




BILANGAN 2

Selected Papers from the 2019 International Conference on Cultural Statistics and Creative Economy






MICHAEL KHO LIM
ROEL HOANG MANIPON
Editors

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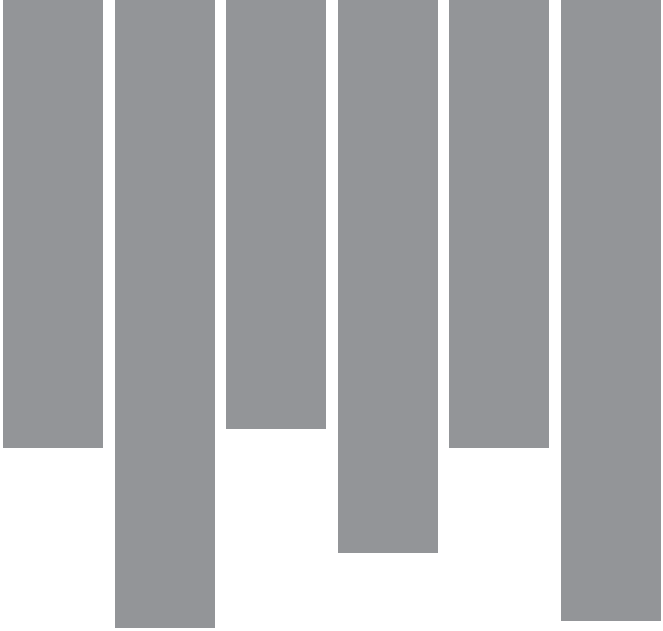
National Commission for Culture and the Arts



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Bilangan *is a word in Filipino meaning the "act of counting."*

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FOREWORD

Creative economy was coined and popularized by British author and media manager John Howkins in his book *The Creative Economy: How People Make Money from Ideas* (2001). This concept flourished at about the same time when 'creative industries' was introduced by the British government through a mapping document published by the Department for Culture, Media and Sport in 1998 (Newbigin 2016, p. 6). The last two decades have seen the rise of these buzzwords, and many nations (mostly in the global north) have channelled their efforts into growing their respective creative industries and creative economies.

According to the United Nations Conference on Trade and Development (UNCTAD), there is no single definition of creative economy. It is an evolving idea that "builds on the interplay between human creativity and ideas and intellectual property, knowledge and technology" (n.d., n.p.). Similarly, creative industries have its own definitional issues that have led to the emergence of different creative industry models and propelled ongoing debates in the field. Both terms are typically used in relation to each other: The creative industries are what keeps the creative economy alive, while creative economy is the totality of or the impact generated by the creative industries.

In the global south, the Philippines is said to have a thriving creative industry and creative economy but there is no strong evidence to support this claim because of the lack of consistent data supply. There was an early attempt to study the Philippine creative industries when the World Intellectual Property Organization published the *National Studies on Assessing the Economic Contribution of the Copyright-Based Industries* in 2007 (Francisco et al 2007, p. 3). Although the report says "copyright-based

industries," they refer to the same industries that are considered as "creative industries" based on any of the classification system used for the cultural and creative industries (UNESCO 2013, p. 22). Subsequent studies have been made by Morato in 2010 and by del Prado in 2014, which specifically used the term *creative industries* (Lim 2019a, p. 245).

Early this year, a state of the sector report was made but it is only focused on the film industry (Lim 2019b). No other research has been made outside of these accounts. Clearly, there is a dearth of literature and a significant gap to fill in this research area.

On March 16, 2016, the Philippine government has taken a more concrete action to develop the country's creative industries when the Philippine Statistics Authority Board approved the Philippine Cultural Statistics Framework, as proposed by the National Commission for Culture and the Arts (NCCA). It is a localized version of the 2009 UNESCO framework for cultural statistics, which is "a classification instrument that includes taxonomies of industries, goods and services and occupations from recognized international standard classifications for use in cultural statistics" (PSA 2016, Annex 1). This is also a key document that serves as the quantitative and qualitative basis for the country's cultural policy development.

Following this, the NCCA adopted a twelve-point research agenda that include the need for a baseline information of the Philippine creative industries and approved the call for proposals for research on culture and the arts 2017 in its regular commission meeting on November 24, 2016 (NCCA 2016, Annex 1). Thereafter, the NCCA started holding the International Conference on Cultural Statistics and Creative Economy in 2017. It aims

to provide a platform that will encourage researchers to conduct more studies in this emerging field toward the creation of a reliable data bank and foster a continuing dialogue among researchers, industry members and policymakers.

On its third year, the conference sets out the theme "Cultural Statistics and Creative Economy as Drivers of Cultural Development," where the NCCA highlights the role and contribution of culture to the country's overall progress and development. This collection exhibits the researchers' commitment to explore and challenge the dynamic concepts of creative industries and creative economy in the Philippine context.

In her paper, Irish Joy G. Deocampo analyzes the implementation of the indigenous peoples' education framework for Sama Dilaut, who migrated to Batangas, part of a region where the Tagalog people are native. On the other hand, Maria Fatima L. Jingco seeks to make the teaching of Physics more understandable and relatable to the indigenous Mangyan of Mindoro Island. Ronald J. Maliao uses local ecological knowledge to understand fisheries trend in Batan Estuary in Aklan while Mark Anthony A. Durana documents and promotes indigenous knowledge systems and practices in Capiz while explaining the scientific principles behind them. Barry C. Gundayao and Raniel B. Taripe aim to measure awareness and attitude of students on the proposal of making the Old Tagalog script or *baybayin* a national writing system. On the other hand, Ann Bernasyl E. Vestal et al. try to find out the level of awareness of millennial students on Cebuano folk dances. Gerald Gracius Y. Pascua surveys state-funded cinematheques and their impact in forming an alternative film viewing culture.

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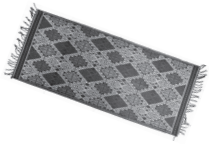


INDIGENIZING THE K-12 CURRICULUM: IMPLEMENTING THE INDIGENOUS PEOPLES' EDUCATION CURRICULUM FRAMEWORK AT MALITAM ELEMENTARY SCHOOL

By Irish Joy G. Deocampo
University of the Philippines in Diliman

Abstract

As an exploratory study, this paper aims to document and analyze the implementation of the indigenous peoples' education (IPEd) framework at Malitam Elementary School, where the Sama Dilaut or Bajao who migrated from Mindanao are currently enrolled. The study uses the test of significance on the data of student enrollment and retention of Sama Dilaut learners within a three-year period since the IPEd framework was implemented in 2016. The results of the trend analysis can serve as supporting data for the identified challenges of the teachers in implementing the framework. This research can also serve as a baseline study in understanding the operationalization of IPEd in a community where the indigenous group is considered a minority. It also hopes to gain a more nuanced understanding of integrating indigenous peoples in institutions such as public schools and ultimately influence the redesigning and reconceptualization of policies like IPEd framework.

Traditional knowledge is at the core of indigenous identity, culture and heritage around the world, according to the chair of the United Nations Permanent Forum on Indigenous Issues (United Nations, 2019). This particular acknowledgement has contributed to the growing global attention on issues of preserving indigenous knowledge. In the Philippines, indigenous communities face several problems, including displacement and aggressive urbanization. These problems also pose a threat to the preservation and enrichment of indigenous knowledge systems and practices (IKSPs). According to a national report, almost 14 percent of the country's population is indigenous. They are among the poorest and the most disadvantaged social groups in the country (De Vera, 2007).

The Sama Dilaut, a Sama subgroup which is also called Bajao (also spelled Badjao or Bajau), are among the most misunderstood, and marginalized among the Philippine Indigenous groups. The Sama Dilaut traditionally live in the waters of the Sulu Sea, between Tawi-Tawi and Sabah (Lagasa, 2015). But over the decades, wars, piracy, discrimination, fishing and environmental issues have caused a number of them to leave their traditional maritime home range and seek refuge in other places including urban areas. Thus, this give rise to the "displaced and urban Bajao," who often resort to begging, a practice that further exposes them to physical and social vulnerability, and which becomes a problem (Macalandag, 2009).

Historically, the Sama Dilaut own no land or other properties ashore except for small burial islands. They are a highly fragmented people with no overall political unity (Macalandag, 2009). In contrast, a majority of indigenous populations reside in the uplands, which they claim as part of their traditional territories. Most of these areas are regarded as ancestral domains and are located within environmentally protected zones (De Vera, 2007). However, most Sama Dilaut do not really have a notion of ancestral domains because they are generally sea-dwellers, and their primary concern is to sustain their livelihood (Soriano, n. d.). Consequently, most national policies prioritize issues of land tenurial security and resource management (De Vera, 2007; Macalandag, 2009).

As a result, other important and urgent issues like social inclusion, discrimination and displacement are excluded and not prioritized in usual discourses. In fact, the Philippine Center for Investigative Journalism (PCIJ) reports that "the high correlation between ethnicity and poverty is compounded by a long history of discrimination and prejudice." (De Vera, 2007).

Finding Appropriate Solutions

The Sama Dilaut are considered to be one of the most marginalized indigenous peoples in the Philippines because of the perception that they are a nomadic people (Macalandag, 2009). They are stereotyped as "urban beggars" and "coin divers." They come from Mindanao and have been forced to move to the cities and nearby piers to escape the conflicts in Mindanao.

Jesuit priest and anthropologist Fr. Albert Alejo believes that the solution to this marginalization is to empower the Sama Dilaut to speak up for themselves: "The way I see it, let's look for leaders in the Badjao communities

and bring them out and support their suggestions." (Lagasa, 2015)

In 2015, the Department of Education released Order 32, "Adopting the Indigenous Peoples' Education (IPED) Curriculum Framework," which seeks to provide guidance to schools and educational programs on localizing, indigenizing and enhancing the recently approved K-12 curriculum. This policy hopes to address the current plight of indigenous peoples in the country (Department of Education, 2015).

Fundamental to the IPEd framework is institutionalizing partnerships between the IP community and respective school/s. The proposed framework assumes that an inclusive and participatory education for indigenous peoples will uplift and contribute positive changes to their communities (Department of Education, 2015). This echoes Fr. Alejo's proposal of empowering the Sama Dilaut through active involvement of the members of the community. This involvement is further realized in the identification and integration of indigenous knowledge systems and practices of the community in the curriculum content—a mechanism that serves as the core of the IPEd framework.

However, the IPEd framework is a new mandate that has not been uniformly implemented in the country and the IP communities (especially the Sama Dilaut) have not yet responded to the different contexts adequately. Hence, there are possible major challenges in implementing this framework. These include the displacement of IPs to urban centers, the inadequate training of IPEd teachers, and the lack of learning materials and resources. Aside from these curriculum-related problems, external concerns like poverty and poor health conditions also hinder IP students from gaining full access to education.

It is also important to note that there is a long history of attempting to integrate the indigenous communities in the national education system. According to a consolidated report, entitled "Indigenous Peoples Education: From Alienation to Rootedness," there have been several initiatives that aim to improve the access of IPs to the public-school system. The consolidated findings outline the different dimensions of indigenous people's experience of education: (a) school as avenue of discrimination, (b) schooling as an experience of non-being, and (c) discussion limited to surface culture.

As a space, schools are often the first place where IPs experience discrimination and othering. This discrimination is reinforced further in the class discussions where indigenous culture is the topic. Most school textbooks portray the IPs' way of life as primitive and a thing of the past, which leads indigenous students to view their practices as inferior.

The Episcopal Commission on Indigenous Peoples further confirms this: "In cases where the 'culture' of indigenous peoples is included in the discussion, there is a tendency to highlight artifacts and practices (songs, clothes, etc.), such that the understanding of culture is limited to surface culture and the tribe is associated with things instead of them being introduced as a people. This results in a shallow understanding of indigenous peoples as people and culture as a process, and indigenous peoples' identity being limited to blood affiliation instead of including the

cultural heritage and history of the community" (2008).

Partnerships with Malitam Elementary School

My first encounter with a Sama Dilaut community started when I was invited to join Solar Hope (Sustainable Outreach and Lifelong Advocacy to Rekindle Hope) in 2017. Solar Hope is a non-profit organization, founded in 2017, that aims to develop sustainable communities through a three-pronged approach: Electrification, education and livelihood ("SOLAR Hope," 2017). One of the organization's host communities is the *barangay* of Malitam in Batangas, where there are about 1,000 Sama Dilaut families.

Currently, the organization is working on developing education-related initiatives that aim to address the poor attendance of and lack of basic literacy skills among Sama Dilaut learners. SOLAR Hope identifies these as the main challenges during its initial community mapping. The organization later forms a formal partnership with Malitam Elementary School (Malitam ES), where the Sama Dilaut students are currently enrolled. It is located at the center of the Malitam community and is accessible via vehicles. The student population comprises both the Tagalog and the Sama Dilaut communities. Currently, the school personnel include one principal, 32 elementary school teachers and one administrative staff. There are seven teachers assigned to teach the IPEd curriculum ("SOLAR Hope," 2017). As of writing, SOLAR Hope is working with the IPEd teachers in improving the implementation of the said framework.

The main goal of SOLAR Hope's project is to co-design and implement an IKSP-based curriculum for the Sama Dilaut learners at Malitam ES by school year 2022. The curriculum will enable students to fulfill the learning competencies and gain a more nuanced understanding of their traditions and identities as members of the Sama Dilaut community. At the same time, the project also aims to assist the IPEd teachers in the school. The goal of this exploratory study is to help best inform the organization of the most effective and appropriate steps in implementing the project ("SOLAR Hope," 2017).

Documenting Narratives and Gathering Data

This study adopts the mixed methods of collecting quantitative data based on the existing data of Sama Dilaut students and documenting narratives via focus group discussions and interviews with the IPEd teachers of Malitam ES. The community profile prepared by SOLAR Hope founder, engineer John Mark Napao, is also used as part of the data.

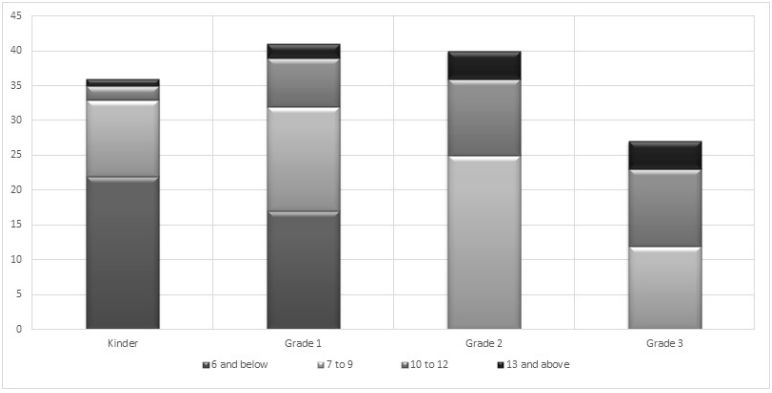
According to Marichelle Fajutagana, the school's IPEd coordinator and primary contact for this study, IPEd implementation began in 2016. Selected teachers were invited to attend a training seminar on the new IPEd framework in Batangas. In its first year of implementation, five teachers were assigned to teach the IPEd curriculum. Two teachers were assigned to teach multi-grade levels (Grades 1 and 2 and Grades 5 and 6) in IPEd classes. Only the Grade 4 class comprised both Tagalog and Sama Dilaut students, while the rest of the grade levels comprised Sama Dilaut students only. The following school

year (2017-2018), when the students have progressed to Grade 5, the same grouping or class composition was still used. However, during school year 2018-2019, all grade levels of IPEd classes comprised of Sama Dilaut students only (personal communication, May 11, 2019).

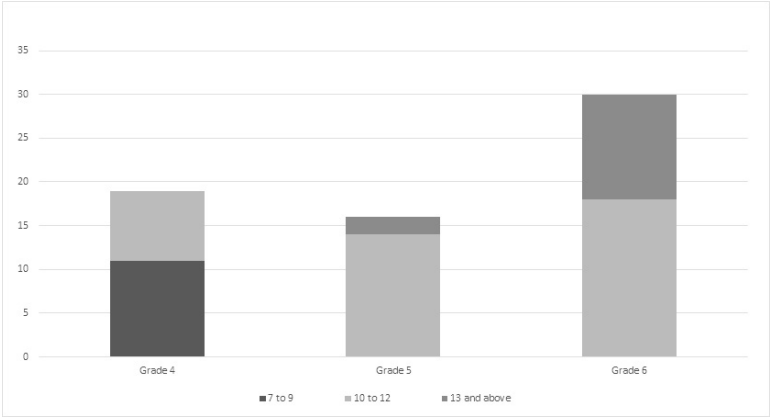
Struggles of Sama Dilaut Students at Malitam Elementary School

Prior to the IPEd implementation, Sama Dilaut students were not segregated from other students. However, Sama Dilaut students generally describe their experiences interacting with non-Sama Dilaut students to be negative. In these classes, non-Sama Dilaut students would often discriminate against their Sama Dilaut classmates. The Sama Dilaut learners are often teased for their identity and connotations of being ignorant, dirty and mendicant. These perceptions cause Sama Dilaut students to see their culture as inferior to their classmates'. Aside from being othered, some Sama Dilaut students also feel ashamed for being overaged in their classes (M. Fajutagana, personal communication, May 11, 2019). Below is a chart tabulating the age profile of Sama Dilaut students for the current school year:

Age Profile of Sama Dilaut Students per Grade Level for School Year 2019-2020 (Primary Grades)



Age Profile of Sama Dilaut Students per Grade Level for School Year 2019-2020 (Intermediate Grades)



The age range of the students for each grade level is plotted, considering the expected average age of students when they were admitted in each grade level. For example, the average age for kindergarten students is between four and six years old, depending on how early they are sent to school. For primary grades, the common average age range of students is between seven and nine years old, and for intermediate grades, the average age range is between 10 and 13 years old. Students aged 13 years old and above are usually expected to have finished elementary school and have proceeded to junior and senior high school.

Based on these data, it can be observed that in the early grades, majority of the student population are within the average age range of its corresponding grade level. However, it can be noted that even as early as kindergarten, there are students aged 13 years and above. This means that in a kindergarten class, the age gap between the youngest and oldest student is almost ten years. This is not an uncommon case among classes with Sama Dilaut students. Some Sama Dilaut children who migrated to Batangas with their families have never had the chance to enter school (M. Fajutagana, personal communication, May 11, 2019). Poverty is the most common reason. Some students are encouraged to work than to study. While this situation also holds true for students of other ethnic groups around the country, the constant displacement of Sama Dilaut families compound their problem of poverty. Since the families are always moving from one place to another, enrolling their children to schools is almost impossible. In case a child gets enrolled, s/he must drop out from school if her or his family transfers to another region. The student is unable to complete a school year and repeats the grade level when she or he enrolls in a new school (J. M. Napao, personal communication, February 23, 2019).

Aside from poverty, one other factor that hinders the timely enrolment of Sama Dilaut students is the need to submit official documents for school admission. During a site visit last year, Napao interviewed one mother from the Sama Dilaut community. When asked how many of her children were in school that time, she said that one of her children was not able to enroll because the child's birth certificate was left in Mindanao (J. M. Napao, personal communication, February 23, 2019). The birth certificate is usually one of the major prerequisites for enrollment in schools. She added that she was unable to pack the birth certificate because her family was in a hurry to leave when the war in the region broke out.

