Ensuring Intergenerational Ties: Digitizing Pidlisan Folktales to Multimedia Based Learning System (MBLS) Applying Tradigital Pedagogy

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Abstract

Digitizing folktales of the indigenous peoples into Multimedia Based Learning System (MBLS) anchored in tradigital pedagogy can foster enhanced memory retention, improved values formation, increased socio-cultural awareness, and strengthened intergenerational tie among the young. Using Cybernetic Tradition of Communication and Participatory Communication Approach (PCA), the study transformed a folktale into an interactive and engaging pedagogical learning material developing a MBLS board game and a courseware. The study digitized one of the oral narratives of the Pidlisan Indigenous Peoples Organizaton in Sagada, Mountain Province - the one titled, "*Ang Pinagmulan ng Fidelisan* (The Origin of Fidelisan)" which reflects the Indigenous Knowledge Systems (IKS) of the tribe. Through PCA, the MBLS was named "Pidlisan: A Cultural Quest." The MBLS development underwent the processes of production, implementation, and evaluation. Under the production phase, the research was able to produce a culturally rooted board game, playing cards, a PowerPoint Presentation, and a courseware to complete the MBLS. The MBLS was implemented and evaluated from Pidlisan schools namely the Aguid Elementary School (AES), Bangaan Elementary School (BES), and Fidelisan Elementary School (FES). The MBLS exhibited an effective transmission of indigenous knowledge, values, and practices through tradigitalism as manifested in the pathway of intergenerational ties. The MBLS, an alternative platform for learning folktales in particular and culture in general, creates an interactive and engaging venue for education and social consciousness. Furthermore, the cybernetic lens employing the Shannon and Weaver's Mathematical Communication Model was used to analyze the systems and units in the tradigitalism framework of the study. It revealed that intergenerational ties may be enacted and manifested if the communication system is properly implemented. The study also encourages yPidlisan to continue living their traditional culture to facilitate more efficient transmission of culture among the younger generation with the aid of appropriate and modern strategies.

KEYWORDS

Multimedia Based Learning System
Tradigital Pedagogy
Digitization
Indigenous Peoples
Indigenous Folktales
Cybernetic Tradition of Communication
Participatory Communication Approach (PCA)

Introduction

Education is an integral part of humanity. It is a right endowed to every individual as enshrined in the universal declaration of human rights. In its very essence, education cuts across the cognitive, psychomotor, and affective domains of a person toward the realization of his/her full potential.

In its course to solve social difficulties, education takes its new form advocating for Indigenous Peoples (IP) realization of their full capacities while preserving cultural identity. Through the years, the IP have struggled on ancestral domains, human rights, and IP education. As a minority, assertion and enhancement of IP education becomes a priority concern in mainstream education. Marginalized groups, including indigenous peoples, face multiple barriers to education and are being left behind in terms of educational achievement. Thus, developing a tailored, culturally and linguistically appropriate educational programs for indigenous learners becomes a priority.

A consolidated report by the Episcopal Commission on Indigenous People (ECIP, 2006) revealed the "alienation of indigenous youth from their own communities, heritage, culture, and history" as a major impact of mainstream education system to indigenous communities. Accordingly, an adverse effect of the mainstream school system has contributed to "broken intergenerational ties, misuse and abuse of cultural practices, dying indigenous knowledge systems (IKS), demise of community reflection processes, and continued marginalization of communities."

As a result, culturally sensitive and inclusive educational interventions were formulated and implemented. Indigenization of formal education and Alternative Learning Systems (ALS) curriculum were executed and continuously reformulated to contribute to the regeneration of culture. Several IP education interventions utilize native beliefs, dances, games, songs, literature, and artworks as a medium to educate children. Among the widely used pedagogical medium are folk stories.

Every culture in the world apparently creates narratives as a way to capture the essence of life in this world. In indigenous communities, "storytelling is a very important part of the educational process. It is through stories that customs and values are thought and shared" (Little Bear, 2000). These stories are oral traditions passed down from one generation to the next, so old that it seems almost as natural as using oral language (Coulter et al., 2007).

In this 21st century, education advances as it takes a new digital platform. The rapid advancement of Information and Communication Technology (ICT) has changed the landscape of education. Besides traditional books, computers using interactive multimedia software now serve as a medium of instruction among millennials. Coping with these advancements, educators throughout the globe devised a way on how to utilize 21st century technologies in effective and efficient instruction. In order to improve and catalyze the learning process, best practices in the traditional learning environment were fused with the best of digital learning characterized as Tradigital Pedagogy (Augus et al., 2017).

The core of Tradigital Pedagogy is the concept that "technology by itself makes no instructional difference". Addition of technology with no change in pedagogy has negative effects on student learning" (Seymour, 2017). Therefore, it can be inferred that adapting to technological advances requires a reciprocal paradigm shift on ways of teaching and learning.

Multimedia software or technology is an aspect of ICT which involves the use of text, pictures, audio sounds, videos and computer generated animation or any combination to convey facts, beliefs, ideas and stories that when communicated will provide values to the audience on a computerized platform (Alade et al., 2015). All multimedia technologies advocating for multisensory approach to education comprise the Multimedia Based Learning System (MBLS) such as in the form of animation, slideshows and presentations, video blogs, films, documentaries, and electronic learning games (Alsadhan et al., 2014).

Taking into account students' differences and peculiarities, MBLS is useful in improving the learning process because it is interactive, flexible, and multi-sensory. Besides technology providing a world without boundaries, it has also paved way in reviving the diminishing native traditional stories to the children. Multimedia learning systems consist of animation and narration, which

offer a potential venue for improving student understanding (Mayer & Moreno, 2000). Najjar (1996) reviewed numerous studies and found that "learning was higher when information was presented via computer-based multimedia systems than traditional classroom lectures."

Despite the growing popularity of western folk stories, the Pidlisan indigenous peoples in Sagada, Mountain Province is progressively taking actions to instill amongst their youth members the values of love, bravery, respect, cooperation and peace as embedded in their folk stories. The indigenous group, which composed of four barangays, has documented their oral traditions from generations into one book. Hoping to transcend good moral values and cultural identity, the indigenous group injects folklores into their curriculum.

Subsequently, coping with this generation's fascination to computer technology will enable the Pidlisan Indigenous Tribe Organization (PITO) to persist in handing over their IKS and cultural integrity to the next generations. Thus, technology can be a tool in transcending good moral values and strengthening cultural rootedness amongst the young. Learning indigenous knowledge through Multimedia Based Learning Systems (MBLS) may have an effect on their consciousness and self-rootedness—cultural integrity.

The study aimed to translate Pidlisan folk stories in Sagada, Mountain Province to Multimedia-Based Learning System (MBLS). The study sought to retrieve the folk stories documented by the Pidlisan Indigenous Tribe Organization; identify the most preferred folk stories of teachers of the PITO; and determine the Information, Education, and Communication (IEC) materials or multimedia materials that Pidlisan students learn best.

Furthermore, the study developed the Multimedia-Based Learning System (MBLS) in the form of a board game and a courseware and evaluated its impacts in enhancing values education, memory retention, and socio-cultural awareness among Pidlisan children. It also analyzed the values embedded in their native folk stories and its manifestations in strengthening the Indigenous People's intergenerational ties.

M e t h o d o l o g y

Research Method

This qualitative study utilized Participatory Communication Approach (PCA), Tradigital Pedagogy and Cybernetics Tradition of Communication.

PCA was used to develop the MBLS. It is not just the exchange of information and experiences; it is also the exploration and generation of new knowledge aimed at addressing situations that need to be improved. Participatory communication tends to be associated with community-driven development. It could be used at any level of decision making (local, national, international) regardless of the diversity of groups involved (Tufte & Mefalopulos, 2009). First the most preferred folktale and multimedia material were determined in the community. After these, the MBLS was developed. The different stages in the MBLS development is presented as a result. It is a process but a new finding as well.

Likewise, the purpose of the study is to solve communication barriers between indigenous knowledge holders and IPED teachers towards PITO youth members through the development of ICT specifically MBLS, as an encapsulation of the cybernetic theory and PCA. Further, Tradigital Pedagogy, a blended learning model that took the best of traditional methods (some direct instruction), and the best of digital learning (data-driven with high student engagement and autonomy) was employed to develop a truly personalized and differentiated instructional system for all pupils (MRI, 2018). This ensures that the education's three learning domains—cognitive, affective, and psychomotor—are present in the translation of folk stories to MBLS.

The study employed the Cybernetics Communication Tradition which conceives communication problems as breakdowns in the flow of information resulting to noise, information overload, or mismatch between structure and function, serves as resources in solving communication problems, offers various information-processing technologies and related methods of systems design and analysis, management; and on the softer side offers therapeutic intervention in the analysis of

the information gaps (Craig, 2006). The study utilized cybernetics communication theory in analyzing the system, specific units, and its general operation. Since the study involved production and evaluation of Multimedia-Based Learning System (MBLS), cybernetics was used to assess critically how the units of the production are essential in attaining the learning impacts using the Shannon and Weaver Communication Model (1949).

The Study Site and the Respondents

Sagada, particularly in Barangays Bangaan, Fidelisan, and Aguid, was chosen to be the locale of the study because of a presence of an established IP organization—Pidlisan Tribe Indigenous Organization (PITO) conducting their initiatives in documenting folk stories.

The respondents of the study included 19 PITO Indigenous Peoples Education Teachers for the preliminary analysis of the preference of folktales and multimedia materials. Two experts on graphic design and two students from Benguet State University were included for the pilot testing. Meanwhile, six pupils from the territorial jurisdiction of PITO were involved in the field-testing. The participants of the study include Pauleen Muslay, Hendrix Dumangan, Clouver Keyda, Jessa Sumbad, and Cammille Torio

from Bangaan Elementary School (BES), Aguid Elementary School (AES), and Fidelisan Elementary School (FES).

Six community respondents namely Maximo Suyon, Bangyad Bolinget, Daloyen Butog, Domingo Kally, Jose Sombat, and Soledad Belingon were involved in gathering the foundations, strategies, and manifestations of intergenerational tie. Lyndon Purok, the Aguid Sanguniang Kabataan (SK) chairman, also participated in the study. The data gathered were consolidated, analyzed, and presented through narrative and content analysis. Table 1 shows the details of the interviews.

Snowball and purposive sampling techniques were used for the 33 participants including Pidlisan elders, IPEd teachers, and pupils. The criteria considered in choosing the referrals are that the participants must be a PITO youth member ranging from 10 to 12 years of age; native IPED teacher, elders, and pupils or those who have lived in Aguid, Bangaan, Pide, and Fidelisan for six years; and should at least have knowledge on Pidlisan folk stories.

