “indigenous knowledge is culture-specific (3.52). Among the indicators obtaining the lowest means are “Indigenous Knowledge is obtained through the scientific method with a mean of 1.93, “indigenous knowledge is an important part of the livelihood of people in poor countries” and “western science and Indigenous Knowledge is one and the same thing” with similar mean of 1.90 while the indicator with the lowest mean of 1.80 is “indigenous knowledge is an important part of the livelihood of people in rich countries only”. Teachers professed that they are slightly aware on these three indicators.

Teachers are slightly aware that Indigenous Knowledge is obtained through the scientific method due to the fact that they are preconditioned to believe that there has been a dichotomy between indigenous knowledge and scientific knowledge.

Indeed, it can be argued that indigenous knowledge has an advantage over western science in the context of poor communities, in that information is tested in the context of survival, and hence is not just true or false in some sort of dispassionate way (as western science might conclude), but is either more or less effective in providing the means of survival, a conclusion more meaningful in the context of everyday existence (Davies,1994; Kalland, 2000).

In conventional science, the discounting of indigenous knowledge is brought about by Descartes’ method of doubt. Objective thought is separated from the subjective– from the perceptive, cultural, and physical systems of the thinker. The atomistic assumptions of the most successful types of objective knowledge support the belief that problems can be separated out and worked on independently. Objectivity, generality, separability, and tractability are well-known presumptions of the most effective scientific knowledge (Norgaard, 2012). Hence Leach and Mearns (1996) noted that Science has retained its resilience in development debates over indigenous knowledge because of its perceived ‘substance’, something which indigenous knowledge apparently does not possess.

Moreover, teachers are slightly aware that indigenous knowledge is an important part of the livelihood of people in poor countries only. Teachers tend to have a peripheral view that indigenous knowledge only deals with the belief of people in a community.

Nevertheless, it can be argued that indigenous knowledge has an advantage over western science in the context of poor communities, in that information is tested in the context of survival, and hence is not just true or false in some sort of dispassionate way, but is either more or less effective in providing the means of survival, a conclusion more meaningful in the context of everyday existence (Davies, 1994; Kalland, 2000).

Likewise, teachers are slightly aware that western science and Indigenous Knowledge is one and the same thing. The result is attributed to the orientation of teachers that western science is based on facts and accuracy while indigenous knowledge is merely an opinion and approximation. However, traditional', 'native', 'local' knowledge and ethno-science are used synonymously with Indigenous Knowledge (Mapara, 2009). As a concept, Indigenous Knowledge delineates a cognitive structure in which theories and perceptions of nature and culture are conceptualized (Hobsbawn and Ranger, 1983). It is the sum total of knowledge and skills possessed by a group of people in a particular area, passed on from generation to generation. This repertoire of knowledge helps them to get the most out of their natural environment without necessarily disturbing the natural ecosystems (Grenier, 1998).

Lastly, teachers perceived that they have slight awareness on the concept that indigenous knowledge is an important part of the livelihood of people in rich countries only. Grenier (1998) views Indigenous Knowledge as knowledge that people in a given community developed, and continue to develop over time and is based on experience often tested over centuries of use, adapted to the local culture and environment, which is ever changing and dynamic. It is a complex set of knowledge and technologies existing and developed around specific conditions of populations and communities indigenous to a particular place.

### **3.2 Difference on the Perceptions of Teachers on the Level of Awareness on the Concepts of Indigenous Knowledge**

Table 3 presents the deference on the perceptions of teachers on their level of awareness on the concepts of indigenous knowledge when grouped according to ethnic affiliation. As shown in the. Statistically, F-test reveals that the p-value of 0.16 is greater than the alpha value of 0.05 level of significance. Therefore, the hypothesis that there is a significant difference on the level of awareness of teachers on the concepts of indigenous knowledge is rejected. The finding implies that ethnic affiliation does not affect the awareness of teachers hence, regardless of their ethnic affiliation they have similar perceptions on their awareness on the concepts of indigenous knowledge.

Indigenous knowledge becomes central debates about sustainable development because of the way in which such knowledge has apparently allowed people to live in harmony with nature for generations. Such a privileging of indigenous knowledge in development is, therefore, apparently to be welcomed, as it represents "a shift from the preoccupation with the centralised, technically oriented solutions of the past decades that failed to alter life prospects for a majority of the peasants and small farmers of the world (Agrawal, 1995).



