

Evaluation of Multisensory Instructional Material Package for Elementary Learners

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Abstract: *Development and effective utilization of learning materials to address the needs of individual learners necessitates 21st century educators to become effective teacher to support multisensory learning. Objectively, this study evaluated the acceptability, usefulness and appropriateness of multisensory instructional material package for elementary learners. The study employed design and development research method. In evaluating the learning materials, descriptive-comparative method was employed. A total of fifty seven (57) respondents broken down into forty seven (47) student teachers and twenty (20) public elementary school teachers were the evaluators of the study. There were sixteen (16) multisensory instructional materials constructed which can be used in all the subject areas of elementary curriculum. Results of the study exposed that the multisensory instructional materials were acceptable, useful and appropriate to be used in the elementary classroom. Test of difference showed that teacher-evaluators perceived higher evaluation on the usefulness of the materials than the student teacher-respondents. Comments and suggestions were offered by the teacher-evaluators to improve the different instructional materials for enhancement and improvement. It is recommended that different instructional materials may serve as guide for other teachers to develop their own teaching materials and testing the effectiveness of each learning material should be conducted.*

Keywords— *multisensory instructional materials, elementary learners, learning styles, design and development*

INTRODUCTION

Effective learning is valued in all societies. At present, the mode and process of education already evolved. The use of plain chalk and talk method of teaching can no longer be the key to successful pedagogy [1]. Therefore, the teacher has to use instructional materials to make the teaching learning process interesting, fun and multisensory.

Teaching materials are aids in the teaching and learning which help increase the effectiveness of the teacher to deliver the lesson. These materials stimulate their interest, simplify, clarify subject matter and ultimately increase the conceptual understanding and motivation of the learners. According to Rigor [2] these teaching materials are tools of the teacher which amuses the learners and these are catalytic agents that transform the interest, curiosity, and experimentation into knowledge and understanding. Instructional materials that are developed for learning and teaching a lesson also have an important role in creating a constructivist classroom environment. In this stage, most teachers have a problem with the restriction of utilizing

perceptible instructional materials in a classroom environment [3].

Instructional materials are the devices used by the teachers in the classroom. Most of the students learn with the aid of well designed and developed learning materials. Adequate instructional materials support learners more vividly which promote deeper learning experience in the educational system. The use of multisensory instructional materials stimulates learning by engaging students on different levels. Such use of senses when learning concepts or ideas and facts in the could be better since it encourages the students to acquire information while doing the learning tasks.

IM is an important tool in the process of learning. It does not only enhance knowledge, thinking and problem solving skills of the learners but also enables them to achieve the learning objectives effectively and interestingly. Thus, wise and creative thinking of the teacher is advised to provide exciting ways to present learning materials that enhance learning [4].

Teaching Learning Materials are often seriously underfunded alongside physical facilities and human resources. It is not surprising therefore, that literacy

has become a major problem in many countries when students and teachers have so little to use and read [5]. The physical, material, human and financial resources invested in schools influence not only the education provided to students but also aspects of teachers and student motivation and consequently the educational outcomes.

According to Dunn and Dunn [6] only 20-30% of school age children appear to be auditory learners, 40% are visual learners, and 30-40% are tactile/kinesthetic or visual/tactile learners. In the same manner, Price, Dunn, and Sanders [7] found out that very young children are the most tactile/kinesthetic, that there is a gradual development of visual strengths through the elementary grades, and that only in fifth or sixth grade can most youngsters learn and retain information through the auditory sense. In addition, Burke and Dunn [8] noted that when teaching tactual and/or kinesthetic youngsters by talking, they focus for only a brief amount of time and then wander off into their own thoughts and quickly forget.

The use of multisensory instructional materials has been promoted by Professors Rita and Kenneth Dunn, they noted that learning style is the way in which each learner begins to assimilate and process information. The interaction of these elements occurs uniquely to individual learner. It is therefore essential for the teacher to identify what most likely trigger their interest and concentration on how to enhance the learning styles and inclinations. Students need to learn how to teach themselves by using tactual materials such as Multipart Task Cards, Flip Chutes, Pic-A-Hole, and Electro boards [9].

The Department for Education and Skills [10] defines multi-sensory as using visual, auditory and kinesthetic modalities, sometimes at the same time. Students have their own learning preference and strategies which is called their learning styles. When students are taught using strategies and teaching materials aligned with their learning style, they learn more easily, faster and can retain and apply concepts more readily to future learning. Due to the different learning styles of students, it is necessary for the teacher as facilitator of learning to integrate in the experiences of students the use of multisensory instructional materials. Coffield, Moseley, Hall & Ecclestone [11] point out in a critical review of learning styles, there is insufficient evidence that such approach is effective. Indeed, work with learners with learning disabilities on developing all the senses as

fully as possible, using techniques such as multisensory environments. Further, Meyer [12] noted that designing and developing well a learning material leads to deeper learning than the traditional verbal-only messages in the classroom.