Fajutagana also mentions that most overaged students enrolled in the primary grade levels often feel a sense of shame for being the oldest in the class. They tend to feel left out and stigmatized. To address this issue, teachers often give leadership roles to these older students. They also serve as teacher assistants and will often be given more tasks than their younger classmates (Fajutagana, personal communication, May 11, 2019). When the IPEd framework was implemented, some of the older students would also help the teachers translate classroom instructions

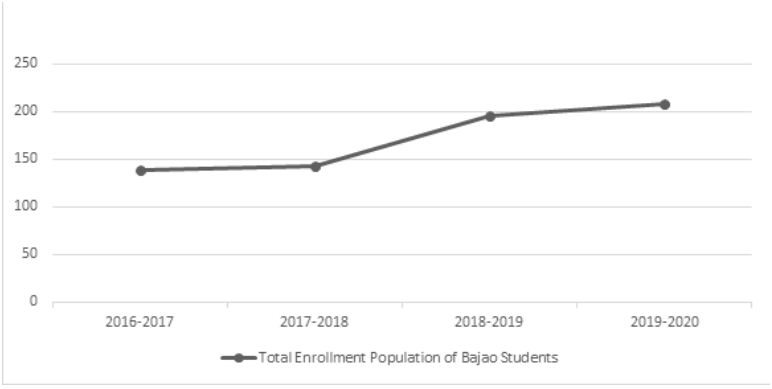
from Tagalog to any of the Sama or Sinama languages (the mother tongue of Sama Dilaut). The increased level of participation has allowed older students to be more integrated in the class and to reduce the propensity for insecurity.

Impact of IPEd Framework on Student Population

In order to determine the possible effects of the IPEd framework on the Sama Dilaut students, data on the student population of Sama Dilaut learners were also gathered before and after the IPed framework was implemented.

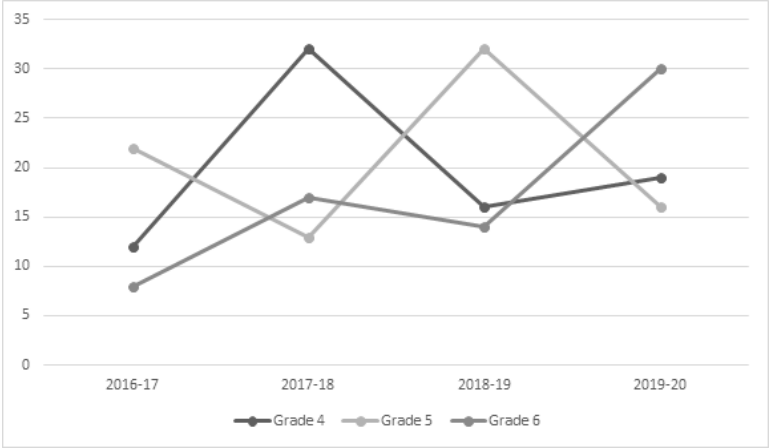
According to Fajutagana, however, no data has ever been recorded on the number of Sama Dilaut students enrolled in each grade prior to the IPEd framework implementation because the Sama Dilaut students were in mixed classes then. Data on the student population are only available from 2016 during the first year of IPEd framework implementation. The following charts illustrate the enrollment population per grade level.

Total Enrollment Population of Sama Dilaut Students

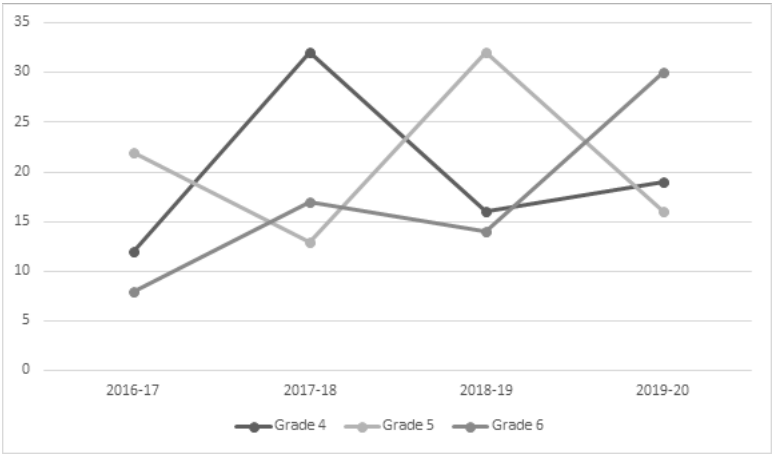


The Wilcoxon Signed Rank Test is used to test and compare whether the median of one school year is the same as the other (e.g., SY 2016-2017 vs. SY 2017-2018). The Wilcoxon Signed Rank Test is the nonparametric test that does not assume normality in the data (Laerd Statistics, n. d.). While the raw data demonstrate an upward trend, the computation reveals that each comparison is not significant at 0.05. This means that there is insufficient evidence to indicate that the population has increased or decreased from one school year to another. From these findings, the enrollment population per grade level in each school year is mapped out in the following graphs.

Enrollment of Sama Dilaut Students in the Primary Grades



Enrollment of Sama Dilaut Students in the Intermediate Grades



Based on the trendlines, there is an increasing pattern in the enrollment population of the early or primary grade levels. The Grade 1 and Grade 2 population are especially noteworthy, because these batches have undergone the IPEd curriculum a year after its implementation. The data on these grade levels show an upward trend from school year 2016-2017 to 2019-2020. In the primary grade levels, the core skills being developed are literacy and numeracy. Most parents of Sama Dilaut students recognize the pragmatic use of these skills and want to ensure that their children undergo each grade level (The Episcopal Commission on Indigenous Peoples, 2008). This is a probable explanation for the consistent rise in student population in the primary grade levels.

In contrast, the data on the intermediate grade levels are fluctuating.

It must be noted that the students in these grade levels are already enrolled in the school prior to the implementation of the IPEd framework. A point for comparison is the population of Grade 6 classes in school year 2016-2017 and school year 2019-2020. A total of eight students are enrolled in Grade 6 for 2016-2017. This is also the school year when IPEd was first implemented in the school. This means that the graduating students of 2016-2017 have been taught using the IPEd framework only in their final year in school. For the first five to six years, they have been mixed with other non-Sama Dilaut students. Meanwhile, a total of 30 students are enrolled in Grade 6 for school year 2019-2020. Compared with the class of Grade 6 in 2016-2017, this current batch has undergone the IPEd framework since they were in Grade 3. This means that there is a 275 percent increase in the population of Grade 6 students from the first year of IPEd implementation to the present. It can be inferred that the period of IPEd implementation has a possible and significant effect on the retention rate of Sama Dilaut students in school. However, this claim needs further verification because there are also possible external conditions that must be identified and studied.

Experiences of IPEd Teachers at Malitam Elementary School

Even three years after the implementation, IPEd teachers at Malitam ES still face several difficulties. One primary challenge is the language barrier. In the recently approved K-12 curriculum, the students' mother tongue should be used to teach the major concepts. There is also a separate core subject, MTB-MLE (Mother Tongue-Based Multilingual Education), which focuses on developing students' competencies in the use of their mother tongue.

The locality's mother tongue is often determined by its geographical location and the ethnic group/s residing in it. In the case of Malitam ES, the predominant mother tongue is Tagalog because the school is located in Batangas, which is part of the Tagalog region. Thus, it is not surprising that students and staff of Malitam ES consider Tagalog as their mother tongue. Even the IPEd teachers are mostly Tagalog speakers and not one of them can speak any of the Sama languages. This proves to be a major challenge during class discussions and regular teacher-student interaction because majority of the Sama Dilaut population can only speak the Sama languages.

To address this concern, some mothers from the Sama Dilaut community volunteer as teacher assistants and help translate for both the teachers and the students. However, the mothers are not always available because they need to stay at home and look after their younger children. In some cases, teachers identify students who can understand both Tagalog and Sama and assign them as the class translator. Often, the overaged students in the primary grade levels carry out this role (M. Fajutagana, personal communication, May 11, 2019).

The issue on language incompatibility has the most impact on the primary grade levels (Kinder to Grade 3), where teachers are expected to teach the MTB-MLE subject. This means that aside from teaching using the Sama languages, the teachers are also expected to have a certain level of competency to teach its linguistic structures. There is also the problem of creating the content of lessons and learning materials for the IPEd classes.

Currently, there are no textbooks available for Sama Dilaut students, so the IPEd teachers are forced to improvise and create original materials from scratch. To lessen the burden of planning the content of the materials, the teachers use existing textbooks produced for the Tagalog students and then ask the help of Sama Dilaut members in translating the content to Sama (M. Fajutagana, personal communication, May 11, 2019).

Rethinking the IP Education of the Sama Dilaut

Several literatures on indigenous education in the country have critiqued the different attempts of designing and implementing the so-called "IP education." Even from a global perspective, indigenous education policies are usually identified to be counter-productive and worse, even harmful to the indigenous communities. The current plight of the indigenous students and the IPEd teachers in Malitam ES is almost similar, if not entirely the same, to other indigenous communities in other regions of the country and other countries of the world.

The UN Report on Indigenous Peoples pointed out that the lack of respect and resources cause critical education gap. Furthermore, there are very few teachers who can speak the language of the indigenous community. (Education for Indigenous Peoples, n. d.). This is especially true for indigenous communities that are displaced from their original homeland such as the Sama Dilaut community in Malitam. One potential solution to this problem is to train or hire Sama Dilaut teachers who are from the community to teach the Sama students. It is also suggested to hire the Sama Dilaut mothers as full-time assistants to the IPEd teachers. However, the teachers say that most of the mothers need to go back home to look after the household while some mothers also work as market vendors, so working full-time is not an option. Even if serving as a teacher-assistant can be a source of income, the school does not have enough funds to compensate for such services (M. Fajutagana, personal communication, May 11, 2019). There should also be a clearer and more compelling national language policy on preserving and developing indigenous languages in the country.

Another common problem in conceptualizing indigenous education is the method of transferring knowledge within most indigenous cultures. For example, the oral traditions of most indigenous communities like the Sama Dilaut are grossly neglected and almost invisible (The Episcopal Commission on Indigenous Peoples, 2008). However, since the mainstream education system is heavily reliant on written forms, it is difficult to integrate the oral traditions of the IPs in the curriculum. If non-IP teachers were to teach students from indigenous communities, the pedagogical framework should be redesigned to accommodate the needs of the students. In order to achieve this, there should be a more intuitive and intentional partnership between the community and the teachers.

It is crucial to highlight that these institutional changes are deemed futile if no major changes are undertaken to increase the political participation of indigenous peoples in policymaking. The material challenges of indigenous communities should also be addressed first before

they can fully participate in the community. For example, the Sama Dilaut families in Malitam also face the problem of land ownership. They are considered informal settlers in the community and their homes are always threatened by the possibility of demolition. This situation exacerbates their vulnerability and affects the schooling of their children (J. M. Napao, personal communication, February 23, 2018). This reality is similar to other Sama Dilaut communities in different parts of the country. Since migrating from the seas of Mindanao, Sama Dilaut communities continue to be threatened by displacement (Z. Soriano, n.d.).

Nevertheless, this reality is not necessarily addressed or considered in the IPEd framework, which assumes that indigenous communities are currently residing in their respective ancestral domain and traditional home range or at least within their regions. The IPEd framework is also silent on the plight of displaced IPs like the Sama Dilaut in Malitam who are currently residing outside of their traditional home range. It is also unclear how to integrate indigenous students in schools that are predominantly populated by students of other ethnic groups.

The situation of the Sama Dilaut in Malitam ES is a noteworthy case study because it informs IPEd advocates and policymakers of the gaps and the exclusions of the proposed framework. The conditions presented in this study also underscore the multilayered causes of the continuous struggle and hindrances of the Sama Dilaut toward achieving genuine self-determination.

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CONTEXTUALIZING PHYSICS INSTRUCTION FOR INDIGENOUS PEOPLES: THE MANGYAN EXPERIENCE

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Abstract

The Mangyan are ethnolinguistic groups indigenous to Mindoro Island. The western part of the island is dominated by the Tawbuid subgroup. These groups are usually marginalized because of their lack of formal education. There have been proposals for a specialized education that optimizes their daily routine and focuses on their cultures, beliefs and traditions. A branch of science that has practical applications in daily life is physics—something most indigenous peoples of Mindoro are not aware of. The researcher utilizes contextualization for the Mangyan for them to better appreciate the concepts of physics. This study makes use of the Embedded Experimental Design, a mixed-method research design where quantitative results are used as main data sources and augmented by the results of qualitative documents. This approach is tested in both the performance in science subjects and motivation for learning of Grade 7 and Grade 8 Mangyan students. Reflective journals and semi-structured interviews reinforce the results. The t-test calculated for both science performance (mean = 12.48; 15.44, $t(24) = -4.23$, $p = 0.000$) and learning motivation (mean = 2.95; 3.38, $t(24) = -6.66$, $p = 0.000$) have a significant effect before and after the exposure to the contextualized approach. Meanwhile, reflective journals and semi-structured interviews reveal that Mangyan students enjoyed the approach because they can relate the concepts to their daily lives. This study concludes that the contextualized approach is successful in contributing to the performance in science and motivation in learning of Mangyan students in Physics.

The Mangyan is an ethnic group in Mindoro with eight subgroups: Hanunoo, Buhid, Tawbuid, Tadyawan, Alangan, Iraya, Ratagnon and Bangon. Ratagnon is the most widespread subgroup while the Tawbuid or the Batangan mostly occupy the western part. They are simple people who practice shifting cultivation of rice, corn, vegetables and tubers. Swidden agriculture or the kaingin (slash-and-burn) system is the most common farming practice of the ethnic group (Askeland, Bull and Mittelmarck, 2010). According to Bawagan (2010), Mangyan communities usually experience discrimination, exploitation and oppression from the lowland populace, relegating them to poverty. In fact, because of poverty and irrelevant teaching methods, only few Mangyans have the opportunity to continue formal schooling.

According to Fabella and Calda (2012), Mangyan education should have the following characteristics and elements: (1) the essentials being taught, (2) traditional ecological skills, (3) respect for the culture, (4) imposition of age and student number limits, (5) teacher's knowledge of the culture, (6) consultation with parents, and (7) communication skills.

Although the Philippines is one of the first in Asia to pass a law recognizing the needs of indigenous peoples—the Indigenous People Right Act of 1997—they are still considered the most impoverished and marginalized sector of society (Abejuela, 2006). Education is inaccessible to these communities because of the mountainous geography (Cornelio and de Castro, 2015; ECIP, 2002). Indigenous students are also discouraged from gaining mainstream education because of lack of cultural integration in schools. As a result, they are oftentimes bullied and discriminated (ECIP, 2002; Sense ASEAN, 2016).

The United Nation (UN) sets the inclusive education of indigenous people as one of their priorities (UN Conference, 2014). Inclusive education is described as "education for all students" regardless of any challenges they may have. It espouses quality instruction, interventions and supports that enable students to meet success in the core curriculum (McManis, 2017). The UN Conference in 2014 reveals that even though efforts are made through the Millennium Development Goals (MDGs), not all learners benefit equally. Marginalized groups, including indigenous peoples, are left behind. Also, the meeting reiterates Article 14 of the UN Declaration on the Rights of Indigenous Peoples: "Indigenous peoples have the right to establish and control their educational systems and institutions providing education in their own languages, in a manner appropriate to their cultural methods of teaching and learning." To realize this right, inclusive education of indigenous peoples (IP) must be strengthened.

The Department of Education (DepEd) recognizes indigenous peoples' rights. Hence, indigenous peoples' education is included in the enhanced basic education curriculum. Science is one of the core subjects in the K-12 curriculum. Science links social movements such as technology, industry and sustainability (UNESCO, 2009). As early as grade school, students are expected to develop and nurture critical thinking skills through observation, experimentation, exploration and investigation. Despite the

curriculum designers' strong push for science education in the country, issues concerning students' low performance in science are still prevalent (Dela Cruz, 2017; Jalmasco, 2014; Marinas, 2002; SEI-DOST and UP-NISMED, 2011; Tan, 2009). The students' low performance is reflected in the annual National Achievement Test (NAT) results among elementary and high-school students.

International surveys such as Trends in International Mathematics and Science Study (TIMSS) attributes the students' low performance to the following factors: (1) lack of functional science laboratories (Jalmasco, 2014; Dela Cruz, 2017; Tan, 2009); (2) insufficient number of qualified teachers (Marinas, 2002; Tan, 2009: DOST-SEI-UP-NISMED, 2011); (3) overloaded and congested curriculum (Marinas, 2002; Tan, 2009); and (4) lack of quality textbooks and instructional materials (Tan, 2009). The Department of Science and Technology-Science Education Institute (DOST-SEI) and the University of the Philippines National Institute for Science and Mathematics Education Development (UP-NISMED) (2011) have designed a framework to address the issue of declining science performance in the country. In their report, they state that in creating a scientifically, technologically, environmentally literate and productive members of the society, the curriculum must focus on knowledge that is relevant to the real world and encompasses different methods of inquiry. The "Science for All" advocacy of the United Nations Educational, Scientific and Cultural Organization (UNESCO) (2010) views that everyone, including the indigenous communities, must have access to quality, basic science education in fighting poverty and improving quality of life.

Accordingly, science subjects in the enhanced K-12 basic education curriculum are facing a major reform to address the overloading and congestion issue. The subject will not be taught until the third grade, and this will be done in the spiral progression approach. The four quarters are divided into major topics such as Earth and Space, Living Things and their Environment (Biology), Matter (Chemistry), and Force, Motion and Energy (Physics). The Physics as subject is perceived to be difficult since it needs to associate ideas with mathematical or graphic representations (Ornek, Robinson and Haugan, 2008). Furthermore, Ekici (2016) says that what makes Physics difficult and complicated is that students cannot apply the concepts and calculations in real-world scenarios. They can solve mathematical problems but they cannot relate them to practical situations. Ekici also points out that Physics is a subject that is generally challenging to learn and teach. As such, the choice of teaching methods plays an important role in delivering the instruction (Stefan and Ciomos, 2010).

In the Philippines, the low mean percentage score (MPS) of students in the science area of NAT is a clear indication of the subject's difficulty. It is also important for teachers to think of ways to solve this predicament (Jalmasco, 2014). Learning-by-doing approach is vital to one's learning (Musasia, Ocholla and Sakwa, 2016). Thus, practical work and hands-on activities are some approaches in addressing the issue.

Correspondingly, it is important to address the issue of sustainability.

According to UNESCO (2012), sustainability is a worldview for pondering a future in which natural, social and financial contemplations are adjusted in the quest for advancement toward personal satisfaction. In 2017, UNESCO formulates the seventeen Sustainable Development Goals (SDGs), which include quality education. It states that quality and lifelong learning must be promoted through inclusive and equitable quality education. Moreover, UNESCO Director-General Irina Bokova (2017) emphasizes that education has a duty to be an apparatus for 21st century difficulties and needs in cultivating the correct qualities and aptitudes that will prompt feasible and comprehensive development and serene living.

Specific objectives are identified to achieve sustainability in education: (1) The learner understands the importance of culture in achieving sustainability; (2) the learner is able to recognize the intrinsic value of education and to analyze and identify their own learning needs in their personal development; and (3) the learner is able to use all opportunities for their own education throughout their life and to apply the acquired knowledge in every situation in promoting sustainable development. Therefore, the inclusion of sustainability in the teaching-learning process of Physics is a great idea especially for indigenous learners. One strategy in addressing and strengthening sustainable education is through contextualization.

