

**Research Article**

Copyright © All rights are reserved by Divya Jaiswal

Designing Children's Garments with Techniques of Printing Using Aquatic-Inspired Nursery Prints

Divya Jaiswal^{1*}, Ekta Sharma² and Nargis Fatima³¹Ph.D. scholar, Department of Textiles and Apparel Designing, Ethelind College of Home Science, SHUATS, Allahabad, 211007-U.P.²Professor and Head, Department of Textiles and Apparel Designing, Ethelind College of Home Science, SHUATS, Allahabad, 211007-U.P.³Associate Professor, Department of Textiles and Apparel Designing, Ethelind College of Home Science, SHUATS, Allahabad, 211007-U.P.***Corresponding author:** Divya Jaiswal, Ph.D. scholar, Department of Textiles and Apparel Designing, Ethelind College of Home Science, SHUATS, Allahabad, 211007-U.P.**Received Date:** November 19, 2024**Published Date:** December 09, 2024**Abstract**

The different printing techniques offers large cost reduction for connectors and printers, enhances new products choices and made it possible to meet the fast changing demand of fashion world just in time. The present study was an attempt to use aquatic motifs for designing and printing of childrens garments and assess the acceptability of developed products. A total fifteen designs were prepared with the help of "corel draw" and "adobe photoshop" for home furnishing items which included bed sheets, table covers with coasters and cushion covers. All the developed designs were subjected to visual evaluation for the selection of two best designs from each category. All the prepared articles were highly appreciated and accepted by the judges. The designing of aquatic motifs on childrens garments using different techniques of printing has paved the way for a wide new world of product diversification.

Keywords: Aquatic motifs; Textile designs; Digital printing; heat transfer printing**Introduction**

The word "designing" encompasses the comprehensive arrangement of line, form, color, shape, and texture in a decorative manner. These design elements manifest in textiles used for personal apparel. Design can be categorized as either structural or decorative. Traditional printing techniques, such as block, roller rotary, and flatbed screen printing, have inherent limitations, relying on the engraving of designs onto blocks, rollers, or screens before printing. This process can be expensive and time-consuming. In contrast, digital printing significantly reduces costs for manufacturers and printers, expands product options, and meets the fast- changing demands of the fashion industry with timely delivery. By developing theme-based designs that

incorporate aquatic motifs, this study aims to foster innovation in children's garment design. Computer-Aided Design (CAD) enables designers to transition seamlessly from initial concepts to visual representations of fabrics, showcasing various design elements and color combinations. CAD enhances the quality and flexibility of design development, increases efficiency, and shortens the time required to move from concept to commercialization. This research focuses on adapting aquatic motifs specifically for the creation of unique and engaging designs in children's wear.

Methodology

Aquatic motifs were collected and converted into vector graphic through CAD. A total fifteen designs were prepared with the help

of “corel draw” and “adobe photoshop” for Childrens Garments (Shirts, Tops, Dungaree). Prepared designs were visually shown to the panel of thirty judges and asked to rank and evaluate on the basis of arrangement of motifs, appropriateness of design, color combination and overall appearance. On the basis of the results two best designs were selected from each category of Childrens Garments items for final production using digital printing technique. The prepared articles were further subjected to assessment of acceptability by the same panel of judges.

Results and Discussion

This chapter presents the results of the study along with the discussion. Results are based on the experimental work and are

presented through subjective analysis and tables. Discussions are made for elaborate interpretation of results. The results obtained are divided into following subheading:

Collection and conversion of aquatic motifs into vector graphic forms through CAD

Aquatic motifs, including fish, whales, coral reefs, and water-inspired abstract patterns, were transformed into vibrant nursery prints using CAD software. This innovative design process involved experimenting with scale and layering to create a whimsical underwater world for children’s garments. The resulting prints, showcased in Plates 3.1 to 3.4, capture the enchanting essence of aquatic themes in children’s fashion.