Minnesota Literacy Council [13] noted that multisensory learning as the involvement of the use of senses which primary focuses on using visual, auditory, and kinesthetic, tactual elements where it is taught incorporating all senses into the learning process to activate different parts of the brain simultaneously, enhancing memory and the learning of written language. It also helps learners discover what learning styles fits them best as it provides more ways for understanding new information, more ways to remember it and more ways to recall it later. Therefore, learning activities should provide learners an opportunity to develop their skills they need to demonstrate their mastery.

A teacher chooses the instructional materials appropriate to a particular learning activity. The aids must suit the learning objectives of the lesson. Ballado [14] outlined the five (5) principles in selecting instructional media in teaching where teachers can be guided in the utilization of instructional materials. Among these are the principles of appropriateness, principles of authenticity, principles of interest, principle of organization and balance, and principles of cost. He further added that among the factors to be considered in selecting one are the following: relevance of the media to the lesson objectives, suitability to students' age, learning abilities and styles, and reading level; accuracy and novelty of media; provision of learner participation; provision of feedback; appeal; availability; adaptability; ease in the use or operation of the media; learning environment; cost; objectivity; maintenance; and technical quality. This just shows that there is no one medium which possesses all the best qualities of an instructional medium. Hence, there is no best instructional medium. Selecting of the most appropriate instructional material media is a skill which depends on the factors mentioned.

The current educational practices recognize the value of developing instructional materials as aids to effective instruction. These materials may be in the form of the simple chalkboard, flannel boards, work books, exhibits, and sophisticated teaching aids like motion pictures projectors, computers, LCDs and documentary films [15]. Instructional materials are therefore, sight tools for teachers at all levels of

education process for effective instructional delivery and promote learner's academic achievement and enable the achievement of the stated objectives of a lesson [16].

As a theoretical underpinning in the development of effective multisensory instructional materials, Dale's Cone of Experience [17] asserts that the amount of immediate sensory participation is important. The cone of experience as a visual model is a pictorial device that presents bands of experience arranged according to degree of abstraction. It suggests that teaching and learning must move systematically from the base to pinnacle, from direct purposeful learning experiences to verbal symbols. This implies that the use of many and varied instructional materials in the classroom help the learners to conceptualize their experiences. The use of multisensory and tactual teaching materials in the classroom is a way for the teacher to make fundamental changes in their teaching methods and materials which is in consonance to Dale's cone of experience. The importance of using tactual teaching materials in the classroom is associated to the age level of the learners, its adaptability to varied learning inclinations of students, integration of games, materials are self corrective and fear of failure and humiliation are reduced on the part of the learner.

Teacher should select instructional aids which are very much appropriate to a particular learning activity. These aids must suit the purpose intended for mastery of the subject matter, skills acquisition, skills improvement, and even valuing. Instructional aides that serve the purpose for which they are intended for are able to contribute to motivating learners to understand the lesson, reinforce learning, encourage participation, and provide meaningful experiences.

In the Philippines, basic education level is the foundation of learning. Learners in this stage must be provided with multisensory learning experiences for them to acquire the basic skills which are reading, writing and arithmetic. Providing the elementary learners with the meaningful learning experience at their level will ultimately increase their engagement and motivation to learn. This study focused on the development and evaluation of sixteen (16) multisensory instructional materials for elementary learners. These IMs hope to benefit the elementary learners with the range of subject areas for which these IMs can be incorporated and utilized particularly Araling Panlipunan, Science, Mathematics, and Language Arts.

It is anticipated that incorporating the use of these multisensory instructional materials may add new dimension of experiences to the elementary learners. As these can engage learners who don't always respond to visual oriented learning materials but with the learning materials which are direct, has multisensory connection to the knowledge and experiences of the pupils which will eventually yield a new level of interest and attention.

The researcher had been a former elementary school teacher and a grade school department head, now as college instructor handling professional education subjects in the College of Teacher Education of Cagayan State University at Lasam considers the role of effective development and utilization of multisensory instructional materials in enhancing learners' interest at the same time encourage would-be-teachers to become innovative in designing and developing instructional materials. Hence, this study was conducted.