In the production of the MBLS, the study utilized PCA to facilitate a communal method in identifying the most favored folktale and multimedia material. PCA, being based on dialogue, allows the exchange of information,

Table 1

Informants Interview Details

Name	Date of Interview	Duration of Interview	Venue
Maximo Suyon	April 25	1 hr 53 mins	Barangay Aguid; Suyon residence
Bangyad Bolinget	April 25	30 mins	Barangay Aguid; Bolinget residence
Lyndon Puroc	April 26	26 mins	Barangay Aguid; Cattlyns Cafe
Daloyen Butog	April 26	1 hr 47 mins	Barangay Fidelisan; Butog residence
Domingo Kally	April 25	54 mins	Barangay Aguid Hall
Jose Sombat	April 26	23 mins	Barangay Bangaan Hall
Soledad Belingon	April 26	1 hr 39 mins	Barangay Poblacion; Belingon residence
Jan Quiore	April 25	51 mins	Aguid Elementary School
Theresa Salao	April 25	33 mins	Bangaan Elementary School
Pauleen Muslay	April 25	13 mins	Barangay Aguid covered court
Hendrix Dumangan	April 25	20 mins	Barangay Aguid covered court
Clouver Keyda	April 25	18 mins	Barangay Aguid covered court
Jessa Sumbad	April 25	22 mins	Barangay Aguid covered court
Cammille Torio	April 25	26 mins	Barangay Aguid covered court

perceptions and opinions among the stakeholders (Tufte & Mefapulos, 2009) thereby facilitating their empowerment.

Data Analysis

The data gathered were consolidated and presented through tabular forms, diagrams, figures, and frameworks. In analyzing the most preferred Pidlisan folk story and multimedia by educators, ranking was used. Narrative presentation and content analysis were used to discuss the result of the data.

Results and Discussion

Most Preferred Pidlisan Folktales by Indigenous Peoples Education (IPEd) Teachers

Results showed that the Top 3 most preferred Pidlisan Folktale are *Ang Pinagmulan ng Barangay Fidelisan* (The Origin of Barangay Fidelisan), *Ang Kasaysayan ng Barangay Pide* (The History of Barangay Pide), and *Ang Pinagmulan ng Aguid* (The Origin of Aguid). These three folktales were chosen by the 19 Indigenous Peoples Education (IPEd) teachers in three elementary schools in the barangays belonging to the Pidlisan Indigenous Tribe Organization (PITO). The rank 1 folktale was used for the development of the MBLS (Table 2).

Out of the 19 respondents, 11 IPEd teachers voted for "Ang Pinagmulan ng Fidelisan" as the most favorable folk story because of its popularity

to students and cultural value. As revealed in the survey, the IPEd teachers favored "Ang Pinagmulan ng Fidelisan" because of its relevance to IPEd, Mother-Tongue Based Multilingual Education (MTB-MLE) and Pidlisan culture, concept of localization, historical importance, and decreasing student acceptability and comprehension.

Juliet Dogao, a Fidelisan Elementary School (FES) educator, emphasized the cultural values and good moral principles embedded in the story. Dogao stressed:

> *Aside from story sya ng unang barangay, may mga aral doon gaya ng pagmamahal sa pamilya, pagmamalasakit sa mga katribo, at pagpapahalaga sa mga nasa iyo. Ipakpakita na iti kina y-Pidlisan. Ado ti masuro dyay uubing didyay aside from the legend on how the place became the way it is now.* (Aside from being a story of the first barangay, there are several values in it such as loving your family, caring for other members of your tribe, and valuing what is yours. It shows the characteristic of a real *y-Pidlisan*. A lot of values will be learned by children in the story aside from the legend on how the place became the way it is now).

The PITO possesses numerous folktales that reflect the community's Indigenous Knowledge Systems and Practices. The IPs intangible treasures such as oral narratives like folktales, systems, and practices are handed down through generations by oral traditions. Currently, the Indigenous Peoples (IPs) organization in partnership with TebTeba Foundation, a Non-Government Organization

Table 2

The Most Preferred Pidlisan Folk Stories by IPEd Teachers

PIDLISAN FOLK STORIES	BANGAAN ELEMENTARY SCHOOL (BES)	AGUID ELEMENTARY SCHOOL (AES)	FIDELISAN ELEMENTARY SCHOOL (FES)	FREQUENCY	RANK
Pinagmulan ng Fidelisan	1	6	4	11	1
Kasaysayan ng Pide	3	-	-	3	2
Pinagmulan ng Aguid	2	-	-	2	3
Ang kwento ni Lakay Lopao	-	1	-	1	4
Lakay Latek	1	-	-	1	4
Lakay Esilen	1	-	-	1	4

(NGO), are documenting Pidlisan folktales.

As of the moment, a total of three folktales were documented completely and nine folktales are still undergoing validation and research. The three complete folktales are about the origins of Barangays Pide, Aguid, and Fidelisan. All of them were documented, processed, and validated by IK holders and IPEd teachers in PITO. On the other hand, the other nine folktales that are in the process of completion and validation narrate the heroism of several *y-Pidlisan* including the local heroism stories of Esilen, Domin-eng, Lakay Lopao, Lakay Latek, Memeg, Juan "Gis-itan" Somebang, Samad, Lumipao, and Kalingan during tribal wars.

According to Tessie Ballucan, Aguid Elementary School IPEd coordinator, the above mentioned folktales are a product of communal effort in preserving their culture. She explained that IP coordinators, community heads, IPEd teachers, IK holders, and cultural preservation advocates from the different PITO barangays all helped in the process of documenting, processing, and validating the Pidlisan folktales. Ballucan stated:

"*Tapno mapreserve and protect nan folktales, we documented them and compiled them into nan big book. These will be used in IPEd to locally fit and be culturally responsive sa mga students. The stories will be discussed during lectures also.* (In order to preserve and protect our folktales, we documented them and compiled them into a big book. These will be used in IPEd to fit locally and be culturally responsive to students. The stories will be discussed during lectures also)."

The preferences or favorability of IP educators towards culturally founded, locally significant, high or low comprehension or popularity rate, and morally inclined folk stories reflect how folktales can create an impact in the cultural or moral context of an individual especially children. All documented folktales, according to key informant Ballucan, were translated into Filipino to fit the current Filipino language fluency of *y-Pidlisan* children and English-Filipino as primary medium of teaching. Moreover, the three complete folktales aside from narrating the origin of PITO barangays also recounts the story of IP settlement and *Pidlisan* descent.

These stories validate the findings of Kollin (1990) that emphasizes the presence of rich and multiplex oral narratives including folktales which have become a part of indigenous people's cultural heritage in Sagada, Mountain Province. This implies that folktales are a part of every culture infusing and integrating itself to ethnic traditions, indigenous knowledge and systems, and cultural values.

Most Preferred Multimedia Materials by Indigenous Peoples Education (IPEd) Teachers

Animated videos, films, and slideshows and presentations are the three top most preferred multimedia material by IPEd teachers (Table 3). Also, the researcher presented the results of the survey and analyzed the capability of the IPEd teachers vis-a-vis the researcher's skill and time availability to develop the multimedia materials. An exchange of opinions and suggestions were conducted before a consensus between the researcher and IPEd teachers was achieved. The factors anchored on local conditions included lack of community resources and lack of technical know-how in the production of the MBLS, and the end-users' inclinations.

Table 3

The Most Preferred Multimedia Materials by IPEd Teachers

Multimedia Material	Mean Rank	Rank
Animated videos	2	1
Film	2.32	2
Slideshows and presentations	3.32	3
Documentary	2.89	4
Video Blogs	3.68	5
Electronic Learning Games	5.84	6

Taking into consideration all the local conditions and the results of the survey employed, the researcher together with the IPEd Teachers decided to create a localized indigenous board game coupled with a courseware and an instructional PowerPoint package as the Multimedia Based Learning System (MBLS).

The indigenous board game utilized slideshows as its multimedia and digital element to satisfy the requirements for tradigitalism. This is beneficial for teachers because they have mastered the use of PowerPoint presentations. The MBLS also incorporated a game type pedagogy in the form of a board game which is suited in student's interest to educational games. Noting the fascination of Pidlisan children to animation, the two-dimensional animation was integrated to the MBLS. This implies that Pidlisan student's interest on anime is a manifestation of technological acceptance and learning flexibility in classroom environments which can be utilized to improve their learning.

This supports several researches on children's learning preferences including the studies of Mayer and Moreno (2000), Okan (2003), Prensky (2007), and Alsadhan et al. (2014) that point out an increased or improved learning through materials incorporating entertainment, interaction, visuals, and manipulation. It also validates the findings of Zin and Ghazali (2010) on animations as multimedia materials that foster values formation and build identity while at the same time entertaining its audience.

As observed, the school was unable to produce two, three, or four dimensional anime. Several western stories and learning books incorporating animation are present in the mini-libraries of the Pidlisan schools. Teachers often download educational animated videos from the Internet to suffice their needs.

On the other hand, films ranked 2nd in the most preferred multimedia material by the IP educators. They highlighted the availability of an array of educational films in their schools which make this material popularly utilized and acknowledged by their students. The teachers have also developed some educational short films for their students during trainings.

Slideshows and presentations ranked the 3rd. The teachers have mastered its development and it is the most used technological medium and multimedia material in their classroom discussions. According to them, the students are often exposed to these materials where they enjoy the graphics and photos presented.

The ranks of multimedia preferences or favorability of IP educators suggest a visually dominated learning environment of students in Pidlisan. The top four materials possess high visual stimulation towards effective learning. Based on the observation and interviews, teachers employ visuals to entice student's interests and participation to classroom discussion. This validates the study of Buckingham and Scanlon (2005) on edutainment as effective teaching strategy which relies heavily on visual interests of students. This utilizes entertainment as a medium to communicate learning subjects to children which unconsciously are accompanied by massive visual materials.

Despite gathering satisfactory inputs through the survey, the researcher still presented the survey results and analyzed the capability of the IPEd teachers vis-a-vis the researcher's skill and time availability to develop the abovementioned multimedia materials. The Partcipatory Communication Approach was employed to facilitate an exchange of opinions and suggestions.

Development and Production of Multimedia Based Learning System (MBLS): Realizing Digital Learning Material

The MBLS developed was named "Pidlisan: A Cultural Quest." Notwithstanding the deviations from the PCA results, still the researcher incorporated the survey findings. Thus, a mixture of slideshows and presentation and learning game multimedia formats was utilized. Still the most preferred Pidlisan folk story was used.

A collegial decision on not incorporating audio content or narration in the slideshow was decided to allow teachers or any facilitator to be a part of the MBLS. Notwithstanding the capability of including recorded narration for the story, IPEd teachers emphasized the need for them to be a part of the learning process. IPEd teachers reiterated that in the context of their schools, learning support and teacher's guidance is necessary in every learning material.

The participation of an IPEd teacher or any elder as a facilitator fosters an interconnection among the facilitator and the learners. The researcher observed that such participation allows the students and any facilitator to establish an intergenerational connection through the process

of storytelling. This notion suggests that materials with full learning autonomy is inappropriate to the learning needs of Pidlisan schools. This conradicts the western concepts suggested by Issa et al. (1999). The MBLS without recorded story narration is more responsive to Pidlisan student's needs.