Contextualization is adapting the curriculum to become meaningful and useful for the students (Rathburn, 2016). This particular process is mentioned in Republic Act 10533 or the Enhanced Basic Education Act of 2013. Section 10.2 states that the curriculum shall be contextualized and global. The curriculum shall be flexible enough to enable and allow schools to localize, indigenize and enhance the curriculum based on their respective educational and social contexts. According to Garin, Reyes, Domantay and Rosals (2016), contextualization can be done in all learning areas by using and maximizing the materials, activities, events and issues that are readily available in the local environment. To contextualize, teachers must use authentic materials and anchor their teaching in the context of the learners' lives. Moreover, culturally contextualized education motivates students to know more about their cultural heritage in order to appreciate and understand other cultural heritage.

In order to achieve DepEd's goal of quality "Science Education for All," the teaching of Physics to the Mangyan must be rolled out. A good start is to look into the Mangyan culture and their ways of life and see how the Mangyan can apply science in their own context. This may also include issues on sustainable education. In the process, the framework of science among the Mangyan will not only be expanded but will also be sustained and improved. Through contextualization, the Mangyan will have the opportunity to adopt DepEd's enhanced basic education system. This will facilitate a contextualized teaching approach that will help indigenous students like the Mangyan to relate science concepts in their daily lives and preserve their culture through science.

Research Problems

UNESCO's call for a quality basic science education for all and DepEd's enhanced K-12 curriculum prove to be insufficient to enhance students' performance in the mainstream public education system and in the indigenous community. This is commonly attributed to the manner of teaching the concepts and the failure to integrate one's culture or context in teaching these concepts. The main objective of this study is to describe the performance in science subjects and motivations of Mangyan students toward learning Physics through the contextualized approach. Specifically, it aims to answer the following questions:

1. What are the features and design of a contextualized approach to teaching Physics to Mangyan students?

2. Is there a difference between Mangyan students' performance in science before and after exposure to the contextualized instruction of teaching Physics?

3. Is there a difference between the Mangyan students' motivation toward learning Physics before and after exposure to the contextualized instruction of teaching Physics?

4. What are the manifestations of the Mangyan students' motivation toward learning Physics during the experience of the contextualized instruction of teaching Physics?

Research Design

This study utilizes the Embedded Experimental design (See Figure 1). It addresses the performance in science and learning motivation of Mangyan students toward Physics by using a contextualized teaching and learning approach. An embedded experimental model was used. It involves collecting quantitative data before and after the implementation of the contextualized approach, while qualitative data were collected during and after the process. Primary data collection was through quantitative research, while the qualitative method reinforced and provided additional information to support the quantitative data. It is both sequential and simultaneous since reflective journals were collected during the conduct of quantitative research, and semi-structured interviews were held to help explain the results.

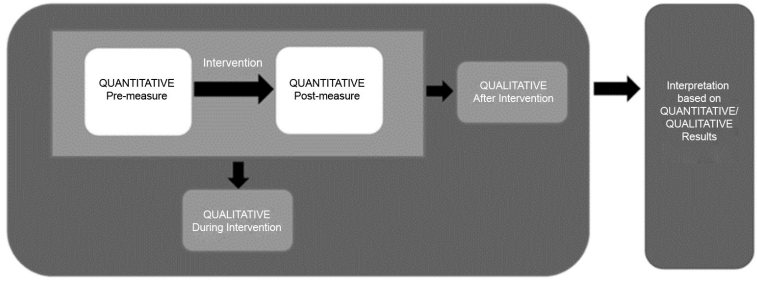

Figure 1. *Embedded Experimental Design (Creswell, J. W., 2012).*

Quantitative Design and Methodology

Quantitative data collection and analysis were done using a pretest-posttest instrument, an embedded qualitative data collection and analysis through daily reflection journal of the sample population and semi-structured interviews. The researcher utilized the One Group Pretest-Posttest design for the quantitative method, where the sample group takes a pretest, is exposed to the contextualized approach, and then takes a posttest to assess the effectiveness of contextualized instruction.

The contextualized approach used the 4PSR (Problem-Predict-Process-Product-Solution-Reflections) working model and was administered on 25 Mangyan students currently enrolled in the seventh and eighth grade. Sound and heat were Physics topics on the seventh grade, while laws of motion and work, power and energy were topics for the eighth grade. These were based on the immersion of the researcher who has observed and interviewed community members to extract the prevailing activities of the indigenous group. The exposure of the respondents to the contextualized teaching approach was 16 contact hours. Pretest and posttest were conducted accordingly.

Qualitative Design and Methodology

This research also employed case study analysis. According to McLeod (2008), case studies are in-depth investigations of a single person, group, event or community. Typically, data are gathered from various sources by using several different methods like observations and interviews. In this study, the exposure of the students to the contextualized approach served as the main component of the changes or improvement in their performance in science and learning motivation. Reflective journals and interviews were also main data sources.

Sample respondents are exposed to the contextualized approach in Physics instruction. During the topic discussion, respondents were required to write about their learning process and experience in their reflective journals. Nine journal entries were collected for Grade 7 respondents and ten journal entries for Grade 8 respondents. The semi-structured interview was conducted to summarize their thoughts and experience about the contextualized approach.

Results and Discussion

The Learning Plans

***Table 1**: Summary of the Means on the Validation of the Features of the Contextualization Model*

Indicators	Overall Mean	Description
Problem	2.67	Evident
Predict	2.67	Evident
Process	4.00	Highly evident
Product	3.00	Evident
Solution	3.33	Evident
Reflections	2.33	Slightly evident

Note: 3.45–4.00 (highly evident); 2.45-3.44 (evident); 2.45-1.44 (slightly evident); 1.45-1.00 (not at all evident).

Table 1 summarizes the responses of three expert validators on the different episodes of the teaching-learning process that forms part of the key features of the contextualization process. Experts were asked if the contextualization is evident in identifying the problem, predicting, processing, creating the product, providing the solutions and writing their reflections. The results reveal that experts have identified and rated the process part as the key feature where contextualization is highly evident with an overall mean of 4.00. On the other hand, the problem identification, prediction process, product creation and the provision of solution were described as evident by the validators with an overall mean of 2.67, 2.67, 3.00 and 3.33, respectively. The experts rated the reflection part as slightly evident with an overall mean of 2.33. This rating may be brought about by the fact that students were writing their reflections in a journal and contextualization was not observed. It is implied that the features of the contextualized model confirm that contextualization happened during the teaching-learning process.

***Table 2**: Summary of the Means on the Validation of the Learning Plan*

Indicators	Overall Mean	Description
Objectives	4.00	Highly evident
Content	3.75	Highly evident
Learning Context	3.68	Highly evident
Assessment and Evaluation	3.75	Highly evident

Note: 3.45–4.00 (highly evident); 2.45-3.44 (evident); 2.45-1.44 (slightly evident); 1.45-1.00 (not at all evident).

Table 2 summarizes the result on the validation of the learning plan anchored on the contextualized approach. Four experts were asked to validate the learning plan and activity worksheets using the four-point Likert scale Learning Plan Validation checklist. Validators were asked to rate the objectives, content, learning context and assessment and evaluation. As stipulated in the table, the objectives have a mean of 4.00 or highly evident. This means that the lesson objectives are clearly reflected in the learning plan. The content that is described by the facts, data and information have a mean of 3.75 or highly evident. This shows that there is a discussion of the data and information as emphasized in the learning plan. The learning context is rated 3.68 or highly evident. This also illustrates that the learners, learning environment, resources and materials are taken into consideration in the learning plan. Assessment and evaluation receive an overall mean of 3.75 or highly evident. This confirms that assessment and evaluation are measurable and aligned with the mentioned objectives and learning competencies.

The contextualized approach is an instructional model designed exclusively for Mangyan students. It is composed of six parts that include: (1) Problem (Students are given a general question and they search for the correct answer as the lesson is taught); (2) Predict (Students list down possible answers or enumerate keywords related to the problem

that may or may not help them in answering the question); (3) Process (Students actively engage in performing activities that will lead them to answer the problem); (4) Product (Students showcase their output); (5) Solution (Students present the answer or solution to the problem); and (6) Reflections (Students write their thoughts and insights about their learning experience). Included in the lesson is the contextualization of the concept since Mangyan education should have the characteristics of essentiality, which means the most important things must be taught.

Based on the results of the validation of the learning plan, the lesson's content is aligned with the features of the contextualized approach. It is highly evident that the six essential parts of the model are highlighted.

Science Performance Using the Contextualized Model Approach

***Table 3**: Descriptive Statistics and t-test Results for Performance in Science*

	Pretest		Posttest			95% CI for Mean Difference				
Outcome	M	SD	M	SD	n			p	t	df
Science Performance	12.48	4.09	15.44	4.71	25	-4.40,	-1.52	.000*	-4.23*	24

**p < 0.05 = significant*

A paired sample t-test was conducted to compare the results of the pretest and posttest before and after the exposure of the Mangyan students to the contextualized approach. There is a significant difference on the pretest (M = 12.48, SD = 4.09) and the posttest (M = 15.44, SD = 4.71) results of the Mangyan students: t (24) = -4.23, p<0.001. These suggest that the contextualized model approach has the effect on the performance in science of Mangyan students. Specifically, the contextualized approach to teaching Physics helps students understand science better.

Table 3 shows that the utilization of the contextualized model is effective in improving the performance in science of Mangyan students. Based on the results of the pretest, it can also be concluded that Mangyan students perform low in science. After the exposure to the contextualized approach with 16 contact hours, which correspond to the 16 topics and lessons—nine lessons for Grade 7 and seven lessons for Grade 8—there is a significant increase on the students' performance on the subject. It can then be implied that the utilization of the contextualized model is a great intervening factor in improving student performance. It can also be predicted that the usage of contextualized lessons makes students understand the concepts even better because they have become useful and meaningful to them (Rathburn, 2017). It was easy for them to analyze these concepts because they can relate to the examples provided, as they are actually happening in their daily lives.

Other factors like hands-on activities and practical science applications in the Mangyans' daily undertakings were also contributors

to the increase of students' performance. Musasia, Ocholla and Sakwa (2016) assert that hands-on activities provide students with a better understanding and experience of the concepts, and thereby increasing their performance. Moreover, Bilican, Carkiroglu and Oztekin (2015) explain how contextualized education increases the academic performance of students. The structures of hands-on activities and contextualized lessons are the major features of the contextualized model, which have led to the improvement in science performance among Mangyan students.

Science Motivation Using the Contextualized Model

***Table 4**: Descriptive Statistics and t-test Results for Motivation for Science*

	Pretest		Posttest			95% CI for Mean Difference				
Outcome	M	SD	M	SD	n			p	t	df
Science Motivation	2.95	0.32	3.38	0.205	25	-0.5595,	-0.2949	.000*	-6.66*	24

**p < 0.05 = significant*

Table 4 summarizes the responses of the Mangyan students in the science motivation questionnaire. A paired sample t-test was used to determine whether there is a significant difference on the learning motivation of Mangyan students before and after they were subjected to the contextualized instruction. There is a significant difference on the pretest (M = 2.95, SD = 0.318) and posttest (M = 3.38, SD = 0.205) responses of Mangyan students in the science motivation questionnaire: t (24) = -6.66, p<0.001. These suggest that the contextualized Problem-Based Learning (PBL) model raises the learning motivation of students. Specifically, the model is a good avenue to motivate Mangyans in learning science.

The contextualized approach aims to enhance the learning motivation of students toward the subject. The structures of the working model are created to target not just the students' performance but also their enthusiasm to learn more. It is equipped with activities designed in the Mangyan context and reinforced by practical concept application in the community. According to Jou (2013), learning motivation can be achieved by using activities students can significantly relate to or associate with. This feature is employed in the contextualized approach for the Mangyan community. It can be predicted that the progress before and after the exposure is brought about by the contextualized learning activities. In their study, Darbyshire and Haarms (2015) confirm that conceptual applications in the students' daily lives are great sources and providers of intrinsic motivation. Glynn and Koballa (2006) define intrinsic motivation as a form of motivation where an individual is driven to learn more because of self-efficacy. This particular feature can be found in the contextualized model, which is responsible for the increase of learning motivation among Mangyan students.

It is the task of every teacher to motivate their students in class. Increasing the interest of students in a difficult subject such as Physics is challenging. Students' motivations come in a variety of types. According to Glynn and Koballa (2006), there are six categories of students' learning motivation. These include intrinsic motivation, extrinsic motivation, responsibility, self-efficacy, and relevance to personal goals.

The contextualized model does not only target the increase in the science performance but also on the learning motivation of Mangyan students. One probable reason why Mangyans are not pursuing higher education or formal schooling is because of their lack of motivation to learn. The researcher adopted Glynn and Koballa's (2006) science motivation questionnaire to determine the learning motivation source of Mangyan students.

The results presented in Tables 5 and 6 complement each other. There is an increase in the motivation levels of students from the pretest and posttest results. Consequently, those who identify relevance (personal goals) as their motivational source have the biggest increase. Therefore, the implementation of the contextualized model has a big impact on students because it integrates the culture, tradition and customs of the indigenous community. Students are motivated to learn because they are exploring and investigating the richness of their culture through a scientific eye.

Manifestations of Science Motivation Using the Contextualized Model Approach

Table 5 presents the results of the triangulation of the students' reflective journal. There are five prevailing themes that describe the motivation of students in class. These motivations are brought about by the activities, real-life applications, the teacher and the importance of science. The last theme reveals that students manifest their motivation in a subject recitation and class participation. Motivation can be described as the increase in the interest of an individual in a particular activity, which is brought about by feelings of happiness and excitement.

Table 5 establishes the fact that students are excited in learning science. As Student B mentioned, "I am so excited on what will happen." This means that students quantify their learnings throughout the day. It can also be implied that they have learned a lot because they are listening to the teacher and/or actively participating in class activities. These actuations are connected to the interest of the students and their learning motivation. Another repeating statement is "I like to listen and recite in class." Being attentive, participating actively in class and getting high scores in quizzes are direct indicators that students are motivated in class. Students also indicate that visual aids, the teachers themselves and their teaching delivery are all sources of their learning motivation. All these illustrate that Mangyan students are greatly motivated in learning science during their exposure to the contextualized approach.

The results of the semi-structured interviews are also aligned with Nayir's study in 2017. It states that the students' learning motivation is

Table 5. Learning Motivation-Related Themes Extracted from the Journal

Sample Transcript	Sub-themes	Themes
It is really fun doing activities in science. I am so excited on what will happen. My group and I was so amazed when the food color in hot water goes up. The "Show Me" activity is also exciting when we demonstrated the different behaviors of molecules.	• Excitement • Demonstration • Activities	Motivation through activities
I was able to report. I like the feeling. I always raised my hand to answer. I like the lesson because I learned a lot.	• Report • Recite	Intrinsic motivation through recitation and participation
I want to listen to the teacher because I know I have so much to learn in science. It makes me learn more about science because there so many application in our everyday life. I know that in everything that we do, there is Physics.	• Like • Learning a lot • Listen • So much to learn	Intrinsic motivation because of the importance of science
It makes me so excited to learn science more because of these applications.	• Learn more • Applications • Excitement	Motivation through applications
I am shy to recite but I wanted to raise my hand always when Ma'am is teaching. I like our teacher, she explained and teach very well that is why I like to listen and recite in class. Next time, I will not be shy in answering her questions.	• Recite • Listen • Teacher	Motivation because of the teacher

related to the level of class engagement that can be seen in group activities and the teachers themselves (Llabao, Sagun, Tamangan, Pattalitan, Dupa, and Bautista, 2016). The Mangyan respondents demonstrated an improvement in their motivation levels because of their engagement in class based on the activities designed by the teacher-researcher herself.

Conclusion

The contextualized approach to teaching Physics opens and provides opportunities for Mangyan students to gain quality basic science education. The process of contextualization helps Mangyan students improve their performance in science and enhance their motivation for learning the subject.

The contextualized model is proven effective based on the analysis of quantitative and qualitative data. The quantitative results present the

exact measurement of the performance and motivation of the Mangyan respondents before and after their exposure to the contextualized approach. The qualitative data sourced from the richness of the journal entries and interviews have augmented the quantitative data and yielded the same findings. The six Mangyan students who were part of the case studies also showed an increased learning performance and motivation. Specifically, the following conclusions are drawn:

1. The learning plans and activity worksheets used in this study are aligned with the features of the contextualized teaching model, which emphasize the utilization of hands-on activities and real-life applications in the Mangyan context.

2. There is a significant difference in the pretest and posttest results that measure performance in science. It is established that the contextualized model is effective in increasing the performance in science of Mangyan students.

3. There is an increase in the pretest and posttest scores on the science motivation questionnaire. It is revealed that the contextualized model plays a significant role in the motivation of students to learn. The results of the paired sample t-test indicate a significant difference between the results of the tests.

4. Both the reflective journal entries and the results of the interview signify manifestations of increased motivation among Mangyan students. The appreciation and awareness of the importance of the subjects indicate that students are interested. The suggestion to have more group and paired activities show an increased interest in learning more about the subject. Students also comprehend the main goal of the contextualized model, which is to appreciate and realize the real-life applications of science concepts.

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STATE-FUNDED FILM VENUES AND FILM EXHIBITION IN THE PHILIPPINES

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Abstract

With the demise of large, standalone movie houses in the 1980s and the concurrent rise of mall cineplexes as the primary form of film exhibition in the country, state-funded cinematheques have since then been earnestly promoted as alternative (a)venues to counter the economic and cultural hegemony of mall cineplexes. This paper is an initial attempt to go beyond and ground the level of expectations by studying the experience of these venues in forming an alternative film viewing culture. In light of these, the specific objectives of this research are twofold: First, gather data on state-funded theaters and contribute to the sparse literature on film exhibition and viewership in the country; and second, use these data to create a critical assessment of these venues in realizing their purported alternative film viewing culture.

Introduction: From a Micro-Theater to Movie Palaces, to Multiplexes, and Back

The early years of motion picture exhibition in Manila arguably began in a micro-theater when Francisco Pertierra operated a *cinematógrafó* in a salon on Escolta in December 1896 (Del Mundo, 48). A few years later, as the Philippines was being forced to adapt under American colonial rule, native audiences began embracing the spectacle of motion pictures. Owing to its novelty, films signaled modernization across the archipelago (Deocampo, 237). In the early parts of the 1900s, the *teatros* that were originally exclusive to operettas, operas and zarzuelas—the prevailing forms of entertainment at that time—would soon feature motion pictures in their programs as interludes. By 1910, a number of theaters in Manila would showcase films exclusively (Del Mundo, 50, 52).

As the American government further established its presence in the country through commerce and culture, imported films from Hollywood challenged local production houses and dominated local movie screens for decades. Several decades after the Philippines gained independence from colonial rules, many Filipinos remained avid consumers of American exports (Garcia and Masigan, 7). Records as early as in the 1970s showed that foreign (predominantly Hollywood) films comprised a majority of films screened in the country. Of the more than 7,000 films screened in that decade, less than 2,000 titles, or a little above 25 percent, were locally-produced. This number increased to around 35 percent in the following decade as the number of titles screened in the country plunged to less than 5,000 in the 1980s.

Recent reports from the Movie and Television Review and Classification Board (MTRCB) noted that of the around 2,785 films screened from the years 2010 to 2016, around 1,100, or a little over forty percent, were from local productions. While these figures point to an increasing share of local titles against foreign titles, local film output remains to be a minority in the total titles screened in the country. Furthermore, despite the increase in local film output, local movie theaters continue to devote more screen time to Hollywood blockbusters.