OBJECTIVES OF THE STUDY

Generally, this study evaluated the multisensory instructional material package for elementary learners. Specifically, it aimed to: 1) evaluate the acceptability, usefulness and appropriateness of sixteen multisensory instructional materials; 2) test the difference between the evaluation of the student-teacher evaluators and teacher-evaluators; 3) enhance and improve the multisensory instructional materials from the gathered suggestions and comments of the teacher-evaluators.

METHODS

Research Design

This study employed the Design & Development Research Method. Richey and Klein [18] specified that this type of research is a systematic study of design, development and evaluation processes with the aim of establishing an empirical basis for the creation of instructional and non-instructional products. This design is fundamental adapted to the process of designing, constructing and evaluating the multisensory instructional materials for elementary learners. Further, Descriptive-comparative method was employed to evaluate the acceptability, usefulness, and appropriateness of the developed learning materials for elementary learners.

Participants

A total of fifty seven (57) participants broken down into forty seven (47) student teachers and

twenty (20) public elementary school teachers were the evaluators of the study. Both groups of participants were purposively drawn by the researcher. Complete enumeration of the student teachers was done since they are undergoing practice teaching and they already have background about the use of different instructional media and how these are selected, produced and evaluated in the classroom which is the focus of their professional education subjects Education Technology 1 & 2. Meanwhile, twenty public school elementary teachers who have been teaching for at least five years in the elementary schools were also purposively selected as expert evaluators by the researcher. Both groups of respondents were selected for the purpose of evaluating the acceptability, usefulness and appropriateness of the multisensory instructional materials. The teacher-evaluators also provided comments and suggestions to improve the teaching materials.

Instrumentation and Procedure

The questionnaire checklist was used as the primary gathering tool in evaluating the sixteen multisensory instructional materials as to their acceptability, usefulness, appropriateness. The instructional materials were constructed for one semester by the researcher through the help of his students enrolled in the subject principles and methods of teaching.

After the construction of the sixteen materials, the student teachers were asked to evaluate the teaching materials and their voluntary participation was asked. Meanwhile, the evaluation of the instructional materials by the public school teachers was also sought. Comments and suggestions on how to improve the materials were elicited from them. The sixteen (16) multisensory instructional materials were presented and used by the teachers for the period of three (3) weeks. They were provided questionnaire for their evaluation. After the retrieval of the questionnaire, the data were tabulated and subjected to appropriate statistical tools. The qualitative data on the comments and suggestions of the teacher-evaluators to improve the materials were presented through content analysis.

Before the conduct of the study, a letter of permission addressed to authorities was sought by the researcher. Proper coordination and orientation with the participants was conducted. Inform consent was observed. Through personal contact and visit of the

researcher, the teachers were requested to act as evaluators. After obtaining their approval, arrangement and scheduling was conducted. They were also personally oriented by the researcher as to how the different multisensory instructional materials will be utilized. Meanwhile, the student-teacher respondents were also asked to participate in the activity by formally informing the purpose of the study. Their participation was voluntary.

Data Analysis

The mean was used in analyzing and presenting the findings of the study. To assess the perceived acceptability of the multisensory instructional materials, the following scale was utilized: 3.51-4.00: Very Acceptable (VA); 2.51-3.50: Acceptable (A); 1.51-2.50: Moderately Acceptable (MA); 1.00-1.50: Not Acceptable (NA).

As to the usefulness of the materials, the weighted mean was further used. The weighted mean score is interpreted as per to the following scale: 3.51-4.00: Very Useful (VU); 2.51-3.50: Useful (A); 1.51-2.50: Moderately Useful (MU); 1.00-1.50: Not Useful (NU).

To describe the perceived appropriateness of the materials, the following scale was also utilized: 3.51-4.00: Very Appropriate (VA); 2.51-3.50: Appropriate (A); 1.51-2.50: Moderately Appropriate (MU); 1.00-1.50: Not Appropriate (NA).

Further, the t-test for correlated sample was used to test the differences on the evaluation of the two groups of respondents as to the acceptability, usefulness, and appropriateness of the instructional materials.

RESULTS AND DISCUSSION

Table 1 presents the description of the different multisensory instructional materials including their materials of construction. The following are caterpillar-spelling-strips, country cups, dress-me-up, electronic mastery quiz board, fill in the turtle shell, flip box, fact bind, knowledge fan, magic window, map location board, match eggs to bird's nest, choose-the-right-hole, science mastery folder, string pictures words, cartoon character sliders, and interactive spinning wheel. It is claimed that these multisensory instructional materials can engage learners. Teaching with objects, manipulative and photographs creates a direct, sensory connection between learners and their subjects that results in new levels of interest and attention of learners.

