

Understanding the role of colour & forms in design of children's learning spaces

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ABSTRACT: Well-designed spaces greatly impact the lives of people across all age groups and socio-economic environments. One of the most important visual components of spaces is the use of different forms and colours in space making elements. Different colours and shapes used in design can immensely affect the experience and perception of spatial environment. This study tries to understand, through different case-studies – the role played by colour and forms in learning spaces for children. The study explores how children get attracted towards colours and forms, how they are encouraged to become more interactive and explorative in such environments. Through the morphological study of children's learning spaces, it is observed that there are definite benefits of using colours and forms where the development of their mental and physical health is concerned - specifically involving creativity, productivity and learning.

KEYWORDS : Colour, Forms, Children, Learning, Spaces, Design

I. INTRODUCTION

All habitable built environments created by us have extensively used colours and forms in various ways throughout the history of our built forms. It is already established beyond doubt that these have a very important role on how we perceive built spaces and our cities around us. In the context of children — these elements become even more important, as they play a role in the shaping of the child's mind and body. This is of course a topic that requires study across various subjects — but the focus of this study is more towards understanding how children's learning spaces can be benefitted by sensible and appropriate use of colours and forms. This is done by critically analysing some case studies. The authors have studied activities such as day care, kindergarten, outdoor and indoor play spaces. These spaces are selected for study because with all those early learning activities there is a scope of promoting intelligence and creativity into the child at the very early age when they start going to pre- primary and primary schools.

As mentioned earlier, understanding the impact of spatial elements on children is a complicated study and requires cross-disciplinary evaluation; we have restricted our scope quite a bit. It is not possible to look at other factors that play a role in increasing the creativity and intelligence of the children such as the heredity, personal characteristics of the children, educational techniques, etc.

The following methodology has been used for this study;

- Literature review on the subject by reading various research papers, magazines, journals, etc.
- Survey for parents, guardian of a child to understand their views on the subject.
- Identify issues regarding the factors that are related to the subject.
- Case-studies to observe the impact of these space making elements on children

II. PERCEPTION OF SPACE: SOME IMPORTANT FACTORS

Spatial interaction focuses on creating spaces that offer an arena for human interaction. Places that break down both physical and psychological barriers and encourage engagement and interaction with others. Interactive space also makes a multi and mutual connection with the different contexts of design. A space becomes communicative and interactive when elements like colour, forms and shapes indulge in and create feelings. Owing to these features designers and clients need to utilize it wisely in order to create an appropriate atmosphere in a given space. In present times, studies show children get easily attracted towards colours and forms, it tends to allow them to play with, explore with it. It is very important to structure the furniture, the ambience of the space, which will create a healthy environment and enhance their mood. This could be achieved through the correct shapes and pleasant colours.

But before we look at these elements, it is important to identify some of the fundamental factors that affect the perception of physical spaces. The critical criteria of an interior built environment that have a direct co-relation with the perception of the space are;

Colour: Colours and spatial dimensions of the physical environment are primarily visually conveyed. Numerous studies indicate that colour can have a profound effect on perceived room dimensions. For instance,

- Warm colours- Red, yellow and orange, tend to make space seem smaller than it is actually.
- Warm deep colours- on the end walls with a lighter colour wall can make a long narrow room seem close and appear more evenly proportioned.
- Cool colours- Blue and green, and lighter colours tend to make space much more spacious.

Area: Horizontal area or floor area is the most crucial factor that influences perceived spaciousness. The amount of visible edges also has a strong effect on judged spaciousness. The larger area was perceived more positively than the smaller one and was judged as being more spacious than it seems to be.

Height: Volume of space (through its height) greatly impacts space perception of the physical environment. The ceiling height might extend beyond the upper limit of the room to increase the perception of its size. Double high space can enhance the volume of space and create a sense of spaciousness. It appears that people tend to prefer ceilings that are higher than standard and the preference of ceiling height varies as a function of occupant's activity in the room.

III. COLOUR

It is important to understand the impact of colours on people and how each colour affects a person's mood, multiple mental abilities, including learning, thinking, reasoning, remembering, creativity, and productivity. Colour exists all around the world. It can control human emotions and the presence of the space. Colour enlightens the space, makes it welcoming and gives a feeling of space in whole, makes the space become alive. The effects of colour on human beings can be varied; cause enthusiasm, peaceful environment, giving inspiration. Such effects can be observed more evidently in children.

How does colour affect children and interior space elements? : Colour schemes are a prime factor in interior design. The space making elements such as the colour of the walls, furniture, natural elements, decorative pieces, lights, and fixtures all play an important role in the psyche of the inhabitant. They spend hours in a particular designed place which is surrounded by the combination of colours. Therefore, it is always good to have the right choice of colour scheme for the space according to the individual's choices and desires. It makes them feel enjoyable and relaxed in the designed space. Based on the results of multiple studies on the importance of colours in design, each person reacts differently to each colour. In addition to mood, emotions and actions, colour also affects the surrounding of a space as well as how big or small, coldly or warmly it is perceived. Colours are the most common tool of children to express their emotions and thoughts. Although the preferences of children show a general commonality based on age group, their colour choices can differ based on their moods, the way they express themselves and their feelings.

Children in the age group of 1-6 years are not mature enough to read, write and understand, so at this age they rely more on visual materials to establish communication. Thus colours are an important tool of expression. However, little research investigates the interaction effect of colours and spatial-architectural dimension on human perception. In many studies it has been studied the importance of colours only at the walls but lack of concentration in the whole space. It should be determined with the spatial effects with all three planes such as the horizontal plane, vertical plane, and overhead plane.

Role of Different colours: Colour can represent the space we live in or work in. Picking proper colours for a particular space is an essential part of interior design. While picking the floor or wall colours it is important to remember the objective of the space. In regards to the functionality and work being performed in a space, exciting and cheering tones should be considered.

Some generally believed (and supported by research and documentation) notions of what is the impact of different colours on young minds;

Red: Using intense red in the space draws a negative impact on the child. Children could feel themselves tense

and aggressive in rooms painted in intense red.

Brown: It is generally believed that brown colour makes the inhabitant feel warm and comfortable.

Orange: Its shades have a pretty much positive effect on the psyche. It is ideal to use in the children's spaces for the introverted children with problems in socializing. Orange physically represents self-confidence, independence and to a certain extent.

Yellow: Perceived as a joyful colour, it also affects memory, motivation and attention it is suitable for use in children's space. Calmer and more peaceful environments for children could be created by using yellow in combination with blue and green.

Green: Resembling nature, it can be used with ease in nurseries, and in spaces for children and teenagers.

Blue: It is a colour that is widely recommended for use in children's space. It can also be comfortably used with more active children due to its calming effect.

Purple: This colour family works well in areas that need to inspire creativity and design. Purple can be easily used in the preschool children that are usually involved in creative activities or learning skills.

Pink: Although pink is largely associated with feminism, simple patterns and sophisticated designs can take pink to a whole new level in interior spaces for children.

Black: This colour works best are restricted and limited highlights or borders, especially in spaces for children.

Grey: The colour grey is another neutral colour that is highly associated with elegance and style.

White: The accomplishment of white makes the room seem larger and cleaner. The colour scheme also works well for people with anxiety and hypertension.

2. FORM

Form can be described as a reference to both the internal structure and external outline, often in the shape of a three dimensional mass or volume. Some of the characteristics of form include:

Shape – the outline of the form

Size – the dimensions of the form, proportions and scale
Colour – the colour of the form will affect its visual weight

Texture – the texture of a form will affect how light is reflected or absorbed
Position – where the form is located in relation to its environment

Orientation – the position of the form in relation to the ground, compass points or the person viewing the form.