Table 3: Difference on the level of awareness of teachers on the concepts of indigenous knowledge

Indicators	Kankanaey	Iloko	Ibaloi	Bago	Over-all W.M
1. Indigenous knowledge is dynamic knowledge that people in a given community have developed over time.	3.18	3.11	3.25	3.00	3.17
2. Indigenous knowledge is the same as traditional knowledge	3.00	3.11	3.50	3.00	3.04
3. Indigenous knowledge is a large body of knowledge and skills that has been developed outside formal educational system.	3.24	3.44	3.75	3.67	3.31
4. Local languages are part of Indigenous knowledge.	3.58	3.78	4.00	4.00	3.64
5. Indigenous knowledge is an important part of the livelihood of people in poor countries only.	2.36	1.78	2.25	3.67	2.34
6. Indigenous knowledge is an important part of the livelihood of people in rich countries only.	2.20	1.67	3.00	2.67	2.19
7. Indigenous knowledge is culture-specific.	3.18	3.56	3.50	3.00	3.23
8. Indigenous knowledge is a critical part of culture.	3.15	3.33	3.25	3.67	3.20
9. Indigenous knowledge is knowledge that is not documented.	2.56	2.67	2.50	2.67	2.58
10. Indigenous Knowledge is adapted to a specific group of people.	3.22	3.11	3.00	3.33	3.20
11. Each ethnic group has got its own Indigenous Knowledge which is different from other ethnic groups.	3.49	3.11	3.25	3.67	3.44
12. Indigenous Knowledge is the basis of decision-making in societal issues such as agriculture, education and health.	2.85	3.00	3.00	3.33	2.90
13. Western science and Indigenous Knowledge is one and the same thing.	2.11	1.89	2.50	1.33	2.07

14. Indigenous Knowledge is obtained through the scientific method.	2.13	1.89	2.75	1.67	2.11
15. Indigenous Knowledge is documented knowledge.	2.55	2.67	2.50	2.33	2.55
16. Indigenous Knowledge generalizations have rational and logical dimensions.	3.00	2.89	3.25	2.67	2.98
17. Facts within are tested.	2.82	2.44	3.00	2.00	2.74
18. Facts within Indigenous Knowledge are experimental.	2.82	3.22	3.25	3.33	2.91
19. Language is important to the acquisition of Indigenous Knowledge.	3.53	3.56	3.50	4.00	3.55
20. All events in Indigenous Knowledge have natural causes.	2.95	2.67	3.50	3.67	2.97
21. Language is an important creative force in Indigenous Knowledge.	3.56	3.11	3.25	4.00	3.51
22. Indigenous Knowledge is a wealth of knowledge important for survival.	3.05	3.00	3.00	4.00	3.08
23. Knowledge explanations of Indigenous Knowledge relate to traditional beliefs and lifestyles of people.	3.25	3.67	3.00	3.67	3.31
24. Indigenous Knowledge is based on questioning and discovering answers.	2.49	3.11	2.50	3.00	2.59
25. Indigenous Knowledge is passed by societies as accumulated, useful or important knowledge related to their existence.	3.24	3.56	3.25	3.67	3.30
26. Indigenous Knowledge is passed from generation to generation by word of mouth or learned by experience.	3.45	3.78	3.25	3.33	3.48
	2.96	2.97	3.11	3.17	2.98

p-value= 0.16    alpha= 0.05    \*not significant

### 3.3 Level of Acceptance of Teachers on the Concepts of Indigenous Knowledge

Table 3 presents the result on the level of acceptance of teachers on the concepts of indigenous knowledge. As shown in the table, teachers moderately accept the concepts on indigenous knowledge as reflected in the overall mean of 2.94. The result implies that while there are concepts of indigenous knowledge that

teachers are highly familiar with that facilitates their acceptance to these concepts; however, there is also indigenous knowledge in which they are slightly familiar with resulting to being hesitant to accept these concepts.

Specifically, teachers highly accept that local languages are part of indigenous knowledge as shown in the mean of 3.76. The result implies that the teachers' understanding of local knowledge and its language, places them in a position where they are able to accommodate different learners' learning styles. This happens if they are able to code switch and explain difficult concepts in local languages, where necessary, so as to enhance pupils understanding of concepts.

Umo (2008) also supported the power of language by saying that, Language is seen as a liberating force for human reasoning for it frees human mind from total dependency. When one lacks language power, he is lost in communication; expression of feelings, thoughts, ideas, interpretation, understanding, socialization, etc. and the individual is unable to exploit the experiences of life. Mazrui, cited in Tarugarira (2009), claims that no country has ever attained advanced technology, 'by depending on a foreign language while looking down upon its own indigenous languages'. Folds (1987) in Munodawafa (2006) also noted that Australian schools which did not recognize the Indigenous Knowledge of Aborigines, contributed much to the destruction of cultural communities in which they were situated, particularly as resistance resulted in failure to learn skills, which enable community members to overcome their dependent status.