Teaching with objects creates students with higher levels of visual literacy [19].

Table 1. Description of Multisensory Instructional Materials and their Materials of Construction

Instructional Materials Developed	Materials of Construction
1. Caterpillar-spelling-strips	cut outs of caterpillar from square foam sheets, pentel pen, velcro,
2. Country Cups	recycled Styrofoam cups, pile of rainbow colored popsicles, cut outs of people wearing national costumes
3. Dress-Me-Up	laminated cut outs of little people and clothes, set of phonemes, hoop and loop,
4. Electronic Mastery Quiz Board	set of ten questions with answers, cartoon character cutouts, battery, small buzzer, wire, recycled cardboard, colored paper strips, small LED lights bulbs, aluminum foil, electric tape, lag screw with ring
5. Fill in the turtle shell	3-D Turtle cut out from sturdy cardboard, colored papers, conductive hoop and loop tape
6. Flip Box	card boards, shoe boxes, colored paper strips,
7. Interactive spinning Wheel	sturdy illustration board, recycled plastic bottles, animation cut outs, paper clips, celluloid plastic sheets,
8. Knowledge Fan	tag board cut equally into six sections, paper plates, brass plated fastener,
9. Magic Casement	pattern of boxes from cardboard, plastic cover, colored papers, glue,
10. Map Location Board	political map, cartolina strips, cut outs of flags and people.
11. Match Eggs to bird's nest	sturdy cut outs of egg and nest, Velcro, foam sheet
12. Choose the Right-hole	sheets of tag board, puncher, plastic cover, cut out of animals,
13. Science Mastery Folder	recycled file folders, pictures, strips, board planning magnets,
14. String Pictures Words	soft plush sticks, shilly-stick, cut outs of pictures, puncher
15. Cartoon Character Sliders	recycled file folders, cut outs of cartoon characters, laminated blank sliders,
16. Fact Bind	yarn, recycled sturdy illustration board, puncher, cartoon character cut outs, colored papers

The *caterpillar-spelling-strip* is a multisensory instructional material made of foam sheets. This

material is appropriate in teaching reading, phonics and spelling. Learners will categorize the letters into their proper order by lining up the foam sheet to form the caterpillar. In order to line up the words or letters hook and loop will be used. The material becomes multisensory because it has self-corrective, tactical and visual attributes. It is effective for learners to reinforce previously learned concepts. Learners who may be provided with this material may work individually or by group. Exploring manipulative, especially self-directed exploration provides an exciting classroom environment and promotes in students a positive attitude toward learning [20].

The *electronic mastery quiz board* is another type of multisensory instructional material which can hold the attention of most learners. It is equipped with lights and sounds where the students are provided with immediate feedback on the correctness of their answers by putting the metal string on the proper answer. The user can find out the right answers by holding a wire on a question and then touching each of the answers with the other wire until the buzzer buzzes to indicate the right answer. Just like the typical matching type sequence where the material has Column A and Column B. The pupils will choose a question in Column A and match it with its correct answer in Column B. This multisensory instructional material will particularly cater to the needs of the tactile, visual and even auditory inclined learners. Shapes and designs can come up with different forms for example shape of a pencil, whale, bag, fruits, animals and etc. the material can be used in any of the different subject areas of the K-12 curriculum.

The *flip sliding box* is a multisensory instructional material where pupils will insert a question-and-answer card into the upper portion of the box. Each question card when inserted by the pupils to the opening of the box, it flips and slides when coming out from the lower opening revealing the answer. The material can also be used in all subject areas when mastery of concepts among the pupils is the goal of the teacher.

Choose-the-right-hole is a cardboard cased with ten (10) to fifteen (15) set of cards. Each card has a question and answers are printed at the bottom part. The pupils insert their pen or pencil in the holes found in front of the card board case. If the question card lifts from the holder with the pen in the hole, the answer is correct. The self-corrective mechanism of the material enhances the mastery of concepts of the learners.

The *Interactive Spinning Wheel* is an instructional material with a diameter of 16 inches made of cardboard with 60 inches height. The material can be used in the different subject areas. The pupils will spin the wheel to create sound which adds interest and motivation. The wheel has sixteen enveloped pasted on the subdivided equal parts of the circle. Each envelop contains question representing the information about a specific topic, concept or skill.