It is often said that space design is the combination of space and form. Space encircles the volume of a structure, the parts of the building we move through and experience. But space can only be created through the use of form. Form is the grouping of materials, used to give a building its shape.

Primary types of shapes and solids that define space;

Horizontal Elements - The most elemental horizontal shape used in design of spaces is the plane. When thickness is added to a base plane, rises above the ground, the edges help define a solid shape.

Vertical Elements - Vertical linear elements define the perpendicular edges of a volume of space and include things like columns. This is the most elemental form used to articulate a vertical boundary.

Enclosures - The most common typology used in space making, an enclosure with four vertical planes creates a strong spatial arrangement.

Openings - Just like enclosures define space, the same is true for openings. Doors provide entry to the room and

show the patterns of movement in it. Windows allows light to penetrate into the space and offer a visual connection with the exterior.

A number of aspects must be also considered in order to study or design form in spaces, including shape, mass / size, scale, proportion, rhythm, articulation, texture, colour, and light.

Shapes in space making : When people view shapes, a multitude of psychological aspects occur. Each shape attributes different emotions, thoughts and perceptions that create a deep impact on the viewer's brain. Importance of shapes has been felt in a child's growth too. It not only helps children identify and organize visual information, it helps them learn cognitive skills and other aspects related to reading, mathematics and understanding scientific concepts. It has been observed that children get easily attracted towards shape from an early stage of learning, with toys, objects at home etc. For example, an early step in understanding numbers and letters is to recognize their shape. Shapes also help children understand other signs and symbols and are able to make a difference at a very early age.

Learning of shapes helps children to develop skills such as comparing, observing, categorizing, and identifying different shapes. Shapes are considered an important part of design and give children advantage in many areas of learning. In today's era experimenting with different shapes combining them as well as arranging them in different permutations and combinations to create new and unique décor plans. If geometry is applied successfully to space décor, it can elevate the space ambiance from being flat and ordinary to multi-layered yet

simple and stylish. Ignoring shapes, geometry, patterns while planning space decor may result in incoherent and unsynchronized room interior.

One can use shapes in various ways to define spaces;

Curves have been associated with sensuality. Also remember that curves can help draw the eye around the room and can help make spaces with lots of angles feel more fluid - so can mix and match quite successfully if you so choose.

Angular shapes like triangles and squares, meanwhile, might be more effective if they feature them in places like workplaces. Such shapes can suggest balance, stability, professionalism and efficiency.

Triangular geometric shapes may also be put to excellent use in offices and areas where hard work happens at home, since the structure of the shape itself is suggestive of persistence, followed by goal achievement.

Polygons represent structure and strength. It would be so easy to incorporate this in your interior design ideas, since the shape can be used numerous times to create a honeycomb look - perfect whether you want to go for a natural look along a bee theme in a bedroom or perhaps want something more futuristic with a science fiction aesthetic.

IV. CREATING INTERACTIVE SPACES FOR CHILDREN

While designing spaces for children, interaction with space and its elements is an important point to remember. As Anita Rui Olds says, "From a child's perspective, everything is an interactive surface with the potential to be sculpted, painted, draped, or moulded artistically.... Their play is often a response to subtle variations in the places and sensations that surround them."

Designing the space and making arrangements in a space can have a significant impact on their learning experience. Whether designing a classroom or simply creating a corner within a home, one needs to consider how the layout encourages movement and creates a natural flow among different areas children take cues from the environment. Some of the aspects that could be considered while planning such spaces for children are;

- a. The functionality of each space, what furniture best suits each area, furnishings that can grow with children and accommodate their emerging interests.
- b. Create clearly defined areas using low shelves and other furniture but take care not to overcrowd the space. Other things can be used like hanging plants, artwork, or beaded curtains to create a visual divider between areas.
- c. Arrange quiet areas (like reading) apart from louder areas (like block play) to minimize distractions and disruptions.
- d. Create wide pathways that allow children to move freely without bumping into one another.

The pre-dominant thought in the mind of the designer should always be of how the four basic needs of children's spaces have been addressed – Movement, Control, Accomplishment and Comfort.

V. Critical concerns impacting children's spaces

We all would agree that a well-designed children's space would promote an active and healthy environment that makes them participate physically, socially and mentally. It helps them to foster themselves in their developing and learning age group. The goal is to design a space where a child gets a chance to play, explore and learn in physical space. Apart from space making — there are also some other critical factors at play here, which need a brief mention, so as to understand the topic better.

Play – Indoor and Outdoor: Outdoor play is a natural way for children of all ages to do physical activity. It's good for children's health and well-being to be physically active through play. It is well established that being active can help prevent illnesses in adulthood and is also great for mental well-being. Indoor play is not just sitting inside and playing. In fact, playing indoors may involve anything from video games to arts and crafts, as well as activities such as board games, puzzles. Children have the freedom to explore and develop their creativity in a secure and safe environment. Research suggests that children cannot develop to their maximum potential just by playing inside. The benefits of indoor play are vast - by neglecting outdoor play children also miss out on the opportunity to become familiar with nature and socialize amongst their peer group. So it is important to achieve a balance of indoor and outdoor play.

Parenting: The parenting method is also a great influencer on the physical and mental make-up of a child. Over the centuries, we have seen different ways of parenting, in different parts of the world. There is no one perfect way to do it — but one should look at the patterns of parenting we observe around us — to understand its effect on children.

Permissive parents communicate openly and usually let their kids decide for themselves, rather than giving directions. They are highly responsive, less demanding and they rarely set any rules and expectations.

Authoritative parents communicate frequently and often convey their feelings and opinions to the child in a manner that may be instructive. They help their child to become highly responsive, and set high expectations, makes them strong, able to face consequences which helps them to become independent and responsive. Of course, it is difficult to classify or segregate distinctly the way parents behave with their children — yet one must realize that this is a very important factor that determines how children act and react in life.

Neighbourhood – Urban vs Rural: It has been observed that children living in small towns and villages experience a different kind of childhood that sees them playing on rough, uneven ground, taking on multiple roles in everyday life, and sharing responsibilities with adults in domestic and public spaces in the community.

On the other hand, children growing up in metro cities experience different kinds of situations according to their age groups. They are also influenced by aspects of urban life such as nuclear family, lack of social connect, restricted space access, commute, pollution, peer pressure, etc.

Digital exposure : In an age where internet and digitization are the norm, it is easier than ever for children to stay indoors and opt for games or play time that requires no physical activity. They definitely have greater exposure to things happening anywhere in the world and this could be a real benefit in the learning process of the child, if handled properly. However, excessive screen time and physical inactivity has major impact also.

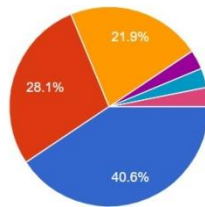
VI. SURVEY: UNDERSTANDING PARENTS' PERCEPTION AND NEEDS FOR PLAY AND LEARN SPACES

In order to better understand the subject of this study the authors conducted a survey with a range of respondents. The topic of the survey was to understand their perception and needs about children's play area and their preferences for such activities. The purpose of the survey was also to get clues regarding concerns that parents have regarding play and learning spaces for children — both in terms of physical making of such spaces and also their operations and management.

