ORIGINAL ARTICLE

OPEN ACCESS

Development and Integration of Waray-Waray Computer Aided Instruction in Teaching Nursery Rhymes

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	ABSTRACT *Nursery rhymes, a method of stimulating young minds and engaging them with literacy. Throughout history parents and teachers sing, read and act the song(s) to mused their children with nursery rhymes. It helps the help children to learn the rhythm and melodic flow of language. A prototype research design was utilized in this research to facilitate and guide in developing the software through the interview, questionnaire, and focused group discussion in data collection. The respondents of this study include (1) Permanent teachers and (7) student teachers, teaching Waray-Waray nursery rhyme from Kinder I – II. In general, all the respondents unanimously said that they teach Waray-Waray Nursery Rhymes through demonstration. Hence, they make use of audio-visual materials, multi-media presentations and instructional aides to present the visual, audio and actual aspects in teaching Waray-Waray Nursery Rhymes. It is imperative to state that a profound learning activity for the pupils is needed through the help of technologies.* *Keywords: Nursery rhymes, computer aided instruction, behavioral theory, prototyping, mother tongue-based multilingual education (MTB-MLE),systems development life cycle, social science*

INTRODUCTION

For generations, young children have grown up on nursery rhymes (Kenny, 2005). They learn it at home and in school. In teaching nursery rhymes to preschool children, they learn the rhyming and rules of grammar (Paquette, 2008). As they started to hear the vowels and consonants in rhymes, children begin to emulate the sound, the rhythmic and melodic flow of language is intensified (Kenny, 2005).

Language is an integral feature of educational practice in the classroom; teachers communicate content and instructions via language (Walter, 2011). When children receive formal instruction in their first language throughout primary school and then gradually transition to academic learning in the second language, they learn the second language quickly (Ball, 2010). In the Philippines, English is being used as a language in teaching. In a hearing conducted on February 27, 2008, by the committee on basic training and the civilization of the Philippine House of Representatives, various stakeholders in education urged Congress to abandon moves to establish English as the sole medium of education, particularly in the elementary grades (Nolasco, 2008). Thus the birth of Mother Tongue-Based Multilingual Education (MTB-MLE). Mother Tongue-Based Multilingual Education (MTB-MLE) is the government's banner program for training as a salient component of the implementation of the K to 12 Basic Education Program. This was made into Law through the Republic Act No. 10533, otherwise known as "Enhanced Basic Education Act of 2013" (DEPED, 2013). As mentioned in the Department of Education's K to 12 Mother Tongue Curriculum Guide December 2013, MTB-MLE is education, formal or non-formal, in which the learner's mother tongue and additional languages are used in the classroom. Moreover, pupils begin their

education in the language they understand best – their mother tongue – where they develop a strong foundation in their mother language before adding additional languages.

In the Philippines, Filipino is the national language and according to the National Commission for Culture and the Arts (NCCA), there are more than 500 dialects, one of these is the Waray-Waray, a widely used dialect in the Eastern Visayas region in the country.

With the use of MTB-MLE, teachers are now adapting the use of this dialect for their teaching. Teaching nursery rhymes in Waray-Waray is a challenge not just for the teachers but to the preschool children. They learn to speak a foreign language rather than learning to speak the Waray-Waray dialect.

Technology advancement has a greater impact on the education sector. With the advancement of computer technology education has become fascinating and easier than before. Computers can introduce children to formal thinking procedures in the context of playful activities (Nickerson, 2013). It streamlines the teaching process that allows dynamic learning experience in discovering new information. One of these is the Computer Aided Instruction (CAI). As defined by Encyclopedia Britannica (ND), CAI is a program of instruction material presented by means of a computer or computer systems. Nowadays, preschool children learn their first alphabet through videos they watched on television or the internet.

The Leyte Normal University, Tacloban City is one of the state universities in Region VIII. It is a training institution in education, arts and sciences, and management and entrepreneurship. As an institution, it is expected to be a catalyst and produced a graduate that has the norms and values of the university as responsible citizens of the Republic of the Philippines. The university is identified and recognized by the Commission on Higher Education (CHED) as the Center of Excellence in Teacher Education in the region. It has established an Integrated Laboratory School many years ago under the supervision of the College of Education in order to provide students an on-campus internship prior to their deployment for the off-campus internship to the different elementary school in the region. The Leyte Normal University Integrated Laboratory School is no excuse in providing the best technology particularly the Computer Aided Instruction that can reinforce in the teaching and learning the Nursery and Kindergarten pupils. However, it was observed and attested by the ILS Director as well as the teacher concerned on the absence of such technology. It is on this premise that this study was conceptualized, to develop a computer aided instruction for teaching Waray-Waray nursery rhymes to the Leyte Normal University Preschool.