Map Location Game is an ideal multisensory instructional material in teaching geography in the elementary level. It is interesting to use in teaching continents, capital of countries with the use of strips and cut outs of cartoon pictures. Pupils will put the names on the map and the pictures of people. It is appropriate for the elementary learners to master the names of the different places and identify the nationalities of its people. They teacher may use printable maps or make her own for the pupils.

The *Country Cups Learning Board* is an instructional material which adds interest of the pupils to learn countries, national costumes and their flags. The cups were written with names of different countries. Using popsicle sticks with flags and pictures of people, they are inserted on the cups' cover. Country cups are using concrete representations of what is being taught. When students use manipulative they are making physical model to represent knowledge. Manipulative are commonly associated with math (e.g. shapes, cubes, money) but can actually be incorporated in all content area truth such time as puzzles, maps, word sorts and legos. For example instead of labeling the various regions would be a good way to use physical model during geography lesson [21].

Science file learning folder is an interesting set of multisensory instructional material for elementary learners. The material can be used by the pupils individually or by group depending on the mode of interaction the teacher prefers to use. Inside the folders are strips and pictures where the pupils will manually match, categorize or classify the concepts.

Cartoon Character slider is material is applicable for review activities of numbers, letters and even beginning sight words. The patterns come with cartoon character cut outs with blank sliders so you can put the skill. The slider should be limited or written in a sturdy paper. The pupils will pull the sliders through and identify the letter or the number which is on the tummy of cartoon character cutouts.

The material is applicable for teacher to teach small group activity.

Fill in blanks on turtle shells is a three dimensional cut out of turtle shape. The pupils will match the cut outs on the blanks. The cut out turtle shape has questions written.

The *Dress Me Up* is cut outs of little people will be dress up with colored paper strips. Questions may be written in the middle level of the cut outs. Cut out of clothes like shirt, shorts, or hats will be dressed to the human cut out. The little clothes were written with answers and pupils will dress the clothes cut out with the correct answer.

The *String-Picture-Word* is an instructional material where questions were written on the strips and were stuck in a string. The material is very much applicable for the pupils to memorize concepts of words. The material may be used in mathematics, science and reading.

Magic casement is an instructional material piece of cardboards. Each window has a question or problem. Under the windows are the correct answers in the boxes on the paper. Then flip the cardboard over and the pupils will write their answer on the cardboard above each window. Pupils will flip the cardboard to self-correct the question.

Match-eggs-to-the-birds' nest is made of study cut outs of eggs and nest pasted on a board. The little eggs must have pictures of words or concepts. The pupils will classify the pictures in the eggs by putting them into proper category. The instructional material may be used in all subject areas for mastery of basic concepts.

Fact Bind is made of sturdy recycled card board having two columns. On the Column A consists of questions while on the Column B are the answers. Notches are cut on the side margin of the board where the strings or yarn will be matched to the corresponding answers.

Knowledge fan is another kind of multisensory instructional material. Draw a semi circle with a diameter of 18 inches on the cardboard. Cut the semi circle into eight equal sections. Then make a hole in the point of each wedge with a paper fastener the wedges will be fixed. Each section of the knowledge fan will have questions. A self-correcting symbol on the back of the semi-circle will be put on the corresponding wedges.

The constructed multisensory instructional materials offer a direct, tactile experience for students. Educational researches affirmed that hands-

on learning is rewarding in providing rich experiences to learners with the aid of multisensory instructional materials. Learners therefore should be exposed to different teaching materials.

Table 2. Acceptability of the Multisensory Instructional Material Package

Instructional Materials	Student Teachers	Teachers	Over-all Mean	I
	Mean	Mean		
1. Caterpillar-spelling-strips	3.47	3.43	3.47	A
2. Country Cups	3.67	3.80	3.74	VA
3. Dress-Me-Up	3.48	3.37	3.43	A
4. Electronic Quiz Board	3.92	4.00	3.96	VA
5. Fill in the turtle shell	3.33	3.49	3.41	A
6. Flip Box	3.68	3.67	3.68	VA
7. Interactive Magic Wheel	3.65	3.76	3.71	VA
8. Knowledge Fan	3.52	3.51	3.52	VA
9. Magic Window	3.60	3.58	3.59	VA
10. Map Game Kit	3.91	3.93	3.92	VA
11. Match Eggs to bird's nest	3.58	3.70	3.64	VA
12. Pick-the-hole	3.56	3.49	3.53	VA
13. Science Learning Kit	3.87	3.89	3.88	VA
14. String Pictures Words	3.53	3.57	3.55	VA
15. Teddy Bear Sliders	3.64	3.52	3.58	VA
16. Fact Wrap	3.51	3.55	3.53	VA
Grand Mean	3.62	3.64	3.63	VA

As far as the acceptability of the developed instructional materials is concerned, both the student teachers and teacher respondents evaluated the materials very acceptable registered with the grand mean of 3.62 and 3.64 and an overall grand mean of 3.63, which indicates that the respondents have very high favorable evaluation on the developed multisensory instructional materials. This implies that the materials are very much acceptable to be used for elementary pupils. This further means that selection and preparation of these multisensory instructional materials was assessed with positive acceptable quality as they transform the interest, curiosity, and experimentation of knowledge of the learners.