The following pie-charts give a glimpse of the range and type of respondents covered in the survey;

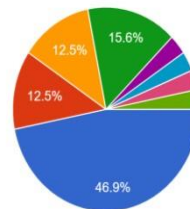
1. Father Occupation

32 responses



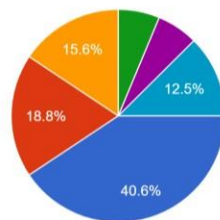
2. Mother Occupation

32 responses



3. Age of your child?

32 responses

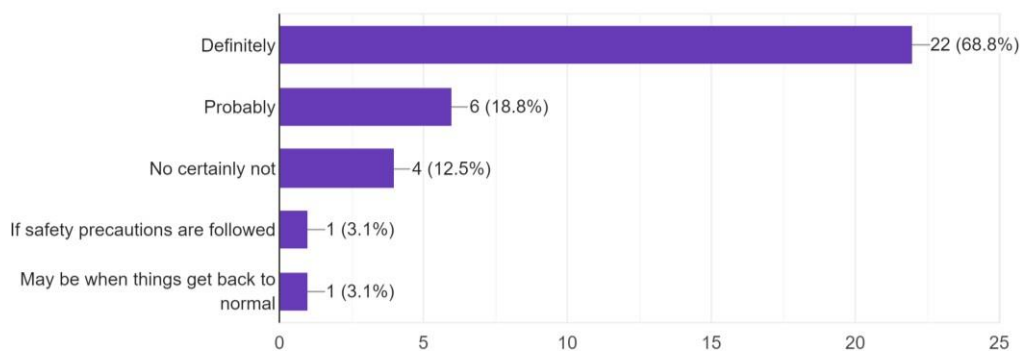


1 year
2 year
3 year
4 year
5 year
6 year

Survey questions and responses:

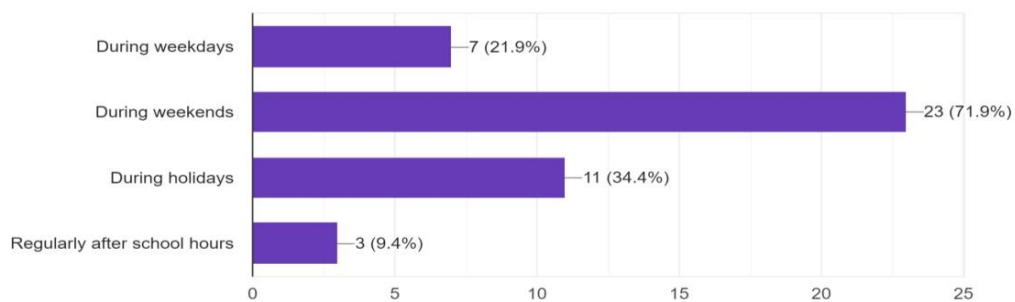
4. Would you like to take your child to a play center if one opens in or near by your town? Can more than 1.

32 responses



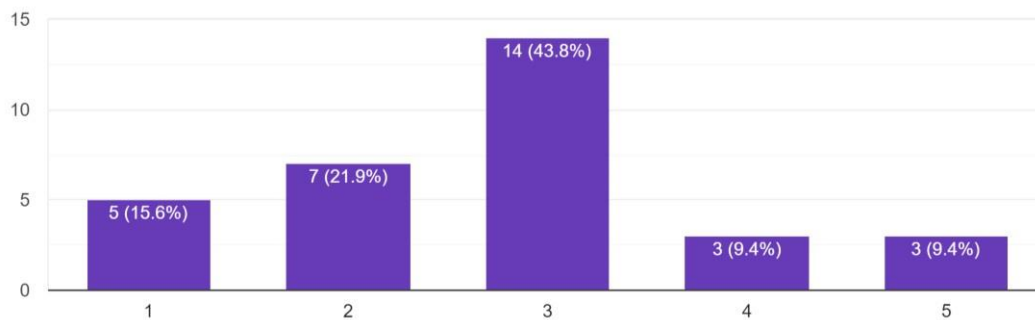
5. When would you be most likely to visit the center? Can select more than 1.

32 responses



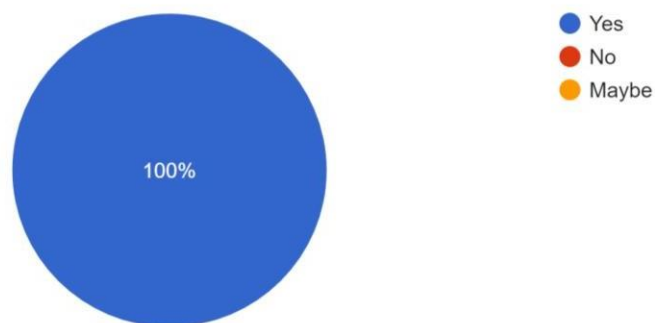
6. How often do you visit these types of center with your child? Rate this on scale of 1-5.

32 responses



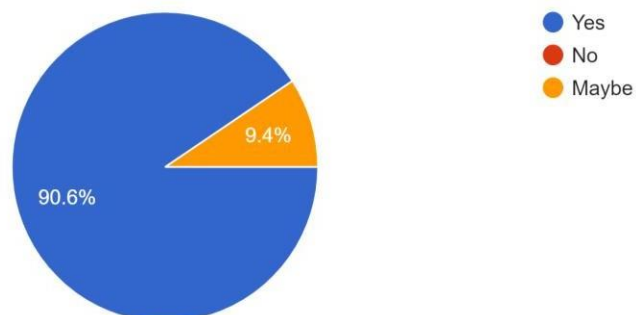
7. Would you be interested in early learning games and activities for your child?

32 responses



11. Does the play centers help in your child's mental and physical development?

32 responses



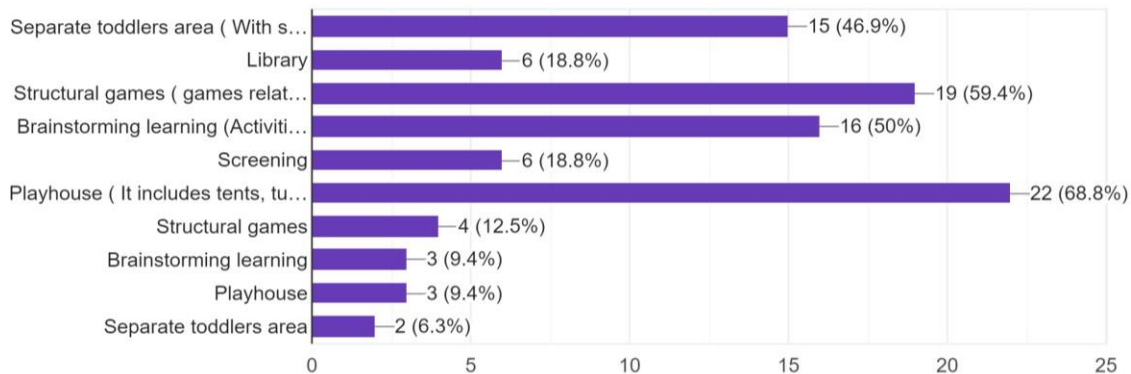
12. For how long you can send your child to such centers?

32 responses



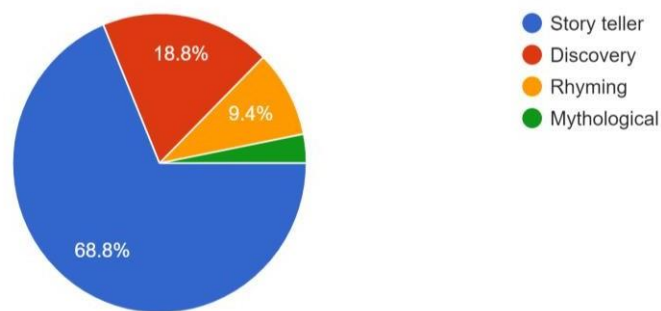
8. Which of the following features of the center make your child visit there? Can select more.

