Creating Environments that Reduce Children's Stress

by Sony Vasandani

It has long been understood that there is a relationship between children's behaviour and the physical environment of their classroom. Now researchers have scientific evidence. They have measured the stress levels of children at home and in preschool settings, specifically cortisol levels. Cortisol is a natural hormone that our bodies secrete and it has often been referred to as the 'stress hormone.' Compared to the consistently low and healthy cortisol levels found in children in home settings, the cortisol levels of children in a child care or preschool environment increase throughout the day. It has been ruled out that the increase of the cortisol level has anything to do with the children's separation from their parents (Dettling et al., 2000). Increasingly, studies indicate that the rise is caused by environmental factors present in the school setting.

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Further, studies have shown that colour, lighting, sound and noise, temperature, and physical space (both vertical and horizontal) affect children's stress levels. This, in turn, affects their cognitive development, learning, and behaviour.

Parents and teachers are well aware of the effect of the immediate environment on a child; this fact is easily observed when teachers and other adults give children their complete and undivided attention. Let's consider different aspects of the physical environment, discuss how they affect children, and explore some practical methods to implement to make the preschool environment a more comfortable and appropriately stimulating place for young children.

Noise

Community noise exposure is a well-established irritant (Evans, 2005). And studies have found a relationship between noise and both reading deficits and cognition. The noise being referred to here is not deafening noises like those from an aeroplane, nor to children who are especially sensitive to sound. Rather, we are interested in noises in the acoustics in the preschool classroom: background noise and reverberation. Background noise can have a number of sources: children running around the classroom or a lawn mower in the school yard. Reverberation, on the other hand, depends greatly on the shape and material properties of classrooms, which can prolong noise in some spaces more than in others. Each of these properties, background noise and reverberation, has negative effects, such as:

- inability to hear the teacher.
- hearing loss in one ear.
- temporary hearing loss (build up of fluid in the middle ear).
- speech and language delays.
- low attention span.
- low motivation.
- irritation.
- fatigue.

Here's what you can do:

There are a number of simple ways to maintain healthy room acoustics. Of course, establishing ground rules, like speaking in a normal volume and teaching children how to get your attention by tapping you on your shoulder (instead of shouting across the room) are paramount in all circumstances. Other strategies include:

- using curtains to help dampen noise.
- covering walls with corkboard, banners, posters, and children's artwork.
- arranging furniture on an angle.
- repairing noisy electronic fixtures.
- keeping doors and windows closed when there are loud outside noises.
- placing latex-free soft tips on the bottoms of chairs and tables.

Crowding

Crowding increases the noise level in the classroom and also deprives children of the personal space they need. A number of studies show that children withdraw socially in crowded conditions (Liddell & Kruger, 1989). Withdrawal is even more marked in children with autism (Hutt & Vaizy, 1966). Studies also show that in crowded conditions boys tend to become more aggressive than do girls (Evans, 2006). In addition to inhibited social interaction, research has revealed a relationship between crowding and both motivation levels and cognitive processing (Evans, 2006).

What you can do:

While there is not much that you can do about improving student-teacher ratios and class size, you can:

- conduct small group activities in different corners of the classroom.
- rotate children between indoor and outdoor play.
- design a private space dedicated to 'quiet time' for children to use when the classroom is overwhelming to them. (It is important to note here that this provision is not effective if it is adjacent to a popular [read, *loud*] activity such as block building.)
- distribute the children throughout the space during events, activities, and nap times.

You will notice that these strategies help children relax and increase their motivation. These methods also may help develop better social skills.

Colour

Colours play an important role in creating the appearance of more or less space, in making a room attractive, in absorbing or reflecting light, and, most importantly, in evoking different moods. Research shows that colours have an effect on children's cooperative behaviour in the classroom (Read, Sugawara & Brandt, 1999). Wall colour also has a significant effect on children's moods, behaviour, and learning. The following should be considered with regard to classroom colours:

- Brightly-coloured furniture has been shown to be over-stimulating.
- Darker colours can create the illusion of a room being smaller than it actually is.
- If the room is long and narrow, you can make the distant wall appear nearer by painting it a darker colour. The same effect can be used to make high ceilings appear lower.