Figure 1 summarizes the development and production process of the MBLS. The process included three phases such as the production phase, implementation phase, and evaluation phase. During the production phase, the researcher conceptualized, designed and developed, pilot tested, and enhanced the material. In the implementation phase, the MBLS was field tested to student respondents.

Production Phase. This stage is a rigorous document review for the most preferred folk story. Enumerating different multimedia format while considering respondent's interest and local conditions are grounded on this phase. This stage composed of four vital and tedious processes that shaped the study's entirety. It included conceptualization or planning, design and develop, pilot testing, and material enhancement.

All of this processes are founded on the results of the preliminary data gathering.

Conceptualization (Planning). As an output of deliberate thinking, the researcher thought of combining the visual stimulation characteristic of slideshows to align with the findings on its effect on Pidlisan students. This format forms the digital element of the MBLS that fulfills tradigitalism. Moreover, the integration of the engaging and interactive element of game-based pedagogy was seen as applicable in the MBLS. It was decided that since students enjoy engaging in classroom activities and sports, a game would achieve the purpose of educating children. In order to keep up with the end-users interest, the researcher had an idea of animating Pidlisan heroes to serve as icons in the conceptualized board game.

To effectively incorporate the story of "Ang Pinagmulan ng Fidelisan (The Origin of Fidelisan)" into the board game, the researcher divided the story into four segments as levels to have a game and a storytelling simultaneously. The storytelling is designed to be conducted prior to the start of a game in every level. Also, the storytelling is designed to last at the fourth
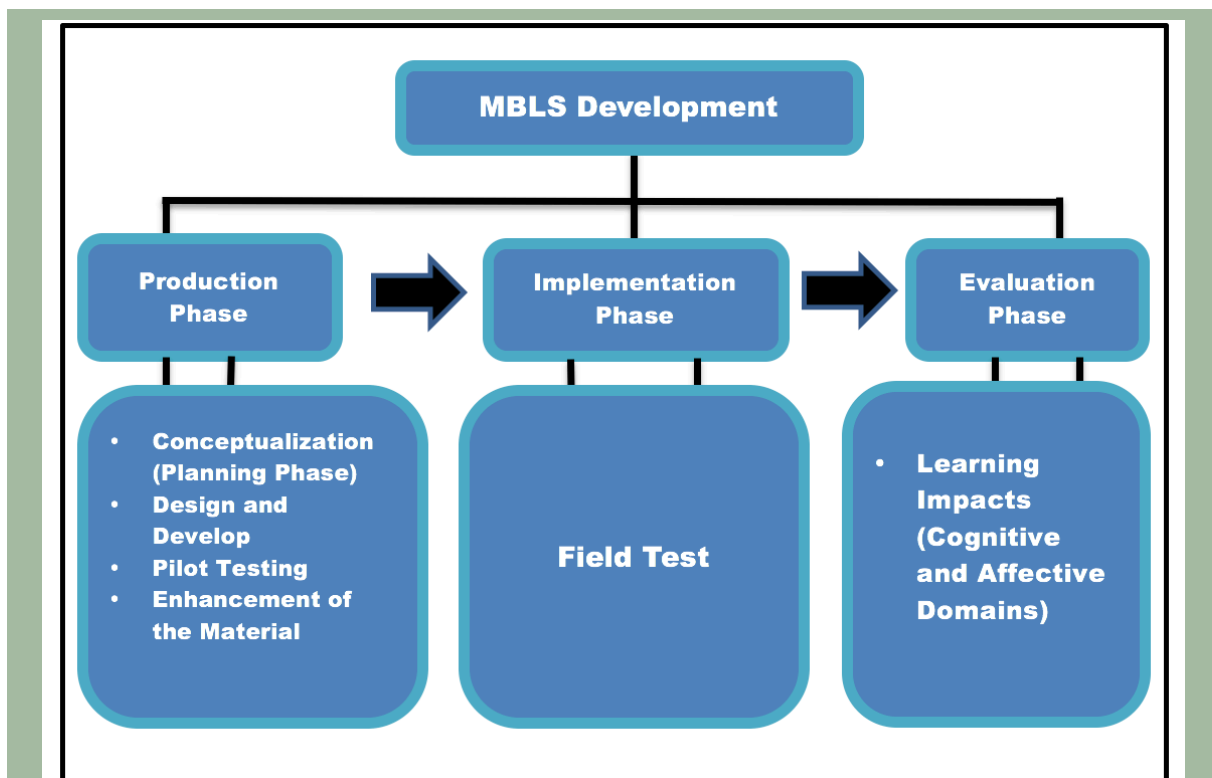

Figure 1. Multimedia Based Learning System (MBLS) Development Process

level; thus, leaving the fifth level as the area of story assessment.

Furthermore, it was also conceived to make blocks filled with challenges to surround the entire five levels. Putting an unfortunate dead block to punish players and ladders to help them propel was also conceptualized as inspired by the snakes and ladders board game. Realizing the need for an intensive yet simple compilation of instructions, the researcher planned to develop a courseware containing the guidelines, procedures, and materials needed in the board game for teachers and any facilitator. The need for its digital format was also conceived. The researcher also retrieved compilations of Pidlisan indigenous practices from key informant Ballucan. These includes all the burial, marriage, birth practices, ceremonies, and beliefs of Pidlisan. Moreover, the researcher retrieved and analyzed a compilation of Pidlisan heroes to be included in the MBLS.

Design and develop. After visualizing the possibilities, making sense out of it is a challenge. In this process, intensive research and document reviews were employed by the researcher to ensure its cultural accuracy and appropriateness. The research developed two multimedia: the board game; and the audio-visual presentation through Powerpoint presentation.

For the board design, the researcher used Adobe InDesign CC and Photoshop CC to fulfill the researcher's creative concept in a user-friendly software interface. On the other hand, Microsoft PowerPoint software was used in developing a digitized instructional courseware. This is in consideration to IPEd teacher's technological knowledge and other mentioned factors.

The MBLS board is 24" wide and 18" long (Table 4). This is enough to fit the multi-leveled circles and dagger shaped blocks together with the icons depicting the setting of the story. Seven kinds of playing cards were developed which were all patterned into a 5"x3" size. This dimension allows the presentation of essential challenges and instructions in a concise yet clear manner. Other miscellaneous cards such as gold coins and character emblems were also created. The 30 piece gold coins all measures two inches in diameter while the four pieces character

emblems are about 3" in diameter. Furthermore, a booklet containing the game-plan was also developed. It was fitted into a 6.5" x 8.5" paper. The chosen earth colors such as brown and green also imbibe a cultural sense of association with the soil. It also fashions a worldly journey across different landscapes in Pidlisan that helps localize the layout.

In this stage, it was a challenge to create a culturally appropriate and contextual game design. Figure 2 shows the final layout of the board game. The designs and its justifications are as follows. In order to reach the final board design, the researcher combined different elements like cultural colors such as red, green, gray, black, and yellow, and contextual shapes including circle. All designs incorporated in the board layout is contextually related to the Pidlisan culture.

Table 4	
Specifications of the MBLS Board Game	
Specifications	**Unit/Quantity**
Size of the Board Game	24x18 in
Playing Cards	
Size	5x3 in
No. of Cards for the Characters	4 pcs
No. of Cards for the Gems	3 pcs
No. of Cards for the Special Powers	3 pcs
No. of Cards for Cognitive Domain	21pcs
No. of Cards for Affective Domain	16 pcs
No. of Cards for Psychomotor Domain	16 pcs
No. of Cards for Story Assessment	10 pcs
Miscellaneous	
Size of the Coins (diameter)	2 in
No. of Gold Coins	30 pcs
Size of the Character (diameter)	3 in
No. of Characters	4 pcs
Booklet	
Size	6.5x8.5 in
No. of Pages	20 pages
Paper Quality (Coated Two Sides; Glossy)	120 gsm

Six colors such as red (C=15 Y=100 M=100 K=0), green (C=100 Y=15 M=100 K=33), gray (C=0 Y=0 M=0 K=76), yellow (C=0 M=0 Y=100 K=0) and black (C=0 Y=0 M=0 K=100) were used in the design. All of which were colors present in the Sagada indigenous attires. The colors may not be the exact CYMK combination as showed in the attire, the researcher maintained the nearest color combination recognizable by the eyes. The blocks were shaped into strident stakes which represent the sharp tip of their 'gayang', an indigenous weapon used in hunting and defense. Figure 3 shows the design of the collection cards.

As stated in the conceptualization process, the researcher used local heroes to serve as characters in the game. These heroes, including Lakays Memeg, Latek, Esilen, and Owatan, are reputable

individuals who have devoted their life toward the improvement of Pidlisan.

Due to the inaccessibility of any picture or portrait and characterization of the heroes, it was the artistic decision of the researcher to base their animation on observable y-Pidlisan characteristics such as broad shoulders, stocky body built, fair skin, and brownish black hair color. The cultural elements incorporated in the animation were based on the Sagada indigenous attire. The necklace, bracelet, headdress, and armor were based on their attires to ensure cultural appropriateness.

The brown color of the player's cards was massively inspired by the indigenous people's relationship with their lands. The Pidlisan tribe practices and holds the same value for their natural resources as
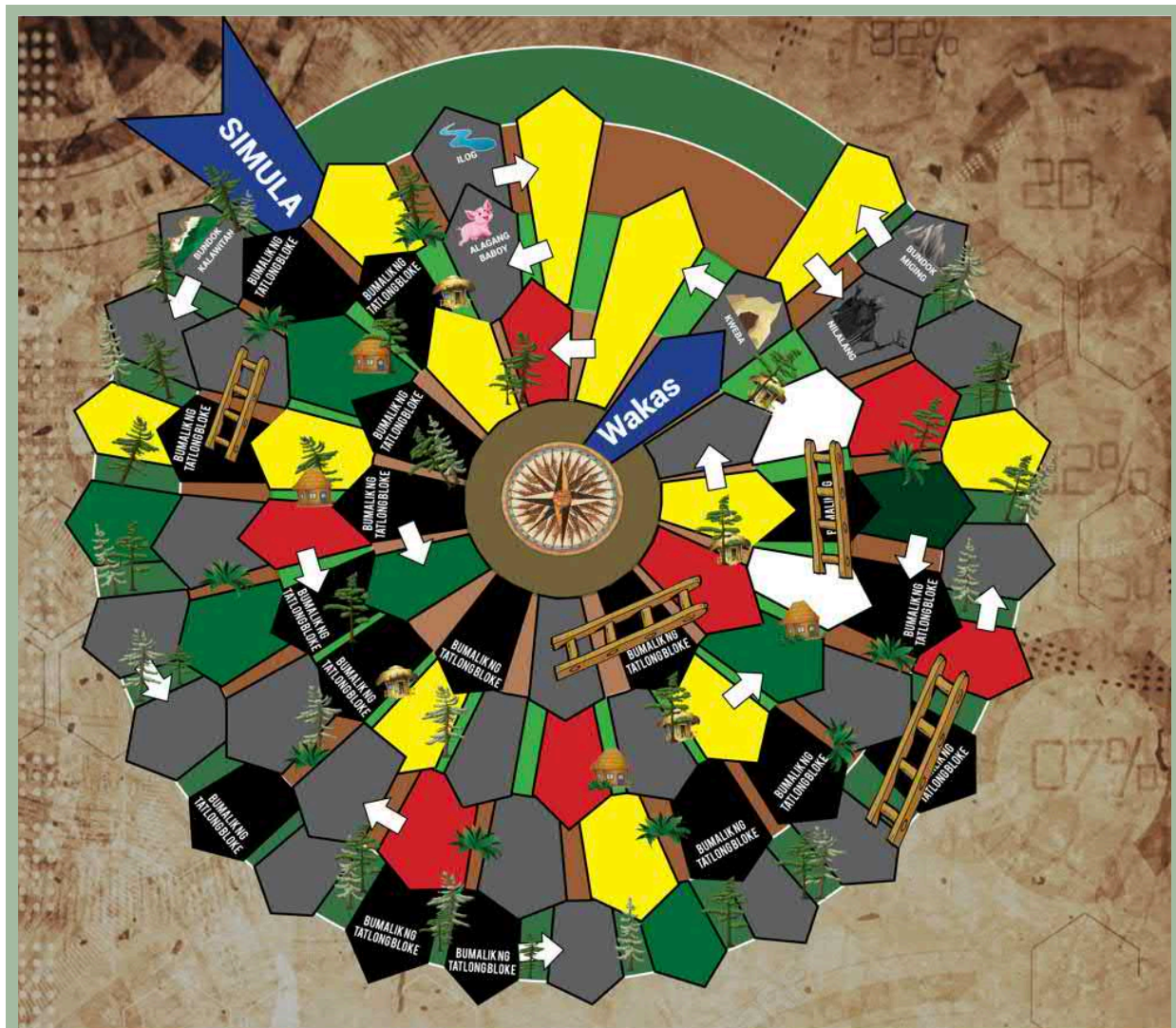