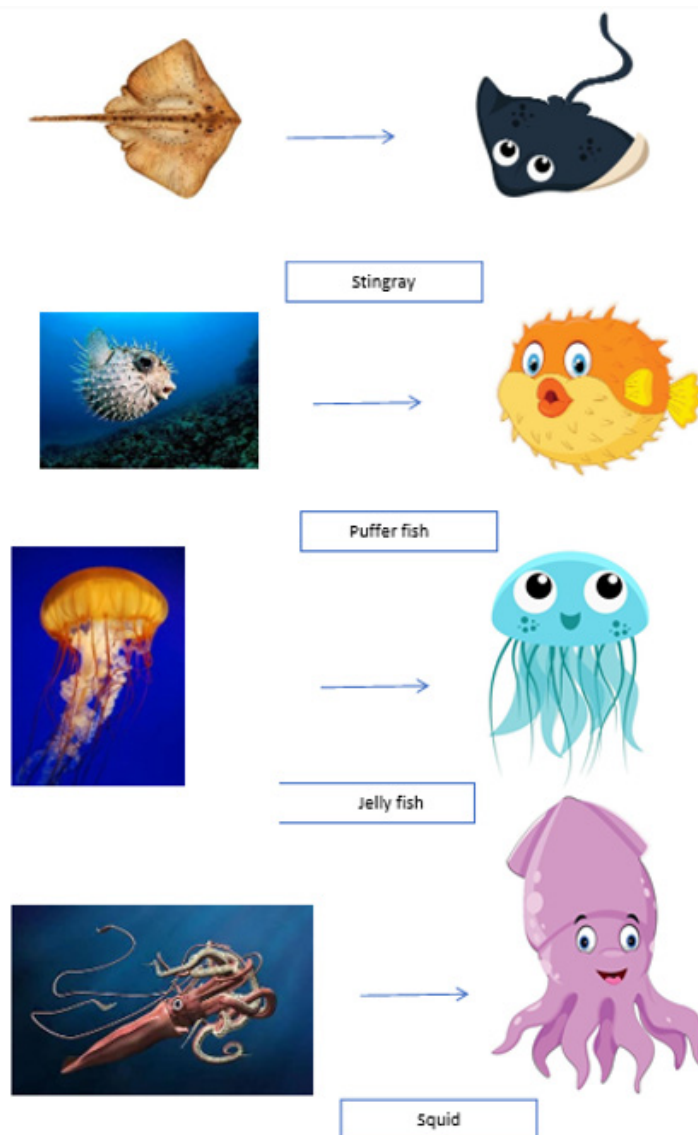
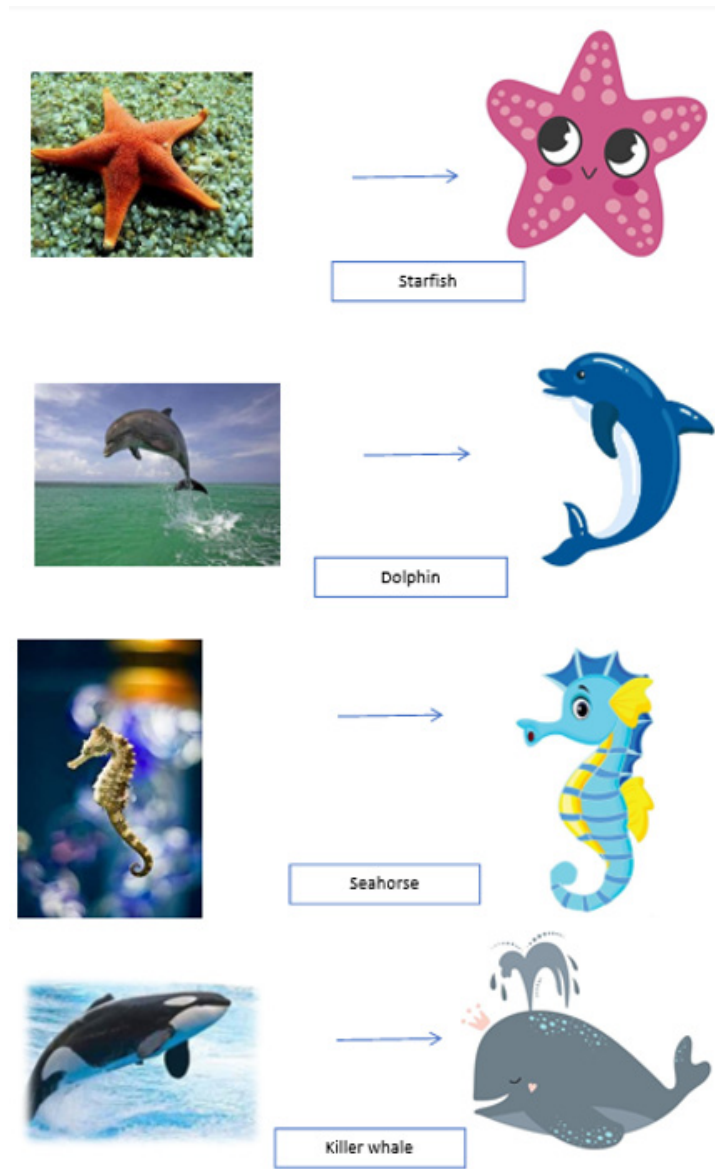