32 responses



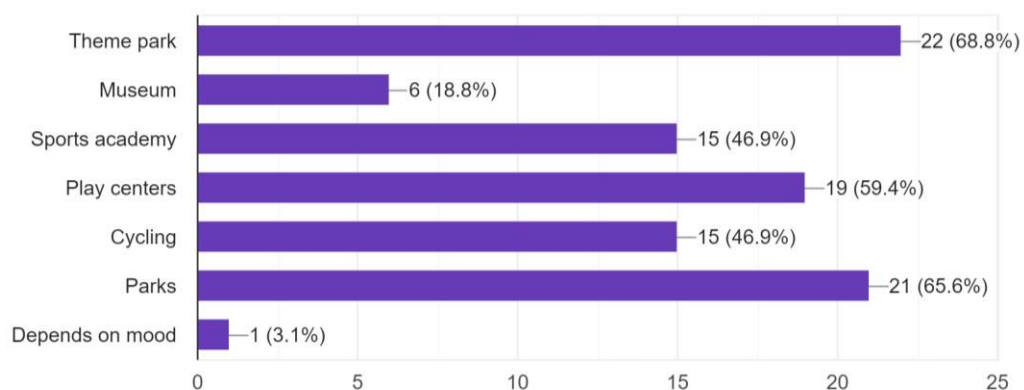
9. Which type of entertainment or show you want to be available in the center for your child?

32 responses



13. During weekends which types of places you prefer to go out with your child? Can select more.

32 responses



VII. CASE STUDIES

In order to better understand how children's spaces for play and learning are designed, this study looked at a few examples of designed play centres in different parts of the world and extracted some inferences about how those designs have utilized colour and forms.