Another concept teacher highly accept is indigenous knowledge is passed from generation to generation by word of mouth or learned experience as indicated in the mean of 3.54. Indigenous knowledge is transmitted from generation to generation. The same community, together with the family, which includes parents, grandparents and older siblings, is responsible for transmitting skills and values to the individual. Sometimes this happens through word of mouth (Warren, 1991), for instance, by the use of storytelling, myths narration (van der Ploeg, 1989, in Sillitoe, 1998), metaphors (Marika et al., 2009), or songs (Battiste, 2002). This explains why the preservation of indigenous languages is also vital to the survival of indigenous knowledge; and sometimes it happens by traditions learned through informed experiences and practical demonstrations, such as rituals and ceremonies (Sillitoe, 1998) or symbols and artworks (Battiste, 2002).

It is then important for teachers to further tap the Indigenous Knowledge that is propagated from generation to generation by word of mouth and through experiences in these local communities. These may include conservation, farming practices, sustainable development and exploitation of resources and use of medicinal plants.

Teachers as role models and transmitters of knowledge to students have undoubtedly demonstrated that they have a very deep understanding of Indigenous Knowledge. Therefore, if teachers know Indigenous Knowledge and its importance to local societies, it becomes easier for the current school curriculum to be integrated with Indigenous Knowledge (Munodawafa, 2005).

Likewise, teachers highly accept the concept that each ethnic group has got its own Indigenous Knowledge which is different from other ethnic groups obtaining a mean of 3.53. Result shows that teachers realize that Indigenous Knowledge is adapted to a specific group of people and that each ethnic group has its own

Indigenous Knowledge which is different from other ethnic groups. This implies that for teachers to effectively use Indigenous Knowledge in the curriculum they should know the socio-cultural set-up (Chiromo, 2004) and languages of specific ethnic groups (Batibo, n.d.) from which their students are drawn, since each ethnic group has its own language and culture.

Additionally, teachers highly accept that language is important to the acquisition of indigenous knowledge and language is an important creative force in Indigenous Knowledge with means of 3.50 and 3.47 respectively. The result is attributed to the notion that language is an essential part of, and intrinsically linked to, indigenous peoples' ways of life, culture and identities. Seeing the benefits of the native language in instruction, Philippine legislator promulgated House Bill 3719 known as the multilingual education and literacy bill which aimed to promote literacy and learning by making the native language as the medium of instruction during the formative years of basic education.

Among the concepts that obtained the lowest means are 'Indigenous knowledge is obtained through the scientific method' (1.96), 'Indigenous knowledge is an important part of the livelihood of people in rich countries' (1.95) and 'Western science and indigenous knowledge is one and the same thing' (1.94). There is a slight acceptance of teachers on the concept that indigenous knowledge is obtained through scientific method. The result indicates that local knowledge observations are not systematically measured and recorded, which makes them very different from scientific findings. Thus, IK lacks legitimacy in mainstream scientific thinking. A large segment of Western-trained scientists and technical personnel still maintain that principles and theories stemming from science are the "objective truths" superior to other kinds of epistemologies and knowledge systems.

Similarly, teachers slightly accept that Indigenous knowledge is an important part of the livelihood of people in rich countries. This is due to the fact that Indigenous Knowledge is socially desirable, economically affordable and sustainable to all countries. Western-trained scientists and technical personnel still maintain that principles and theories stemming from science are the "objective truths" superior to other kinds of epistemologies and knowledge systems. Lastly, teachers slightly accept that indigenous knowledge is obtained through the scientific method.

Table 4 presents the difference on the level of acceptance of teachers on the concepts of indigenous knowledge when grouped according to ethnic affiliation. As indicated in the table, there is a slight difference among the means of the four groups. Bago teachers have the highest acceptance on the concepts of indigenous knowledge followed by the Iloko teachers. This is due to the fact that majority of them are born and raised in Cervantes, hence they are familiar with the culture and belief of the community. Kankanaey and Ibaloi teachers have the lowest level of acceptance since most of them are migrants in Cervantes.

Statistically, F-test shows that the p-value of .90 is greater than the alpha value of 0.05 degree of significance. Therefore, the hypothesis that there is a significant difference on the level of acceptance of teachers on the concepts of indigenous knowledge is rejected. The finding implies that regardless of the teachers' ethnic affiliation, they have similar perceptions in the acceptance on the concepts of indigenous knowledge.