Figure 2. Final Layout of the Board Game Design

manifested in their good farming and land conservation practices. As a farming community, the Pidlisan IPs value the soil as taught by their community elders.

Just like the board blocks, the three colors used in the game cards are inspired by Sagada cultural attires. This game cards contain all the challenges a player must undergo when they ended or stepped into a corresponding block (Figure 4).

Red colored blocks correspond to red colored cards containing challenges targeting a child's psychomotor domain. A total of 10 psychomotor cards were included in the game. The psychomotor domains are challenges ranging from translations of English or Filipino words

and sentences to Pidlisan language, traditional dances and songs, and traditional massage that the player has to enact. This contains cultural challenges that players must do before moving to the next challenge. If they can not accomplish the task, the players will be punished with two backwards movement in the blocks.

The same concept goes with the yellow colored block and card composed of cultural practices questions which target the cognitive domain of players. Questions in the cognitive domain range from their knowledge on the cultural practices and beliefs of the Pidlisan culture. A code was included for the cognitive cards to serve as a guide in their correct answers.
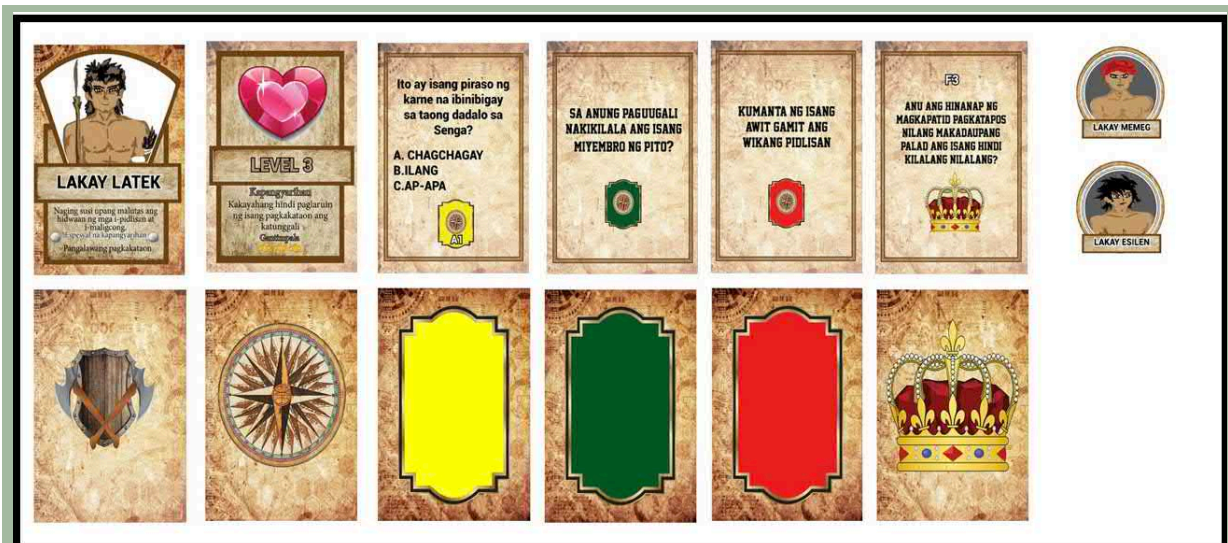
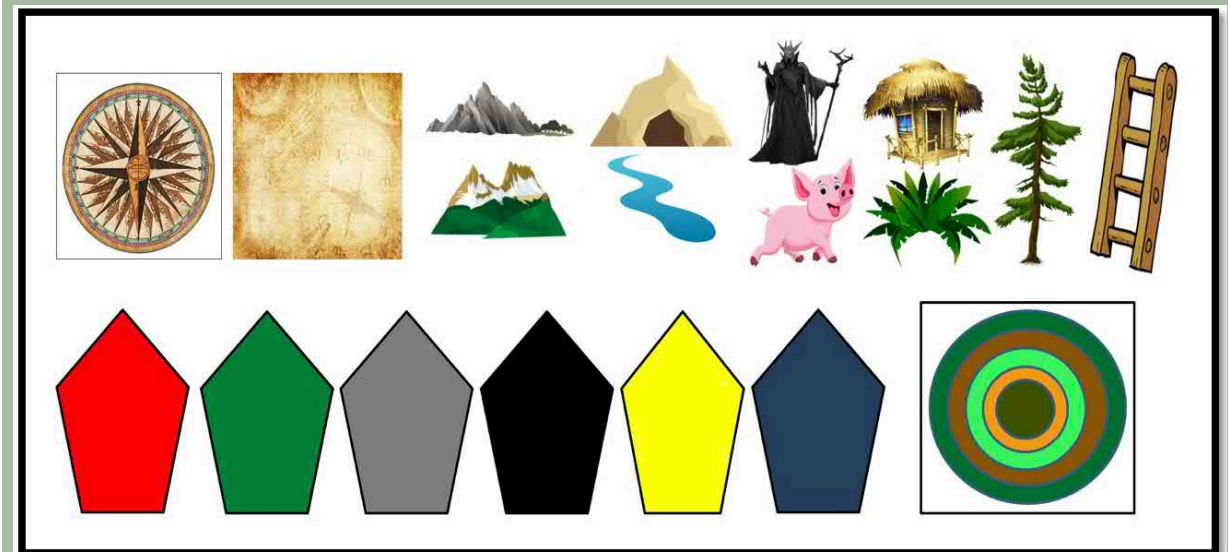

Figure 3. Collection of Game Cards Designed

Figure 4. Blocks and Icons of the Board Game

The green colored block and card also challenges players with behavioral questions which stirs a reflection and an affective change in players. The behavioral challenges include questions revolving around the preservation of the environment, intergeneration connections of younger generations to the old, values embedded to the practices of the Pidlisan culture, and characteristics of Pidlisan men and women. Other cards which serve as a reward to winners in every levels were designed with elements such as gems, crowns, and armors. The gems symbolize preciousness, which suits its assigned power in the game. Crowns also signify triumph which are suited for the last question before hailing an overall champion. Lastly, armors suggest a competitive mood for players to be on game mode.

On the other hand, icons were placed at the start and end points in every level of the game. The icons were downloaded from www.pngtree.com, www.pngkey.com, and www.pinterest.com. They are essential points in the plot of the story which gives players a direction towards the goal of helping characters in the story to find one another or find a place. Additional sets of icons were incorporated to create a visually pleasing and story based contextualization. These icons were downloaded from www.pinclipart.com. The trees were distributed in the first and second levels to provide an idea of a forested setting as narrated in the story.

Grass was added to the second level to add in the portrayal of a forest. Traditional houses were also included in the third level to depict an inhabited area as narrated in the story. Moreover, ladders were also included in the board design to make the game transitions even more challenging. As inspired by the snakes and ladders board game, it will be used to propel a player from one block to another. Aimed at portraying Pidlisan's rice terraces, the circles symbolize a continuum on the process of farming while the levels depict the terraces. On the other hand, shades and tints of green and brown were used to symbolize an organic environment.

A courseware was also developed by the researcher utilizing the applicable elements in the board and card layouts. This creates cohesiveness throughout the materials designed and produced. Figure 5 shows the sample design of the course ware. Furthermore, a Powerpoint presentation was developed to create a digital accompaniment of the game. It contains instructions and guidelines in the MBLS. All the designs utilized were similar to those of the game board and cards.

Pilot testing. In order to ensure that the MBLS is consistent to its purpose and ready for field testing, the researcher conducted a pilot test on April 17, 2019. According to Janet Lynn Montemayor, a professor from BSU-College of Teacher Education, the pilot testing should be conducted to ensure that the materials produced are consistent with the rest of the population. She explained that the pilot testing should include participants other than the actual participants of the field testing.

Thus, the activity was attended by four participants including Jhumann Kevin Tindo, a freelance online content developer and graphics artist; Bobby McGee Lee, a Senior High School Teacher from King's College of the Philippines (KCP); Gabriel Tugbo, a Benguet State University (BSU) student taking Bachelor of Public Administration (BPA); and Chris Warren Lagman, a Bachelor of Science in Home Economics (BSHE) student. All of them are board game enthusiasts.

After deploying the game for one hour and 30 minutes, several suggestions were expressed. These include color corrections, language consistency, rules and procedure adjustments, and layout modifications. Tindo recommended to correct the pale color of the board and cards. He also suggested to arrange the black colored blocks in such a way that it not confuse to the other colored blocks and the ladders. Moreover, Tugbo praised the strategic inclusion of the folk story in the game. He also suggested to be consistent with the language emphasizing the use of pure Filipino throughout the MBLS. On the other hand, Lee and Manalo were satisfied with the games execution and concept. The two stressed the need for careful and straight to the point explanation of the games guidelines and procedures.