Using compiled data on film exhibition and film viewership across the years, this paper provides initial observations on the important role played by movie theaters in molding a film viewing culture and how economic contingencies shape film exhibition and viewership.

Film Exhibition in the Philippines

In the 1910s, the number of theaters in Manila exclusively showing films would increase (Del Mundo, 52). In 1927, the *Film Daily Yearbook* reported 250 movie theaters in the Philippines[1]. By 1940, the country was reported to have 450 movie theaters, and this count would double in about two decades. Extrapolating from recent records, one can infer that this growth rate was not sustained. MTRCB records in 2016 reported 866 registered movie theaters, which is lesser than the 921 reported in 1972. Nevertheless, the country has breached the 1,000 mark this year, with 1,026

Table 1. Number of Movie Theaters in the Philippines, 1927-2019, for Years Available

Year	Theaters	Year	Theaters
1927	250	1938	235
1928	280	1939	258
1929	268	1940	350
1930	275	1950	450
1931	282	1972	921
1932	300	2016	866
1933	300	2017	954
1934	300	2018	967
1936	313	2019	1,026
1937	211		

Sources: *Film Daily Yearbook*, 1927-1940, as cited in Clodualdo del Mundo, A Review of Philippine Cinema Under Colonial Rule," *Native Resistance: Philippine Cinema and Colonialism 1898-1941* (1998); *1950 International Motion Picture Almanac*, as cited in Vincente Salumbides, *Motion Pictures in the Philippines* (1952); *Directory of Cinema Theatres in the Philippines* by the Philippine Mass Communication Research Society (1972), and requested reports from the Movie and Television Review and Classification Board (MTRCB) records

registered theaters (Table 1).

The *Directory of Cinema Theatres* compiled by the Philippine Mass Communication Research Society[2] (PMCRS, 1972) and the MTRCB records both reported the locations of the theaters, allowing for a geographical comparison between the two time periods. The PMCRS directory showed that all regions have at least one theater in their provinces, which were mostly located in the Greater Manila Area (and now part of the National Capital Region or NCR), Central Luzon, and the Cavite-Laguna-Batangas–Rizal–Quezon Region (Calabarzon). Of the 921 theaters listed in that year, most theaters were situated in Manila (67), while the provinces with the most theaters were Quezon with 54, Negros Occidental with 47, and Cebu with 28. Of the eighty-one provinces in the Philippines, only 30 did not have theaters in 1971.

The MTRCB records reveal quite a different picture. The number of movie theaters in Metro Manila more than tripled, increasing its share from around fourteen percent in 1972 to forty percent in 2019. Calabarzon trailed far behind with 13 percent. With the exception of NCR, Calabarzon, Central Visayas, Northern Mindanao, and Davao regions, the rest of the country experienced a decrease in the number of theater houses. The Autonomous Region in Muslim Mindanao (ARMM), which used to have a total of seventeen movie theaters in 1971—four in Basilan, eight in Lanao del Sur and five in Sulu—had no registered movie theaters in 2019. This makes ARMM the only region with no registered movie theaters. The number of provinces without registered theaters has also increased to 37. Apart from the three earlier mentioned, there were no longer registered theaters in Catanduanes, Davao Oriental, Marinduque, Masbate, Mountain Province, Northern Samar, Samar, Occidental Mindoro, Romblon, Sorsogon,

Table 2. Percent Share of Movie Theaters in the Philippines, Selected Years, Per Region

Region	1972	2017	2019	Change from 1972 to 2019
NCR	13.8	41.9	40.0	189.8
CAR	1.1	0.4	0.6	-46.1
ILOCOS REGION	5.5	2.3	2.1	-61.3
CAGAYAN VALLEY	4.6	1.5	2.0	-55.1
CENTRAL LUZON	13.7	10.4	9.7	-28.8
CALABARZON	14.4	13.4	13.1	-9.6
MIMAROPA	2.2	1.2	1.1	-50.6
BICOL REGION	7.8	2.2	3.2	-58.9
WESTERN VISAYAS	8.6	5.0	6.5	-23.9
CENTRAL VISAYAS	6.0	6.0	5.9	-0.4
EASTERN VISAYAS	4.1	1.3	1.9	-52.8
ZAMBOANGA PENINSULA	2.6	1.3	0.8	-70.1
NORTHERN MINDANAO	4.0	3.8	4.2	4.3
DAVAO REGION	3.9	5.6	5.1	29.7
SOCCSKSARGEN	4.2	2.8	2.7	-35.6
CARAGA	1.6	1.0	1.0	-40.2
ARMM	1.8	0.0	0.0	-100.0

Sources: Author's calculations using the Directory of Cinema Theatres in the Philippines by the Philippine Mass Communication Research Society (1972) and reports from the MTRCB records.

Southern Leyte, Surigao del Norte, Surigao del Sur, and Zamboanga Sibugay. These show an exponential rise in film viewing avenues in Metro Manila while the complete opposite occurs outside of it (Table 2).

Aside from number of theaters based on geography, another observation deducible from the records is the type of establishment. The PMCRS directory showed that almost all of the theaters in 1972 were standalone structures whose primary, if not only purpose, is to exhibit films. Depending on the size, the theaters might have had an orchestra, balcony and/or loge, with seating capacities that ranged from 200 (such as the Center Theater located in Cuyapo, Nueva Ecija; and the Teresita Theater located in Caloocan City) to as large as 2,000 (such as the Iris Theater in Bacolod City, Negros Occidental; and the Rizal Theater in Zamboanga City). One of the largest in the list is the New Frontier Theater located in Quezon City with a recorded seating capacity of 4,035. These movie infrastructures followed after the beginnings of film exhibition in the archipelago.

The rise of the mall culture in the Philippines beginning in the late 1980s has significantly altered the public's film consumption behavior. Around that time, mall owners had begun installing film-viewing facilities in their establishments as part of recreational and entertainment centers. Multiple cinemas were installed in malls, now commonly referred to as "multiplexes" or "cineplexes." The set-up, driven by economies of scale, proved convenient and efficient for movie-goers and exhibitors. The wide

variety of leisure activities and revenue-generating services offered by malls was something standalone movie houses could not compete with. This was further compounded by technological challenges that theater owners had to contend with in the advent of digital film production and exhibition. The changing technological and economic realities brought standalone movie houses at the brink of extinction by the early 2000s.

Unlike in the 1970s, only less than five percent of movie screens are housed in standalone buildings today. In the most recent records of the MTRCB, some of the remaining standalone movie houses are the Alpha Theater in Quezon City; New Ultra Vistarama Theater in Cebu; and Dilson and Times Theaters in Manila. The majority of movie theaters in the Philippines are cineplexes owned by mall giants: Ayala Malls, Robinsons Malls, and SM Malls. In 2019, more than fifty percent of all movie theaters in the country are within these three major mall owners.

SM had the first cineplex in the Philippines with the birth of the country's first shopping mall in SM City North EDSA (Lim, 114). In the most recent statistics of the MTRCB, SM Malls currently has a total of 353 cineplexes, more than 30 percent of all movie houses in the country. SM has mall cinemas in all regions except the Zamboanga Peninsula, the Caraga Administrative Region, and the ARMM. Trailing behind are Robinsons Malls, owned by the Gokongweis, and Ayala Malls with nineteen and nine percent shares, respectively.

On the other hand, Robinsons Malls have established presence nationwide except in the Cordillera Administrative Region (CAR), Zamboanga Peninsula and ARMM. Ayala Malls are less dispersed with cinemas limited to NCR, Central Luzon, Calabarzon, Bicol Region, Western and Central Visayas, Northern Mindanao and Davao Region. All three mall giants locate majority of their cineplexes in key locations in NCR, Central Luzon and Calabarzon regions, but SM and Ayala Malls noticeably place their cineplexes in NCR more. Around forty percent of SM cinemas are in NCR while Ayala malls have more than sixty percent of their cinemas in the same area. On the other hand, Robinsons Malls were more dispersed across the three key regions, with NCR comprising around twenty percent of all Robinson cinemas. A total of 249 mall cineplexes in NCR are owned by the big three major mall owners, comprising more than 60 percent of all movie theaters in Metro Manila. The big three likewise own the majority of mall cineplexes in most regions outside of NCR. For example, Robinsons Malls, SM Malls and Ayala Malls own 95 percent of mall cineplexes in Eastern Visayas, eighty percent in the Mindoro-Marinduque-Romblon-Palawan (Mimaropa) region, and seventy percent in Western Visayas. Few exceptions to this are Davao Region, which is dominated by Gaisano Malls; Soccsksargen Region which has CityMall Commercial Centers, G-Mall and KCC Malls; and the Zamboanga Peninsula, which also has KCC Malls (Table 3).

The proliferation of malls contributed to the transformation of film exhibition industry in the country. Among the relatively urbanized areas and city centers, where establishing commercial presence is deemed

Table 3. Percent Share of Mall Cineplexes in the Philippines, 2019, by Establishment and Per Region

Region	Robinsons Malls	SM Malls	Ayala Malls
NCR	19.5	43.1	64.5
CAR	0.0	1.1	0.0
ILOCOS REGION	5.3	1.1	0.0
CAGAYAN VALLEY	5.3	1.7	0.0
CENTRAL LUZON	7.4	13.3	8.6
CALABARZON	13.7	17.3	4.3
MIMAROPA	2.1	1.4	0.0
BICOL REGION	3.2	2.8	4.3
WESTERN VISAYAS	16.3	3.4	4.3
CENTRAL VISAYAS	4.7	5.7	5.4
EASTERN VISAYAS	7.9	1.1	0.0
ZAMBOANGA PENINSULA	0.0	0.0	0.0
NORTHERN MINDANAO	6.3	3.1	4.3
DAVAO REGION	3.2	3.7	4.3
SOCCSKSARGEN	2.1	1.1	0.0
CARAGA	3.2	0.0	0.0
ARMM	0.0	0.0	0.0

Sources: Author's calculations using requested reports from MTRCB records.

profitable, malls led the closure and subsequent replacement of many standalone movie houses with relatively more cost-effective mall cineplexes. For the relatively underdeveloped areas, however, the closure of standalone movie houses was not accompanied by newer forms of film viewing venues. This resulted in films becoming less accessible to movie-goers. The steeper costs and thinning profit margins made the business of film exhibition industry more profit-driven, resulting in increased concentration of movie theaters only in locations where theater-owners are more assured of profits. Furthermore, mall cineplexes, prioritizing assured commercial returns from its operations, would not risk screening titles other than Hollywood imports and formulaic local blockbusters.

Several alternatives would eventually emerge to challenge the hegemony of mall cineplexes as a form of film exhibition. For example, developments in digital technology encouraged bootlegging and piracy, and in the process have arguably democratized film access. The street markets in Quiapo, Manila, where the pirated optical disc trade was most noticeable, was a haven for cinephiles.

Jasmine Trice, in her ethnographic work on Quiapo's pirated cinema trade, observed that "[f]or Manilenyo cinephiles, the circulation of this pirated media provides access to the world's cinematic offerings, both

'mainstream,' mass culture works and the art films James Naremore terms 'boutique cinema,' available on city streets, markets, and even malls for a few pesos" (Trice, 2009, 3). Resorting to these means could be attributed to discontent resulting from rising prices of movie tickets and a growing clamor (primarily by film enthusiasts) for a wider selection of films, among others.

In the early 2000s, alternative forms of film exhibition would surface in the form of micro-cinemas and art houses. These were essentially scaled-down film exhibition venues more suited for fewer audiences. Trice recalled the now defunct Mag:net Café's, along Katipunan Avenue in Quezon City, to hold daily screening series that ran from November 2006 to April 2008, as well as Cubao Expo's Mogwai Cinematheque, which opened in 2007, as early examples of alternative cinema exhibitions (Trice, 150). Recent additions to this list are Cinema '76, managed by TBA Studios and which currently has two branches in Quezon City and San Juan, opened in 2016 and 2018, respectively; Black Maria Cinema in Mandaluyong City, and Cinema Centenario on Maginhawa Street, Quezon City, which both opened in 2017; and Dream Theater, managed by Carl Balita Review Center (CBRC), which opened in 2018 (Lim, 153-54).

Accessibility as Opportunity

State-funded film exhibition venues likewise gained wider attention in recent years. Of particular interest in this paper are the Film Development Council of the Philippines (FDCP) Cinematheque Centres in Manila, Iloilo, and Davao, as well as the University of the Philippines Film Institute (UPFI) Cine Adarna and Videotheque.

The FDCP, under the Office of the President, is the country's lead government agency for film. Its Cinematheque Centres aim to be an "alternative and accessible venue to expose audience to both conventional and non-conventional forms of film and programs directed to developing new filmmakers and upgrading the skills of existing ones (FDCP, "About Us," n.d.)." It currently has six cinematheques in Manila, Iloilo City, Davao City, Zamboanga City, Nabunturan (Compostella Valley), and Bacolod City (Negros Occidental). FDCP used to have a Cinematheque Centre in Baguio, but it had to stop operations in 2017 due to location concerns. As of this writing, the Cinematheques in Nabunturan and Bacolod have not officially started regular operations yet, while Cinematheque Centre Zamboanga has been closed for renovation since 2017. Three continue to regularly screen films: The 100-seater Cinematheque Centre Manila located in Ermita, Manila; the 74-seater Cinematheque Centre Iloilo located in Iloilo City; and the 120-seater Cinematheque Centre Davao located in Davao City.

Cine Adarna, on the other hand, is the main screening facility of the UPFI. The 745-seater theater located at the UPFI Film Center Complex is equipped with 35-millimeter and 16-millimeter projectors, as well as Christie Digital Cinema Projector (DCP) and 5.1 Dolby sound system (UPFI, "Facilities," n.d.). The complex also houses a newly-renovated, 60-seater Videotheque with audio and video equipment. The FDCP Cinematheque Centres, Cine Adarna, and Videotheque all provide regular

Table 4. Monthly Screenings, 2019, By Venue

Venue		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	Total
FDCP-M	Paid	7	19	21	27	13	32	15	25	159
	Free	1	10	3	12	11	8	9	0	54
	Total	8	29	24	39	24	40	24	25	213
FDCP-I	Paid	8	17	19	14	10	19	9	25	121
	Free	6	7	0	0	0	4	20	0	37
	Total	14	24	19	14	10	23	29	25	158
FDCP-D	Paid	8	20	8	26	12	16	11	28	129
	Free	0	0	0	0	0	0	0	0	0
	Total	8	20	8	26	12	16	11	28	129
UPFI-CA	Paid	43	37	33	24	7	42	31	49	266
	Free	4	9	10	2	20	0	0	0	45
	Total	47	46	43	26	27	42	31	49	311
UPFI-V	Paid	19	27	30	36	30	29	37	20	228
	Free	0	9	13	12	2	9	3	2	50
	Total	19	36	43	48	32	38	40	22	278
TOTAL	Paid	85	120	111	127	72	138	103	147	903
	Free	11	35	26	26	33	21	32	2	186
	Total	96	155	137	153	105	159	135	149	1,089

Sources: Author's calculations using requested reports from the Film Development Council of the Philippines (FDCP) until August 17, 2019, and requested reports from the University of the Philippines Film Institute (UPFI) until August 13, 2019.
Legend: FDCP-M refers to Cinematheque Centre Manila. FDCP-I refers to Cinematheque Centre Iloilo. FDCP-D refers to Cinematheque Centre Davao. UPFI-CA refers to UP Film Institute Cine Adarna. UPFI-V refers to UP Film Institute Videotheque

film screenings to the general public.

UPFI Cine Adarna and Videotheque screen the most films on a regular basis, averaging more than 30 times a month. Among the FDCP venues, Cinematheque Centre Manila has the highest average of around 27 times a month. Cinematheque Centres Iloilo and Davao are comparable with twenty and sixteen, respectively. Of the 1,089 total scheduled screenings across FDCP and UPFI venues up until mid-August, close to 200 films, or around 17 percent, were free screenings (Table 4). Most of these free screenings were held during cultural exchange programs. To give a few examples, select Japanese films were screened for free during the Eiga Sai Japanese Film Festival in Cinematheque Centre Manila (February 19 to 26, 2019), Cinematheque Centre Iloilo (February 13 to 16), and UPFI (August 14 to 17). Cinematheque Centre Manila also held the first-ever Colombian Film Festival (July 16 to 18), while earlier this year UPFI hosted Indonesian film (March 6 to 8) and Korean film (March 13 to 15) festivals.

Free screenings featuring local films were also made available. Cinematheque Centre Iloilo hosted free screenings for Cinekasimanwa: The Western Visayas Film Festival (January 19 to 25), while Cinematheque Centre Manila held Sinebernakular (August 22 to 23), among others. Retrospectives were held at UPFI which has featured Elwood Pérez (February 4 to 7), RoxLee and Filipino experimental filmmaking (February 26 to 27), and Lino Brocka and electoral politics (April 1 to 5), among others.

Screening records show that on the average, free passes are correlated with more audience traffic (Figure 1). Expectedly, movie-goers are more willing to watch if they don't need to pay. Utilization rate is derived as the percent of audience turn-out with respect to the venue's maximum capacity. In total, significantly higher utilization rates have been observed for all venues that offered free screenings within the year. However, much leaves to be desired for the paid screenings. While these numbers provide a broad picture on film viewership catered by these venues, a more intuitive take on audience reception between paid and free screenings would necessitate looking at the audience's movie preferences.

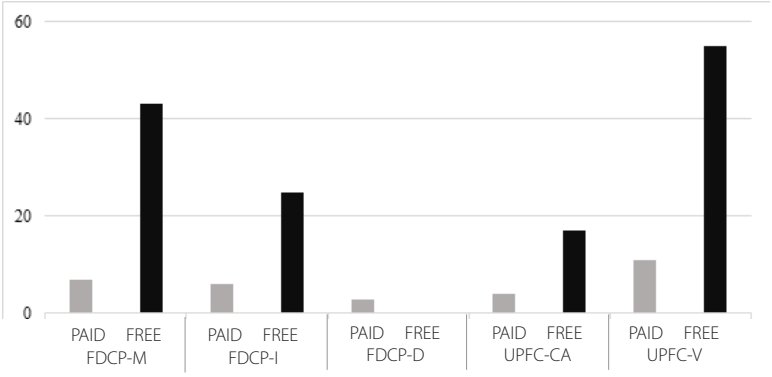

***Figure 1**. Utilization Rate, in Percent, 2019, by Venue.*

Sources: Author's calculations using requested reports from the Film Development Council of the Philippines (FDCP) until August 17, 2019, and requested reports from the University of the Philippines Film Institute (UPFI) until August 13, 2019
Legend: FDCP-M refers to Cinematheque Centre Manila, FDCP-I to Cinematheque Centre Iloilo, FDCP-D to Cinematheque Centre Davao; UPFI-CA to UP Film Institute Cine Adarna; and UPFI-V to UP Film Institute Videotheque

Towards an Alternative Film Viewing Culture: Are We There Yet?

Initial foray into the wealth of data provided by FDCP and UPFI proves that the potential of state-funded cinematheques as venues that will incubate an alternative film viewing culture is not illusory. The demand for films outside of what is conventionally shown in mall cineplexes definitely exists. There are movie-goers who are also willing to pay to watch these films. State-funded initiatives are welcome steps to inculcate a film-viewing culture that is receptive to more diverse, challenging films.

