



Research Article

Multi-Purpose Table with Educational Peekaboo Toy Box

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ABSTRACT



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The purpose of this study is to design and assemble a multi-purpose table with an educational toy named "Peekaboo". This study also sought to determine the level of functionality of its features and level of acceptability in terms of appearance, durability, safety, and cost. This study used a one-shot experimental design since the study only focused on the functionality and acceptability level of the product. Purposive sampling was used in determining the respondents in which 24 students from fourth year and one instructor coming from Industrial Design course were chosen to examine the design of the product. Another set of respondents were the two instructors who specialized in the wood-working area to test the functionality and acceptability level of the product. This study has undergone several steps and procedures from designing, choosing good quality materials yet economical and actual product making. The responses for the questionnaires were tabulated, analyzed, and interpreted using the weighted mean treatment. The result of the study showed that the Multi-Purpose Table with Educational Peekaboo Toy Box is very functional and very acceptable. The features of the product such as its drawers and compartment, table top and its extension and the portability were rated as very functional while removable toy box was rated functional thus, some suggestions are given for more improvements such as its mechanism and the size of the box. Meanwhile, the product's appearance, durability, materials, and cost were rated as very acceptable while in terms of safety in using the product, it was rated as acceptable in which some suggestions were given for the mechanism of the toy box. Therefore, the Multi-Purpose Table with Educational Peekaboo Toy box as a newly designed classroom furniture for the young learners was described as very functional and highly responsive to learning space. Also, the table's features on appearance, durability, materials, and cost are highly preferred while the safety concerns need some enhancement to address fully the needs of the learners. It is suggested that administrators may consider the newly designed product as a classroom furniture and tool. Another suggestion is for furniture makers to have the corners and edges safe from young learners. Lastly, future researchers may use this study as a reference and may design a new and enhanced mechanism for the toy box and study for further refinements and improvements.

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Introduction

Classroom furniture plays a significant role in the teaching and learning process. It contributes comfort, ability to concentrate as well as encourage flexible pedagogies and methods in the learning process. Table is one example of classroom furniture which came from the Latin word "tabula" that means "board or flat piece". There are lots of forms and designs of a table that can help improve the productivity and comfort of the students. One example of it is the multifunctional table in which it is not just a facility for writing and drawing but it also helps teachers develop their students into active learners. This table can also store manipulatives or table toys that are used to support early education programs to practice a wide variety of skills. A study on perceptions of preschool children's furniture design found that different elements of design on the preschool children's furniture affect the perceptions of children (Tamthintha et al., 2018).

As the curriculum of Philippine education changes to suit the latest educational standards, the need of providing the students with proper environment and furniture are not given as much consideration. Currently, as per observation in the classrooms here in Bohol, most of the schools are utilizing armchairs, simple tables and chairs even for the preschoolers that results to less collaboration, connection and interaction with each other. On the other hand, toys and manipulatives were kept in a separate area where they were mostly utilized for playtime and not as part of the educational learning material of the curriculum.

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Literature Background

A study from Eastern Washington University in 2019 states that students can better grasp the idea of learning by forming stronger connections with other learners. One of the learning theories is known as constructivism that states, information is best acquired through a process of reflection and active mental building. Children loves the idea of playing and it is through playing that they learn something. When the child is involved in doing something, they actively respond to it that leads to better understanding. As cited by Penn State article, children benefit most when teachers engage in stimulating interactions that support learning and are emotionally supportive. Interactions that help children acquire new knowledge and skills provide input to children, elicit verbal responses and reactions from them, and foster engagement in and enjoyment of learning (Yoshikawa et al. 2013).

One of the prevalent needs of this generation's education is flexibility. According to Shurville et al. (2008) as cited by Robert, 2013, "Flexible Learning is a set of educational philosophies and systems, concerned with providing learners with increased choice, convenience, and personalization to suit the learner. In particular, flexible learning provides learners with choices about where, when, and how learning occurs". And as stated by Lomas and Oblinger (2006) in their study about "Teaching in Flexible Learning Spaces", learning spaces that are flexible can be either physical or abstract, and regardless of whether they were designed in a particular way, they have a number of advantages for both teachers and students. In a flexible classroom, students are given more freedom to choose how they want to study.

Moreover, the teaching and learning process is significantly impacted by the furniture in the classroom. It facilitates comfort and concentration during the learning process which has an important connection to the increased learning and development of the children as stated by (UNICEF) Office of Innovation. A blog from Philippine Basic Education (2015) that tackles issues on basic education (in the Philippines and the United States) addresses concerns about changes outside the curriculum of the Philippine education. Nair (2019) stated that the curriculum and methodology at educational institutions are continually updated to suit the latest educational standards.