Material enhancement. After the pilot test, all recommendations were analyzed and considered. Suggestions on color correction were included. The layout's tint and shade were amplified to strengthen its transparency; the Filipino language was used throughout the MBLS for language consistency; and, characters and gem powers specification were included to their
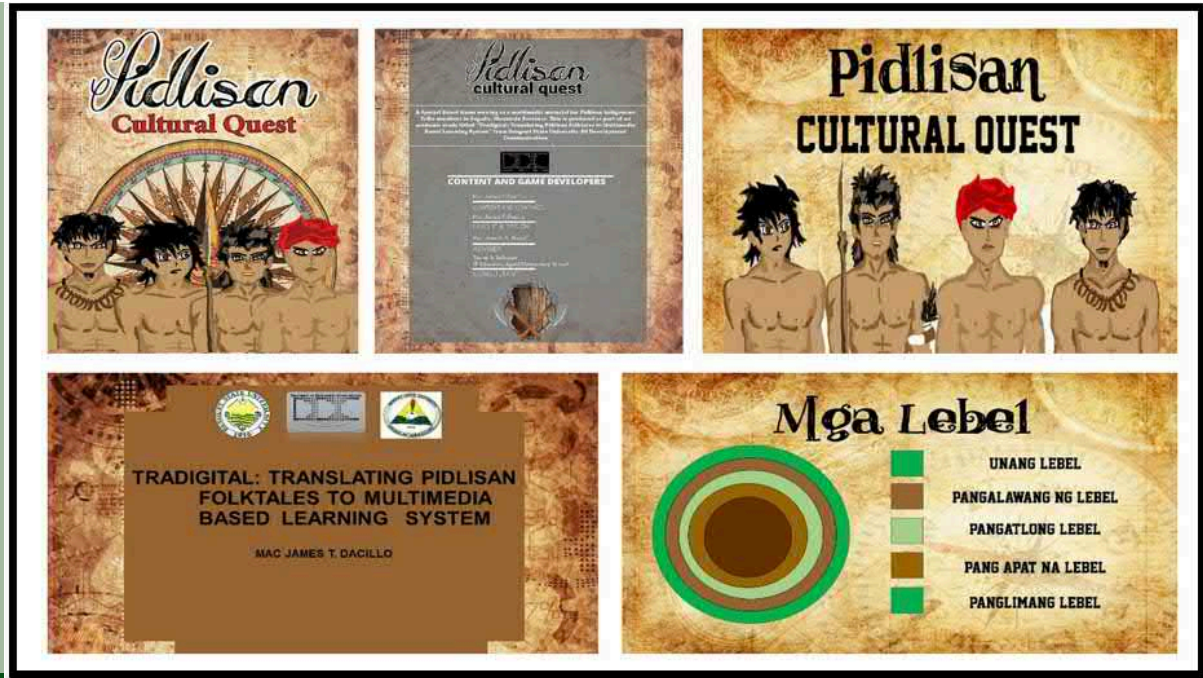
Figure 5. Samples of the MBLS Courseware and Powerpoint Presentation

corresponding game cards. The emphasis on being used once was also established. The recommendations on guidelines simplification were also considered. The guidelines were reviewed to make it easily understood. The inclusion of icons to portray the setting of the story was also considered. On the other hand, the proposal of removing the partitioning of the story to give way into a more competitive game was not considered because it could complicate and ruin the smooth transition of the story. Removing the story partitions per level could likely get rid of the strategy on successive storytelling and game play.

Implementation Phase. This stage puts the MBLS into test. After the rigorous conceptualization and designing, the overall output was used to Pidlisan students in Bangaan, Aguid, and Fidelisan.

Game mechanics. The "Pidlisan: A Cultural Quest" is played by a maximum of four players or in four groups. Before they start the game, a facilitator which can either be a teacher, an elder or any individual who is not a player discusses the instructions and guidelines stated in the courseware and presented by the PowerPoint presentation.

After the instructions, four cards containing the Pidlisan heroic characters possessing a special power are given to every player/group. The usefulness of the cards must be emphasized by the facilitator. Afterwards, the first part of the story is presented and is read by the facilitator. The game does not start unless the story telling is finished. Once ended, the first player which has the first chronological name will dice. The number/s revealed in the dice correspond to the number of blocks a player skips and lands. If the player landed on a red block, he or she is challenged with psychomotor activities. The same goes with the yellow cards containing cognitive questions and the green cards with affective questions. Every time a player lands on those colored blocks, they are required to accomplish the challenges stated in their corresponding cards. If they are able to answer correctly, they are rewarded with a gold coin. But if not, they are required to go two blocks backward and lost their turn to answer on that round. They can only be exempted to go backwards if they pay a gold coin corresponding to the number of blocks backwards they are compelled to do.

Players play one after the other. The first player which lands to the last block of a specific level and answered or executed the challenge successfully is rewarded with a gem which has a specific

power in the game. All powers can only be used once in all levels specified in their cards. When a player successfully reaches the last block, all other players are automatically moved to the next level together with the level winner to listen in the continuation of the story. The same process applies to the third, fourth, and fifth levels. When players reached the final level, a different game card containing questions about the story narrated are asked. The question gives every participant the chance to gain three additional gold coins. They are given different questions.

After the final questions, gold coins are tallied. Every gold coin corresponds to a score equivalent as itemized in the courseware. The player with the most number of coins wins and gets the highest corresponding score given by the teacher as performance task.

Field test. On April 25, the researcher deployed the MBLS. A field test was conducted to determine the effectiveness of the MBLS on fostering socio-cultural awareness, improving memory retention, and strengthening values education. Figure 6 shows the field test among the pupils in Pidlisan.

The field test at Aguid Elementary School (AES) was participated by six students from the PITO barangays. The field test was conducted in a multi-purpose court. Two students were from Bangaan Elementary School, one from Fidelisan Elementary School (FES), and three were from AES.

Cammille Torio and Hendrix Dumangan, BES grades 6 and 5 pupils, respectively, participated in

the board game as recommended by school head Theresa Salao. Similarly, Charmaine Bolinget, Clouver Keyda, and Pauleen Muslay, grades 5 and 6 pupils joined the play test as recommended by IPEd teacher Tessie Ballucan. Lastly, Jessa Sumbad, FES grade 6 pupil also joined the playtest.

The pilot testing activity was conducted twice to accommodate the two excess players in a maximum of four player game. The first game lasted for 1 hour and 45 minutes while the second game comprising of two players lasted for 35 minutes.

Evaluation Phase. Immediately after the field test, an on-site evaluation of the board games' effectiveness in enticing student participation and interest to learn was conducted. The activity was participated in by the same six field test participants. According to the students, they enjoyed the execution of the game. They learned about their culture in a fun and engaging manner because of the employment of the board game.

Jessa Sumbad shared her satisfaction in the board game presenting their cultural traditions, practices, and folktales in a new format. She stated:

> *Man enjoy ka man san ay-ayam ta adu-adu ti maisuro na. Madim maramdaman ti bored gamin ta kakadwam dyay kaeskwelam. Nagmayat pay ta adu ti makikita nga mabuya ken tao tao nan cartoons. Kaykayat ti students man buya ken man ayayam ta sabali met ti maisuro san iskwelaan* (You will enjoy the game because it has many things to tell you. You cannot feel bored because you are accompanied by your schoolmates. It is

Figure 6. Pilot Testing among Grade 5 and 6 in Pidlisan, Sagada, Mountain Province

good that it has incorporated cartoons and colorful structures. Students like to watch and play because there is something new to learn).

Moreover, the students expressed their enjoyment of the visually appealing board, cards, and presentation. According to them, it added interest and attentiveness to them every time a new instruction or story unfolds. After deliberate discussions with Theresa Salao, BES school head, the Pidlisan board game is not appropriate to their student population. According to her, the school only holds an estimated 5% of Pidlisan students. The results of the evaluation were highlighted in the learning impacts associated with the MBLS.

Multimedia Based Learning System (MBLS) Learning Impacts: Bridging Learning through the Digital Platform

Aside from evaluating the execution and efficacy of the MBLS in increasing student participation, an assessment on its impacts to values education, socio-cultural awareness, and memory retention was conducted. Concerning the MBLS learning impacts, three themes surfaced in relation to cognitive and affective domain. The psychomotor domain is one of the limitations of the study since this domain takes a lot of time for such impact to surface. In the cognitive domain, improved memory retention was noted. Additionally, an enhanced values education and increased socio-cultural awareness were noticed in the affective domain.

This serves as a validation and a substantiation to several pedagogical researches pointing out the efficacy of multimedia materials in fostering socio-cultural awareness, values education, and increased memory retention. This assessment also cements the concept of tradigitalism as an effective teaching and learning strategy for 21st century students.

Enhanced Values Education. Many studies have concluded that multimedia materials advance the acquisition and internalization of values. In the context of the study, the cultural board game serving as the MBLS was used as a tool to foster cultural regeneration and to strengthen moral principles among the respondents. Values learned by the respondents include love for family, friendship, sportsmanship, and value of helping.

According to Hendrix Dumangan, a Grade 6 pupil of AES and one of the pupil participants, he learned to value more his little sisters and his family after learning about the story. He emphasized his realization of keeping his little sister safe and nurtured with love. Dumangan expressed:

Nasurok nan man aywan ken ading ko. Baken ko isuna ibabati ta kasla nan istorya madi da mabirok dyay ading na idi nalpas nan dakel a layos. Nan istorya met lang en mama ti kasta, ngem am-amed latta nan bagim ta mas nasurok nan kinamanung ko ken Julia. Gawgawis adi ta maisuro nan love for family. (I learned to take good care of my younger sibling. I will not leave them because I reflected in the story when the boy's sister is missing after the big flood. My mother also narrates that story but yours is in different style because I was challenged to be a better brother to Julia. It is good because it teaches love for family.)

Similarly, Sumbad learned the value of helping through the story and most especially through the game. Other than competing, Sumbad realized the essence of participation and healthy competition during the game. According to her the game cultivates a bond among the players while enjoying and it unconsciously puts them closer to one another.

This not only validates but reiterates the findings of Okan (2003) and Norhayati and Siew (2004; 2007) on edutainment wherein children can enjoy while learning. This loosen up and enable them to learn better because they are relaxed and motivated towards winning.

Moreover, it also confirms the constructive impact of the interactive element of the MBLS in relationship building. As concluded by Alsadhan et al. (2014), the introduction of multimedia materials in the teaching and learning process will satisfy students need for an interactive and participative leading towards improved learning experience. The statement of Sumbad on relationship or bond cultivation through interactive learning in the game authenticates this. Sumbad explained:

Iyong natutunan ko sa laro ay ang kahalagahan ng pagtutulungan. Iyong pagkakagawa niya na tutulong ang mga heroes upang hanapin ang magkapatid at ang nawawalang baboy ay

siyang nagturo sa akin noon. Parang dahil hero ka dapat matulungin ka. Nasa story din iyon. Iyong pagtutulungan ng mga magkakatribo para makahanap ng kweba ay ipinapakita din ang pagiging matulungin ng mga y-Pidlisan. (I learned the importance of helping in the game. The concept of us, as the heroes in the game, helping find the siblings and the lost pig taught me to be helpful. It is like being a hero requires you to be helpful. It is also in the story. Our way of helping one another to travel towards the cave also showcases the helpful characteristic of y-Pidlisan.)