Table 4: Difference on the level of acceptance of teachers on the concepts of indigenous knowledge when grouped according to ethnic affiliation

Indicators	Kankana-ey	Iloko	Ibaloi	Bago	Ove-all W.M
1. Indigenous knowledge is dynamic knowledge that people in a given community have developed over time.	3.27	3.22	3.25	3.25	3.31
2. Indigenous knowledge is the same as traditional knowledge	2.93	3.11	3.5	3.33	3.04
3. Indigenous knowledge is a large body of knowledge and skills that has been developed outside formal educational system.	3.13	3.22	3.75	3.67	3.24
4. Local languages are part of Indigenous knowledge.	3.62	4	4	4	3.76
5. Indigenous knowledge is an important part of the livelihood of people in poor countries only.	2.07	1.67	1.75	2.67	2.06
6. Indigenous knowledge is an important part of the livelihood of people in rich countries only.	1.95	1.56	2.5	1.67	1.95
7. Indigenous knowledge is culture-specific.	3.11	3.56	2.75	3	3.19
8. Indigenous knowledge is a critical part of culture.	3.11	3.33	3.25	3.33	3.20
9. Indigenous knowledge is knowledge that is not documented.	2.38	2.56	1.75	2.33	2.40
10. Indigenous Knowledge is adapted to a specific group of people.	3.15	3.11	2.75	3.33	3.17
11. Each ethnic group has got its own Indigenous Knowledge which is different from other ethnic groups.	3.53	3.22	3.25	3.67	3.53
12. Indigenous Knowledge is the basis of decision-making in societal issues such as agriculture, education and health.	2.75	2.78	3	3.33	2.83
13. Western science and Indigenous Knowledge is one and the same thing.	1.96	1.89	1.75	1.33	1.94

14. Indigenous Knowledge is obtained through the scientific method.	2.02	1.89	1.25	1.33	1.96
15. Indigenous Knowledge is documented knowledge.	2.51	2.67	2.25	2.33	2.54
16. Indigenous Knowledge generalizations have rational and logical dimensions.	2.98	3.11	3	2.67	3.03
17. Facts within are tested.	2.78	2.11	2.75	2.33	2.71
18. Facts within Indigenous Knowledge are experimental.	2.73	3	3.25	3.33	2.86
19. Language is important to the acquisition of Indigenous Knowledge.	3.44	3.44	3.5	3.67	3.50
20. All events in Indigenous Knowledge have natural causes.	3	2.67	3.5	2.67	3.01
21. Language is an important creative force in Indigenous Knowledge.	3.47	3.11	3.25	3.67	3.47
22. Indigenous Knowledge is a wealth of knowledge important for survival.	2.91	3.11	3.25	4	3.04
23. Knowledge explanations of Indigenous Knowledge relate to traditional beliefs and lifestyles of people.	3.18	3.44	3	3.67	3.27
24. Indigenous Knowledge is based on questioning and discovering answers.	2.51	3	2.5	3	2.63
25. Indigenous Knowledge is passed by societies as accumulated, useful or important knowledge related to their existence.	3.16	3.56	3.25	3.33	3.27
26. Indigenous Knowledge is passed from generation to generation by word of mouth or learned by experience.	3.47	3.78	3.25	3.33	3.54
Average	2.89	2.93	2.89	3.01	2.94

p-value= 0.90    alpha= 0.05    not significant

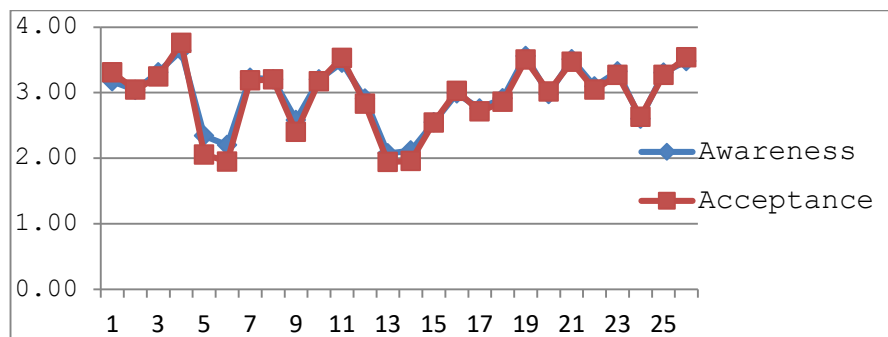
In general, Indigenous Knowledge Systems enable everyone to move the frontiers of discourse and understanding of the sciences as a whole and to open new moral and cognitive spaces within which constructive dialogue and engagement for sustainable development and collective emancipation can begin. In the process of changing the content of the curricula and educational system, an integrated research project—which may be drawn from classroom-based research, teacher training, collaborative projects of various institutions, and the active participation of indigenous peoples—can forward the role of education



as emancipatory for indigenous peoples. In this way education is directed at empowering indigenous peoples and helps enhance their role as decisive agents of cultural advancement.