Nubo Kindergarten, Sydney, Australia

2017, Area - 770 sqmt. Designed by – PAL Design

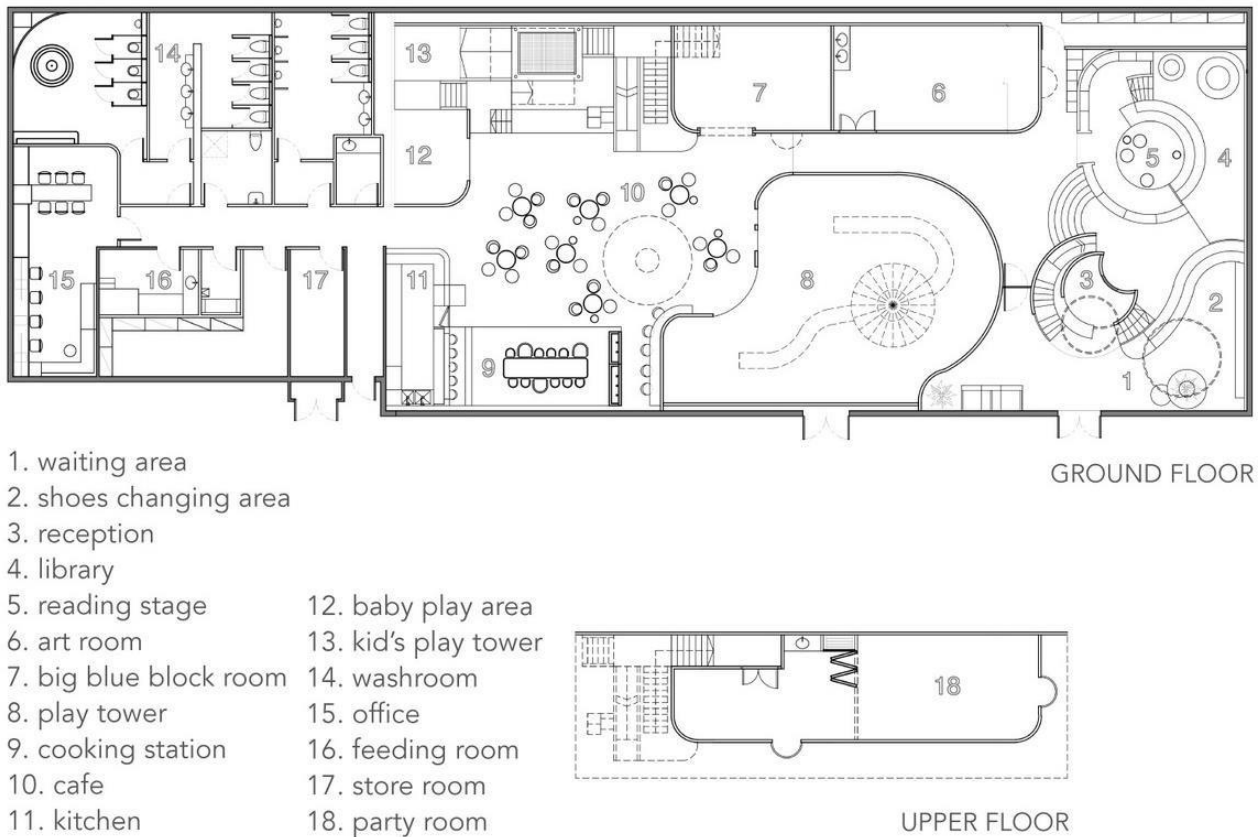


Fig.7.1.1 Plan of Nubo Kindergarten



Fig.7.1.2 Interior spaces for children's play, learning and resting activities

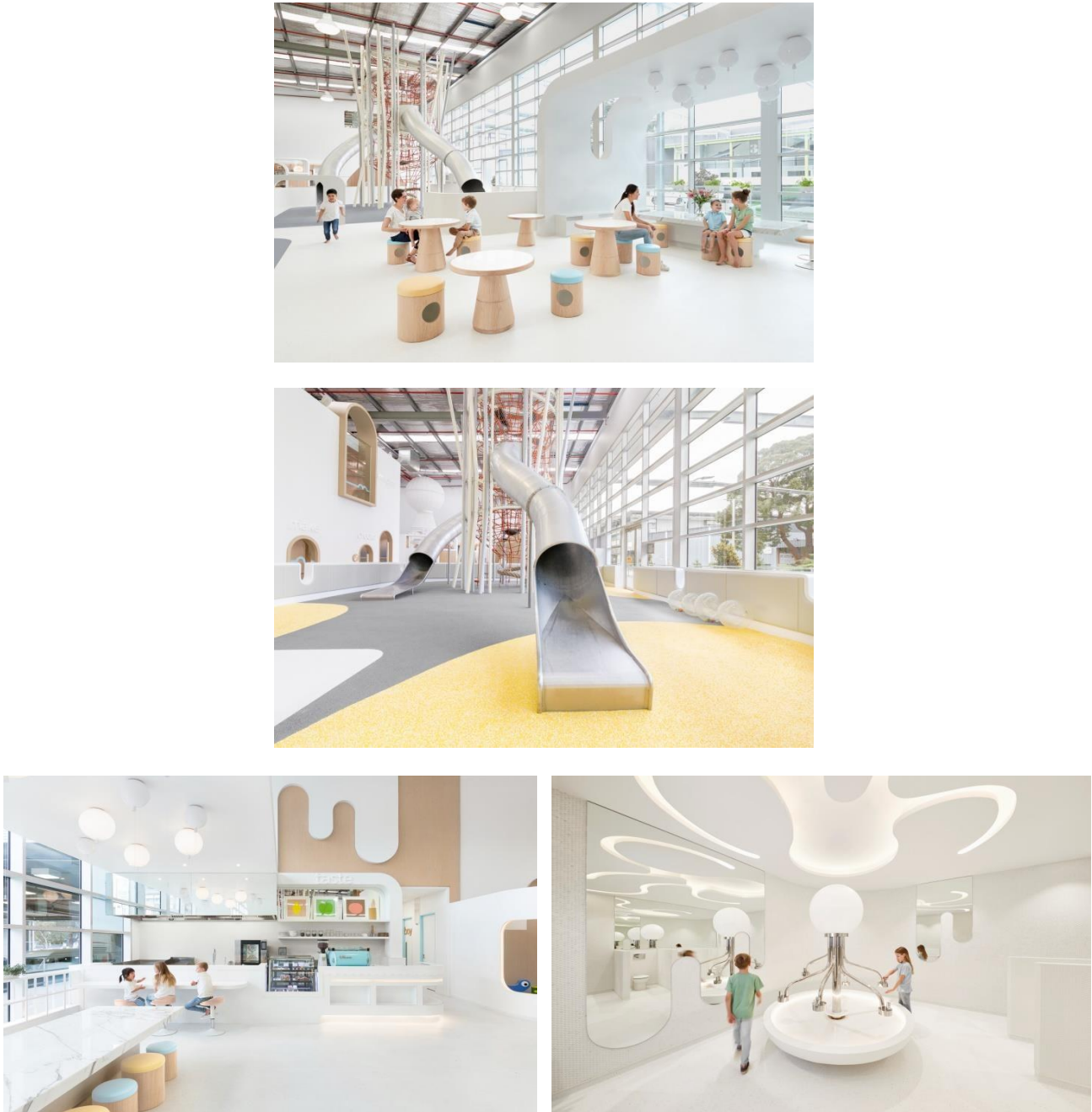


Fig.7.1.3 Interior spaces for children's play, learning and resting activities

ACTIVITIES & PLANNING: At the entrance, a slide curves around the reception counter so that children can play while adults pay. They then store their shoes in lockers with white boards for their names before charging up the stairs to the library. Children can play in the hot air balloon that floats above the stepped reading area with other alcoves providing quiet places for children to enter the imaginative world of stories. A two-storey structure is designed like a simplified castle with arched doorways sized for adults and children. Inside, children can play with materials to “make” and “create” things in the arts and crafts room, and with interlocking foam blocks and tubes to “build” things in the building block room.

Three free play areas with architectural play equipment enable children to develop their spatial awareness and coordination and to test their abilities, and in some cases, courage. Older children can climb and slide on the spaceship-like tower, and younger children can navigate the custom- designed cruise ship-like structure with a ball pit, slide, stairs, steps and trampoline. Toddlers can play in a separate but connected area with padded

nooks and ocean-themed toys.

INFERENCES ABOUT SPACE MAKING: The project focuses on developing space which builds curiosity in children to explore and play. Inclusive of different functions the play centre helps children to encourage learning, exploration, and boundless imagination.

Emphasises on the concept of „Pure Play“ to make and create, with facilities carefully designed and flexibly suited for children aged two to eight. The area allotment is accurate and simple for children to understand the space and its functionality very easily, so they can move along on their own without any supervisor. The minimalist approach to colour (white, blue, light grey and brown), low- maintenance materials (rubber, laminate and timber) and equipment and structures (just enough for children to invent their own games) have created a visually subdued environment that is overlaid with the noise and energy of children.

Plywood, laminate, MDF's, laminated aluminium, toughened glass, vinyl flooring, rubber flooring these materials have been used in designing the kindergarten. Rubber flooring is used for safety reasons where the height plays the role in areas like - Spaceship play tower, Baby play tower, reading stage. The space-ship-like tower made up of laminated aluminium might be risky for the toddlers as they might get hurt with the rods.

The space serves an adequate amount of natural light from big window panes on the ground floor. The space planning is very precise and provides a good circulation space for children to play, run, explore.