Despite these, however, economic and sustainability issues should eventually be brought up and addressed in order for film exhibition and viewership to prosper. For example, should the price of movie tickets be lowered further to make it more affordable? But will film producers be willing to show their films at such lowered ticket price? Will there be mechanisms other than lowering ticket prices that will incentivize greater audience patronage? As newer forms of film exhibition and film viewership open, future scholarly works on these topics necessitate a direct and continual confrontation with these recurring issues.

NOTES

[1] Del Mundo raised curiosity on the drastic changes in the figures, "particularly on the years from 1936 (313 theaters) to 1937 (211), and from 1939 to 1940" (Del Mundo, 1998, p. 68).

[2] The regional classification of movie theaters presented in Table 2 was derived by referring to the city or town where the theaters were located as listed in the PMCRS directory, and then categorizing it following the current Philippine Standard Geographic Code Classification system. For example, even though Novaliches in 1972 was still considered a part of the province of Rizal (Calabarzon), Table 2 places theaters in Novaliches under Quezon City, and thus falls under NCR.

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UNDERSTANDING FISHERIES TREND IN BATAN ESTUARY, AKLAN, USING LOCAL ECOLOGICAL KNOWLEDGE

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Abstract

Fishers have detailed knowledge of their resources, their environment and their fishing practices. These collections of traditional knowledge are collectively referred to as local ecological knowledge (LEK) and have been hailed as crucial in our understanding of the stochastic nature of the fisheries, particularly in the absence of long historical data. In order to understand the trend of fisheries in Batan Estuary, I have conducted household interviews involving 444 local fisher folks in Batan Estuary. Respondents are limited to those who have been fishing in the area for at least 30 years. The survey instrument includes questions regarding their fishing methods, locations of fishing area, catch composition and total catch per species, and variations of these parameters over time. My assessment indicates a severe decline of fishery resources based on the current average fish catch across all 66 species in 35 families of finfishes and invertebrates, representing only ~ 10 percent of their catch in the 1960s. This study demonstrates the usefulness of using LEK in the assessment of artisanal fisheries and its critical role in fisheries management in the absence of long-term historical data.

Located in the northwest part of Panay Island, the province of Aklan is renowned for being the home of the world-class beach paradise Boracay Island and of the annual Ati-Atihan Festival. Eleven out of the 17 municipalities of Aklan are located within the coastal area facing Sibuyan Sea, which is considered to be one of the most productive but overly exploited seas in the Philippines.

Despite the Disneyfication of several areas in Aklan due to the high concentration of international tourists in Boracay, the use of traditional ecological knowledge (TEK) to cope with local life still prevails in the local communities. TEK is a cumulative body of knowledge, practice and belief about their environment that evolves through adaptive processes and has been passed down through generations (Berkes et al., 2000) by cultural transmission. Transmission of traditional knowledges (TKs) in society can happen through different mediums and forms such as stories, songs, folklore, proverbs, cultural values, beliefs, rituals, community laws, local language, and agricultural and fishing practices (Johannes, 2000).

The utility of TEK as a management and conservation tool has been recognized worldwide. Berkes et al. (2000) highlight the rediscovery of TEK as an adaptive tool in natural resource management through the use of traditional people's (indigenous) ways or practices in monitoring, responding and managing ecosystem processes and functions, which play a major role in ecological resilience. In the Philippines, TEK is not yet well known or popularized. However, a study from Bohol infers that this indigenous knowledge will assist in monitoring the life-based history of the disappearance of local finfish species inhabiting the coral reefs such as the giant grouper (*Epinephelus lanceolatus*) and African pompano (*Alectis ciliaris*) (Lavides et al., 2010).

The main goal of this project is to highlight sustainable traditional fishing practices in Batan Estuary through different social media platforms, namely, Facebook, Twitter and Instagram. As these practices are deeply associated with the community's TEK, this project also emphasizes the critical role of the community's TEK in fisheries conservation and management. Hence, the output of the project can both serve as the nexus of the celebration of local fishing practices, as well as a wellspring of pride of the local community. This study will also connect the local community to the global village by promoting responsible ecotourism for these communities, e-crowd-sourcing to support a local project and serving as a model for sustainable traditional fishing practices in the country.

Study Site

This study is conducted in the municipalities of New Washington, Altavas and Batan, which surround the Batan Estuary in Aklan (See Figure 1). Batan Estuary is a semi-enclosed estuarine system composed of lagoons and rivers covering a total area of about 8,000 hectares, which is a prominent feature of Aklan. The estuary is an important fishing ground in the province and is politically shared by the three municipalities.

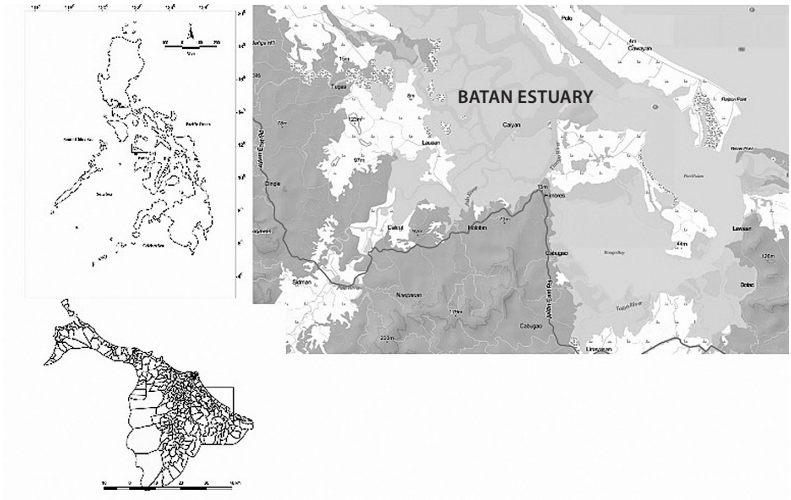


Figure 1. Map of Aklan with Superimposed Map of Batan Estuary

The northern part of the bay features a mangrove forest divided by a network of rivers, creeks, sandbanks and fishpond dikes, while the southern part is mostly open water. The estuary has brackish water due to hemorrhages of freshwater from Aklan River tributaries, which is mixed with an influx of seawater from the Sibuyan Sea. Based on the 2007 Fisheries Profile, 58 percent of the total population (41,000) of New Washington earns a livelihood from fishing. This figure is also comparable with the municipality of Batan. As Anasco and Babaran observe, the towns of Batan and New Washington are almost solely dependent on coastal and estuarine fisheries (2001).

Batan Estuary is a multi-gear and multi-species fisheries. Fishing gear ranges from stationary lift nets to crab and fish pots, with crustaceans (crabs and shrimps) as primary catches. Like elsewhere in the country, Batan Estuary fisheries are declining (Altamirano and Kurokura 2010).

Methodology

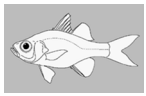
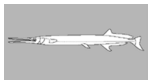
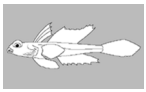
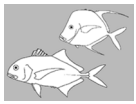
A total of 444 respondents have been randomly selected based on the registry of fishers from the municipalities of New Washington, Altavas and Batan. Respondents are equally selected by gender (male and female, but no statistical comparison between gender is made in this report). Respondents must also meet the criteria of having fished in the area for at least 30 years and that their livelihood is dependent on fishing.

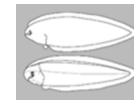
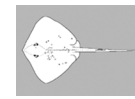
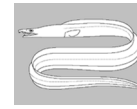
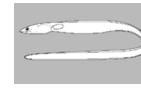
The interview instrument covers the following topics: (1) fishing historical transect, (2) changes of fishing contextual variables, (3) changes of fishing methods, (4) ethnoichthyology/ethnobotany, (5) threats of fisheries, (6) traditional fisheries management, (7) customary fishing practices, (8) anecdotes and lore, (9) fishing knowledge, (10) ecological knowledge, and (11) climate change awareness.

Results and Discussion

The result of this study indicates a severe perceived decline of fishery resources, with current average fish catch representing only ~10 percent of their catch in the 1960s. This downward trend is manifested by ~90 percent of exploited species (finfishes and invertebrates under sixty-six species belonging to 35 taxonomic families) harvested through thirteen fishing methods (See Table 1).

***Table 1**: Local fishers (n = 444) identify a total of 66 species belonging to 35 taxonomic families of exploited marine/estuarine species in Batan Estuary, Aklan. Except for invertebrates, images used are from FishBase database (www.fishbase.se). Similar local name can refer to species under different families (e.g.,* Ambassidae *and* Apogonidae*) or may refer to different species under the same family (e.g.,* danggit *for* Siganus guttatus *and* bueawis *for* Siganus cannaliculatus*).*

English name	Family	Local name	Reference image
Asiatic glassfishes	Ambassidae	Bakagan	
Cardinalfishes	Apogonidae	Bakagan	
Needlefishes	Belonidae	Tambilawan	
Dragonets	Callionymidae	Saway	
Jacks and pompanos	Carangidae	Mangudlong/ Eayaw/Marot/ Tulisok/Bukawon/ Matang Baka	
Butterflyfishes	Chaetodontidae	Kanding-kanding	
Milkfish	Chanidae	Bangus	
Cichlids	Cichlidae	Tilapia	
Herrings, shads, sardines	Clupeidae	Manamsi/Tamban	

English name	Family	Local name	Reference image
Tonguefishes	Cynoglossidae	Paead	
Stingrays	Dasyatidae	Lipot	
Anchovies	Engraulidae	Bolinao	
Mojarras	Gerreidae	Batuanon	
Snappers	Lutjanidae	Pasuan/Bugok/ Pasuan/Tambak	
Tarpons	Megalopidae	Buean-buean	
Mullets	Mugilidae	Gusaw/Baeanak	
Pike congers	Muraenesocidae	Obod	
Moray eels	Muraenidae	Nipa-nipa	
Threadfin breams	Nemipteridae	Bisugo/Upusan	
Snake eels	Opichthidae	Nipa-nipa	
Shrimps	Palaemonidae	Ueang	
Threadfins	Polynemidae	Akin	

English name	Family	Local name	Reference image
Scats	Scatophagidae	Kilo	
Mackerels, tunas, bonitos	Scombridae	Gurayan/Hasa-hasa/Kimod/ Bueaw/Tangigi	
Groupers	Serranidae	Lapu-lapu/Banahan	
Rabbitfishes	Siganidae	Bueawis/Danggit/ Mub-ead	
Barracudas	Sphyraenidae	Tunong/Tirok/ Batog	
Grunters	Terapontidae	Bagaong	

For all species in totality, perceived catch today (2019) only represent fourteen percent of their catch in the 1960s. This is reflected in all catches (Figure 2) and in highly exploited families (Figure 3). This collaborated with the report of Altamirano and Kurokura (2010) for Batan Estuary and Nong (2019) for Southeast Asia.

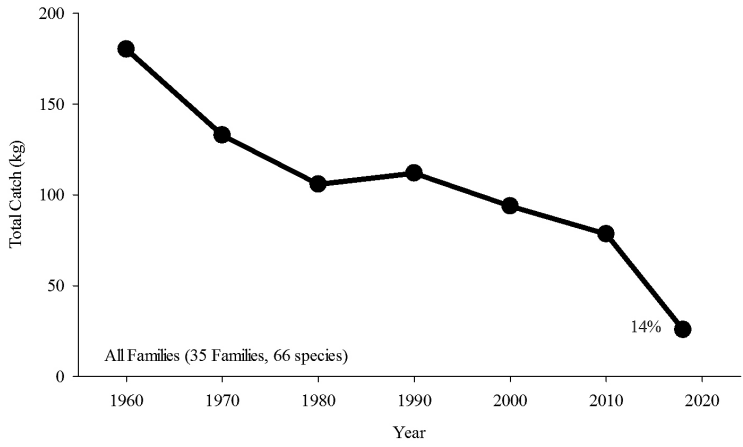


***Figure 2**. Perceived Catch Trend for Selected Exploited Families of Finfishes and Invertebrates in Batan Estuary.*

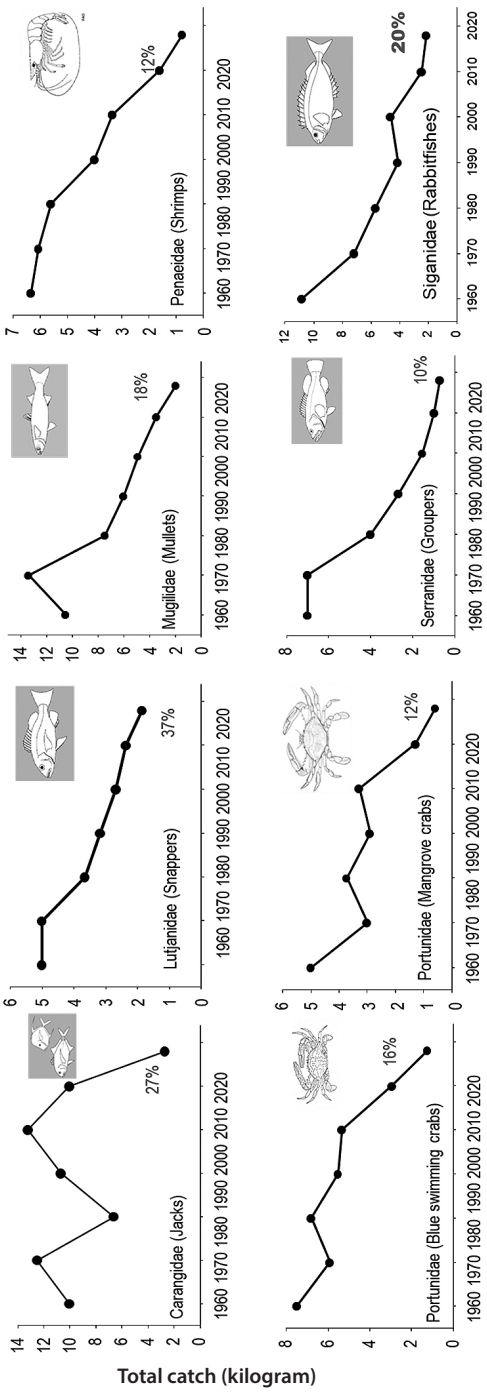


Figure 3. Perceived Catch Trend for Selected Exploited Families of Finfishes and Invertebrates in Batan Estuary.

Furthermore, there is a diversity of fishing lore and customary practices such as (1) *gatuob it panagat* (smoking the fishing gears) to increase luck in fishing; (2) *gadaga it baroto ag panagat* (drenching the fishing boat and gears with the blood of sacrificial animals) to ensure good harvest, and (3) *gauga it dumdum* (drying seahorse) hung in windows to ward off bad spirits or pulverized and mixed into drinks to cure various illness or to serve as an aphrodisiac.

This study indicates a wealth of traditional fishing practices in Batan Estuary, which have been practiced continuously in the midst of the severe decline of resources and Cocacolonization of even the most remote villages in Aklan. This study demonstrates the usefulness of using LEK in the assessment of artisanal fisheries and its critical role in fisheries management in the absence of long-term historical data.

NOTES

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BAYBAYIN AND THE PROPOSAL FOR A NATIONAL WRITING SYSTEM: KNOWLEDGE AND ATTITUDE AMONG UNIVERSITY STUDENTS IN QUEZON CITY, PHILIPPINES

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Abstract

This study aims to determine and assess the knowledge and attitude of Filipino university students in Quezon City, Philippines, regarding Baybayin and the proposal for a national writing system. The researchers utilize a survey questionnaire consisting of 15 attitude and five knowledge questions that is distributed to 380 participants via random sampling. The results of the study show that most university students have insufficient knowledge and understanding of Baybayin but demonstrate a favorable response toward the enactment of House Bill 1022, which declares Baybayin as the national writing system and its utilization in the communication system of various establishments, educational institutions, media organizations and government agencies among others.

In recent years, many civic organizations are calling for the reintroduction and revival of Baybayin because of the increasing popularity of Baybayin among young Filipinos. This study aims to identify the knowledge level and attitude of university students toward Baybayin and the enactment of House Bill 1022 that proposes Baybayin to be the country's national writing system.

Baybayin is one of the ancient Philippine writing systems used before Hispanic colonization. The writing was documented by Spanish scholars during their occupation of the archipelago. *Doctrina Christiana* (The Teachings of Christianity) is the first book published in the Philippines, printed in 1593, that contains both Latin and ancient Tagalog script (Wolf, 1947). Meanwhile, the book *Relación de las Islas Filipinas* (Reports of the Philippines Islands) by Jesuit priest Pedro Chirino asserted that early peoples of the Philippines must have been literate to practice writing and reading (1969). Historian Antonio de Morga also agreed that there was high literacy rate among early Tagalog (De Morga, 1864). According to Salcedo (Casal et al, 1998: 222), indigenous peoples back then might have used Baybayin through legends, incantations and songs. Moreover, settlers who live near bodies of water could have used Baybayin as a way of recording all their transactions with different merchants that time. Even with the introduction of Spanish in the seventeenth century, people still use Baybayin as signatures in their wills and testaments. According to Scott, however, the introduction of the Latin alphabet and the economic advantages attached to it gradually killed the Tagalog script (1984: 56).

The word baybayin is derived from the Tagalog word *baybay*, which means "to spell." This writing system is believed to be part of the Devanagari script family that shares similarities with the scripts of Indonesia and Northern and Southern India (Miller, 2013). It is composed of seventeen letters and a single punctuation mark. The script was predominantly used by early Tagalogs (from the word *taga-ilog* or "people living near the river"). Baybayin is one of the various pre-Hispanic scripts found throughout the islands and is considered as part of the Suyat or Surat writing system. It refers to a group of other indigenous writing scripts that include the Apurahuano or Tagbanwa script of the Tagbanwa people, the Kur-itan script of Ilocos, Badlit script of the Visayas, the Buid script of the Buid Mangyan, the Hanunoo script of the Hanunoo Mangyan, Iniskaya script of the Eskaya people, Kulitan script of the Pampangan and the Palawan script of Palawan, among others.

The Baybayin consists of three main vowels—a, e/i and o/u—and twelve consonants that are usually pronounced by using "syllabary" or by attaching them to the vowels with a vocal indicator above and below the letter (Juan R. Francisco). (See Figures 1 and 2).