In addition to the theories and principles stated, DO 018, S. 2020 policy establishes the guidelines that will enable DepEd to provide learning resources in the implementation of Basic Education-Learning Continuity Plan. One of the defined terms used in the policy is the learning resources which means any text-

based (print or non- print) or non-text-based materials (devices, tools, equipment, manipulative toys) aligned with the K-12 curriculum and as primary bases or supplements to teaching and learning processes.

Anchored on the mentioned theories, concepts and legal bases, this study involves designing and development of multi-purpose table with educational peekaboo toy box. This study also aims to determine the level of functionality of its features and level of acceptability in terms of appearance, durability, safety, and costs.

The Problem

The main purpose of this study was to design, assemble and determine the functionality and acceptability level of the Multi-Purpose Table with Educational Peekaboo Toy Box. This study was conducted at Boctol Elementary School located at Boctol, Balilihan, Bohol and Bohol Island State University- Main Campus at CPG. North Avenue, Tagbilaran City, Bohol for the Academic year 2023-2024.

Specifically, this study sought to answer the following questions:

1. What is the description of the Multi-Purpose Table with Educational Peekaboo Toy Box in the aspect of:
 - 1.1 design;
 - 1.1.1 Orthographic View,
 - 1.1.2 Isometric View,
 - 1.2 parts and functions;
 - 1.2.1 whiteboard table top
 - 1.2.2 table top storage
 - 1.2.3 table extension
 - 1.2.4 Drawers
 - 1.2.5 peekaboo toy box
 - 1.2.6 caster wheels
 - 1.3 procedure;
 - 1.3.1 assembly,
 - 1.3.2 operation, and
 - 1.4 materials and costs?
2. What is the functionality level of the features of Multi-Purpose Table with Educational Peekaboo Toy Box in terms of:
 - 2.1 peekaboo toy box;
 - 2.2 storage
 - 2.2.1 table top compartment
 - 2.2.2 drawers
 - 2.3 table top and extension; and
 - 2.4 portability?
3. What is the acceptability level of the Multi-Purpose Table with Educational Peekaboo Toy Box in terms of:
 - 3.1 Appearance
 - 3.2 durability
 - 3.2.1 load capacity
 - 3.3 safety; and
 - 3.4 materials and costs?
4. What technology guide can be proposed to maximize the utilization of a Multi- Purpose Table with Educational Peekaboo Toy Box?

Methodology

One shot experimental research design was used in planning and assembling the newly designed "Multi-purpose Table with Educational Peekaboo Toy Box". The study focused on the functionality and acceptability level of the product. A series of tests were done to assess the functionality level of the parts of the product through an observation guide and survey tool was used to determine the functionality level of the features and acceptability level of the product in terms of its appearance, durability, safety, and cost.

The study was conducted at two different environments according to the data needed to be gathered. First was in Bohol Island State University – Main Campus (BISU-MC) located along the CPG North Avenue, Tagbilaran City. In determining the respondents to examine the design of the product, purposive sampling of the 24 fourth year students and one (1) instructor from Industrial Design Program were chosen. Two (2) wood-working instructors were purposively chosen to test the functionality and acceptability level of the product. The second environment was in Bocol Elementary School located at Bocol, Balilihan, Bohol. The Kindergarten, Grade One and Two teachers were purposively chosen to answer the survey form to test the functionality and acceptability level of the Multi-Purpose Table

with Educational Peekaboo Toy Box. To determine the functionality and acceptability level of the Multi-purpose Table with Educational Toy Box (Peekaboo), the weighted mean formula was used. Afterwards, the result of the computed weighted mean was interpreted.

RESULTS AND DISCUSSIONS

Table 1 indicates that the product effectively meets user needs, creating a conducive environment for teaching and learning activities, particularly for early childhood development. The table also serves as an organized storage solution for educational supplies (Smith, 2023).

Table 1: Functionality Level of Multi-Purpose Table and Educational Peekaboo Toy Box (n=30)

Functionality Level of the Features of the Multi-Purpose Table Box in terms of:	WM	Description
A. Peekaboo Toy Box		
1. The peekaboo toy box can be removed from the drawer easily.	3.67	Agree
2. The push buttons of the toy box can be easily swiped.	4.13	Agree
3. The toy pops out the box smoothly.	4.10	Agree
4. The educational toys can be easily replaced by other toys inside.	4.43	Strongly Agree
5. The toy box can accommodate at-least more than five (5) educational toys.	4.60	Strongly Agree
Average Weighted Mean	4.19	Agree
B. Drawers and Compartment		
1. The upper compartment can be used as a storage for the toys and writing materials (e.g., pens, pencils, coloring materials, etc.)	4.90	Strongly Agree
2. The first drawer in the side corner can be used as the storage of the peekaboo toy box.	4.67	Strongly Agree
3. The second drawer in the side corner can accommodate books, notebooks, pencils, etc.	4.80	Strongly Agree
4. The cover of the upper storage can be pulled up smoothly.	4.43	Strongly Agree
5. The drawers can be pulled out smoothly.	4.13	Agree
Average Weighted Mean	4.59	Strongly Agree
C. Table Top and Extension		
1. The table extension can be easily pulled out from the table.	4.43	Strongly Agree
2. The table extension can accommodate another kid/child.	4.57	Strongly Agree
3. The surface of the table top and extension can be used for writing and other activities.	4.83	Strongly Agree
Average Weighted Mean	4.61	Strongly Agree
D. Portability		
1. The table can be easily transferred from another place.	4.43	Strongly Agree
2. The peekaboo toy box can be carried and transferred to another place.	4.43	Strongly Agree
Average Weighted Mean	4.43	Strongly Agree
Over-all Average Weighted Mean	4.46	Strongly Agree