Among the multisensory instructional materials evaluated, electronic quiz board obtained the highest mean of 3.96 followed by map game learning board with 3.92 revealing a very much acceptable description. In like manner, Science learning board

obtained 3.88, country cups registered a mean of 3.74, interactive learning wheel has 3.71 mean, flip box was rated with a mean of 3.68, match egg to bird's nest board with 3.64, teddy bear slider got the mean of 3.58, string picture words obtained 3.55 mean, fact wrap was rated 3.53, magic window has 3.59, knowledge fan 3.52, and pick the hole with 3.53 with verbal interpretation of very acceptable quality. The results imply that fourteen multisensory instructional materials rated very appropriate to be used were carefully developed and design to address cater the learning styles of the pupils. This further implies that the evaluators highly accepted the materials.

Meanwhile, three instructional materials rated with acceptable quality by both groups of respondents namely dress me up obtained 3.43, caterpillar-spelling-strips obtained 3.47, and, fill-in-the-turtle-shell obtained the mean of 3.41. The evaluation of the respondents implies that these instructional materials need to be enhanced in order to attain their full acceptability in the elementary classroom.

Table 3. Usefulness of the Multisensory Instructional Materials

Instructional Materials	Student Teachers	Teachers	Over-all Mean	I
	Mean	Mean		
1. Caterpillar-spelling-strips	3.51	3.59	3.55	VU
2. Country Cups	3.54	3.70	3.62	VU
3. Dress-Me-Up	3.51	3.52	3.52	VU
4. Electronic Quiz Board	4.00	4.00	4.00	VU
5. Fill in the turtle shell	3.53	3.57	3.55	VU
6. Flip Box	3.56	3.59	3.58	VU
7. Interactive Magic Wheel	4.00	4.00	4.00	VU
8. Knowledge Fan	3.54	3.60	3.57	VU
9. Magic Window	3.72	3.71	3.72	VU
10. Map Game Kit	4.00	3.95	3.98	VU
11. Match Eggs to bird's nest	3.54	3.60	3.57	VU
12. Pick-the-hole	3.70	3.76	3.73	VU
13. Science Learning Kit	3.90	4.00	3.95	VU
14. String Pictures Words	3.56	3.64	3.60	VU
15. Teddy Bear Sliders	3.80	3.78	3.79	VU
16. Fact Wrap	3.67	3.63	3.65	VU
Grand Mean	3.69	3.73	3.71	VU

Table 3 presents the evaluation of the respondents on the usefulness of the developed multisensory instructional package. The table reflects that all the

sixteen instructional materials were rated *very useful* by both groups of respondents with 3.69 for practice teachers and 3.73 for teacher respondents obtaining a grand mean of 3.71 interpreted to have *very useful* quality. This only implies that the materials were strongly considered by both groups of respondents very useful to enhance participation and achievement of the learners. The materials were carefully designed to serve their purpose. For an effective use of instructional materials, their selection and use should be considered.

A closer look at the table, it reveals that both group of respondents strongly agreed that electronic quiz board and interactive magic wheel were very useful as evidenced of the highest mean of 4.00. In like manner, other materials were also rated very useful were map learning game board with a mean of 3.98, science learning kit obtained the mean of 3.95, teddy bear sliders with 3.79, magic window with 3.72, country cups was rated 3.62, pick the hole 3.70, fact warp with 3.65, string picture words with 3.60. in like manner, match the egg to bird's nest was rated 3.57, caterpillar-spelling-strips with 3.55, dress me up with 3.52, fill in the turtle shells with 3.55, flip box obtained the mean of 3.58, and lastly, caterpillar spelling trips obtained 3.55.

It can be inferred from the data that the materials were all perceived very useful by the respondents. This clearly shows that the utilization of the multisensory instructional materials would be of great help to facilitate better instruction for elementary learners. These learning materials are important tools to facilitate the process of teaching and learning in the elementary grades.