House Bill 1022

Proposed by Representative Leopoldo Bataoil, House Bill 1022, or the National Writing System Act, declares Baybayin as the national writing system of the Philippines. It aims to protect, preserve and conserve this

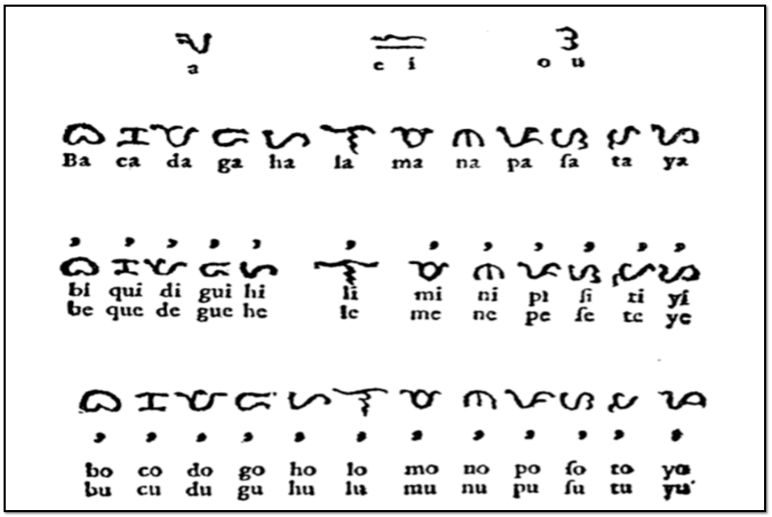

***Figure 1**. The Baybayin Script as Documented in* Relación de las Islas Filipinas *(Reports of the Philippines Islands) by Pedro Chirino (1604).*

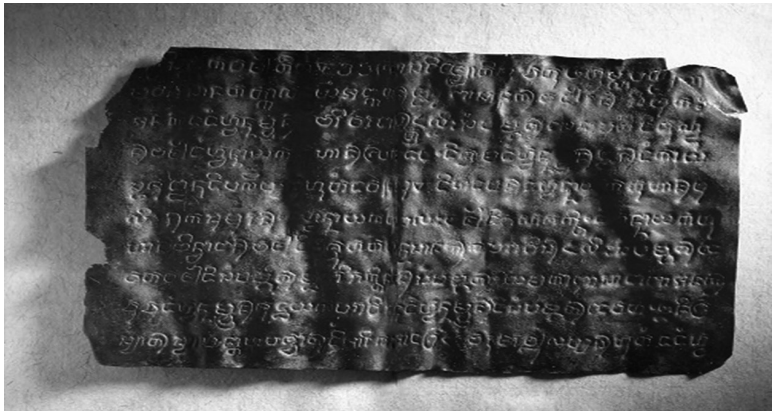

***Figure 2**. The Laguna Copperplate Inscription written in Baybayin (Photo by Oshima, N. in "Xiao Time, 27 May 2013).*

ancient script by requiring all government agencies and local government units to use Baybayin in their communication systems (e.g., signage, etc.). Local manufacturers are also expected to use Baybayin in their product packaging, while media organizations are obliged to include Baybayin translations in their broadcast and publications. The Department of Education (DepEd) is also tasked to promote this writing system. The bill also aims to generate greater awareness on the old Tagalog writing system, value one's national and cultural heritage and foster a sense of patriotism among Filipinos.

Revival of the Ancient Script

Modern technology and accessibility to information have piqued the interests of many Filipinos on Baybayin. This is mainly a result of people's access to internet and the creation of several websites devoted to the Baybayin script. While efforts in promoting awareness seem very effective, the ancient script has also become very susceptible to misinterpretation. Leo Emmanuel Castro of Sanghabi, a non-governmental organization that studies Filipino culture, believes that the growing interest in Baybayin is largely attributed to the Filipino-Americans' constant quest to understand their Filipino roots. It also helps that a large number of calligraphers are starting to use Baybayin instead of other Asian writing systems. Presently, Baybayin is gaining more popularity through tattooing and its usage on merchandise like shirts and jewelry.

Methodology

This research utilized the knowledge and attitude survey questionnaire and was modified in accordance with the research objectives. The 20-item questionnaire was then subjected to validation and initial testing to determine possible limitations. The consent form and survey questionnaire have been approved by experts before administering them on students from a university in Quezon City, Philippines via random sampling. Using Slovin's formula, the sample size was calculated at 380 out of 7,458 university students with a margin of error of 0.05. Research assistants were tasked to recruit possible respondents and supervise the collection process. Each question was classified as a knowledge or an attitude question and analyzed using descriptive statistics. A t-test was also conducted to determine the difference between the knowledge and attitude level among university students. Lastly, the profiles or general information like age, sex, place of residence and ethnicity of the respondents were also obtained. All responses were recorded and managed via Microsoft Excel 2010, while data analysis was accomplished using Minitab 17.

Results

Descriptive Results

This study was administered to 380 respondents, 44 percent of which are female and 56 percent are male, ranging from 15 to 20 years old. There were 15 attitude questions and five knowledge questions used in this study. It also employed the statistical treatment for testing the difference between two means based on small independent samples.

In terms of the respondents' familiarity with Baybayin, 15 percent are very familiar, 24 percent are somewhat familiar, 47 percent are a little familiar and only 13 percent are not familiar with the Baybayin at all (See Figure 3).

The respondents were also given a set of words written in Asian writing systems (Korean, Japanese, Chinese and Baybayin) to determine their script recognition. The Korean script was correctly identified at 53

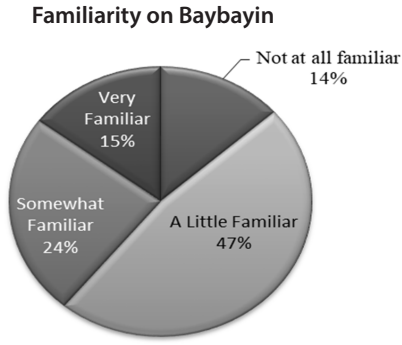

Figure 3. Respondents' Familiarity with Baybayin

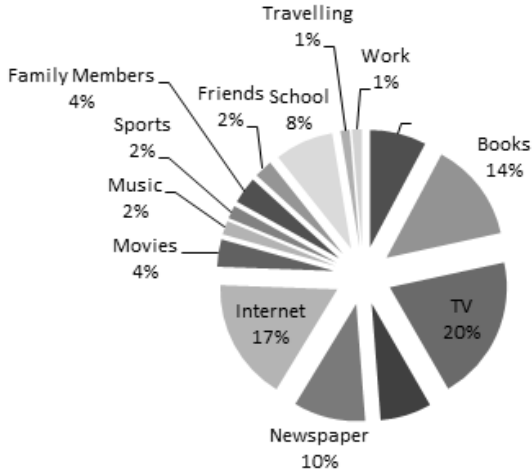

Figure 4. Respondents' Source of Information on House Bill 1022.

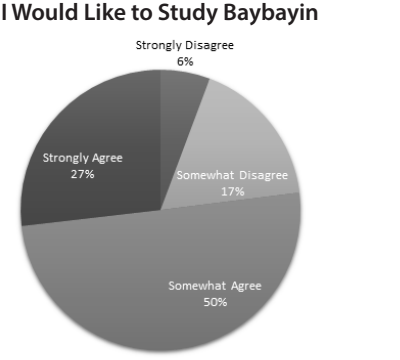

Figure 5. Respondents' Willingness to Study Baybayin.

percent, Chinese at 45 percent, Japanese at 43 percent, Baybayin at 42 percent and Thai at 27 percent. The respondents' awareness on House Bill 1022 (National Writing Act) was also measured. Four percent were very familiar about the bill, 17 percent are somewhat familiar, 36 percent are a little familiar and 43 percent are not familiar with the bill at all. They were also asked about whey they have learned about the bill, 17 percent said from the internet, 29 percent from television, 11 percent from school, 24 percent from both books and newspapers, eight percent from advertisements, two percent from friends, four percent from family members, four percent from movies and one percent from work (See Figure 4).

In terms of the respondents' interest in studying another writing system, Japanese script ranks first at 26 percent, followed by Korean script at 23 percent, Chinese at third and Baybayin only at sixth. When asked about their willingness to study Baybayin, 27 percent strongly agreed, 50 percent somewhat agreed, 17 percent somewhat disagreed and sic percent strongly disagreed. (See Figure 5). On whether or not Baybayin should be called Alibata, 17 percent of the respondents strongly agreed, 47 percent somewhat agreed, 23 percent somewhat disagreed and twelve percent strongly disagreed.

The respondents were also asked about their perception on the importance of Baybayin across the different aspects of life (See Figure 6). In terms of Baybayin's significance on the Filipino culture, 29 percent strongly agreed, 47 percent somewhat agreed, 16 percent somewhat disagreed and nine percent strongly disagreed. In relation to the economy, 23 percent strongly agreed, 46 percent somewhat agreed, 22 percent somewhat disagreed and nine percent strongly disagreed.

In terms of Education, 42 percent strongly agreed, 35 percent somewhat agreed, eight percent somewhat disagreed, and 15 percent strongly disagreed. In line with security and military operations, 22 percent strongly agreed, 45 percent somewhat agreed, 22 percent somewhat disagreed and 11 percent strongly disagreed. For political cooperation, 20 percent strongly agreed, 45 percent somewhat agreed, 25 percent somewhat disagreed and 10 percent strongly disagreed. In relation to sports, 14 percent strongly agreed, 45 percent somewhat agreed, 28 percent somewhat disagreed and 13 percent strongly disagreed. Lastly, in terms of tourism, 34 percent strongly agreed, 40 percent somewhat agreed, 16 percent somewhat disagreed and nine percent strongly disagreed.

As to whether or not the existence of Baybayin will make any difference in the respondents' lives, 17 percent strongly agreed that it will not make any difference, 43 percent somewhat agreed, 29 percent somewhat disagreed and 12 percent strongly disagreed.

Inferential Results

The two groups of population were given the questionnaire with five knowledge questions and six attitude questions on Baybayin and the proposal for a national writing system, where response options are set up on a Likert scale. The researchers summed up the positive answers per

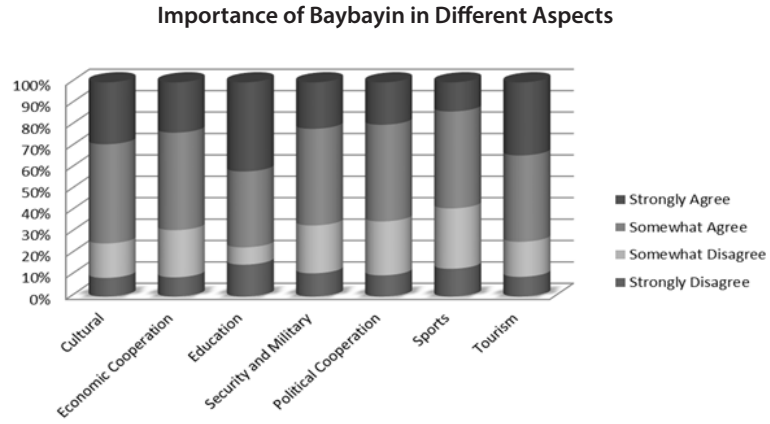

Figure 6. Respondents' Perception on the Importance of Baybayin across Different Aspects.

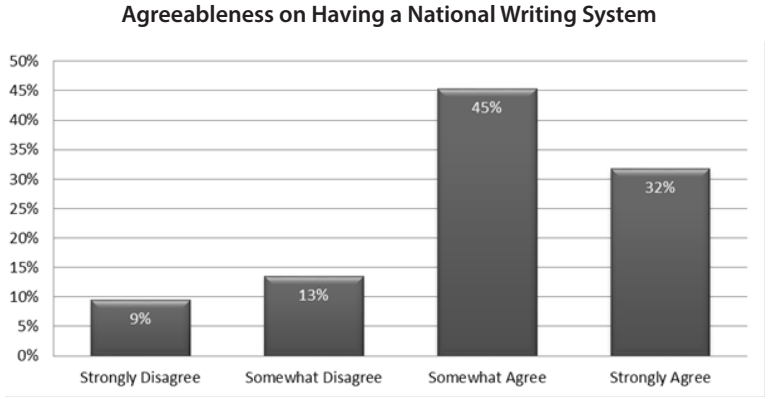

Figure 7. Respondents' Stand on Having a National Writing System.

question (See Table 1) and used each total figure to test the difference between two means based on small independent samples since our raw data do not exceed 30 samples (t-test).

Table 1: Summary of Possitive Responses.

Knowledge	Attitude
39 %	77 %
14 %	64 %
42 %	69 %
27 %	77 %
7 %	60 %
	76 %

Hypothesis

Null: The student's knowledge is greater than or equal to their attitude toward Baybayin and on it being a national writing system.

Alternative (Claim): The students' knowledge is less than their attitude toward Baybayin and on it being a national writing system.

Significance level: 0.05

Table 2: Based on Microsoft Excel Data Analysis, the t-stat is -6.546, Which is Lower than the t-critical Value. Similar Results are Generated Using the Minitab 17 Statistical Software.

t-Test: Two-Sample

	Knowledge	Attitude
Mean	0.245	0.705
Variance	0.024	0.005
Observation	5.000	6.000
Pooled Variance	0.013	
Hypothesized Mean Difference	0.000	
df	9.000	
t Stat	-6.546	
P (T<=t) one-tail	0.000	
t Critical one-tail	1.833	

Two-Sample t-Test and CI: Knowledge, Attitude

Two-sample T for Knowledge vs Attitude

	Knowledge	Attitude
N	5	6
Mean	0.245	0.7052
StDev	0.154	0.0734
SE Mean	0.069	0.030

Difference = μ (Knowledge) - μ (Attitude)
Estimate for difference: -0.4602
95% CI for difference: (-0.6192, -0.3012)
T-Test of difference = 0 (vs ≠): T-Value = -6.55 P-Value = 0.000 DF = 9
Both use Pooled StDev = 0.1161

Since the computed t-value of -6.55 is less than the t-critical value of 1.833 at 0.05 level of significance, the statistical decision is to reject the null hypothesis and accept the alternative hypothesis, which is the researchers' claim. As such, there is enough evidence to conclude that the students' knowledge level is lower than their attitude toward Baybayin and on it being a national writing system. This means students only have little knowledge of Baybayin but are still interested to study or learn it. This idea is supported by the box plot below (See Figure 8).

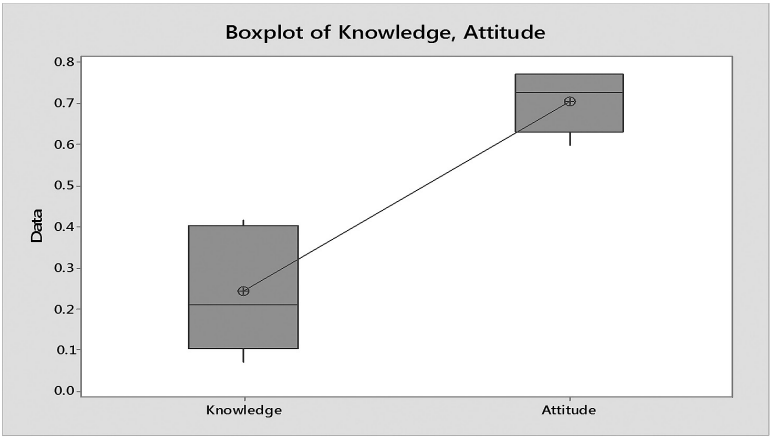

Figure 8. Box Plot of Knowledge and Attitude Level on Baybayin.

Significance of the Study

To date, there is no existing literature studying the knowledge of and attitude towards Baybayin across any target sample. This is the first paper that sheds light on the knowledge and attitude of university students in Quezon City regarding Baybayin and it being a national writing system. Hence, this research provides initial data for future research on Baybayin. The results of this study can also assist in making policies and implementation should House Bill 1022 be enacted.

Conclusion

This study shows that most Filipino university students in Quezon City, Philippines, believe that Baybayin is very important in relation to its usage and impact on the economy, education, security and military operations, sports, political cooperation and tourism. This research also indicates that respondents are more knowledgeable on foreign and Asian scripts such as Korean and Japanese than on Baybayin. Likewise, respondents are not well informed about House Bill 1022 and its provisions. However, most respondents were enthusiastic in studying Baybayin if it will be formally introduced and included in the curriculum.

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INDIGENOUS KNOWLEDGE SYSTEMS AND PRACTICES OF CAPIZ AND THEIR SCIENTIFIC PERSPECTIVES: A BASIS FOR CULTURE-BASED SCIENCE EDUCATION

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Abstract

Indigenous knowledge systems and practices (IKSP) have played an important role in the emergence and development of human society. This mixed-method study is conceived to generate and document IKSP of locals of selected upland, lowland and coastal communities in the province of Capiz. It also aims to determine the observance level of these IKSPs; the factors and conditions attributed by the community members; and the conditions that challenge the preservation and transmission of these IKSPs. Participants of the study include the identified key informants and other ancillary respondents. Qualitative data were generated through cultural memory bank and thematic analysis, while quantitative data were measured using mean and standard deviation. Findings showed that Capiz has preserved its IKSPs in farming, fishing and healing, and the overall level of observance is interpreted as "observed." Most of these IKSPs possess scientific principles but there are also IKSPs that are non-scientific. Furthermore, the community members attribute their IKSPs to traditions, socioeconomic factors, spiritual beliefs, local resource mobilization and environmental awareness.

Science is indeed essential to mankind. The progress and development mankind has achieved can be rightfully attributed to science. It is considered to be integral to human existence. The sciences, however, predominantly tend to have Western perspectives. School education and societies' outlooks have been looking at the Western way of studying. According to the International Council for Science (2002), Western science is based upon the principles of repeatability and predictability. On the other hand, there is another kind of science that people tend to undervalue and underrate. This is traditional science or indigenous science, collectively known as "ethnoscience." This kind of science is based on knowledges present in a particular community or locality. Pollock (2012) defines ethnoscience as the study of what the members of any culture know about the world, usually the natural world, and the relationships among the parts, components, or features of their knowledge of that world.

For the purpose of this study, the general term indigenous knowledge means "indigenous knowledge system and practices" or IKSPs. The National Commission on Indigenous People of the Philippines (NCIP) defines IKSP as "systems, institutions, mechanisms, and technologies comprising a unique body of knowledge evolved through time that embody patterns of relationships between and among peoples and between peoples, their lands and resource environment, including such spheres of relationships which may include social, political, cultural, economic, religious spheres."

Furthermore, indigenous knowledge systems and practices, as a whole, have played an important role in the emergence and development of human society. For Steiner (2008), long before the various scientific and technological advancements came into the picture, humanity all over the world depended on indigenous knowledges. Definitely, indigenous knowledge had enabled communities in the past to achieve stable livelihoods and to enable living harmoniously with the environment. In general, traditional or indigenous knowledge was proven to be a perfect scaffold for sustainable development, connecting the past, the present and the future (Kinomis, 2016).

However, there are challenges that indigenous knowledge in science have been facing over the years. These include its rejection by some scientific communities, and deterioration due to continuing assimilation and diminishing interest among young people. Aggravating these is the failure to preserve these knowledge systems and practices held by the elders who are considered to be "experts" of these.

It is undeniable that over the past centuries, there is a dearth or scarcity of literatures that document this knowledge in science that communities possess across the globe. As cited by Linaugo, Larroder and Larroder (2012), in the field of meteorology and astronomy, insufficiency of documents focusing on the cosmic views of Filipinos is observed. Consequently, the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA) is asking the public to help compile local legends about celestial bodies for educational purposes. Additionally, schools are geared towards teaching positivists' science rather than

traditional or indigenous one. Buenvenida (2015) indicates that over the past years, conventional school science serves to acculturate and even assimilate students to western scientific way of looking at the world, thus, paving a way to underrate indigenous scientific knowledge that a certain community or area possess.

Ideally, indigenous knowledge should be integrated in the teaching-learning process of science. Community funds of knowledge are considered a rich source of knowledge systems and practices that can aid in the learning process. Funds of knowledge are essential and a great tool in carrying out students' learning. When this knowledge is tapped and used to plan and deliver instruction, it becomes a social and intellectual resource for teachers (Gonzalez, Greenberg and Velez, 1999).

In a multi-cultural country such as the Philippines, it is important to preserve and integrate indigenous knowledge into the teaching and learning process. This is for the purpose of not only augmenting the delivery of educational instruction but also to take into account the rich local funds of knowledge that different communities have. Michelle, et al. (2008) state that incorporating aboriginal perspectives in school science is not only imperative to generating interest and relevance for native students but will also broaden all people's worldview and understanding of the interconnected relationship of people with the earth and environment. The utilization of well-documented and captured indigenous knowledge in science teaching will basically address the needs of multicultural learners, and more importantly learning will become meaningful and significant in the sense that learners take pride in the ownership of their unique indigenous knowledge.