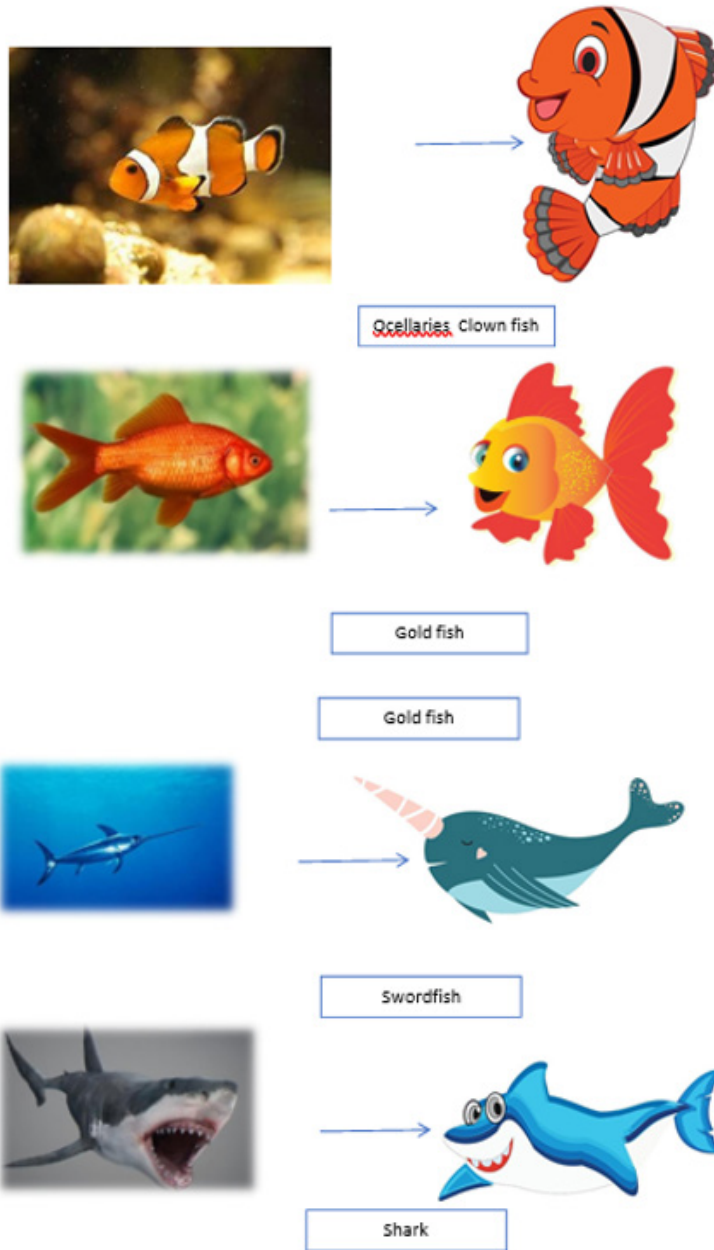


