

Colour psychology in kindergarten classroom

Chin Xing Thung, Hakimi Ahmad* 

School of Housing, Building and Planning, Universiti Sains Malaysia
11800 Gelugor, Penang Malaysia



ARTICLE INFO	ABSTRACT
<p><i>Article history:</i> Received June 22, 2021 Received in revised form July 12, 2021 Accepted July 31, 2021 Available online April 01, 2022</p> <p><i>Keywords:</i> Architecture Colour psychology Kindergarten classroom</p> <p>*Corresponding author: Hakimi Ahmad School of Housing, Building and Planning, Universiti Sains Malaysia Email: hakimi@usm.my ORCID: https://orcid.org/0000-0003-1954-0878</p>	<p><i>The research was conducted to explore the colour that can create a calm and peaceful environment in kindergarten classroom. Colour is the mood of a space as each colour has its own meaning. Hence, the colour used in every space need to suit with the activity done in the space. Kindergarten is among many other spaces that used colour a lot because children like colour and will be attracted by colour, especially bright colour. Kindergarten classroom is one of the spaces that preschool children stay in most of time, hence, the colour scheme required careful consideration to calm down children and let them concentrate on learning. From the previous research, it was found that researcher mainly focus on kindergarten design, kindergarten furniture design or on colour design in other interior spaces, such as restaurant, office, and hospital. Hence, the research gap for the will be the colour in the kindergarten classroom which can create a calm and peaceful environment. As there are different colour scheme for interior design, the most suitable colour scheme had identified for the kindergarten classroom to make the preschool children can calm down and pay attention in the classroom. The research concludes that the light green and light blue colour is the ideal colour for a calm and peaceful kindergarten classroom.</i></p>

Introduction

Colour has been connected to myths and legend since the ancient time in every civilization. Since 4th century B.C., Aristotle had developed the principles of colour and connected colour to nature and human until it replaced by Isaac Newton's discoveries which is the theory of colour (Hunjet and Ivančić 2018). There are thousands of colour word in the language of modern societies, nevertheless, Berlin and Kay had concluded them into eleven basic colour terms, which is black, white, red, blue, yellow, pink, brown, green, orange, grey and purple (Shamey 2020).

Colour is emotional, it can affect people moods, behaviour and even psychological wellness whether people aware of it or not (Vakili, Niakan, and Najafi 2019). Every colour

had its own meaning in a psychological aspect. Therefore, many specialists and experts in different industries had been used colour to directly affect people's decision. It is important for designers to select the correct colour scheme to match the design and let the design to meet certain people's need.

As colour can represent different mood and even changed mood of people, especially for children, colourful design used when the design target is children. Children are sensitive to colour and also associate emotion with colour, such as bright colour represent positive emotions while dark colour represent negative emotion of a child (Jonaskaite et al. 2019). Therefore, colour might be a cue for preschool children in the kindergarten, especially in the classroom. As the ambiance of the classroom might affect preschool

children by influence their emotion to calm down and pay attention on learning.

The concept of colour

Colour is important in our daily life as it will impact us psychologically and physiologically (Ghamari and Amor 2016). In 1666, Isaac Newton had discovered that visible colour is compound from the pure white light that passed through a prism (Marhalim 2013). Scientifically, colour is defined on how human's eyes and brain interpreted the wavelength of light from a surface (Sebastian 2020). Hue, saturation, and value is the three properties of all colours (Sebastian 2020).

There are variety of colours that is known, however, only three colours, red, yellow and blue are the basic of colour, it is also known as the primary colour (Sebastian 2020). The primary colour can combine or mix together to get another colour, but mixing the other colour is impossible to create the primary colour (Sebastian 2020). When the primary colour mixing together, it will create secondary colour which consist green, orange and purple, while tertiary colour is when one primary colour mix with one secondary colour (Sebastian 2020).

Colour psychology

Colour psychology is a study of human emotion and behaviour that affect by colour (Ella et al. 2018). The psychological responses to the colour happens when the colour is transmitted from eyes to the brain, the brain will release hormones according to the colour transmitted from the eyes, the hormones released will affect our mood (Vakili, Niakan, and Najafi 2019). Therefore, different colour applied in a space can evoke different emotion and mood of human (Sebastian 2020).