Maker-space Sungwon, South Korea

2021, Area - 200 sqmt. Designed by – GUBO

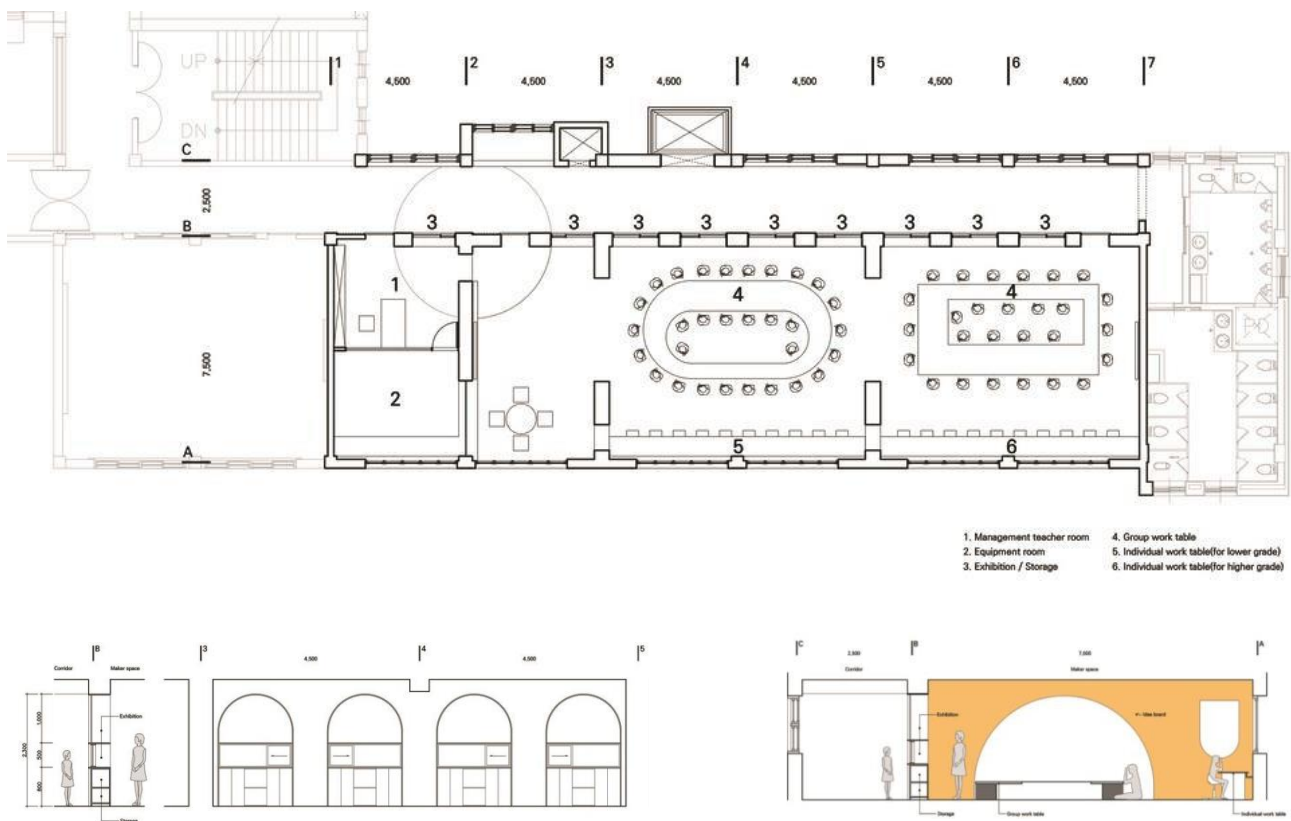


Fig.7.2.1 Plan & Sections of Maker-space Sungwon

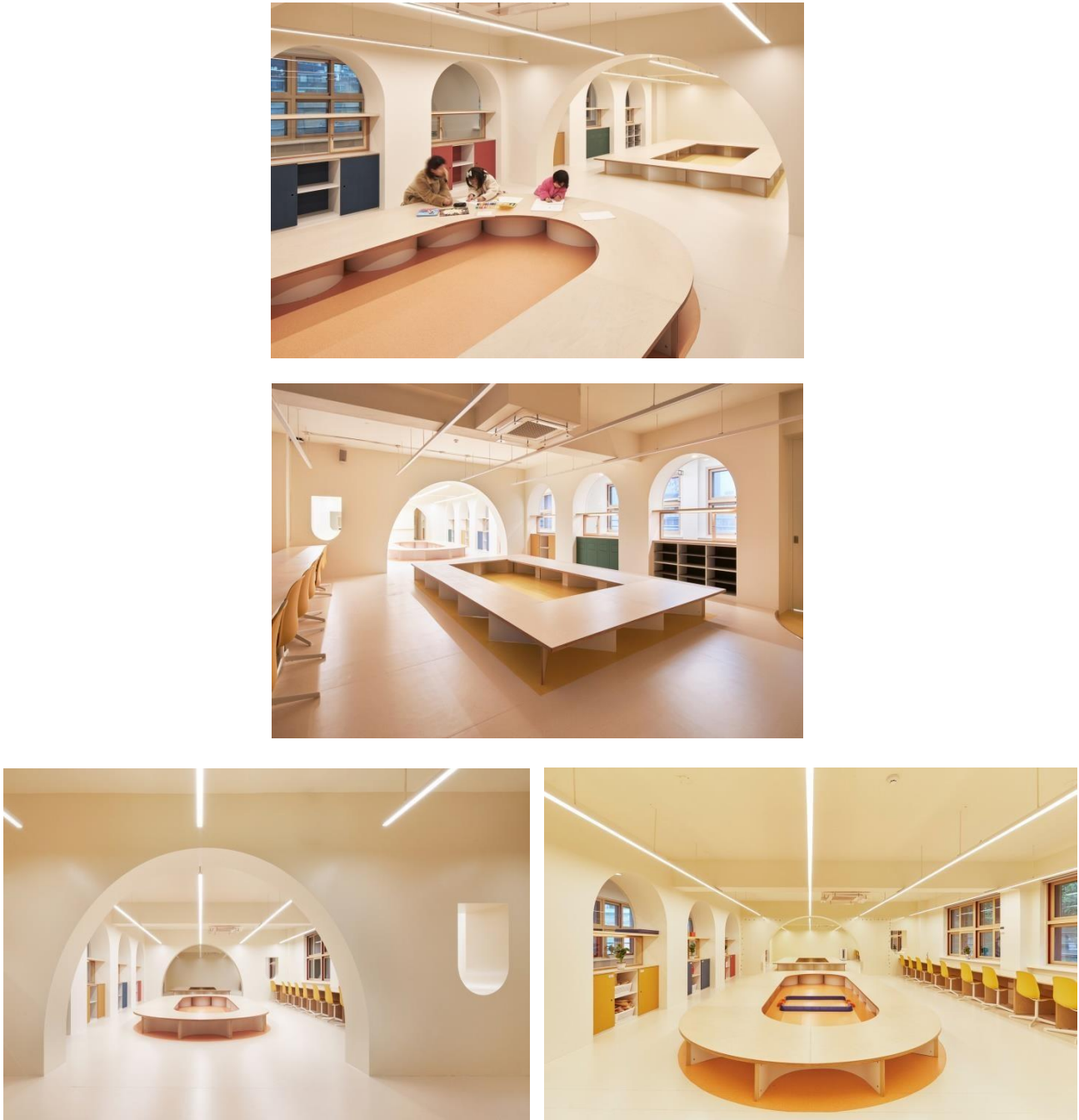


Fig.7.2.2 Interior spaces of the project

ACTIVITIES & PLANNING: Play, Learn and Make - It was a project to refurbish three empty classrooms located side by side to use as a maker-space and equipment room for students. The most fundamental goal of the maker-space should be to create a place where students could stimulate their creative thinking and allow them to do a variety of activities. The most important spatial element in the maker-space of the Sungwon Elementary School is the tables. Besides equipment and materials to support the activities of the students, they thought that tables where children can work together (or alone) comfortably should be the centre of the space.

Gathering tables - It was intended to form the centre of the maker-space by designing two large tables where up to 15 people can gather and work at the same time. The tables have an inside and an outside space and are designed to be used separately during training or production activities. The structure supporting the table has distinct morphological characteristics, (study of size, shape, structure) in which small geometric units are connected to form the structural frame.

INFERENCES ABOUT SPACE MAKING: The area division in the plan is very good. They have divided the area according to the use and need of their users. The space planning is very precise and the circulation in the entire classroom is properly maintained with good space allowing for children to walk, play and perform. The design idea is that too much equipment or tools occupying space could limit the activity space where children can freely express their creativity. The space looks very spacious with the minimal use of colours and furniture.

The arches and the geometric forms in the space give it a unique look. The space defines the importance of shapes in the built environment. The group work table in the centre of the classroom draws the attention of the users and the centre of attraction. The two group work tables were designed with the theme of round and square to have distinct geometries. Considering the scale that elementary school students can work comfortably, instead of placing chairs, they sit on the floor and move freely. The overall space looks aesthetically appealing but the windows, ceiling of the classroom could be designed well with modern styles which best fits the interior.

Kids Smile Labo Nursery, Atsugi, Japan

2021, Area - 340 sqmt. Designed by – HIBINOSEKKEI + Youji no Shiro

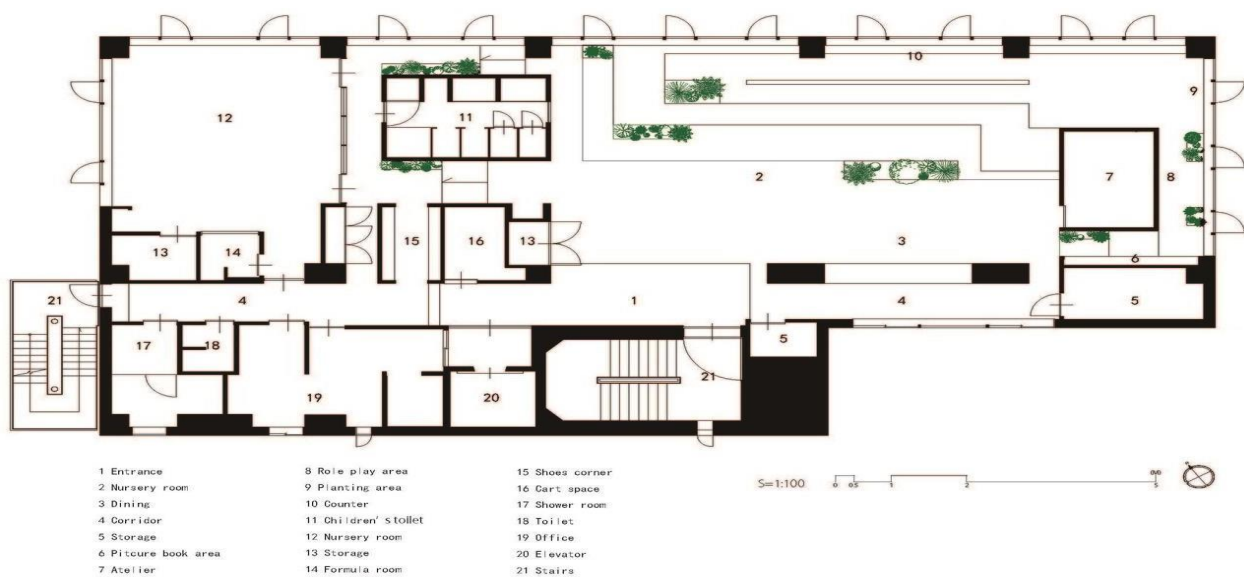
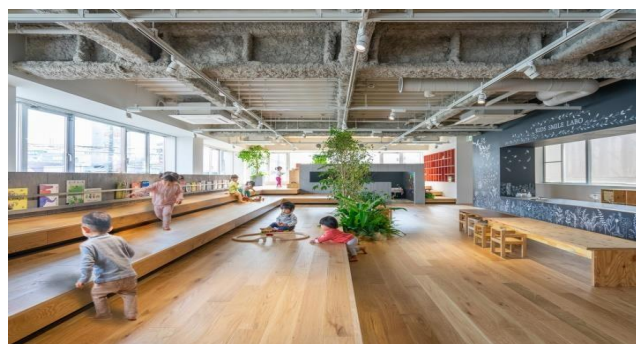