Plate 3.1: Developed Fish Motifs.



(Cont.) Plate 3.1 Developed Fish Motifs.



(Cont.) Plate 3.1 Developed Fish Motifs.

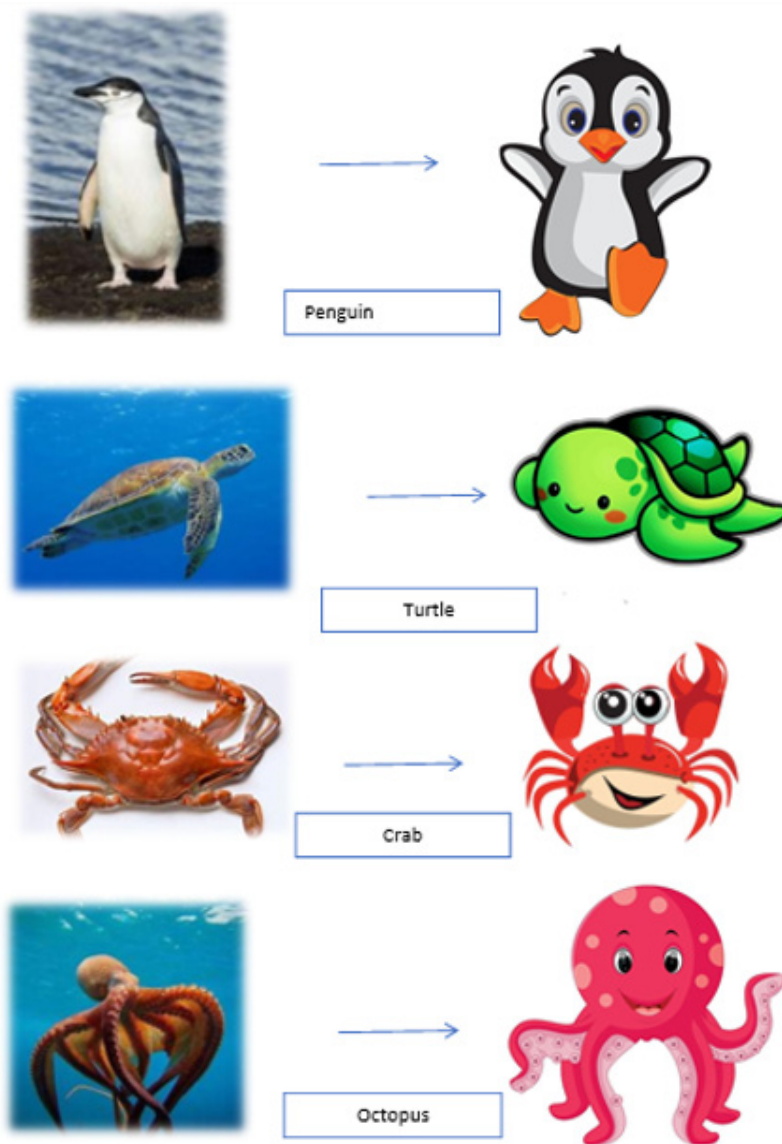


Plate 3.2: Developed Sea Creatures Motifs.



Plate 3.3: Developed Sea shells Motifs.



Plate 3.4: Developed Sea weeds Motifs.

Designing of children's garment using converted aquatic motifs

The design process for children's garments incorporated creatively transformed aquatic motifs, resulting in vibrant and playful pieces that captured the essence of underwater life. The placement of the motifs was very important for making the designs look attractive. Overall a total of 20 designs for childrens wear were

designed and these are shown in Plates no. 3.5 to 3.8

Selection of most preferred designs based on average scores obtained through visual evaluation

All the prepared designs for children's garments were subjected to visual evaluation for selecting the 8 most preferred designs, from each category. The results were presented in Tables 1-4.



Plate 3.5: Developed designs for T-shirt.



Plate 3.6: Developed designs for Shirts.



Plate 3.7: Developed design for Frock.



Plate 3.8: Developed design for Top.

Table 1: Average score of visual evaluation of T-Shirt designs.