Moreover, Tessie Ballucan commented that the MBLS can transmit values and facilitate a moral reflection among students through the affective domain challenge cards. She stressed the ability of the affective challenge cards for students to re-evaluate themselves and the values they practice. All the perceived impacts to values formation manifests the efficacy of folk stories and game-based pedagogy as encapsulated by the MBLS in transmitting good moral values to students under the stage of character building and moral reasoning development. It is achieved by setting an example and serving as basis for children to follow.

Increased Socio-Cultural Awareness. The study also assessed the impact of the MBLS on the socio-cultural awareness among the Pidlisan students. Notwithstanding the centralized and massively western context of general education in the country, students in the Pidlisan culture remained to be aware of their roots and cultural identity.

According to the student respondents, the MBLS improved their cultural indebtedness, enhanced their cultural knowledge, and increased their interest to IKS. Dumangan expressed his increased interest to learn more about the indigenous practices after being unable to answer a question about Gobgobaw, a day when the Igorot name of a baby is given and when a chicken is butchered immediately after the umbilical cord of a child is cut. Due to his six correct answers out of eight cognitive questions, Dumangan can be categorized as conscious of Pidlisan cultural practices. Dumangan stated:

Ada ti duwa a wrong ko dyay questions. Dahil dito mandamag nak ken papa nan

everything about Pidlisan. Mayamayat ta manenjoy sik-a nga masuro pay dyay haan mo a ammo. Manayunan pay dyay ammo mon ti y-Pidlisan gamit iyong laro. Easy met nan ipapaubra nan red cards kasi isusuro en dyay eskwelaan sitan sasala. (I have two incorrect answers. Because of this I will ask my father more about Pidlisan. It is good that I enjoy learning the things I still do not know. It can add cultural knowledge through the game. The tasks given by the red cards are easy because it has already been taught in school including ethnic dances).

Meanwhile, Bolinget expressed her satisfaction on being able to reflect about the importance of cultural preservation in the Pidlisan culture. She shared that being posed with the challenge of the green affective cards made her assess the current weakening cultural transmission of the tribe. Bolinget shared:

Narigat na answeran dyay itattay a green question kasi di ko alam ang isasagot ko. Parang napaisip po ako sa nangyayari ngayon sa amin. Maganda po ang game kasi napapaisip ka dahil sa mga mahihirap na tanong tapos mapapaisip ka din kong tama ba ang sagot ko. Magaling po iyong game sa pagpapaisip at pagpapaalala sa amin kung ano ang meron sa Pidlisan. (It is hard to answer the green question because I do not know the answer. It is like I was being driven to think about what is happening today. The game is good because it makes you think of the hard questions and reflects if your answer is right. The game is intelligent in making us think and remember what is with us today in Pidlisan.)

All of these validate the efficacy of the MBLS in cultivating socio-cultural awareness among Pidlisan children. It also supports the findings of Zir et al. (2010) emphasizing the helpfulness of ICTs including multimedia materials in cultivating, conserving, and regenerating culture. Their studies contradict the notions of technology being detrimental or ill-suited to indigenous traditions. Instead, it presents culture and technology to be in synergy conquering technophobia and cultural misappropriations. This indicates that the MBLS was a successful tool for cultural assessment among the students through cognitive, affective, psychomotor activities or challenges.

Improved Memory Retention. Out of the six participants, five students answered the questions correctly. According to students, the interactive and visual stimulation element of the MBLS helped maintain their interest on the story. They highlighted the support that animation and the board game provided towards their better understanding of the folk story. Pauleen Muslay, AES grade 6 pupil, shared:

Mas napinpintas dyay game tadtay ta mas nakakainspire at nakakaenjoy dyay ay-ayam. Hindi siya boring kasi marami kayo na naglalaro. Hindi ka rin malilito sa story kasi sunod-sunod din sya. Maganda rin iyong mga naipapakita sa amin para interesado, excited, at attentive kami na hintayin kung ano pa ang susunod. Mas gusto ko ito kaysa sa storytelling ni maam. Mas maawatan dyay story. (The game is better because it inspires and is enjoyable. It is not boring because you have others to interact with. You will not be confused with the story because it is successive. It is good that everything shown to us makes us interested, excited, and attentive to wait for what is next. I like it more than the story-telling by our teacher. This way, the story is better understood).

The interactive and visually stimulating element of the MBLS improves the student's retention on the folk story corroborates the study of Yamauchi (2008) which highlighted the importance of learning objects in pedagogy. Accordingly, these learning objects improve children's cognition and comprehension as compared to the traditional way of teaching. It therefore indicates that children retain much in their memory the information presented in a visually stimulating and interactive manner.

Pathways of Strengthening Intergenerational Ties through Folktales: Framing the MBLS Experience

In the context of the study, several intergenerational tie foundations and their corresponding manifestations linked by a specific strategy were noted. Figure 7 shows the pathways of intergenerational tie. The intergenerational pathways comprise of three foundations such as valuing IKS; strong drive towards cultural regeneration; and conscious responsibility of

intergenerational transmission of culture. Its manifestations include increasing youth cultural initiatives; sense of acting and doing; maintained interest to IKS; reciprocity of support and cultural adoption; augmented youth cultural involvement and participation; and maintained fascination and interest to folktales. Strategies to foster strengthened intergenerational ties include integrating folktales to formal, informal, and non-formal education; family transmission; and technology amalgamation.

Embedded in the multimedia based learning system is the concept of providing a connection between generations of IK holders towards their inheritors at the same time fulfilling the study's tradigitalism framework.

Valuing Indigenous Knowledge Systems. Indigenous Knowledge Systems (IKS) throughout the years have been valued as an intangible heritage composed of values, practical understandings, and philosophies. According to Gao-an (2016), this knowledge spans the interface between the ecological and social systems, and intertwine nature and culture.

Likewise, the Pidlisan indigenous tribe maintains a strong cultural foundation by valuing IKS. Elders and the youth alike approve this endeavor. Indigenous knowledge holders composed of community elders possess impalpable cultural knowledge. They exhibit familiarity towards Pidlisan ethnic dances, traditions, practices, oral narratives, knowledge systems, language, and values. These knowledge when left undocumented and when not transmitted are in danger of extinction. Therefore, there is a need to preserve these strategies such as integrating folktales to formal, informal, and non-formal education.

Founded on valuing IKS, culturally rich folktales are incorporated to classroom discussions and Dap-ay sessions. According to Maximo Suyon, the Aguid IP coordinator, indigenous knowledge are transferred through several generations in the Dap-ay or Ebgan which served as a dwelling place for the young men (Dap-ay) and young women (Ebgan) to learn about their culture. Notwithstanding the weakened Dap-ay in Pidlisan, Suyon emphasized the contemporary role of the Dap-ay as an area maintained for cultural transmission and gathering. He stated
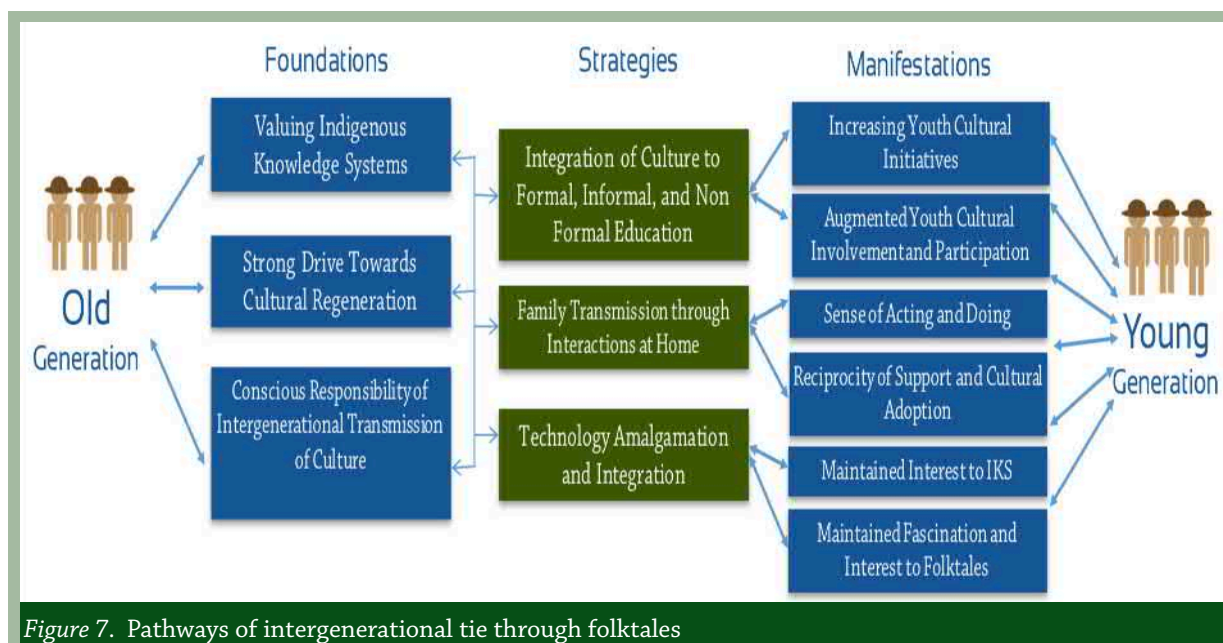
Figure 7. Pathways of intergenerational tie through folktales

that until now stories are being told in the Dap-ay despite houses, schools, and churches taking or emulating its function as a dwelling and educational place. According to him, the youth and elders when inside the Dap-ay usually converse about stories and elderly advises thereby making folk stories an interceding component in cultural transmission. Suyon stressed:

Those stories of the old are part of our culture. It contains their experiences and factual events in their time which led to what it is now. During our time, the Dap-ay is number one in cultural transmission just like you are saying. But today, in my opinion due to the stubbornness and laziness of children our culture is in danger of extinction. Other youth do not want it for their reason that those were our times. That is why the schools must strengthen their cultural education in order for our children to learn to be a member of the Pidlisan tribe despites the Dap-ay's weakening or death.

He also shared the efforts of IK holders in the community to go to schools quarterly or at least every month to narrate Pidlisan stories and teach indigenous knowledge. This was validated by Tessie Ballucan stating their enormous help in their mother tongue subjects. Ballucan attested:

Dagidyay lallakay ket umay da ditoy eskwelaan tapno agisuro. Dakkel a tulong dijay gapo ta ad ado ti ammo da compared

kinya mi. Mabalin da nga agsuro about their cultural experiences tapno maamuan ken maapreciate dagijay students jay culture tayo. Kasla nga part metten daytoy dijay IP education strategies mi ditoy school (The elders come to school to teach. They are of huge help because they know more about our culture than us. They can teach about their experiences for students to know and appreciate our culture. It is part of our IP education strategies in the school).