Fig.7.3.1 Plan & Sections of the project



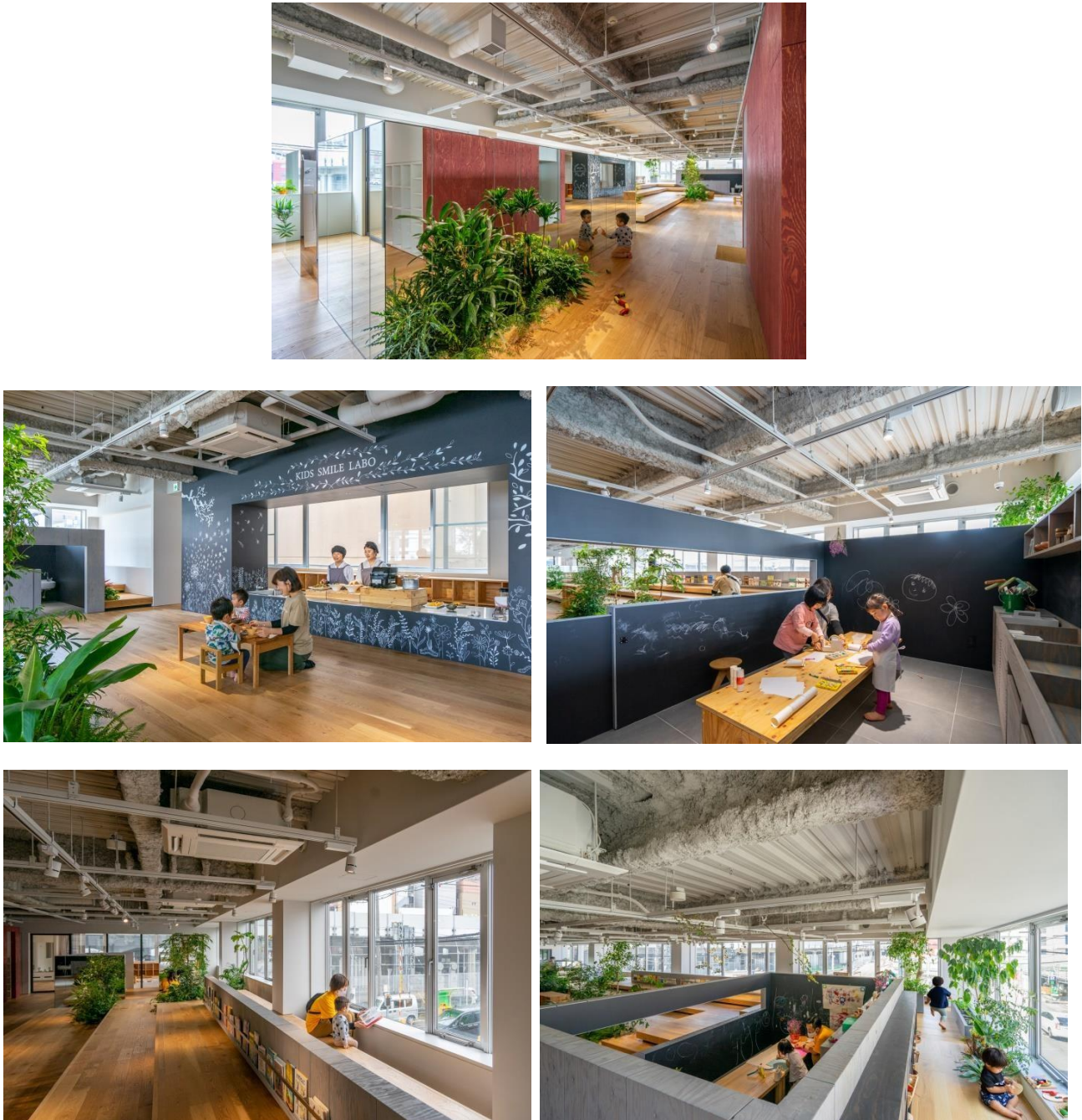


Fig.7.3.2 Spaces for play, learning, eating, resting

ACTIVITIES & PLANNING: This is a nursery on the 2nd floor of a building in Atsugi, Kanagawa. It's an architectural design office

HIBINOSEKKEI" which specializes in designing children's spaces that has designed and manages this nursery. Many elements of forests in Atsugi are taken into interior designs;

Trail Steps - There are many steps in this nursery. Even in a limited space, with steps children will take exercise.

Forest in a Building - In the steps, various kinds of plants are placed so that children can feel green inside. Also, they can notice small changes in plants in each season like sprouts and blooms.

Cave Atelier - The atelier is surrounded by low walls so that children can concentrate on drawing while

blocking adults' eyes. The inside wall is a blackboard to display children's works, draw with chalk, play with magnets, and so on.

Explorer Library - Next to the atelier, there is a bookshelf. On the bookshelf, there is an aquarium and some insect cages. Next to them, there are picture books and an encyclopaedia about creatures, so they can watch the creatures while looking up. Their interests can be connected to learning.

Secret Path - Next to the explorer library, there is a narrow path and it has a shelf of toys for the playhouse. This space faces the east and children can enjoy their imagined world while feeling the warm sunlight. Next to this space, there is a long planter so that they can touch the soil and raise up vegetables and plants.

View Counter - When climbing up to the highest step, there is a counter where people can see the city view. Children can take picture books from the bookshelf behind the counter and read them here, have lunch here, and watch trains and people outside.

Mirror Pond - The toilet space is surrounded by mirror walls. Though the toilet is in the classroom, people don't feel any oppressive feeling but can feel as if the classroom with many plants is continuous. These mirror walls can be the place for children to draw, enjoy the wonder of the mirror or create creative plays.

Forest Dining - The height of the kitchen counter is suited to children's sizes so that they can decide how much they eat and prepare their lunch by themselves. This lower counter is convenient for cooking. Also over this counter, they can communicate with chefs more easily. It stimulates children's interest in food.

INFERENCES ABOUT SPACE MAKING: The space planning is very precise as they have divided the spaces in consideration to their uses. The area proximity is sorted and easy for children to connect. They have made a proper use of the natural light coming inside with providing proper windows and ventilation. Also the artificial lighting is balanced all over the spaces. Surveillance cameras have been installed to keep an eye on children's activities and for safety measures. Materials used give a feel of raw and rustic look which best compliments the concepts and brings them close to nature. Wooden flooring, Wooden texture laminates, plywood, Neutral color schemes, Glass all these enhance the design and look of the space and connect to the nature feel. Wooden flooring is used in the space because it is anti-slippery and turns out to be a soft floor compared to tiles, stones which less hurts the child. The circulation in the nursery is properly maintained with good space allowed for people to walk. The space looks aesthetically appealing but the ceiling could be properly designed with good color, forms which makes the whole space complete and well functioned. The mirror pond gathers the attraction of the child but it seems risky to, they might get hurt.

The sill level of the windows could be appropriate as children are quick learners they can try to climb up, or may be able to open the windows.

Baby Steps, Hong Kong SAR : 2021, Area - 160 sqmt. Designed by – AtelierBlur / Georges Hung Architecte D.P.L.G. + PriestmanArchitects HK

ACTIVITIES & PLANNING: Centred around play, music and art therapy, the focus is on progressive learning while ensuring health psychological growth in every individual child. Baby Steps interior, therefore, features three main concepts:

1. **Boldness:** Enhanced simplicity, spatial depth with transparency and fluidity.
2. **Color:** Bringing the joy of color in an elegant and subtle manner to the context.
3. **Brightness:** open, spacious and inviting layout.