Objectives of the Study

The main objective of this study is to generate and document the indigenous knowledge systems and practices and their scientific perspectives of locals from selected upland, inland, and coastal communities in Capiz.

Specifically, it aims to answer the following questions:

1. What are the IKSPs and their scientific perspectives in terms of farming in selected communities of Capiz?
2. What are the IKSPs and their scientific perspectives in terms of fishing in selected communities of Capiz?
3. What are the IKSPsand their scientific perspectives in terms of healing in selected communities of Capiz?
4. What is the level of observance of IKSPs in the selected communities of Capiz?
5. What factors and conditions do the community members attribute their IKSPs to?

Methodology

This study employs mixed methods of research with emphasis on ethnography as the primary design, used in order to generate and document the indigenous knowledge systems and practices and their science perspectives of locals of selected upland, lowland, and coastal communities

in Capiz. Mixed methods research is a type of research in which a researcher or team of researchers combine elements of qualitative and quantitative research approaches (e. g., use of qualitative and quantitative viewpoints, data collection, analysis, inference techniques) for the broad purposes of breadth and depth of understanding and corroboration.

Ethnography is defined both as a product and as a process. As a product, it is a written document of the historical, physical, biological and social environment, the activities, values, and belief of a social group. As a process, it is how the researcher learns about and understands the group through fieldwork (Palaganas, 2003).

In gathering the qualitative data, the researcher used key-informant interview (KII) and direct observations as methods. The researcher has designed a KII interview schedule that is semi-structured in nature to gather significant data from key informants. It is designed to mine local knowledge, beliefs and practices of the community on the following key areas: farming, fishing, and healing. In the study, the questionnaire consists of 12 open-ended questions that serve as initial questions to key informants during the interview. During the course of the interview, supplemental questions are also asked to substantiate the topic of discourse. The responses are recorded and transcribed. Interviews are held upon the convenience of the informants. Moreover, key-informant interviews are supported by photographs and audio recordings. The key informants and ancillary participants are asked to perform the said practices as much as possible. These have been recorded, and reflection notes have been written during the observation process.

A researcher-formulated questionnaire is used in collecting quantitative data. The questionnaire comprises four sections. Section one determines the basic socio-demographic profile of the respondents while section two determines the level of observance of IKSPs, particularly on farming. Section three focuses on fishing while section four on healing. The questionnaire has a total of 30 items, and sections two, three and four contain 10 items each. The questionnaire on the level of observation can be answered by the following responses:

5 – Strongly agree
4 – Agree
3 – Undecided
2 – Disagree
1 – Strongly disagree.

To describe the level of observance of IKSPs, a scale is used:

5.00-4.21 (Highly observed),
4.20-3.41 (Observed)
3.40-2.61 (Moderately observed)
2.60-1.81 (Less observed)
1.80=1.00 (Least Observed).

To ensure validity and reliability, the questionnaire is subjected to content and face validation by experts of the field. After it has been content- and face-validated, the instrument was pilot-tested to fifty members of a nearby community. McDaniel (1992) contends that an instrument with a reliability index of .70 and above is considered reliable. Result of Cronbach alpha revealed a reliability index of .723. The results of the statistical test indicate that the instrument is reliable and valid.

The participants for the qualitative aspect of the study depend on the extent to which data saturation is achieved. There is a total of 23 identified key informants of the study coming from the locals of the upland, lowland and coastal communities. To enhance the data gathered further, 24 ancillary informants have also been invited to take part in the study. These informants are people living in the said identified communities who know the language of the community and also practice similar activities as the key informants.

Purposive sampling is used in this study. It is a sampling method that begins with volunteer informants and may be supplemented with new participants through snowballing (Polit and Beck, 2004).

On the other hand, there are 212 respondents for the quantitative aspect of the study. Cluster sampling is utilized in determining the sample size. The total population is divided into six clusters representing the identified cultural communities. In cluster sampling, the researcher has divided the population into separate groups called clusters. Then, a simple random sample of clusters is selected from the population. The proportional allocation formula is used to get the appropriate sample size from various groups or classes of the population involved. Furthermore, quota sampling is employed to meet the intended number of respondents per cluster. According to David (2004), quota sampling is a method in which researchers can form a sample involving individuals that represent a population and are chosen according to traits or qualities.

Qualitative data are generated through cultural memory bank and thematic analysis while quantitative data are measured using mean and standard deviation as the primary statistical tools.

Thematic analysis aims to identify the kinds of stories told about the researched phenomenon and the kinds of story representing the phenomenon in culture and society. The participants' responses from the interview are then studied closely and reflected upon. On the other hand, cultural memory bank is a tool in which the term "seeds" is being used to refer to those practices and knowledge systems that are deemed to be important to the community. These "seeds" are identified by capturing them from the locals that are considered to be "expert" who has the knowledge of the seed. Then a memory bank will be constructed in the process of analyzing the seeds.

As far as quantification of data is concerned, the mean is employed to find out the level of observation of the IKSPs of the respondents whereas the standard deviation is utilized to determine the homogeneity and heterogeneity of the responses. All quantitative data are processed and analyzed using the Statistical Package for Social Sciences (SPSS) PC software.

Results and Discussions

A) Indigenous Knowledge System and Practices in Farming

Among farming IKSPs, tanom or planting by means of transplanting; *gi-ok* or manual separation of rice grains; and *pagpatay it paka*, a pest control measure, are not being practiced regularly by both the upland and lowland communities of Capiz. Qualitative data reveal that this is due to the advent of modern farming approaches that are less time- and energy-consuming.

Notably, *pang-ani* by means of *kayog* is still a practice in the mountains of Jamindan. The rest of the other communities do not practice this anymore. Moreover, *sab-og* is a practice observed in the upland community of Putian, Cuartero, which helps the soil to become fertile. On the other hand, the lowland communities, particularly the community of Cabungahan, Maayon, observe the so-called "*pag-uga sang binhi*" that is rooted on the belief that it assists in the faster germination of the rice seeds.

It is also worth noting that farmers are very observant of their surroundings, as their planting and harvesting times are associated with tidal patterns. The people of the communities make references to the tides (*taob* and *hunas*) as to when they are going to plant and harvest the rice seedlings in the field. The belief is that farmers prefer to plant and harvest rice seeds during *taob* or high tide since they associate the level of water to the growth of the rice grains. Since *hunas* or low tide signifies that the level of water in the field is low, farmers prefer not to plant or even harvest their crops because they believe that the harvest will not be bountiful. Furthermore, the knowledge on biological control is evident.

All farming IKSPs are methods in farming, farming technologies and farming beliefs. Methods in farming primarily observe scientific principles such as soil preparation, pest control, and soil fertilization. On the other hand, farming beliefs are all considered to be non-scientific in nature, and no scientific principles can support their relevance. Moreover, these practices are considered to be part of cultural heritage and considerably contain socio-cultural values and relevance.

Table 1. Indigenous Knowledge Systems and Practices and their Scientific Perspectives in Farming.

Indigenous Knowledge Systems	Indigenous Practices	Scientific Perspectives
The people of the communities make references to the tides (*taob* and *hunas*) for the times when they are going to plant and harvest the rice seedlings in the field. The belief is that farmers prefer to plant and harvest rice seeds during *taob* or high tide since they associate the level of water to the growth of the rice grains. Since *hunas* or low tide signifies that the level of water in the field is low, farmers prefer not to plant or even harvest their crops because they believe that the harvest will not be bountiful.	*Tanom* is the preparation of the rice fields that involves a series of steps which includes making of a seedling nursery and transplanting of rice seeds from the nursery into the field. *Pang-ani* is a rice harvesting process using the tool *kayog*.	Rice fields located near a river or stream form the so-called tidal floodplain. These area experiences flooding during periods of high discharge. The soils usually consist of levees, silts and sands deposited during the flow of the water. These make the soil fertile and suitable for planting. Moreover, it is ideal to plant rice in a watery soil surface, in which tidal attraction is an important factor.
Traditional farmers believe that the ashes from burnt trees and *mongo* seeds make the soil in the field fertile.	*Kaingin* is planting of rice seeds in a sloping area using the slash-and-burn method.	Wood ash is an excellent source of lime and potassium. Moreover, these ashes in the field also provide many trace elements that plants need to thrive.
	Sab-og is the spreading of *mongo* seeds along the field after harvest.	Biological nitrogen fixation is the process that changes inert nitrogen to biologically useful ammonia. This process is mediated in nature only by bacteria. Other plants benefit from nitrogen-fixing bacteria when the bacteria die and release nitrogen to the environment, or when the bacteria live in close association with the plant. In legumes and a few other plants, the bacteria live in small growths on the roots called nodules. Within these nodules, nitrogen fixation is done by the bacteria, and the NH3 produced is absorbed by the plant. Moreover, it makes the soil fertile.

Common pest animals in the field before include flies and some small insects. Traditional famers believe that the scent of dead animal will attract them, thus it is used as a pest control measure.	*Pagpatay it paka* is a process where a frog is killed and hanged at the field so that pests will gather around the dead body. Later in the afternoon, the carcass is burned.	Biological control or biocontrol is a method of controlling pests such as insects, mites, weeds and plant diseases using other organisms. It relies on predation, parasitism, herbivory, or other natural mechanisms, but typically also involves an active human management role. It can be an important component of integrated pest management (IPM) programs. There are three basic strategies for biological pest control: classical (importation), where a natural enemy of a pest is introduced in the hope of achieving control; inductive (augmentation), in which a large population of natural enemies are administered for quick pest control; and inoculative (conservation), in which measures are taken to maintain natural enemies through regular reestablishment.
Community folks have recognized the need to separate the rice seeds from stalks and husks after it was harvested. They have a common understanding that beating the crops in an object could thresh their harvested grains.	*Gi-ok* is the separation of rice seeds from stalks and husks by steeping in and with the aid of the natural air.	The principle behind this is the so-called "trampling." Trampling involves the use of bare feet or animals to thresh out or separate the crop. The crop is spread over a mat or canvass, and workers trample with their own feet or use their animals. After treading, the straw is separated from the grains and cleaning of the grain is done by winnowing, with or without the aid of an electric fan.

Community folks developed a measuring system that estimates the amount of yield that they have produced in a single cropping.	*Paniga* and *tabubo* are containers that serve as temporary storages of grains and as measuring tools as well.	The purpose of any grain storage equipment is to provide safe storage conditions for the grain in order to prevent grain loss caused by adverse weather, moisture, rodents, birds, insects and micro-organisms like fungi. In general, it is recommended that rice for food purposes be stored in paddy form rather than milled rice as the husk provides some protection against insects and helps prevent quality deterioration.
Farmers thought that drying the seeds under the heat of the sun will promote faster growth.	*Pag-uga sang binhi* is the process in which rice seeds are being dried under the heat of the sun before scattering in the seedling nursery.	Basically, increase in the temperature of drying air affects the physiological quality of seeds. This effect is basically shown on the observable changes in the length of the plant. Drying the seed will leave it dehydrated, thus proliferation of microorganisms that might affect plant growth is prevented. It will lead later on to maximum seed potential.
Community people have this belief called "*pag-umpisa*" which is done to show reverence to unseen entities residing in the field.	*Bungad* or *bung-gad* is the placing of some local plants before the start of planting and harvesting at the center or at the intersection of rice fields. *Pagkutol* is a ritual of cutting the first set of harvested rice grains.	Considered to be pseudoscientific in nature, this is a set of beliefs of local farmers and community folks that is rooted on the religious beliefs. Filipinos are known to be believers of the animate, thus they put high regard to nature as a home of both seen and unseen entities. Thus, practices that show high regard and respect to all entities are observed.
Community people gather after harvest to celebrate their bountiful harvest.	*Panuigon* or *pangahaw* is a community gathering during harvest time.	It has something to do with the culture. Filipinos are known for valuing close family ties, thus gatherings are embedded in the way of life of the community.

B) Indigenous Knowledge System and Practices in Fishing

The coastal and lowland communities of Capiz comprise a rich fund of IKSP. Community folks use their knowledge on the phases of the moon, tidal activities, and fishing technologies in performing their fishing-related practices.

Community fisher folks recognize that the phases of the moon affect the activities of fishes. They expect a bountiful catch during *ugsad* or full moon. While during *lati*, they just have a usual catch of fishes. This is because the number of fishes feeding at night often increases when there is a full moon.

Significantly, in coastal communities, all fishing practices and technologies are continually observed by the fisher folks. Fishing technologies include non-stationary fishing such as *pagataw* and *iwag*, gillnet fishing, tidal trap, basket fishing, dredge fishing, line fishing, and net mending technology. In observing these fishing practices, fisher folks primarily rely on the movement of tides and phases of moon. The science behind these is based on the gravitational relationship between the earth's surface water and of the moon.

Fisher folks have knowledge about the relationship between the moon and surface water. They know that the number of fish feeding at night often increases when there is a full moon. They have observed that larger fishes take advantage of the fact that baitfish is illuminated by the light of the full moon in order to feed. Moreover, they have learned that fishes are highly sensitive to light. Hence, they are attracted to sources of light such as the moon during its full phase and lamps of the fisher folks.

Also, local communities have recognized the effect of the tides in their fishing activities. Fishing is considered generally better when the tide is running, that is, during the middle period of the tide, instead of the peak of the low or high tide when the water is "slack." Snappers and a lot of other fish species tend to feel more excited when the water is flowing. However, the fish biting regularly slows down with a slow or high water flow. It makes sense to time fishing trips to coincide with the tides. Tides also affect deep-sea fishing, dictating the place where the fish retain their structure and concentrating food in circular movements of water that lead to a small whirlpool and deeper nutrient-rich water pushed to the surface which is termed as upwelling. Moreover, fisher folks have a basic understanding of biological preservation as manifested by their art mending practices.

As far as inland-water fishing is concerned, *panaklob* is the only fishing practice that is not observed in the inland waters of the lowlands as of this time being. Basically, fishing practices, listed here, are classified as gillnet, basket, manual, torch, or line fishing. All these fishing technologies have their specific purposes.

Table 2. Indigenous Knowledge Systems and Practices and their Scientific Perspectives in Fishing.

Indigenous Knowledge Systems	Indigenous Practices	Scientific Perspectives
Fisher folks believe that the phases of the moon affect the activity of fishes. They expect a big catch during *ugsad* or full moon, while during *lati*, they have just a usual catch of fish.	*Pagataw* is a fishing method that uses *surambaw* and is used during the daytime. *Iwag* uses the same mechanism as that of the *pagataw* but operates during night time and has an alcohol lamp to attract fish. *Arong* follows the mechanism as that of the *taba* but operates during night time. It has a lamp to attract fish. *Panglaya* is a method that uses a mesh net to capture fishes either in the shallow or deep part of the river. *Panulo* is conducted at night time using a torch to attract fishes at the river especially along the river banks.	In terms of the phases of the moon, the number of fishes feeding at night often increase when there is a full moon. Larger fishes take advantage of the fact that baitfish are illuminated by the light of the full moon, in order to feed. Technically, fishes have high light sensitivity. Hence, they are attracted to the source of light such as the moon during its full phase and the lamps of the fisher folks. Furthermore, in general, studies suggest that many species of saltwater fish are most active on the four days leading up to the full moon and the four days after the full moon. During these few days, fish activity should increase in general, regardless of what time of day it is or whether it is a "major" or "minor" phase in accordance with the position of the moon.

Fisher folks observe the water currents when fishing both in inland and marine waters. If it is *linaw* (calm and tranquil), they tend to use smaller fishing implements while if it is *humbak* (with bigger waves), smaller fishing implements are kept and bigger fishing implements are being used.	*Taba* is a passive fishing gear used to trap shrimps and fish. *Patuloy* is a method that uses a mesh net to capture fishes but both ends are attached to bamboo pillars. *Lambo* and *labay* is a long rope with hooks (attached with bait). Usually, one end is attached to a bamboo pillar at the bank of the river or in the open waters. *Pangkisyo* or *pamunit* is a fishing method that uses rods, ropes and hooks.	Fishing is considered generally better when the tide is running, that is, during the middle period of the tide, instead of the peak of the low or high tide when the water is "slack." Snappers and a lot of other fish species tend to feel more excited when the water is flowing. However, the fish biting regularly slows down with a slow or high water flow. It makes sense to time fishing trips to coincide with the tides. Tides also affect deep-sea fishing, dictating the place where the fish retain their structure and concentrating food in circular movements of water that lead to a small whirlpool and deeper nutrient-rich water pushed to the surface which is termed as upwelling. Upwelling is an oceanographic phenomenon that involves wind-driven motion of dense and usually nutrient rich water. The impact of the tide is strongest in shallow waters, bay, estuaries and the harbor, as well as around the islands and reefs that "press" the tide through narrow channels.
Fisher folks believe that making noise and disturbing the water will attract fishes to come to the net. Coastal fishermen called it *panalbog*.	*Patuloy* is a fishing method that uses a mesh net to capture fish. *Likos/kurantay/kurantog/ largarete* is an act of noise-making that makes fishes swim towards the direction of the net for capture.	Technically, fishes sense sound and vibrations underwater via two sensory organs, including bony structures called otoliths in the inner ears. The other organ is called the lateral line, which runs along each side of a fish's body from the gills to the caudal peduncle (just forward of the tail). Fish utilize hearing and vibration for a number of purposes. They use it to find food, locate schoolmates, engage in courtship, and avoid danger. So when sound or vibration is produced, it may attract fish to come over.

Fisher folks are aware of fishing by using trapping methods with the utilization of a basket locally called *bandi*. They usually put some *paon* or bait to attract fish, crabs, and other benthic animals.	*Tangab/Lumpot/Pana-un/ Tapangan* varies in sizes and shapes, but these are fishing practices that use the scoop net technique as a means of capturing various types of fish, prawns and crabs. *Panaklob* is done by covering the target fish with a tool that resembles like a taon and manually collecting it. *Parugmon* is digging up of piece of land in the river banks and putting wood as a trap for fish. *Pamintol/bobo* is a basket trap used to capture fish, shrimp, and crabs. *Hudhud* is a manual dredge that resembles a scoop net. It is an apparatus for dragging the seabed to collect benthic organisms.	Fish traps can have the form of a fishing weir or a lobster trap. A typical contemporary trap consists of a frame of thick steel wire in the shape of a heart with chicken wire stretched around it. The mesh wraps around the frame and then tapers into the inside of the trap. When a fish swims inside through this opening, it cannot get out, as the chicken wire opening bends back into its original narrowness. Contemporary eel traps come in many shapes and sizes and are constructed of many materials. In earlier times, traps were made of wood and fiber.
Community folks have this specific knowledge on the appropriateness of the size of the net eye. In catching big species of fish they use the *lahang* (net with bigger eyes) while for small fishes and small crustaceans, they basically use the *sumpot* (net with smaller eyes).	*Pamuna* is the act of mending of nets.	A conventional practice of a sustainable fishery is harvesting at a sustainable rate, in which the fish population does not decline over time because of fishing practices. Sustainability in fisheries combines theoretical disciplines, such as the population dynamics of fisheries, with practical strategies, such as avoiding overfishing through techniques such as individual fishing quotas, curtailing destructive and illegal fishing practices by lobbying for appropriate law and policy, setting up protected areas, restoring collapsed fisheries, incorporating all externalities involved in harvesting marine ecosystems into fishery economics, educating stakeholders and the wider public, and developing independent certification programs. Moreover, in this scenario, fisher folks use varying sizes of fishnet depending on the kind of fish they want to catch. They tend not to catch newly-hatched fish so they can grow and still multiply.