T- Shirts design	appropriateness of motifs	arrangements of motifs in design	colour combination	overall appearance	Average score
TD1	4.2	4.1	4.33	4.4	4.25
TD2	4.86	4.66	4.63	4.86	4.77*
TD3	4.6	4.6	4.5	4.6	4.5**
TD4	4.03	3.9	3.8	4.2	4.17
TD5	4.5	4.5	4.4	4.4	4.4

Table 2: Average score of visual evaluation of shirt design.

Shirts design	appropriateness of motifs	arrangements of motifs in design	colour combination	overall appearance	Average score
SD1	4.1	4.1	4.1	4.5	4.2
SD2	4.8	4.7	4.8	4.7	4.7**
SD3	4.5	4.4	4.6	4.3	4.45
SD4	3.9	3.9	4.3	4.3	4.1
SD5	4.8	4.8	4.8	4.7	4.75*

Table 3: Average score of visual evaluation of frock design.

Frock design	appropriateness of motifs	arrangements of motifs in design	colour combination	overall appearance	Average score
FD1	4	4.7	4.2	4.2	4.275
FD2	4.16	4.13	4.16	4.5	4.23
FD3	4.7	4.5	4.7	4.4	4.57**
FD4	4.6	4.7	4.7	4.8	4.7*
FD5	4.4	4	4.3	3.6	4.07

Table 4: Average score of visual evaluation of design for Top.

Top design	appropriateness of motifs	arrangements of motifs in design	colour combination	overall appearance	Average score
T01	4.4	4.6	4.3	4.2	4.3
T02	4.3	4	4	4.2	4.1
T03	4.4	4.3	4.5	4.4	4.4
T04	4.6	4.8	4.6	4.8	4.7*
T05	4.5	4.3	4.5	4.5	4.45**

Table 5: Acceptability scores of the developed children's garments.

Products	Articles	Suitability of fabric used	Colour combination	Neatness and clarity of design	Economic feasibility	Overall appearance	Acceptability score	Rank within group	Overall rank
T- shirt	TD2	5	4.5	5	4.5	5	4.8	I	III
	TD4	4	5	5	4	5	4.6	II	VI
Shirt	SD2	5	5	5	4.7	4.9	4.92	I	I
	SD5	4.5	4.5	4.3	4	5	4.46	II	VII
Frock	FD3	5	4.8	5	4.8	5	4.9	I	II
	FD4	5	5	4.3	4	4.8	4.62	II	V
Top	T04	3.5	4.2	4.2	3.9	4	3.96	II	VIII
	T05	4	4.7	4.6	4.8	4.7	4.65	I	IV

Table 1 shows the visual evaluation scores for T-shirt designs. Design TD2 is the most preferred, with the highest average score of 4.77, excelling across all criteria. Design TD3 is the second preferred, with a strong average score of 4.5. Both designs stand out in motif appropriateness, arrangement, color combination, and overall appearance.

Table 2 shows the visual evaluation scores for shirt designs. Design SD5 was the most preferred, with the highest average score of 4.75, performing well in all criteria. Design SD2 was the second preferred, with a strong average score of 4.7. Both designs excelled in motif appropriateness, arrangement, color combination, and overall appearance.

Table 3 presents the visual evaluation scores for frock designs. Design FD4 was the most preferred, with the highest average score of 4.7, showing excellent ratings in all areas. Design FD3 was the second most preferred, with a strong average score of 4.57. Both designs stood out for motif appropriateness, arrangement, color combination, and overall appearance.

Table 4 displays the visual evaluation scores for top designs.

Design T04 was the most preferred, achieving the highest average score of 4.7, with top ratings across all criteria. Design T05 was the second most preferred, with a strong average score of 4.45, also performing well in motif appropriateness, arrangement, color combination, and overall appearance.