The entry area is essential to the initial welcome of both young children and visitors. Through the transparent glass doors, the entry is made up of a series of curved planes assembled with vertical colour and monochromatic metallic louvers.

The undulation of the vertical fins creates a subtle play of light and shadow and crafts a visual identity for Baby Steps.

The Pantry, functionally, is a layout-kitchen with multi-colour cabinetry. It evokes a sense of fun and a whimsical quality.

The colours are derived from the same colour tones as the Baby Steps logo. The pantry connects with the visual identity of the playgroup while it also playfully interacts with the overall subtle monochromatic qualities of the interior space.

The lounge is a sitting area made up of zigzag built-up platforms. Tucked neatly in its corner and against the ledge of the glass curtain wall, and without intruding onto the children's play zone, the lounge allows for a perfect viewing angle of the children both for appreciating the children's revelations to learn more, too, in the daily miracles of taking in new steps.

It is an open, luminous and inviting play area with multiple zones of activities: active, tactile, and calm.

A large feature wall with curved geometrical colourful cut-outs and built-in storage anchor the space and provide a playful yet peaceful backdrop for staging transformative play.

Behind the feature wall, there are three classrooms that align with the glass curtain wall.

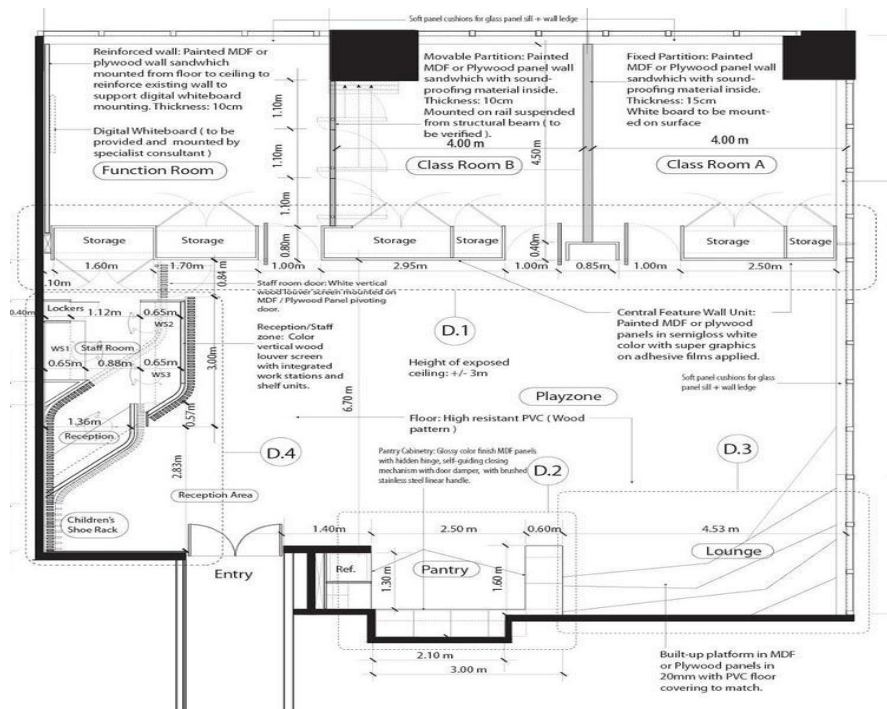


Fig.7.4.1 Plan of the project

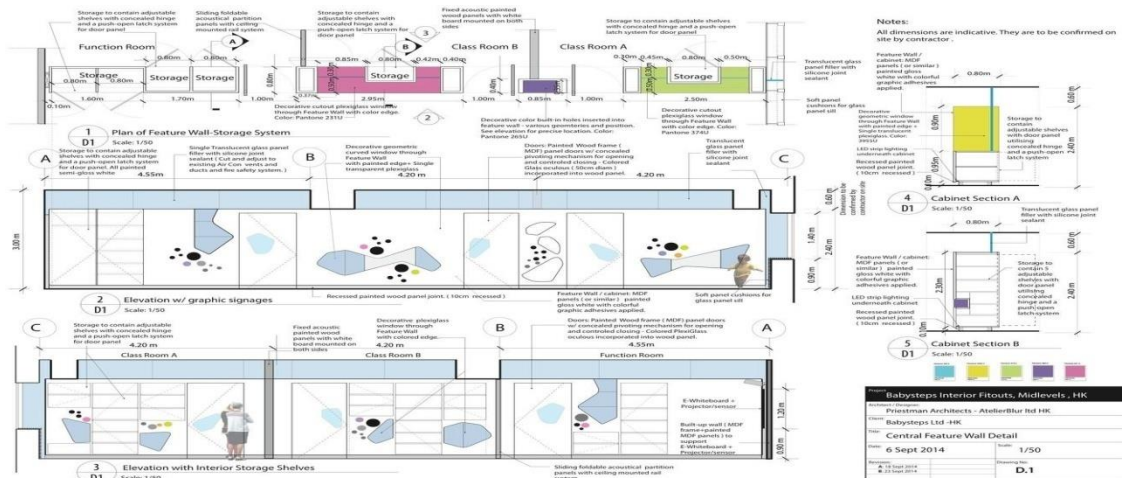


Fig.7.4.2 Interior elevations and Details



Fig.7.4.3 Photographs highlighting the use of forms and colours in the space

INFERENCES ABOUT SPACE MAKING:

The concept of the space is very unique and draws one's attention into it. The space focuses on boldness, colour, and brightness. The concept makes the space very interactive with each feature like the cut-outs in the wall, lounge, play zone, interconnected classrooms. The interior fit-out for Baby Steps is a series of crafted and specialized spaces for learning, interconnected for ease through an inviting, fluid and open space, where play and learning intermingle into one experience. The pantry and the lounge area are the two zones mutually designed for parents and teachers to interact and to enjoy each other's company. The gentle undulation unfolds itself into the reception area as well as the staff area, containing 4 workstations. The undulation of the vertical fins creates a subtle play of light and shadow and crafts a visual identity for Baby Steps. The lounge area provides a perfect viewing angle for children. It makes them see the outer on going activities. It uses playful and monochromatic colour schemes all over the space.

Baby Steps serve a good amount of natural light as well as multi task lights also lighten up the space. The overall design is exciting but the ceiling turns out to be simple without any design or relevance to the concept. So the ceiling could be well designed. Materials used were vinyl flooring, baby mat in the play zone, metallic louvers, toughened glass, MDF, laminates, plywood, PVC floor covering.

VIII. CONCLUSION

This study was aimed to identify the impact of colours and shapes in children's learning spaces. This study was intended to observe how colours and shapes play a role in designing and how it affects the child behaviour and their growth and development. The study used observations, questionnaires and other readings related to colour, forms, space making, parenting, indoor and outdoor plays and design theories, etc. By doing case studies of spaces designed for children's learning and play activities, this study tries to identify how different designers have applied ideas related to colour and form, into the making of spaces. Several pointers are quite apparent from the studied projects;

- While designing children's spaces, specific colours can influence their play behaviour and learning capacity.
- It is observed that colours blue, yellow, green, orange are widely recommended for use in children's space. It can also be comfortably used with active and vibrant children due to its calming effect and these colours make the ideal interior for such spaces. Bold colours like red, black, pink, purple could be used as highlights — in restricted quantity.
- It has also been observed that children get easily attracted towards shapes from an early stage of learning. Shapes can be considered as an important part of design and gives children an advantage in many areas of learning.

The nature of this subject is quite broad and complicated, and there are several other aspects that need to be looked at while studying children's learning and place spaces. But within the limited objectives of this study, one finds that Colour and Form in the interior space design of children's spaces can be very effective tools in the hands of an able designer.

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