C) Indigenous Knowledge System and Practices in Healing

Community folks have technically learned how to utilize the resources in the surroundings and have strong connection with their environment. It is worth noting that the traditional healing practices of the selected communities in Capiz are deeply rooted in their knowledge of herbal medicine and the recognition of the existence of unseen entities that reside in their respective communities. Primarily, traditional healing is a part of Philippine society and culture. It is said that traditional healing practice is combined with Christian beliefs. In Panay, a faith healer is called *medico*. It is believed that a *medico* is not only capable of healing physical ailments but he or she can also cure ailments instigated by paranormal entities, beyond the capacity of an ordinary individual.

Almost all IKSPs have scientific relevance except for some that are considered to be non-scientific. Most of these IKSPs in healing rest on the principles of alternative medicine particularly on the use of medically important plants, popularly known as ethnobotanical medicine. Traditional healers in these areas believe in *sanag*, the payment given to the healers to prevent recurrence and transfer of the ailment from patient to healer.

Moreover, some of the healing practices like *pamaltera* or traditional birthing is significantly not observed in the community as of this time. This is due to some legal prohibitions in the community such as the prohibition against home deliveries, which is concurrently a directive from

***Table 3**. Indigenous Knowledge Systems and Practices and their Scientific Perspectives in Healing.*

Indigenous Knowledge Systems	Indigenous Practices	Scientific Perspectives
Community folks believe that certain plants can treat certain illnesses especially those that are caused by unseen entities residing together with them.	*Panampol* is usage of medicinal plants as an external patch to treat various diseases.	Herbal medicine, also known as herbalism or botanical medicine, is a medical system based on the use of plants or plant extracts that may be eaten or applied to the skin. It basically addresses a wide variety of medical conditions. Certain plants are considered to be rich in a variety of compounds. Many are secondary metabolites and include aromatic substances, most of which are phenols or their oxygen-substituted derivatives such as tannins. Moreover, many of these compounds have antioxidant properties.

	Pang-lana is making mineral oil from the coconut.	Coconut oil, or copra oil, is an edible oil extracted from the kernel or meat of mature coconuts harvested from the coconut palm. It has various applications. Because of its high saturated fat content, it is slow to oxidize and thus resistant to rancidification, lasting up to six months without spoiling. Specifically, lauric acid, the predominant medium-chain fatty acid found in coconut oil, has proven to be antibacterial, antiviral, antifungal, and anti-inflammatory. Other chemical substances in coconut oil, including phytonutrients and polyphenols, act as antioxidants, and have other tissue-supportive and tissue-protective properties.
They believe that massaging the fundus of the delivering mother will make the birthing process faster and easier.	*Pamaltera* is traditional way of delivering a child.	Fundal maneuver is the application of manual pressure to the uppermost part of the uterus directed toward the birth canal to assist spontaneous vaginal delivery and to avoid prolonged second stage of labor.
Immersing the postpartum mother's hips in lukewarm water will promote faster healing of wounds.	*Panagang bughat* includes ways of preventing postpartum illnesses with the use of herbal plants boiled in water where the patient's hips are immersed in the lukewarm water.	A sitz bath is a warm, shallow bath that cleanses the perineum, the space between the rectum and the vulva or scrotum. A sitz bath can also provide relief from pain or itching in the genital area. Bathing in warm water helps increase blood flow which can speed up healing. Moreover, warm water is soothing and helps one to relax and relieve some pain.

They believe that if they will get a hilot, good circulation of blood is promoted. Moreover, it is believed that air trapped under the skin is being released.	*Hilot* is touch therapy using essential oils.	Acupressure is based on the concept of life energy which flows through "meridians" in the body. In treatment, physical pressure is applied to acupuncture points with the aim of clearing blockages in these meridians. Pressure may be applied by hand, by elbow, or with various devices.
Communities have this so-called *medico* who can treat illnesses caused by unseen entities. The *medico* will usually utter an "*orasyon*" or a prayer before doing the treatment to drive away the cause of the illness. Moreover, traditional healers have this belief that for them to prevent the transfer of ailment, they should receive *sanag* as their protection.	*Pamulso* is the usage of body pulse to diagnose certain conditions. In a *pantayhop*, a traditional healer blows the upper part of the head of the patient in a gentle manner accompanied by uttering a prayer. *Pagpaniming* is the process of creating a panaming, a protective charm composed of various leaves and barks of plants. *Pamutbot* is the usage of turmeric (*dulaw*), applying it externally in the affected part of the body. In other areas, it is done in combination of *buok* and *tampol*. *Panawas* or *pamatpat* is the diagnosis of certain conditions caused by unseen entities. This involves the use of candle and water.	Considered to be pseudoscientific in nature, traditional healing is part of Philippine society and culture. It is said that traditional healing practices is combined with Christian beliefs. In Panay, a faith healer is called medico. It is believed that a *medico* is not only capable of healing physical ailments but he or she can also cure ailments which are instigated by paranormal beings, beyond the capacity of an ordinary individual. A folk healer, according to Leiban, is said to have an unusual connection with the spiritual world, derived from his or her mystical patron, in order to uphold the power to heal. Several medico acquire their knowledge in healing or sorcery from their ancestors or through spirit intercession. They also learn *orasyon* or words of power from a book called *librito*, which is authored and given by a spirit as a *tuga*, a gift, as they strongly believe but contents of this little book are written in Latin texts, which are the basis of the healer's hushed mantras. It is healing with the assistance of the unseen entities.
Community people believe that the smoke coming from the burnt *kamangyan* will make them feel at ease. It is believed that the *kamangyan* and other dried leaves will drive away the entities that cause their sickness in which they call it *dadalmunon*.	*Bu-ok* is the burning of some types of plants and letting the smoke seep into the skin of the patient but sometimes it is used in material rather than in person.	

Table 4. Mean and Standard Deviation of the Level of Observances of the Indigenous Knowledge Systems and Practices and their Scientific Perspectives in Farming, Fishing, and Healing.

Areas of Indigenous Knowledge Systems and Practices	Mean	Description	SD
Farming IKSPs	3.91	Observed	1.18
Fishing IKSPs	3.90	Observed	1.46
Healing IKSPs	3.85	Observed	1.29
Overall	*3.88*	*Observed*	*1.31*

the Department of Health.

Table 4 shows the overall level of observance of the IKSPs of the selected communities as well as their key-areas. Result show that the overall level of observance is observed (m = 3.88; SD = 1.31), which means that the selected communities practiced and observed the identified IKSPs on farming, fishing and healing. Moreover, among the areas of IKSPs, farming ranked first followed by fishing and lastly by healing.

D) Attributions of Indigenous Knowledge Systems and Practices

Folks of various communities, whether in upland, lowland and coastal, attribute their indigenous systems and practices in science to the following factors or conditions: IKSPs as their customs and traditions; IKSPs as their means of living; IKSPs as an offshoot of their social dynamics; integral to their IKSPs is their regard and respect to the spirits; in doing their IKSPs they have utilized available community resources; and IKSPs enable them to recognize clues from nature that guide their day-to-day living.

Conclusions

Based on the findings of the study, the research presents the following concluding statements:

The upland and lowland communities of Capiz have preserved IKSPs in farming that has played an important part in their ways of living. It has paved a way to the development of modern farming technologies and practices. Most of the knowledge systems in farming have scientific principles behind it. These scientific principles serve as a framework that gives justification why these knowledge systems and practices are being done and observed. Moreover, there are also IKSPs in farming that are non-scientific by nature. These are mostly based on beliefs and customs passed on from one generation to the next. Although considered to be non-scientific, it still has deep cultural relevance and significance that makes it indispensable for the community.

The coastal and inland water communities of Capiz have rich community funds of knowledge in fishing. These funds of knowledge have directed the fishing practices of the fisher folks. All of these IKSPs centers on the different technologies that makes fishing for the community easy

and sustainable. These knowledge systems and practices have evolved over time but the principles and the frameworks behind them remain intact. People in the coastal communities are closely connected to their local surroundings, thus they are often the first ones to notice their surroundings. This is widely exhibited as fisher folks use the phases of the moon, tidal activities and underwater happenings as references in their day-to-day life in the coast. These kinds of knowledge systems are derived from long-term observational data maintained through an oral tradition.

The IKSPs in healing are deeply embedded in the culture and the way of life of those practicing it. This is the reason why even some IKSPs in healing, though having no strong scientific explanations and logical bases, people in the community still believe and follow such practices. Considerably, these kinds of IKSPs have been part of the existing cultural system in the community and have been propagated and transmitted through time. Moreover, the communities have a unique healthcare system that utilizes available resources innate to them and being passed on to the next generation which is usually oral and practical in nature.

There are factors like traditions, socioeconomic factors, spiritual beliefs, local resource mobilization, and environmental awareness to which members of the respective communities attribute their indigenous occupational knowledge systems and practices. These factors serve as strong influences to the perpetuation of different IKSPs in the community level.

Recommendations

The following are the recommendations that were drawn from the conclusion of the study:

That these local funds of knowledge and practices that can be classified as science concepts must be carefully documented and published to preserve the living traditions of these communities;

That the National Commission for Culture and the Arts enact relevant legislations for the preservation of these local funds of knowledge that are owned by the community itself. Moreover, schools of living traditions shall continue to propagate in different areas to enable the preservation and transmission of indigenous knowledge systems and practices to the next generation;

That the documented IKSPs will be put as reference in developing instructional materials and be included in the lesson being taught in schools under the realm of culture and community-based learning pedagogies;

That the educational policymakers, curriculum implementers and school administrators initiate innovations and interventions inculcating contextual learning and utilization of the community as tools in teaching science and other content subjects;

That the teachers utilize IKSPs in teaching science concepts and other content subjects using the community as the context of learning. Thus, augmenting the contextualization, indigenization, and localization mandate of the curriculum; and

That the community, with their leaders, continuously exert efforts to preserve the local culture, tradition and practices so that the next breed of

generation may learn from it and use these funds of knowledge in their day-to-day activities. Moreover, the community must be very attentive to the external factors that may come in the community and influence their IKSPs.

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MILLENNIAL STUDENTS' LEVEL OF AWARENESS OF CEBUANO FOLK DANCES

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Abstract

Philippine folk dances are reflections of everyday life of past centuries that captivate modern-day audiences now. It mirrors the cultures and tradition of Filipinos. The history of the Philippine folk dances includes their roots and the impact made by settlers and colonizers. Cebu, known for many Christian traditions and practices, is famous for its Sinulog Festival, which is rooted in a dance ritual in honor of the miraculous image of the Santo Niño (Infant Jesus). Cebuano folk dances need to be promoted, because most millennials are not aware of them. These dances have a wide range of mimetic performances in which steps mimic movements found in some aspects of Cebuano life and culture such as the flight of birds, the catching of fish, and the making of wine. For this study, the researchers aim to determine the level of awareness of millennial students of the different Cebuano folk dances. It utilizes the descriptive research method using simple weighted mean as statistical treatment of the gathered data from the self-made questionnaire with the reliability score of 0.89. The study reveals that the respondents are only familiar with the itik-itik *of Sibonga the most. Despite the fact that these dances originated in Cebu, the respondents are not aware of dances like* Jota de Medellin, kuyayang, La Berde, Miligoy de Cebu, ohong-ohong, Pastores Kawit, salimbod, *Sampaguita and* Pastorsillos. *The study concludes that millennials are not fully aware of Cebuano folk dances. With this information, this study aims to help students and future researchers gain more awareness of Cebuano folk dances.*

Folk dance has been a marker of cultural identity of a people. It is part of the cultures and traditions of Filipinos. They are genuine impressions of day-to-day life of past centuries that captivate modern-day audiences now. The history of Philippine folk dances includes their roots and the impact made of settlers and colonizers. In a culturally diverse country like the Philippines, there is also a diversity in dances. There are different forms and dynamics, and they have developed across different times, situations and experiences. Dances are integral to festivals and other occasions. Sometimes, a dance even inspires the whole festival.

In their study, Cruz and Tullao (2015) state that "folk dances form an integral part of Filipino culture, and it impeccably depicts its people's values and a way of life and mirror the influence of hundreds of years under foreign rule."

Cebu is a province that is culturally rich even before colonization. Sugbuanons or Cebuanos possess a range of dances that reflect its Malayo-Polynesian culture. Later on, the influences of different colonization have affected and enriched these dances (Nimor, 2018), including the famous Sinulog dance ritual in honor of the miraculous image of the Santo Niño.

The first mention of dancing in Cebu dates back to 1521, when Pigafetta described the dancing and music using gongs by women during festivities (Jocano, 1975; Alejandro, 1978 &Nimor, 2018). Later on, the books of Francisca Reyes-Aquino and of Nimor in 2018 mentioned five Cebuano dances: *Maramion, surtido Cebuano, mananguete, escala*, and *pinggan-pinggan pino*. Dance researchers continue to perform and document Cebuano dances, which are shared through various dance workshops and books. Cebuano folk dances are written in the book *Sayaw Sugbu* by Nimor and Janson, which enumerated ten: *Itik-itik Sibonga, Jota de Medellin, kuyayang, La Berde, Miligoy de Cebu, ohong-ohong, Pastores Kawit, Pastorsillos, Salimbod* and *Sampaguita*. According to Poralan (2014), cultural awareness is fundamental to or the core of literate national communication.

Currently, influences of cultures from outside the country are very evident. Students tend to prefer the popular dances (Nimor, 2004) and contemporary dances (Cruz, 2015), including hip-hop (Lewis, 2012), from other countries brought by mainstream media and the internet. These dances let people move freely according to their emotions without specific rules and restrictions in steps, leading to decreased interest in our very own dances (Babiera, 2014).

According to Republic Act 7356 (the law creating the National Commission for Culture and Arts), the government is mandated "to establish and develop an intensified arts education program at all levels of the educational system, public and private, to ensure meaningful arts integration across the school curriculum." Folk dance is included here since it is a way of preserving Cebuano culture. The researchers observe that there are only few who study the awareness level of millennial students on the Cebuano folk dances. Their research can help in the promotion of Cebuano folk dances as well as the prevention of distortions.

Methodology

The research design in this study is quantitative and uses the survey method. The respondents are students in the secondary level of the Mandaue City School for the Arts in Casili. The researchers utilize a self-made instrument. Part I focuses on the familiarity of students with folk dances, and Part II focuses on the origins and movements of the folk dances. This instrument is then tested for validity and reliability using Cronbach's alpha test with a reliability score of 0.89, which means that the tool is reliable.

The researchers have asked permission from the principal to conduct the study. This is followed by asking permission from the grade-level advisers. After getting the approval of the consultants, a pre-test is conducted before distributing the questionnaires to the respondents. After which, the researchers give the letter of permission and the survey questionnaire to the respondents. They are given enough time to respond and the answers are retrieved one day after data tabulation and analysis.

The researchers utilize descriptive statistics, particularly weighted mean, to determine the awareness level of the students on Cebuano folk dances.

Results and Discussion

In the conduct of a localized study, the researchers refer to the book *Sayaw Sugbu*, Volume 1, by Nimor and Janson, which lists the ten Cebuano folk dances. This research ranks these ten Cebuano folk dances according to the level of awareness of the respondents, particularly on their origins and steps.

***Table 1**: Respondents' Level of Awareness on the Cebuano Folk Dance Origins.*

Folk Dances	Weighted Mean	Descriptive Equivalent
Itik-itik Sibonga	2.69	Aware
Miligoy de Cebu	2.14	Slightly Aware
Sampaguita	2.38	Slightly Aware
Jota de Medellin	1.79	Slightly Aware
Pastores Kawit	1.83	Slightly Aware
Pastorsillos	1.45	Unaware
Kuyayang	1.45	Unaware
La Berde	1.41	Unaware
Salimbod	1.41	Unaware
Ohong-ohong	1.34	Unaware

On the origin of the dances, *Itik-itik Sibonga* is the folk dance that millennials are most aware of. The dance originates from Sibonga, a town in the southern part of Cebu. The respondents are slightly aware of *Miligoy de Cebu*, which originates from Consolacion; *Sampaguita*, which originates

from Ilaya, San Fernando; *Pastores Kawit*; and *jota de Medellin* from the town of Medellin. The remaining dances that respondents are unaware of in terms of origin are *Pastorsillos*, from in Pajo, Lapu-Lapu City; *kuyayang* from Bogo City; *La Berde* from Bacayan, Cebu City; *salimbod* from Adlaon, Cebu City; and *ohong-ohong* from Guadalupe, Carcar City.

***Table 2**: Respondents' Level of Awareness on the Cebuano Folk Dance Steps.*

Folk Dances	Weighted Mean	Descriptive Equivalent
Itik-itik Sibonga	2.69	Aware
Miligoy de Cebu	2.14	Slightly Aware
Jota de Medellin	1.90	Slightly Aware
Sampaguita	1.69	Unaware
Pastores Kawit	1.45	Unaware
Pastorsillos	1.59	Unaware
Kuyayang	1.48	Unaware
La Berde	1.34	Unaware
Salimbod	1.41	Unaware
Ohong-ohong	1.41	Unaware

Regarding the steps, the respondents are only aware of the *itik-itik Sibonga's* basic movements; they are slightly aware of *Miligoy de Cebu*, *Sampaguita*, *jota de Medellin*, and *Pastores Kawit*; while they do not have any knowledge of *Pastorsillos, kuyayang, La Berde, salimbod* and *ohong-ohong* at all.

Itik-itik is commonly performed by many people because it only has four steps that can be easily memorized even by kindergarten pupils.

***Table 3**: Respondents' Ranking of Cebuano Folk Dances According to their Level of Familiarity.*

Folk Dances	Rank
Itik-itik Sibonga	1
Miligoy de Cebu	2
Sampaguita	3
Jota de Medellin	4
Pastores Kawit	5
Pastorsillos	6
Kuyayang	7
La Berde	8
Salimbod	9
Ohong-ohong	10

On the familiarity of respondents on the Cebuano folk dances, *itik-itik Sibonga* ranks first while *Ohong-ohong* ranks last. This is because *itik-itik*,

which imitates the movements of duck, is included in the most popular folk dances in the Philippines. According to a legend, *itik-itik* is created by a young maiden dancer who is inspired by the music and decided to improvise dance steps imitating duck movements. *Ohong-ohong* is named after a mushroom that grows in an agricultural area in Carcar City and that signals the start of the planting season (Nimor and Janson, 2018).

Conclusion

Folk dances are integral to many aspects of Cebuano life such as worship, courtship, and weddings. Cebuano folk dances are reflections of the tradition and culture of the Cebuanos and contribute to developing a sense of national identity.

In this study, respondents are not fully aware of the aforementioned Cebuano folk dances. The only one known to them, including its origin and steps, is the *itik-itik Sibonga*. The outcome of this study signals a great concern to the academic sector as well as to the local community. There is a need to strengthen and preserve the folk dances that showcase Cebuano culture.

Recommendations

It is recommended that Cebuano folk dances, mentioned or not mentioned in this research, should be promoted to a wider audience. These folk dances can be used as presentations in many activities in classrooms or outside-of-school shows to emphasize the richness of our culture.

In the MAPEH (Music, Arts, Physical Education, and Health) curriculum where folk dances are being taught, there is a need to enliven the program and its contexts in teaching these folk dances.

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