This notion of the Dap-ay, church, and schools perpetuating culture is validated by manifestations of increased youth cultural involvement and participation; and reciprocity of support and cultural adoption. According to Domingo Kally, the Aguid barangay captain, the youth specifically children are involved in cultural activities and celebrations in their community. Until now, children according to him practice their culture in 'Kanyao', 'Begnas', school presentations, church events, and other cultural activities. Kally explained:

Aginga itata makita met ti interest ti uubing ti cultura. Makipaset met isuda kadagiti iuubra ti lalakay basta haan nga maiparit. Kasla kuma jay itata nga ada iti ubing nga nagpakamatay, ti suro mi a lalakay maiparit amin a ubbing nga umay jay ayan tay natay tapnon awan ti sumaruno dijay ubing. Ket isu

met awan ti immay nga uubbing aginga idi ponpon na. No ada met ti celebrasyon no fiesta, adu ti uubbing nga ag sasala. Maki watwat da pay. Isunga makita latta ti partisipasyon dagita uubbing (Until now, we can see the cultural interest among the children. They participate in the activities of the elders as long as it is not restricted. Just like when a kid committed suicide and we elders prohibited them to attend the wake for we believe that another child may follow. Proudly, no child went until the burial. On the other hand, if there is a celebration, the children participates in cultural dances. They also engage in 'Watwat')

Meanwhile, Lyndon Puroc, the Aguid Sangguniang Kabataan (SK) chairman, attested to the reciprocity of support and cultural adoption established between educators, IK holders and children. He emphasized the mutual agreement of the elders in teaching IKS and children embracing and practicing them. According to him, all that is being thought by the elders are adopted by the youth and are practiced depending on the child's perception of it. Puroc explained:

Iyong pagsali ng kabataan sa mga cultural events ang nagpapatibay sa pagvalue namin sa kultura. Parang kapag kasi involved kami parang nakukuha na din naming iyong kaalaman ng mga matatanda sa kultura na pwede na din naming ipasa sa iba. (Community participation and involvement of the youth strengthen our valuing of culture. Because if we are involved, we can get the knowledge of our elders about culture which we can also pass to others.)

These findings imply a synergistic relationship between educational, religious, and cultural institutions. All of which denotes that the Pidlisan Tribe's system of cultural valuing as intensified by the IK holder's efforts on integrating folktales to formal, informal, and non-formal education is a multi-sectoral approach towards cultural conservation that leads to synergism. Such synergism by educational, religious, and cultural institutions increase the impacts of their cultural interventions as compared to their separated or individual impacts.

Strong Drive towards Cultural Regeneration. Just like any other culture in the archipelago, the Pidlisan indigenous tribe is in danger of degeneration. In order to combat the subtle occurrence of cultural degradation in their community, Pidlisan elders initiate activities towards cultural regeneration. One of the identified major activity is family transmission.

According to Pidlisan elders, every household has the enormous cultural liability to foster IKS transmission among their children. They emphasize that cultural integrity is an indispensable element in every Pidlisan family that must be cultivated, upheld, and imparted. Maximo Suyon, explained:

Iti panakapasa iti kultura ket agrugi dayta jay balbalay. Dagidiay parentes ket adaan ti responsibilidad nga mangisuro kadagidiay anak da iti kultura ngem no haan da nga nasuruan ken namati ket isu met lang a mapasamak nan anak da. Ita nga haan unay napigsa nan Dap-ay, dagita babalay ti makayanan dagita uubbing. Kasla jay annak ko insurok nan inayan kan lawa ken nan kultura jay panagbagbagak kinya da. No mamangan kami manistorya ti lalakay ken no awan ti trabaho. Kasjay kuma met jay sabali. Uray no bastos itan ti uubbing ken sadot da, isuro latta. No umay da nan abong ta mandamag nan assignment ket isuruak tapno manbiag latta nan kultura. (The transfer of culture starts at home. Parents have the responsibility to teach culture to their children but if they themselves were not educated and do not believe such, the same will happen to their children also. Just like my children, I teach them the Inayan and Lawa, and culture through advising. When we eat and when there is no work to do, I tell them stories. Hopefully others will do so. Even if children nowadays are lazy and dispectful, they must be taught. If they come to my house asking about an assignment, I will teach them for culture to continuously be alive).

Parents, on the other hand, approve the abovementioned responsibility. According to Bangiyad Bolinget, a mother from Aguid, aside from community elders, parents also are the source or foundation of children's cultural upbringing and rootedness. She emphasized that mothers must 'foster freedom for kids to practice their culture. Other than guiding them, Bolinget enthused the importance of parents being a role

model by learning and teaching IKS. Bolinget expounded:

> Dapat talaga na ang mga magulang ay natuto at nagsasagawa at naniniwala sa ating kultura para maniwala din iyong mga anak nila. Kagaya ng apo at mga anak ko na tinuruan ko kung paano mabuhay sa pamamaraang Pidlisan. Ang pagmamahal sa kultura ay nagsisimula sa mga tahanan. (It is indeed upright that parents learn and practice and believe in our culture for their children to do the same. Just like my children and grandchildren that I trained to live in the Pidlisan way.)

The efficacy of family transmission as founded by elder's strong drive towards cultural regeneration is manifested through children's sense of acting and doing; and maintained interest to IKS. As witnessed by the researcher during the MBLS field test, Pidlisan children are well versed in executing the sasala. A red card devoted for psychomotor domain stimulation included challenges to enact or execute cultural dances and practices including the Chagchagay or Dagdagay facilitated a validation of children's sense of acting and doing.

A manifestation of maintained interest of Pidlisan children on IKS was also noted. According to pupil participants in the MBLS field test, they are continuously being fascinated to learn about IKS specially when the subject is presented in a new format. Clouver Keyda, Aguid Elementary School (AES) pupil stated:

> Wen adi kayat nan uubbing nga masuro nan kultura. Mas namaymayat no kasla kastoy ta haan nga boring. Ngem uray no awan nan ayayam, gawigawis ladta. Kayat ko nga masuro ta isu met nan kayat ti lalakay. Isu nga mapmapan kami nan fiesta ken gatherings tapno masusuro mi ti iuubra da. Layad mi metlang ta man-enjoy kami. (Yes shildren would like to learn about our culture. It is better when presented this way because it is not boring. But even if there is no game, it is still great. I would like to learn because it is what the elders want and are teaching us. So we attend the fiesta and cultural gatherings to learn about what their doing. We love it also because are also enjoying.)

Thus, it can be inferred that families are the basic foundation of cultural conservation. Such transmission of culture happens in every household thereby cementing its vital role in serving as a role model, intergenerational tie, and fostering strong mutual dependence among children.

Conscious Responsibility of Intergenerational Transmission of Culture. Culture is transmitted across generations through the systematic and complex learning process. Culture, being transmitted, shared, and learned from one generation to the next results to intergenerational transmission or relations.

According to Basiwal (2018), intergenerational relations describe a wide range of patterns of interaction among individuals in different generations such as parents and grandparents, aunt, uncles, and those in younger generations, such as children and grandchildren, nieces, and nephews. Such definitions apply to the context of Pidlisan. Indigenous Knowledge (IK) holders in the tribe developed a conscious responsibility of intergenerational transmission of culture. This is proven by indicators such as their initiatives to educate children, teachers, and church leaders.

As analyzed in previous discussions, elders conduct cultural initiatives to teach the younger generations about their Indigenous Knowledge Systems (IKS). This reflects the elders role in the community as not only culturally elite individuals who has power over younger generations, but more importantly as bearers of the culture of the tribe. Given this possessions of cultural knowledge, elders have the responsibility to hand them over to the next generations.

According to Maximo Suyon, IK holders are pressured of their responsibility to transfer IKS to younger generations through education which lead them to their initiatives. Such pressure is attributed to their old age coupled with their decreasing time to live. Suyon explained:

> We know that we must transfer our IKS since our time in this mortal world is decreasing because we are old. That is why those younger than us must help. Now that they are still younger, they must not wait for a near to death age before they

start to teach IKS. They must realize and be conscious of the need for IKS transmission earlier.

Due to these, the elders actively participate in the amalgamation of culture with technology. According to Tessie Ballucan, Pidlisan elders served as key informants and validators in every cultural information or educational material produced by schools under the Pidlisan Indigenous Tribe Organization (PITO). Ballucan expounded that they have produced a Pidlisan Language to English dictionary and 'Bolboltiya' (Riddle) book which were products of the IK holder's effort to preserve and conserve the Pidlisan culture. She expressed:

Dagidiay elders ket nan progressive da and hardworking in helping dakami nga teachers tapno malpas mi dyay localized IP education curriculum mi. Aside nan efforts da to teach and manistorya, kasla man a partner isuda dyay documentation of their traditional knowledge na mapan to nan materials nga haan nga maktiy kadwa da. Haan nga kasla dyay dadduma, very cooperative nan lalakay and very open tapnon man cooperate nan mix ti kultura ken nan technology. (Community elders have been progressive and hardworking in helping us educators to create our localized IP education curriculum. Aside from teaching and telling stories, they serve as partners in documenting their traditional knowledge into materials that can survive past their time. Unlike others, they have been very cooperative and open to integrating current technology to our cultural preservation efforts).

As witnessed by the researcher during the MBLS field test, elders were welcoming and full of interest in the multimedia material showcasing the Pidlisan Tribe. According to Maximo Suyon, the multimedia material is undeniably an encapsulation of their envisioned educational technology that promotes Pidlisan cultural integrity. He emphasized that technologies when promoting culture combats technophobia among elders at the same time increased the possibility of effective IKS transmission between elders and the children. As a result of strategies on technology amalgamation to culture, manifestations on increasing youth cultural initiatives and maintained fascination and valuing

interest to folktales surfaced.

According to Jose Sombat, y-Pidlisan Bangaan barangay captain, children currently are organizing themselves to create their own account and initiative of cultural integrity. He explained that children in Pidlisan often prepare cultural events in school and in the community through the Sanguniang Kabataan (SK). According to him, most youth tribe members engage and involve themselves to cultural activities without being demanded to do so.

Such initiative also instigated informal story-telling of children. This activity often occur in an unexpected and unorganized manner wherein children tell stories to their friends. According to Sombat, he had witnessed his children together with their playmates sharing the story of a billit or a bird and the origin of Aguid while on their way home. He observed that during the said storytelling, the children incorporate or situate themselves as characters in the story. These occurrences confirm a maintained fascination and interest of Pidlisan children to folktales. This idea can also be attested by a firsthand experience of the researcher when younger children and other teenagers who were not participants of the MBLS field test clustered towards the testing area to listen and give reactions to the story narrated through the MBLS.

All the aforementioned findings denote a progressive approach to cultural transmission by Pidlisan IK holders as founded in their awareness of intergenerational transmission of culture. Through this, we infer that technology can harness the complex process of learning in the context of cultural transmission and establish or strengthen intergenerational connections.

Characteristics of Tradigital Approach in MBLS Development: A Cybernetic Lens Analysis

Tradigital Pedagogy as a conceptual framework of the study revealed a complex and multi-sectoral structure of interconnected and interdependent units aimed at cultural conservation and regeneration. In order to decode the interactive system, the cybernetic lens was used with the aid of the Shannon and Weaver's Mathematical Communication Model

(1949) to look at the system and its specific units as portrayed in Figure 8.