Table 4 presents the evaluation of the respondents on the appropriateness of the developed multisensory instructional materials. The two groups of respondents generally rated the materials 3.70 and 3.72 with the grand mean of 3.71 which fall under the description of very acceptable. This means that all the materials developed were strongly agreed by the respondents to have very appropriate quality. This only implies that the multisensory instructional materials are properly developed to suit to the different levels of understanding, interest and inclinations of the learners, be it tactile, kinesthetic and auditory. In the process of selecting instructional materials, they should be appropriate for the age, intelligence, and experience of the learner [22].

Table 4. Appropriateness of the Instructional materials

Instructional Materials	Student Teachers Mean	Teachers Mean	Over-all Mean	I
1. Caterpillar-spelling-strips	3.51	3.61	3.56	VA
2. Country Cups	3.90	3.70	3.80	VA
3. Dress-Me-Up	3.60	3.65	3.63	VA
4. Electronic Quiz Board	3.98	3.96	3.97	VA
5. Fill in the turtle shell	3.65	3.73	3.69	VA
6. Flip Box	3.53	3.87	3.70	VA
7. Interactive Magic Wheel	3.92	3.86	3.89	VA
8. Knowledge Fan	3.74	3.56	3.65	VA
9. Magic Window	3.58	3.59	3.59	VA
10. Map Game Kit	3.79	3.80	3.80	VA
11. Match Eggs to bird's nest	3.55	3.76	3.66	VA
12. Pick-the-hole	3.59	3.51	3.55	VA
13. Science Learning Kit	3.85	3.85	3.85	VA
14. String Pictures Words	3.73	3.72	3.73	VA
15. Teddy Bear Sliders	3.70	3.92	3.81	VA
16. Fact Wrap	3.64	3.50	3.57	VA
Grand Mean	3.70	3.72	3.71	VA

A closer inspection of the table presents that electronic quiz board still obtained the highest mean of 3.97, followed by interactive magic wheel with 3.89, map game kit and country cups were rated with the mean of 3.80, teddy bear sliders with 3.81, flip box obtained the mean of 3.70, string pictures with 3.73, fill in the turtle shells with a mean of 3.69, knowledge fan with a mean of 3.65, match eggs to bird's nest with a mean of 3.66. meanwhile, dress-me-up was also rated with the mean of 3.63, caterpillar spelling strips with the mean of 3.56, magic window obtained the mean of 3.59, fact wrap with the mean of 3.57, and pick the hole was also rated 3.55. The quality of learning material is enhanced if the material is designed to take into account learners' individual learning styles that mean a consistent or habitual mode of acquiring or imparting knowledge through study, experience or teaching [23].

Table 5 presents the test of difference on the acceptability of the multisensory instructional material package. The mean of student teacher respondents was 3.62 while the teacher respondents had a mean of 3.64. It showed that the computed t-

value of -1.012 with the computed p value of 0.327 which is higher than 0.05 alpha level.

Table 5. Test of Difference on the acceptability of the multisensory instructional material package

	Mean Score	SD	df	t-ratio	P value
Student Teachers	3.62	0.165	15	-1.012	0.327 ns
Teachers	3.64	0.188			

*= significant at 0.05 level ; ns= not significant at 0.05 level

Hence, there is no significant difference between the evaluation of the two groups of respondents on the acceptability of the developed multisensory instructional material package. This further means that the materials have very acceptable quality to be used in the elementary classroom to enhance pupils' learning interest and motivation.

Table 6. Test of Difference on the usefulness of the multisensory instructional material package

	Mean Score	SD	df	t-ratio	P value
Student Teachers	3.69	0.189	15	-2.506	0.024 *
Teachers	3.73	0.170			

*= significant at 0.05 level ; ns= not significant at 0.05 level

As presented in table 6, it shows the test of difference on the usefulness of the multisensory instructional material package. The computed p value of 0.024 which is lower than the alpha level of 0.05 level of significance. Hence, there is a significant difference between the evaluation of the two groups of respondents on the usefulness of the developed multisensory instructional material package. The teacher respondents perceived higher assessment on the usefulness of the developed instructional materials. This implies that the materials are highly useful for elementary level.

Table 7. Test of Difference on the appropriateness of the multisensory instructional material package

	Mean Score	SD	df	t-ratio	P value
Student Teachers	3.70	0.148	15	-0.562	0.582 ns
Teachers	3.72	0.145			

*= significant at 0.05 level; ns= not significant at 0.05 level

Table 7 presents the test of difference on the appropriateness of the multisensory instructional material package. The mean of the practice teachers was 3.70 and teacher respondents had a mean of 3.72. It shows the computed p value is 0.582 which is higher than the alpha level of 0.05. Hence, there is no significant difference on the assessment of the respondents on the perceived appropriateness of the materials. The data suggest that the developed multisensory instructional materials possess the appropriate quality as aid for teaching elementary learners in the different subject areas. They are appropriate for the intended learners.