The highest-rated feature is the 'table top and extension,' with an average weighted mean of 4.61, showing its versatility for writing, playing, eating, and accommodating additional children, thereby supporting interactive learning (Yoshikawa et al., 2013).

The 'drawers and compartments' feature also received high ratings, with an average weighted mean of 4.59, demonstrating its effectiveness in storing toys and educational materials. This aligns with Holloway's (2013) concept of maximizing space utilization while keeping the classroom orderly. Additionally, the 'portability' feature, rated with an average weighted mean of 4.46, enhances the dynamic learning environment by allowing easy movement of

the table and toy box, supporting flexible and personalized learning spaces (Nair, 2019; Shurville et al., 2008).

Conversely, the 'peekaboo toy box' received the lowest rating with an average of 4.19, indicating it is merely functional. Although it accommodates toys, it offers limited space and play mechanisms. This finding aligns with the Hannover Principles, which acknowledge the limitations of every design (McDonough, 1992). Despite its limitations, the toy box serves its purpose as a learning aid, helping young learners practice various skills (Childcare, 2019).

Table 2: Acceptability Level of Multi-Purpose Table and Educational Peekaboo Toy Box (n=30)

Acceptability Level of the Features of the Multi-Purpose Table in terms of:	WM	DESCRIPTION
A. Appearance		
1. The over-all design of the table and the toy is child friendly.	4.47	Strongly Agree
2. The table and the toy box are visually appealing.	4.17	Agree
3. The design of the table and toy box is gender neutral.	4.5	Strongly Agree
Average Weighted Mean	4.38	Strongly Agree
B. Durability		
1. The table can carry at least a load of 30 kilograms.	4.47	Strongly Agree
2. The wood joints of the table are still properly fitted during usage time.	4.17	Agree
3. The Multi-Purpose Table with Educational Peekaboo Toy Box doesn't shake when used.	4.23	Strongly Agree
Average Weighted Mean	4.29	Strongly Agree
C. Safety		
1. The table and toy boxes are made from safe and non-toxic materials.	3.97	Agree
2. The table is stable, and it won't tip over easily.	4.17	Agree
3. Edges and corners of the table and toy box are not sharp that could cause injury.	4.23	Strongly Agree
Average Weighted Mean	4.12	Agree
D. Materials and Cost		
1. The materials used in making the table and toy box are locally available.	4.6	Strongly Agree
2. The table and toy box are economical and cost-effective.	4.07	Agree
3. The table and toy box have a low maintenance cost.	4.1	Agree
Average Weighted Mean	4.26	Strongly Agree
Over-all Average Weighted Mean	4.26	Strongly Agree

Table 2 reveals that the Multi-Purpose Table with Educational Peekaboo Toy Box is highly acceptable, with an overall average weighted mean of 4.26. The table's appearance, durability, safety, materials, and costs were rated highly, suggesting it meets the demands of a flexible and safe instructional environment (Migliani, 2020). Specifically, the 'appearance' received the highest rating of 4.38, indicating that its design is appealing to young learners and enhances their classroom experience (Read, 2019).

The 'durability' of the table, with an average weighted mean of 4.29, indicates that it is robust and can handle heavy loads without shaking. This highlights the importance of quality furniture in fostering growth and efficient learning (Migliani, 2020; Nair, 2019). Additionally, the 'materials and cost' received a rating of 4.26, showing that the product is made from locally available, economical materials, in line with the Republic Act No. 10557.

However, the 'safety' feature received the lowest rating, with an average of 4.12, though it is still considered acceptable. The table is stable and firm, with safe edges and corners. Main (2022) emphasizes the need for teacher supervision to ensure young learners use the product safely. Despite being the lowest-rated feature, the safety aspect is deemed adequate for its purpose.

Conclusion

The Multi-Purpose Table with Educational Peekaboo Toy Box as newly designed classroom furniture for the young learners was described as very functional. The Storage drawers and compartment with the table top and extension and portability are functional and highly responsive features to learning space. The table's features on appearance, durability, materials, and cost were highly preferred by the respondents. However, the safety concerns of the table's features on stability and toy boxes need some enhancement to address fully the needs of the learners.

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