Different colours have different wavelength frequency, it can differently affect us. For example, in the psychological meaning, red stands for passion, love and power, while danger, anger and war are the negative meaning for red colour (Sebastian 2020). The colour red can be the focal point when it is applied to an object or a space, as it is attention grabbing (Vakili, Niakan, and Najafi 2019). Yellow colour represents joy, happiness and energy which give a sense of warm and welcoming to people, it is also the most preference colour by children (Pietromarchi 2014; Burkitt 2008; Burkitt and Sheppard 2014). While blue colour are always associate with peaceful,

calmness and tranquillity as it produces calm effect to the environment (Sebastian 2020).

Colour and indoor environment

Colour give huge impact on indoor environment. As people walk into a space, colour will be the first element that been noticed by people (Meyerhoff 2016). Apart from colour, from the architecture aspect, the most effective stimulus for people in a interior space will be the wall in the space (Ghashghaei et al. 2017). With the colour applied on the interior wall, it can greatly impact human psychologically (Ghashghaei et al. 2017).

Research shows that colour in an interior space, especially on a wall can greatly affect human emotion and behaviour. For example, a research that applied colour red onto a wall in a classroom. Vakili, Niakan, and Najafi (2019) tested seventy female high school students which randomly divided into two groups. Then, one of the classroom walls will be painted into red and another stay white as a controlled group. In the end of the study, the group of students stay in the red wall classroom become more aggressive (Vakili, Niakan, and Najafi 2019).

Another research shows that cold hues in a classroom can enhance students' memories and concentration, especially blue hue (Llinares, Higuera-Trujillo, and Serra 2021). The research shows that blue hue can greatly help students in difficult tasks and have a higher achievement in IQ test (Llinares, Higuera-Trujillo, and Serra 2021). Besides, cold hues that applied in a interior facilities in condominium lets people feel calm and relax (Ghashghaei et al. 2017).

Colour and children

Colour acts as an important feature in children's life. Children are sensitive and easily attracted by colour, especially bright and warm colour. Colour also acts as a tool for children to express their emotion. For instance, children use light colour to represent positive emotion, while dark colour as negative emotion (Jonaskaite et al. 2019). In a study, researcher tested that yellow, pink and blue associate with positive emotion while red and black are negative emotion for children (Ravishankar 2020).

Apart from that, research found that different colour in a space can also affect children's emotion (Khodakhah Jeddi 2016). For instance, medical centre that children usually fear of, the children ward at medical centre will designed

with appropriate colour to let children calm down and relax at the space (Khodakhah Jeddi 2016). According to the activity carried out in the space, different colour will used in the particular space, for instance yellow colour used at the lobby to give a sense of welcoming to children, while blue colour used in hospitalization room to let children rest well (Khodakhah Jeddi 2016).

Table 1. Summary of colour psychology, colour and indoor environment, colour and children

Colour	Psychological meaning	Environment	Children
Red	Passion; love; power	People will become aggressive	Negative emotion
Blue	Peacefull; calmness; tranquillity	Let people feel calm and relax	Positive emotion; can let children rest well
Yellow	Joy; happiness; energy	Give a sense of welcoming	Positive emotion; feel welcoming

Method

The method used in the research is the grounded theory and case study by John Creswell. Grounded theory is a research technique that enables to seek and conceptualise new theory through analysis of data (Creswell and Creswell 2018). The grounded theory started with collecting of data, analysing the data, and repeating the process (Marvasti 2018). The data was collected from review others' articles and papers (Marvasti 2018). When data was complete collected, open coding started by list down three keywords that are related to the main idea of the research (Marvasti 2018). The three keywords from the main idea of colour psychology are emotional, comfort and behaviour. Therefore, the research will about emotion, comfort, and behaviour.

The grounded theory will not focus on finding the truth of the research but observe and find out how people will reflect on the action in the future (Marvasti 2018). Hence, the result found out in the research is analysis from others' papers and articles and it is a new theory that created in the present research (Zafeiriou and Gulliford 2020). This research might help other researchers in for further research and experiments in the future.