What you can do:

- Experts recommend that neutral colours be used on furniture because these create natural ambiance.
- Light shades of brown are good; these colours emphasize the toys, materials, and inhabitants of the space.
- Although white is a neutral colour, it reflects light and can be very hard on the eyes.
- The colours blue-green and violet induce relaxation and are, therefore, good for classrooms with active children.
- Blue has a calming effect and for this reason is not recommended for the dining area as it inhibits children's appetites, causing them to eat less.
- 'Sunshine' yellow stimulates brain activity and is recommended for learning areas. However, bold colours may be distracting, especially with younger learners.
- Red has been shown to increase heart rate and activity level.

Temperature

Children have a difficult time focusing their attention if the temperature of the classroom is uncomfortable. The optimal temperature for any learning environment is between 18-22° Celsius (68-70° Fahrenheit). You may need to vary the temperature, depending on outdoor conditions. Try the following:

- On a warm sunny day, set the indoor temperature to 18° Celsius (68° F).
- On a cold cloudy day, set it to 20° Celsius (70° F).

- Set the temperature to 22° Celsius (72° F) during nap times.

Lighting

Natural light is an important factor in the overall health of children. Daylight is known to destroy mould and bacteria and provide Vitamin D. In addition, it contributes to positive mood and helps connect children to the outside world. However, rarely are we lucky enough to have a classroom that can rely exclusively on natural light.

Currently, there is an overemphasis on increasing brightness in children's classrooms. In a study conducted in the United Kingdom involving 90 classrooms, 84 percent of classrooms were excessively lit, meaning that luminance was at a level uncomfortable for the eyes (Winterbottom & Wilkins, 2008). Unfortunately, it is rarely possible to reduce brightness created by classroom design and building infrastructure. Features like windows and other shiny surfaces can reflect light and cause bright spots throughout the classroom. Too much lighting can cause overstimulation and distraction, while dim lighting can cause headaches.

What you can do:

- Avoid fluorescent lamps.
- Avoid the tube lights that are commonly used in shopping centres and offices. These are low-frequency lamps with high colour temperatures (6000k) and vary greatly in output.
- Use lamps with a colour temperature of 3500k.
- Install Venetian or other types of blinds to control the amount of light entering the room.

In observing the children in your class, you will see that some children are more sensitive to light than are others. Help children find areas in the classroom to work and play accordingly.

Physical Space

A well-planned, attractively arranged classroom environment is important for many reasons, including the fact that it helps foster positive feelings and associations in children that they will carry with them through a lifetime of learning. The layout of the preschool environment will, of course, derive from your personal teaching philosophy and how you plan to support children's learning and development.

It is a common practice in the planning of preschool classrooms to designate spaces for different activities. Depending on the dynamics and learning styles of the children, it is the teacher's responsibility to organise space to meet multiple, often competing, goals. Teachers want to encourage socialisation and interaction with materials, while being attentive to children's need for space (for example, arranging space to minimize crowding that may occur if two popular learning centres are placed side by side). The furniture layout also may encourage or discourage a child's movement in the room, affecting their social and cooperative behaviour.

Most research on the organization of the physical space has focused on how the horizontal space of the classroom affects children's behaviour. However, more recent studies have shown how room height affects cooperative behaviour. According to Gibson (1986), cooperative behaviour increases in preschool settings with differentiated ceiling space; this also makes the classroom more aesthetically pleasing to the children and more conducive to their learning.

What you can do:

There are a few inexpensive ways to have differentiated ceilings in the classroom:

- Place a tent in the reading corner and some soft cushions to add coziness.
- Attach a fishnet to the ceiling and enclose it around an area (perhaps the art or the dramatic play area).
- Hang children's work from the ceiling in designated areas.

In Summary

Incorporating some of these ideas and creating the best classroom environment you can for children, mixing a variety of spaces such as boundary heights, using different floor textures, or using different sources of light will enhance a sense of comfort in children. Being mindful of the amount of stimulation the physical environment provides, Weinstein (1987) believes that children should be exposed to environments that are bright as well as dim, small and cosy as well as large and open, and noisy as well as quiet, for their sensory stimulation. This allows children to make sense of the world they live in.

An aesthetically-pleasing environment helps children to feel secure and relaxed, reducing stress levels to enable their healthy holistic development and the development of positive behaviours that we value, such as cooperation and persistence.

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