STATEMENT OF THE PROBLEM
This research explored the status of teaching Waray-Waray Nursery Rhymes in the LNU Integrated Laboratory School as the basis of the development of a Computer Aided Instruction Material. Specifically, this research seeks the following questions:
1. What Waray-Waray nursery rhymes are being used by the respondents?
2. What technology do the respondents are using in teaching Waray-Waray nursery rhymes?
3. Based on the findings, what prototype system can be developed in order to improve the teaching and learning in the delivery of MTB-MLE?

THEORETICAL FRAMEWORK
A popular tool amongst scholarly institutions today that uses frameworks which incorporate the educator's lore and capability into the delivery of didactic discourse is CAI or Computer Assisted Instruction. Computer Assisted Instruction in learning involves the use of the computer system to deliver instructions to pupils by allowing them to interact with lessons programmed into the system. The Learner would start their learning from different points; take different routes, finishing at different times in this type of learning environment (Muraina, M. B., 2015). While CAI can refer to the utilization of PCs in the classroom, it all the more comprehensively alludes to an organized digital system in which PCs are employed for educational purposes. CAI can be a PC based bundle that is refined or it can be a straightforward software application created by a developer or a person. It uses progressed intelligent interactive media encounters that give an educative boost using content and visual representations. The Visual representations are static graphics, computer animations, hypertext and multimedia that are incorporated into instruction. Animation provides visual and spatial information while Hypermedia, characterized as "a generic term covering hypertext, multimedia, and related applications, involves the chunking of information into nodes that could be selected dynamically. Multimedia promotes learning when students utilize the information presented in two or more modalities such as visually presented animation and verbally presented narration to construct knowledge (Mayer & Sims, 1994). Generally, people understand the information presented by the visuals better; it is well said: "a picture is worth a

thousand words (Zahra, S B. et al, 2016)." The learner in light of this jolt sorts at a console snaps a mouse or talks into an amplifier to effectively communicate with the CAI. Computer Assisted Instruction (CAI) simply like most PC instructive systems fuse capacities like learner appraisal, presentation of instructive materials in navigational structure, procurement of drills for upgrading information, and recording understudy score and advancement for assessment or courseware improvement (Judge, M., 2002). Utilizing CAI, the PC produces feedback, then analyses learner response.

The Instructional Design of the CAI is congruent with the Behavioral learning theory. The behavioral Learning Theory is a suitable methodology for planning the CAI courseware considering that the respondents of the study are Nursery and Kindergarten pupils. When planning from a behaviorist/cognitive position, the designer investigates the circumstance and sets an objective or learning goals. Rhymes will be broken down into modules and after that learner, goals will be created for every set. The assessment of every set module comprises of figuring out if the criteria for the learning goals have been met. In this approach, the designer chooses what is critical for the learner to know then transfers that knowledge to the learner directly. The learning bundle is a closed system concept. However, it might consider some expanding and remediation if the need arise. Furthermore, the behavioral approach is for functions requiring low-level processing or methodologies connected with a behavioral viewpoint such as stimulus-response, contiguity of feedback and reinforcement (Sackney, L. & Mergel, B., 2007).

Utilizing the behaviorist theory as premise for the instructional design of the CAI software will permit the teacher to deliver the following:

 • Give the learner immediate feedback.
 • Break down the task into small steps.
 • Repeat the directions as many times as possible.
 • Work from the simple to the most complex tasks.
 • Give positive reinforcement

 The behavioral theory will contribute to the efficiency of the CAI by ensuring that the student is focused on a clear goal and can respond automatically to the requirements of that goal.

Another significant theory used in this study is the Embedded Teacher model and the ADDIE model. The ET model will be the basis for the design of the Graphical User Interface (GUI) of the CAI. The GUI software serves as the form of communication between users and computers that facilitates interaction.

The Embedded Teacher (ET) model embeds the following teacher functions into the GUI (Lohr, L., 1998).