Source. Social and educational institutions were noted as senders in the study. This include teachers, Indigenous Knowledge (IK) holders, community heads, and faith leaders that served as multi-sectoral sources of information concerning the Pidlisan's Indigenous Knowledge Systems (IKS). They played as key informants in the entirety of the study.

In the study, it can be inferred that the source is an important unit in achieving appropriate knowledge. Without the source of an intangible knowledge, nothing will be digitized. This contradicts the ideas pertaining to digital learning supremacy that says everything that is traditional can be transformed into a digital counterpart. Without the source of traditional messages, no tradigitalism or communication is achieved. Therefore, it can be concluded that digital learning recordings are rooted from the sources of IK knowledge.

A multi-sectoral and multi-disciplinary source is vital to achieve tradigitalism as experienced in the study. Tradigitalism in itself is manifested in the sender or encoder of information, which is a blend of the traditional or culturally knowledgeable individuals and contemporary or digitally knowledgeable individuals.

The mixture of knowledge from IK holders, IPEd teachers who are traditionally inclined and the researchers' contemporary digitization expertise qualified a multi-disciplinary approach towards tradigitalism. The senders of blended knowledge facilitate and initiate the intergenerational connection, who fortifies their importance in the communication process.

Message. Several contents about the Pidlisan tribe were transmitted by the senders. These include a Pidlisan folk story titled "Ang Pinagmulan ng Fidelisan (The Origin of Fidelisan)," and Pidlisan cultural practices such as 'gawis', 'Kok-olli', 'Gobgobbaw', 'Chalay-o', 'Ubaya', 'Ap-apa', and many more. All of which contributes to the overall purpose of IKS transmission and cultural protetion.

The message usually plays the traditional knowledge element in tradigitalism as experienced in the study. With a digital vessel, such traditional message will be of interest and effectively received by its recipients. Through the study, the researcher realized that the message is a delicate communication element that must be properly encrypted and conveyed in the MBLS. With a culturally appropriate and responsive message that is conveyed clearly through the MBLS, an effective transfer of indigenous knowledge in different ages can be achieved thereby fostering a strengthened intergenerational tie and relations among the young and the old generations.

As experienced in the study, the vessel specifically the MBLS is tradigital in itself. The fusion of the usual or yet traditional board game and a digital accompaniment achieved tradigitalism even without the message.

Channel. The Multimedia Based Learning System (MBLS) was utilized to encode and decode the messages. The MBLS is composed of a multimedia boardgame and a courseware rooted on the concept of tradigitalism. Tradigitalism as a concept or an emerging pedagogical framework amalgamates the finest of traditional teaching and learning and the best of the contemporary digital learning to advance the learning process. This framework, according to Najjar (1996), encompasses the use of computer-based instruction.

Considering local factors such as community resources, technical know-how, and the end-users inclinations, a version of tradigitalism was established fusing traditional and digital means but not heavily relying to computer technology. The study employed tradigitalism with the aid of a simple PowerPoint presentation known by the end-users and mastered by educators. Unlike the ideal massive reliance of tradigitalism to high-end computer softwares, the research utilized a simple digital format that suits its end-users.

Nonetheless, the tradigitalism approach was fully employed with the traditional game, storytelling and IKS accompanied by a digital presentation. The tradigitalism experience of the study reiterates the ability of underdeveloped or developing communities to achieve tradigitalism by utilizing any available educational technology without conforming to the tradigitalism concept of technologically developed communities.
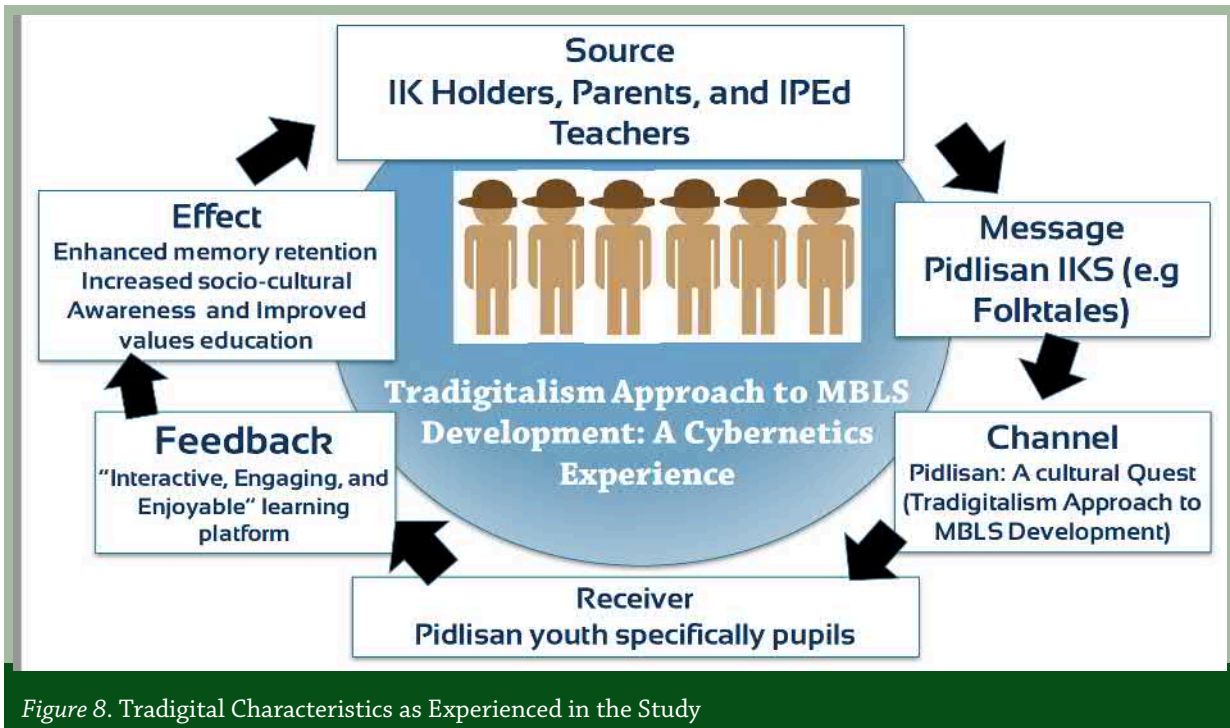
Figure 8. Tradigital Characteristics as Experienced in the Study

In Pidlisan, the researcher observed that the channel to be utilized in the communication process must be tailored or anchored to local conditions. In order to deliver an improved learning process and strengthened the intergenerational ties, the researchers operated on available digital resources of the community for a realistic, replicable, and reproducible learning experience. The experience proved that the lack of community resources, deficiency in technological knowledge, and the complexities and technicalities of digitization could not impede in the process of adopting tradigitalism in developing communities. Instead, they serve as elements to be considered in the production of a communication channel under the tradigitalism concept, hence, localization and contextualization.

Receiver. Pupils representing the young generation were classified as the receiver of the traditional message delivered in a tradigital vessel. These recipients are the target of message sources aiming to create a linkage to transmit Indigenous Knowledge (IK) towards cultural protection.

The receivers play an important role in the establishment of intergenerational connections between generations of y-Pidlisan as founded in their cultural interplay, reciprocity, and interdependence. In the study, the decoders

of cultural information act as the element of cultural adoptors. Through the tradigitally rooted MBLS, cultural adoption is able to happen leading to another transmission as emphasized in the cyclical SMCRFE communication process.

Based on the experience of tradigitalism in the study, the receiver is the identifying factor of the success of a tradigital material in fostering strengthened intergenerational ties. The receiver acts as an end and/or a starting point in the recurring exchange of cultural messages through the MBLS leading to the success or failure of the communication process.

Feedback. These are important cues that serve as responses of receivers to messages. In the study, welcoming and gratified recipients were noted. As observed, all participants of the study were satisfied of the cultural rootedness and interplay of generations in the MBLS.

Such feedbacks can determine the success or failure of tradigitalism in delivering a message to specific audiences. Feedbacks also serve as a validation on the appropriateness of the tradigitalism in conforming to local conditions. As experienced in the study, satisfied and encouraging IPEd teachers, pupils, and community elders confirmed the efficacy of

utilizing PowerPoint Presentations and game based pedagogy as a multimedia material aligned with the tradigitalism concept.

Effect. Improved memory retention, enhanced values education, and increased socio-cultural awareness were the communication outcomes in the study.

These MBLS impacts validate the efficacy of tradigitalism in communicating messages in the 21st century generation. It also proves the ability of establishing or strengthening intergenerational ties through technology. All the abovementioned units contributed to the creation of an effective system of intergenerational transmission of indigenous knowledge through technology.

These units which served as a product of deconstructing tradigitalism manifest a synergism despite the hypothetical contradiction of cultural deemed traditional and technological as contemporary discourses. This further suggests the operative amalgamation of culture and technology to create an effective learning process amongst students fascinated with technological advancements while at the same time exhibiting a strengthened cultural integrity.

Conclusions

Based on the result of the study, the following conclusions were drawn. The folktales documented by the PITO revolve around the cultural inclusivity of the Pidlisan as the old nomenclature of the three barangays. The most preferred story among the teachers is rooted to the legendary creation of Pidlisan as a community.

Also, the multimedia preference of the stakeholders is anchored to the newest ICT-based platforms; however, the preferred multimedia necessitates technical skills, time, and equipment for it to produce. As a result, negotiations were made to develop on alternative platform but integrates the qualities of the preferred multimedia.

The MBLS produced was titled, "Pidlisan: A Cultural Quest." It is appropriate since the process underwent participatory communication approach. The MBLS, as an alternative platform for learning folktales in particular and culture in general, creates an interactive and engaging venue for education and social consciousness.

Recommendations

An evaluation of the PITO folktales is highly encouraged since only three out of the 19 collected stories underwent validation. Pidlisan Kankana-ey is also encouraged in writing the folktales since all of the stories are written directly in Filipino. The Pidlisan Indigenous Tribe Organization (PITO), Department of Education-Indigenous Peoples Education, and concerned agencies may also capacitate the technical skills of the teachers and provide high end equipment to create alternative pedagogical approaches in packaging folktales such as animation and film production.

The Pidlisan Indigenous Tribe Organization (PITO), Department of Education-Indigenous Peoples Education, and concerned agencies may create a localized and contextualized definition of a Multimedia Based Learning System (MBLS) and Traditalism anchored on the educational situations of the Philippines. Participatory Communication Approach may also be replicated

by the PITO and the educational institutions to develop, produce, and evaluate learning and instructional materials. Electronic formats of the folktales are also encouraged to be produced by the organization provided that the intellectual property rights will be given to the authors and developers.

Moreover, learning outcomes anchored to cognitive, affective, and psychomotor are highly encouraged to be encapsulated in the production of multimedia platforms. Since these platforms are dynamic, the learning outcomes should be an important aspect to consider.

The community is encouraged to continue living the culture as it is proven that the foundations of enacting culture can result to manifestations among the younger generation employing appropriate strategies.

Lastly, other indigenous knowledge systems can be documented and translated into digital and electronic format to supplement the learning strategies of teaching culture among the young. Hence, knowledge management practices of sharing and reusing of information would be fostered

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