### 3.4 Correlation between the Awareness and Acceptance of Teachers on the Concepts of Indigenous Knowledge

Figure 2 presents the correlation between the level of awareness and acceptance of teachers on the concepts of indigenous knowledge. As shown in the figure, the result established very strong linear relationship between awareness and acceptance of teachers on the concepts of Indigenous Knowledge revealing a high relationship of .99 (appendix E, correlation matrix). The finding revealed that acceptance of teachers has a positive relationship with the identified concepts of Indigenous Knowledge with strong linear correlation with awareness. Since the concept that local languages are part of Indigenous knowledge tangibles established the highest degree of relationship among the identified concepts of indigenous knowledge, it has found the said indicator plays the best predictor of teachers' acceptance on the concepts. Indigenous People and their indigenous knowledge systems have been formally recognized by the United Nations, and the Civil and Human Rights Movements since 1992 and the 21st of August is now recognized as the commemoration of the International Day of the World's Indigenous People. Many countries, including the Philippines issued Policy Documents not only to endorse the rebirth of the previously suppressed indigenous but also protect their intellectual rights and encourage and incentivise researchers and education systems to include IKS in their core activities. Indeed, the Centre for Advanced Research on Indigenous Knowledge Systems established in 1993 in Mysore in India stands as an exemplary success of how government policy can be transformed into accredited high quality theoretical and applied research in the field of IKS; so much so that IK research became an integral component of all government's and NGOs development programmes.



$r=.99$  \*high relationship

Figure 2: Relationship between awareness and acceptance of teachers on the concepts of indigenous knowledge

In general, IKS research and teaching are yet to be internalized, but not without sufficient intellectual curiosity that is willing not only to break out of the comfort of its familiar zone but also to disrupt it and pose questions challenging the reluctance of most educators and academicians to explore this new source of knowledge, probing its potentials and studying its epistemology, assessing whether it can provide a complementary source of knowledge in such a diverse and multi-cultural Philippine society and robustly

debating such relevant issues as who owns knowledge, how is knowledge validated and invalidated, what are the criteria and yardstick used, whether knowledge has a life cycle, etc.

#### **4. Summary of Findings**

The following are the major findings of the study.

1. Teachers are moderately aware on the concepts of indigenous knowledge. No significant differences were noted on the perceptions of teachers on their awareness on the concepts of indigenous knowledge when grouped according to ethnic affiliation.
2. There is a moderate acceptance of teachers on the concepts of indigenous knowledge. There is no significant difference on the perceptions of teachers in their acceptance on the concepts of indigenous knowledge when grouped according to ethnic affiliation.
3. There is a high correlation between awareness and acceptance of teachers on the concepts of indigenous knowledge.

#### **5. Conclusion and Recommendation**

##### **5.1 Conclusions**

1. Teachers do not have full awareness and acceptance on the concepts of indigenous knowledge since they have varied understandings of Indigenous Knowledge.
2. There is no difference in the awareness and acceptance of IK in terms of ethnic affiliation
3. The awareness of teachers on the concepts of Indigenous knowledge greatly affects their acceptance on these concepts. Hence, there is a positive parallel relationship between the two variables.

##### **5.2 Recommendations**

1. Teachers are encouraged whenever possible and suitable to participate describing and interpreting their beliefs, thoughts and conceptual categories in their own terms in order to strengthen their awareness on the concepts of their Indigenous Knowledge.
2. Teachers should enrich their concepts on indigenous knowledge through seminar and training as well as engaging themselves in interpreting their own culture as well as others culture in order for them to fully accept the diversity Indigenous Knowledge.
3. Teachers should strengthen their awareness on the concepts of indigenous knowledge in order to have full acceptance on these concepts.
4. It is likewise recommended the inclusion of Indigenous Knowledge in the secondary school curriculum in the following three main ways: content, methodology and teaching aids.
5. It is also recommended to amend the current educational policies to accommodate Indigenous Knowledge in the secondary school curriculum.
6. Continuous research on the approaches on infusing Indigenous Knowledge into the curriculum is strongly recommended in order to particularly look into how Indigenous Knowledge content, methodology and teaching aids could be infused into the secondary school curriculum.
- 7.

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