Case study is a process, an activity, or an event that researchers will explore in depth (Creswell and Creswell 2018). In this research, there are three case studies that been explore in depth. The first case study is the colour of play spaces for children, which study about the appropriate colour applied in children's play spaces. The second case study is the impact of colours in the emotions of children in a pediatric dental clinic, which is about the bonding of colour and emotion to children. The third case study is the colour psychology in children medical ward centre, which focus on the ideal colour for a children medical ward centre.

Case studies

Impact of colour in the emotions of children in a pediatric dental clinic

This paper is to explore the connectivity of colour and emotion to children in a Pediatric dental clinic. The experiment done by asking children in the dental clinic to coloured six drawing faces, three positive emotion and three negative emotion with seven colours, including blue, red, yellow, pink, black, green, and orange. The results of the experiment is colour such as yellow, pink and blue represent positive emotion while red and black are negative emotion to children (Ravishankar 2020).

Colour in play space for children

The paper is about the problem of colour used in the play spaces of children, both indoor and outdoor. These places are design for children; therefore, it should satisfy the children's need for the space, including the selection of colour. The current play spaces are colourful and overuse of colour, which can cause overstimulate to children. The best solution is choosing a colour as dominant and can accompanied by another colour (Godyń et al. 2018).

The effect of colour psychology in children ward at medical centres

This paper is about the colour that can create a calm and stress-free environment in children ward. Different space of the medical centre requires different colours. For example, the hospitalization rooms for infants recommended mild colours, while happy and energetic colours for children and teenagers. These different colour that used in the space is to reduce the fear of the children to get treatment in the medical centre (Khodakhah Jeddi 2016).

Result and discussion

This research was carried to study about the colour that can create a calm and peaceful environment in kindergarten classroom. According to the reviewed literature, the ideal colour to create a calm and peaceful environment is blue and green colour. Study shows that cold hues in a classroom enhance memory and attention of a student (Llinares, Higuera-Trujillo, and Serra 2021). Blue hue helps students to perform in difficult tasks and have a higher achievement in IQ test (Llinares, Higuera-Trujillo, and Serra 2021). While warm hues will let students to become active (Llinares, Higuera-Trujillo, and Serra 2021).

Another research shows that children feel calm and relax with cool colour such as blue with bright spectrum in medical centre (Khodakhah Jeddi 2016). It is an ideal colour to used in places such as the hospitalization room to let children calm down and have a good rest (Khodakhah Jeddi 2016). However, the spaces need to accompanied by some bright and warm colour such as yellow or orange colour to make the room become more exciting to children (Khodakhah Jeddi 2016).

In the study about the colour in play spaces for children shows that bright colour can evoke the feeling of happiness and joy in play spaces (Godyń et al. 2018). Hence, bright colour is recommended for indoor and outdoor play spaces (Godyń et al. 2018). However, too much colour used in a play spaces might lead to overstimulate, hence, it is recommended to have one colour as the dominant colour and accompanied by other colour (Godyń et al. 2018).

Conclusion

The study explores the colour that can create a calm and peaceful environment in kindergarten classroom. The colour that is ideal to create this environment is green and blue colour. this colour can help in soothing and calm down children that is active and pay attention on the learning session in the classroom. The colour can be applied on the wall, floor, or the furniture of the classroom. Apart from that, natural element can be bringing into the classroom to create calm and peaceful environment.

While the warm colour such as yellow, red, and orange can make children become active. Hence, the warm hues can be accompanied to the blue and green colour that applied in the classroom to let the classroom become more exciting. However, the dark blue and dark green are not ideal for the classroom as it will let children feel gloom, therefore, light blue and light green, the bright colours are suitable for the classroom.

However, there are more aspects that can create a calm and peaceful environment in kindergarten classroom except from colour used. For instance, lighting, material used and even the ventilation in the interior environment. The result for this research can be useful in the future for other professionals include the design of or the research into the learning spaces.

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Author(s) contribution

Chin Xing Thung contributed to the research concepts preparation, methodologies, investigations, data analysis, visualization, articles drafting and revisions.

Hakimi Ahmad contribute to the research concepts preparation and literature reviews, data analysis, of article drafts preparation and validation.