 • Orienting the learner,
 • Providing navigational assistance,
 • Providing instructional strategies (core and complementary information zones), and
 • Providing interactive feedback.

The Embedded Teacher (ET) model presents a framework of the ADDIE design model. ADDIE is the acronym for the Analysis, Design, Development, Implementation and Evaluation phases of the instructional design process (Grafinger, D.J., 1988). ADDIE involves the following stages:

1. The Analysis stage includes front end examination of learner, substance, and undertaking and how these variables decide the reason for instructive movement. Investigation of content sequencing results in the creation of the essential GUI navigational structure.

2. The Design stage addresses how instructional objectives and goals shape instructional procedures. Instructional methodologies are created into the core, complementary and intelligent criticism data.

3. The Development stage addresses the procedures used to make the instructional material. The features managed at this stage include: Coding the GUI and making all sight and sound components

4. The Implementation stage coordinates the execution of the instructional materials or system in a prepared situation. This includes watching how learners interface with the GUI.

5. The Evaluation stage addresses both development and summative assessment. It covers GUI user testing for adequacy, proficiency, and consistency. It answers how well the items in the CAI are arranged. Learners suggest navigational procedures, approves instructional systems and gives intuitive criticism.

Ultimately, user responses will be employed to modify the design and to identify the requirements needed by the CAI model. After a one-on-one testing, little groups of two or three people will try out the interface. Again, user comments will be translated as a modification of the CAI structure and interface (Lohr, L., 1998).

Prototype theory deals with how people classify and categorize certain items in the speech. Such understandings help psychologists understand and analyze the acquisition of vocabulary, individual mental vocabularies, and the growth of linguistic skills in people. Teaching environments, such as chief schools, benefit from such inquiry and understanding when developing curricula for students.

Interpreting how the brain categorizes and classifies information, as well as how that operation is affected by cognitive development, acculturation, and early learning experiences, aids in helping students acquire vocabulary and acquire more advanced language skills (Johnson, 2016). A paradigm is a preeminent example, or cognitive representation of something in a certain class. Prototypes are used to enhance retention and call up since you can keep a prototype of something and then match new, similar things to the prototype in order to identify, categorize, or store this new affair. For instance, if I call for you to imagine a dog, what do you think? You may view a German Shepherd your prototype for a dog by which you compare all other hounds. Thus, if you catch another dog, you could say that another dog is small (compared to your prototype), threatening, ugly, beautiful, and so on (" Prototype", 1998). The central tenet of Prototype is that concepts, instead than being defined by conventional rules or mappings, are represented by prototypes and that classification is based on similarity to these paradigms. By taking typicality to be a decreasing function of distance from prototypes, this approach would naturally explain the fact that some cases are taken every bit being more typical exemplars of a concept than others. For example, robins are more typical examples of birds than penguins, since the latter has certain typical characteristics such as the inability to take flight. This notion of typicality is also strongly related to conceptual vagueness where borderline cases have an intermediate scope of typical values. In other words, such object lessons are not sufficiently similar to the concept prototypes to be judged as taking in certain membership in the class but are also not sufficiently dissimilar to the prototypes to be ruled as being certainly outside the division (Lawry, J., & Tang, Y., 2009). The paradigm-driven plan of attack takes in three intensity levels. First, since we provide a set of object symbols, we can evaluate induced trees using standard labeled parsing metrics. Second, knowledge is declaratively specified in an interpretable way. If a user of the system is unhappy with its systematic behavior, they can modify it by modifying the prototype information. Third, and related to the first two, one does not confound the power of the organization to get a consistent grammar with its ability to memorize the grammar a user has in mind (Haghighi, A., & Klein, D., 2006).

METHODOLOGY AND DESIGN
Research Design
A prototype research design was used to perform this research. Prototyping is a is design used in the information technology based research using both qualitative and quantitative approach (Bannan-Ritland, 2003). This was also utilized to gather and identify clearly the research questions that will seek to answer the research problem. Interview, questionnaire, and focused group discussion are the tools used in this research to collect data.

Research Method
Research Procedure
The researcher seeks the approval of the University President and other key officials of this university to conduct the research. At the same time know the availability of the K -1 teacher to carry out the interview and class observation. The study uses the **Systems Development Life Cycle (SDLC)** it is a conceptual model that explains the process how software development should be undertaken. It consists of six phases the following are:

Plan – In the planning stage, the schedule and task have been identified. Specifically, the researchers identified the Waray-Waray nursery rhymes for preschool pupils at the University. The identified Waray-Waray nursery rhymes were carefully selected and given to the pre-school teachers for further evaluation and approval.