Suggestions Offered to Improve the Multisensory Instructional Materials

As to the general comments and suggestions of the teacher-evaluators, they serve as points for improvement and enhancement of the instructional materials. Four points to be improved were offered by the teacher-evaluators namely: (1) auditory appeal, (2) visual appeal, (3) durability, and (4) ease of handling.

As to the auditory appeal of the materials for electronic mastery quiz board and interactive spinning wheel, the respondents suggested that the buzzer and spinning sounds of the materials should be louder to be heard by the farthest pupil in the class in such a way that will bring the element of surprise and excitement of the materials. For the visual appeal of caterpillar-spelling-strips, dress-me-up, fill in the turtle shells, magic windows, the evaluators suggested that uniformity of letter sizes should be considered, handwritten letters must be computerized and printed with larger fonts so that they may be readable. The relativity of size of pictures should also be observed. In like manner, fact bind, knowledge fan, string pictures words, and cartoon character sliders should be in larger sizes. The choice of colors of the caricatures should be life-like and the use brighter and darker colored papers should be observed because they attract the interest of elementary learners. Further, to make the instructional material package more appealing, labels of the materials printed with catchy design should be pasted to the multisensory instructional materials.

As to their durability, cards of flip box, maps of country cups and maps of location board, pick-the-hole and string picture words, science learning folder, and cartoon character sliders should be laminated or covered with plastic to ensure their durability and

multiple use. Finally, it was also suggested that the materials should be encased in a big box to consider it as a learning package for easier handling and storage and for future use of the materials. Guidelines of using the materials should be attached to the learning materials.

CONCLUSIONS AND RECOMMENDATIONS

Based on the results of this study, the following conclusions are taken. 1) The development of multisensory instructional material package is in consonance to address and enhance the learners' sensory literacy and to develop their ability to learn better considering their unique inclinations, 2) the developed multisensory instructional materials were evaluated by both group of respondents to have high level of acceptability, usefulness and appropriateness to be used in the elementary classroom; 3) test of difference showed that teacher-evaluators perceived higher evaluation on the usefulness of the developed materials than the student teacher-respondents. Comments and suggestions were offered by the teacher-evaluators to improve the different instructional materials.

The implications of the present study will bring out desirable changes on the part of the learner as they will be stimulated, motivated and interested to learn using multisensory instructional materials in the elementary classroom. Aligning the use of teaching materials to the different learning modalities and preferences of learners will make learning experience more rewarding and permanent. In like manner, through this study, it is hope that awareness of teachers in designing and developing their own instructional materials will be enhanced with the main goal of improving students' learning engagement and performance. Since this study presents that the assessment on the use of multisensory instructional materials which is considered relevant in the elementary classroom resulted to the favorable ratings in terms of their acceptability, usefulness, and appropriateness in the elementary classroom. This holds the idea that the use of multisensory could generate a student-centered classroom environment where the teacher can foster a positive and child-friendly learning situation thus engaging them at multiple levels by catering to all their senses.

The use of these multisensory instructional materials is supported by Dale's Cone of Learning Experience, Gardner's learning style theory, and Dunn and Dunn learning styles model on how

teachers' provision of learning experiences should be greatly influenced to the dominant learning modalities, preferences and styles and connection to immediate sensory participation of the learners. Finally, as a way for elementary teachers to initiate optimum learning for the students, development and utilization of varied instructional materials which are multisensory in its construction and appeal is necessary.

From the conclusions of the study, the following are recommended: (1) the different instructional materials may serve as guide for other teachers and student teachers to develop their own teaching materials and these may be further innovated and improved; (2) The multisensory instructional materials should be tested using experimental designs to identify their direct effect to the academic performance and motivation of elementary learners; (3) Actual try out of the teaching materials including the development of lesson plans should be conducted; (4) Utilization of the Multisensory materials to a wider population should be considered; (5) Training for teachers may be conducted through the Research, Development and Extension office of Cagayan State university at Lasam.

As to the limitations of the present study, this paper only presents the process of construction and evaluation of multisensory instructional materials which are based solely on the descriptive assessment of the respondents. Further studies using experiential design should be conducted considering specific learning contents and outcomes of the different subject areas in areas in the K-12 curriculum.

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