Developed products of most preferred design for children's garments using various surface enrichment techniques

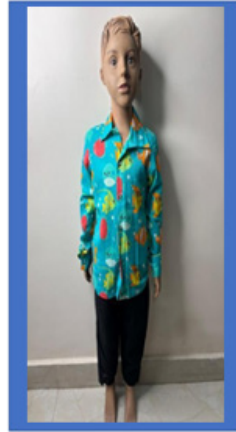
The most preferred designs for children's garments were developed using various surface enrichment techniques to enhance their visual appeal and functionality. A total of 8 products were developed 2 from each category. Different types of printing methods, such as sublimation, heat transfer printing, and vinyl techniques, were utilized to suit the needs of children. Vinyl techniques added a playful, textured element to the garments, ensuring both style and comfort. These techniques were selected to ensure that the products were not only visually appealing but also comfortable, durable, and safe for children. The developed products are shown in Plates no. 3.9 - 3.12.



Plate 3.9: Prepared Printed T- Shirts.



SD2



SD5

Plate 3.10: Prepared Printed Shirts.

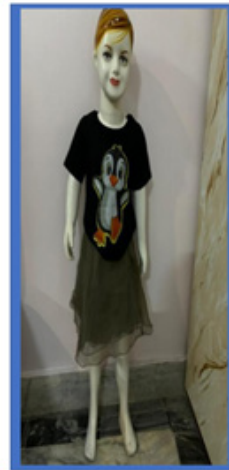


FD3

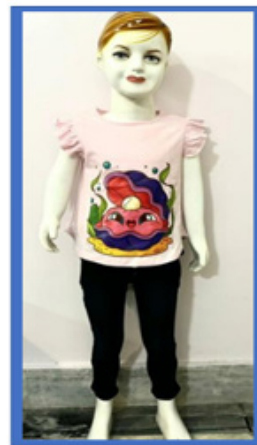


FD4

Plate 3.11: Prepared Printed Frock.



T04



T05

Plate 3.12: Prepared Printed Tops.

Choudhury [1] had shown that digital printing offers greater flexibility in creating detailed motifs with fewer colors compared to traditional methods.

Acceptability of developed products

All prepared products were visually evaluated for the acceptability by the same panel of judges and the result are reported in the Table 4.

Dharmadhikari and Adhav [2] emphasized that digital printing offers significant advantages in terms of design clarity and fabric suitability, as it allows for high-resolution designs and efficient color placement.

Liu, Y., & Li, Q. [3] explored the importance of economic feasibility in textile purchases, emphasizing that consumers are increasingly aware of the cost-effectiveness of products. The findings indicated that while quality and design are critical, price remains a significant determinant of consumer acceptance.

The Table 5 evaluates children's garments (T-shirts, Shirts, Frocks, Tops) on fabric suitability, color combination, design quality, economic feasibility, and overall appearance. Each item receives an acceptability score and is ranked within its category and overall. "Shirt SD2" ranks the highest with a score of 4.92, followed by "Frock FD3" at 4.9. Among T-shirts, "TD2" ranks third overall, while "Top T04" ranks lowest with a score of 3.96. This analysis identifies top designs and areas needing improvement, guiding better product

choices for girls [4,5].

Conclusion

The aquatic motifs were successfully converted into vector graphic (nursery prints) and adapted for designing of childrens garments by using different printing techniques. All prepared products were highly appreciated and well accepted with regards to visual evaluation. Among the childrens garments item, multi colour printed shirt with the combination of coral reefs and seaweeds on white colour Shirt printed with digital printing was highly appreciated and accepted.

References

1. Choudhury AKR (2019) Digital printing in textile design: Enhancing flexibility in motif creation. *Journal of Textile Engineering and Fashion Technology* 5(3): 101-109.
2. Dharmadhikari D, Adhav R (2018) Emphasis on digital printing in enhancing design clarity and fabric suitability. *Journal of Textile Science* 15(2): 45-53.
3. Liu Y, Li Q (2020) The role of economic feasibility in consumer textile purchases. *International Journal of Fashion Marketing* 28(4): 312-320.
4. Sharma E, Paul S, Sheikh S (2014) Fusion of Indian Folk Arts Madhubani and Warli for Designing of Apparels using CAD. *Eduved International Journal of Interdisciplinary Research* 1(8): 45-62.
5. Sharma E (2016) Digitalization of motifs based in Indian folk paintings through CAD and their adaptation on apparels using Digital Printing technique. *Research Journal of Family, Community and Consumer Sciences* 4(1): 1-3.