Analysis – In the analysis phase, the problem statement, goals, and objectives have been identified. As well as the Waray-Waray nursery rhymes being used in Kinder I and II. Furthermore, the identified Waray-Waray nursery rhymes were evaluated by the pre-school teachers at the University and recommend for further improvement of the selected Waray-Waray nursery rhymes.

Design – In the design phase, the storyboard of the identified nursery rhymes has been created. The design of the Waray-Waray nursery rhymes has been identified to get the interest of the pupils.

Development – from the design phase, the development of animation was done using authoring tools, software and computer programming languages that would be supplemented and development the musicality of the Waray-Waray Nursery Rhymes Computer Aided Design Software.

Implementation – from the development stage, the implementation of the animated Waray-Waray Nursey Rhymes be tested to check the effectiveness and usefulness of the developed software.
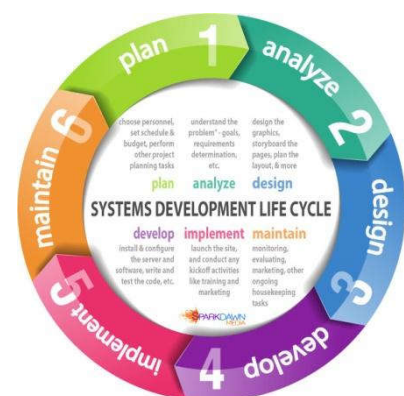
Maintenance – In the maintenance phase, that developed software has been maintained to free from virus and error in teaching Waray-Waray Nursey Rhymes.
Respondents of the Study
The respondents of this study include (1) Permanent teachers and (7) student teachers, teaching Waray-Waray nursery rhyme from Kinder I – II.
Data Gathering and Instruments
The main instrument used in this study was a questionnaire an interview.
Questionnaire. To determine what Waray-Waray nursery rhymes are commonly used in the classroom. To identify what method is being used in teaching Waray-Waray nursery rhymes.
Interview. The researcher conducted unstructured interviews to verify and clarify the answer(s) of the respondents to the survey questionnaire.
Observation. This was used to substantiate a source of questions to be addressed by the respondents and validate the same during the conduct of the interview.

RESULTS AND DISCUSSION
This section presents the analysis and interpretation of data gathered by the researchers through the survey questionnaire on what Waray-Waray nursery rhyme is commonly used in the classroom.
Waray-Waray Rhymes Used
The researchers identified common Waray-Waray nursery rhymes and upon interviewing the ten (10) respondents, the following results were gathered, as shown in the table below.

Table 1: Distribution of the Responses on the Nursery Rhymes that is Prevalent in the Classroom

Nursery Rhymes	Frequency
Tiil, Tuhod	8
Lobo	7
Chikading	5
Pato	5
Gagamba	1
Kamot	1
Namok	1
Uran-Uran	0

Among the eight identified nursery rhymes, Uran-Uran is not used in the classroom. But in addition to this, the respondents also mentioned particular nursery rhymes which are used, and that is "Dinhi, Malipayon, Didto Malipayon, Bisan Diin Malipayon."
Technology Used in Teaching Waray-Waray Nursery Rhymes
The respondents said that Waray-Waray Nursery Rhymes is taught through demonstration. By definition, this is a strategy of teaching wherein; the teacher shows learners how doing a task using sequential instructions with the ultimate goal of perform students the projects independently. The aim is for the pupils is to acquire mastery wherein children can already sing the Waray-Waray Nursery Rhymes individually.
During the pre-operational stage of a child's development between 2-7 years old, they learn actions through imitation and symbolism; this is according to Piaget's Stages of Cognitive Development (1964). In this theory of Piaget, individuals undergo different stages of cognitive development and understanding each stage can lead to identifying the appropriate strategy in handling learners (Bjorklund, 2005).
For the respondents teach the Waray-Waray nursery rhymes; first, they present and read the lyrics, then the children follow, second is listening to the tune, singing it to the children then the children follow, and last is the actions then the children follows. Each step must be mastered from the lyrics to tunes, and last is the actions. This sequence of teaching is also following Edgar Dale's Cone of Experience (Dwyer, 2010). According to Edgar Dale, people remember 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they hear and see, 70% of what they say and write and 90% of what they do. With this concept in mind, step by step mastery must be implanted in children. Starting from the visuals to auditory, then finally the action part.
One of the respondents also pointed out something and said:
"We present them this Waray -Waray nursery rhymes with the use of videos, but most of the time we teach the songs by showing the lyrics or letting them listen to the lyrics and the tune of the music."

Considering teachers to be facilitators, another way also of demonstration is through the aid of a multimedia presentation. It can also be through this presentation that the Waray-Waray Nursery are shown and demonstrated in the video.

In general, all the respondents unanimously said that they teach Waray-Waray Nursery Rhymes through demonstration. Hence, they make use of audio-visual materials, multi-media presentations and instructional aides to present the visual, audio and actual aspects in teaching Waray-Waray Nursery Rhymes.

In a similar study conducted at the University of Ottawa (Bolduc & Lefebvre, 2012), a similar model was used to assess the efficiency of learning conditions in the development of musical skills through the use of nursery rhymes. In the study, kindergarten pupils were assigned and evaluated through different learning conditions; (1) music, where the nursery rhymes were complemented with music; (2) language, where the nursery rhymes were incorporated with language activities; (3) combination of music and language, and (4) passive listening where the pupils listened to a nursery rhyme every day for 15 minutes for exploration. The results showed that the children who were assigned and assessed in conditions 1, 2 and 3 improved their phonological awareness, but only conditions 1 and 3 with the music incorporation showed improvement in their verbal tasks. Children assigned to conditions 1, 3 and 4, showed improvement in tone and rhythm respectively. Thus, this study shows that supplementing nursery rhymes with different learning aspects such as music and language activities is an effective way to develop literacy skills and phonological skills.

Prototype System to Improve Delivery of MTB-MLE

Instructional Materials (IMs) is a tool in completing the teaching-learning process. Every school or formal education must have different tools and technology to improve the teaching delivery most especially in the new Curriculum for the Preschool Pupils which is on the Mother Tongue Based – Multilingual Education (MTB-MLE).

From the results presented above, the demonstration is the most appropriate strategy to improve the teaching-learning process for MTB-MLE specifically in teaching Waray-Waray Nursery Rhymes. To incorporate this approach with Information and Communication Technology (ICT), developing a computer-aided/assisted instruction (CAI) can improve facilitation in this aspect. Furthermore, the integration of ICT in teaching MTB-MLE has shown significant impact in the preparation and using the IMs. Among those advantages were low cost, less effort, more time with family, and socio-cultural benefits as parents were can be involved in the process (Analytical, 2015).

One of the advantages of CAI is the provision of a one-to-one interaction with a student (Encyclopedia Britannica, ND). With this, the learner can learn according to his/her pace and those allowing teachers to focus more to those who needed much individual attention. Student-centered learning using ICT-Based IMs is considered to be a semi-active learning and has the student need satisfaction as its primary focus whereas the subject-centered environment has the transmission of a body of knowledge as the primary focus (Nanney, 2004, & Clasen and Bowman, 1974). Furthermore, another study revealed an impressive result of a self-paced learning where most participants identified it as an advantage (Caluza, 2016). In this way, the students were given the chance to explore at their own rate.

A CAI on Waray-Waray Nursery Rhymes such as Tiil, Tuhod, Lobo, Chikading, Pato, Gagamba, Kamot, Namok and Dinhi Malipayon, Dito Malipayon, Bisan Din Malipayon can be a useful prototype for the improvement of MTB-MLE delivery about teaching Waray-Waray Nursery Rhymes. Among studies, also shows a significant impact of the effect of ICT Based Nursery Rhymes about Childs' cognitive development. This type of application develops cognitive developments like skills, including motor skills, speech and language, reading and writing, numeracy, working memory, social skills, and behavior (Black & Wood, 2003).

CONCLUSION AND RECOMMENDATION

It is imperative to say that a profound learning activity for the pupils is needed with the aid of information and communication technology. The gathered data were employed as a basis in the developed Waray-Waray Nursery Rhymes Computer Aided Instruction with the supervision of the Teacher or Parents. The prototype processes and the software output are can be used as a basis for possible technology transfer and extension program of the Information Technology Department to its stakeholders. Ultimately, this can as well be applied as the basis for other educational institution to develop similar IMs for the K-12 programs and MTB-MLE courses.

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