Neuro-Education in the Early Childhood Classroom

By Catherine Erpen

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Early Childhood classrooms can brim with excitement, intrigue, curiosity and joy! However, maintaining such an atmosphere on a day-to-day basis can be a challenge. Developing an understanding of how children’s brains work, and how children learn best helps to foster an appropriate classroom setting for student achievement. The following principles, gleaned from the plethora of research into how our brain’s best work; have helped me to create an incredibly supportive learning environment for our youngest learners. I trust there are some ideas for you to take and implement. Best wishes!

My Top 5 Tips

1. **Keep your students active.** It is now understood that regular short bursts of physical activity stimulate the brain by increasing blood flow (which provides oxygen and nutrients for individual neurons), increasing production of a hormone that enhances brain function, producing endorphins for feelings of well being, and supporting the production of new brain cells (Jensen, 2008; Kleim, 2011). It keeps kids alert, makes them feel energized and has a positive impact on student learning (Greenfield, 2004). Regular breaks, about every 20 minutes or so, from seat-based activities and tasks enable students to exercise their physical bodies as well as providing social interactions and time to use their naturally curious minds to explore their environment. Tried and tested activities such as floor puzzles, outdoor chalk-play, blocks, and shapes allow students time to process and engage in alternative but equally important motor activities. In my experience, incorporating stretching activities, movements whereby students’ arms and legs cross their centre lines, and dancing to energetic music or action songs in my daily routines means that my students are more attentive and engaged. Depending on such factors as weather, time of day and energy levels of the students, I also add a few randomly scheduled trips outdoors utilizing the both outdoor environment through skipping, hopping, and various team games as well as visits to the purpose built play areas. I find that this helps students develop stronger relationships with one another as they learn to develop their social skills.

2. **Promote healthy eating and drinking habits.** Experienced teachers see the effects of dehydration in young children’s focus of attention and behaviour. Now, thanks to brain research, we are better placed to explain what is happening. The human brain dehydrates quickly, especially in active children. Drinking water aids digestion, increases the oxygen-carrying capacity of the blood, and helps maintain cellular health (Society for Neuroscience, The Neural Regulation of Thirst, 2012). This may seem obvious, and it actually is, but how well do you implement this in your classroom and to what extent do you work to gain parental support? I keep students water bottle in the classroom and actively remind students to drink. We have ‘Water Guidelines’ such as:
   1. Only clear and fresh water
   2. Water bottles are for drinking from; they are not toys to be played with
   3. If condensation occurs, water bottles are placed on tissues
   4. Bathroom breaks are for recess and lunch except in emergencies
   5. Drink when you are thirsty, not just for the sake of it
Drinking water is a basic human need. It does not make us smarter and drinking too much water can be quite dangerous to our health. But a lack of water, especially for young children increases their stress hormones (cortisol) and increases responses to novelty (overreactions) leading to fuzzy thinking and unpredictable behaviour.

Diet impacts learning, memory and focus of attention in young children \( (Jensen, The Great Memory Book, 1999) \). Beyond drinking fresh water and controlling their sugar, salt and fat intakes, young children can benefit from 2 or 3 snack breaks while at school. Fruit or vegetable products should form an important part of a child’s day. These foods are exactly what young children need to maintain strong energy levels and healthy brains. Equally important, teachers should model this approach and make healthy choices too!

Regular grazing in classrooms is to be avoided. It is unnecessary, places our dental hygiene at risk and creates messy classroom with health risks. Educate children and parents (wherever necessary) about the benefits of a healthy eating and drinking. Monitor children’s lunches and ensure they are receiving adequate and proper protein, carbohydrates, and memory boosting foods \( (Joseph, Food for Thought, 2009) \).

### Change the classroom environment regularly
This includes wall displays, role-play areas, and even classroom furniture. Be just a little creative with the organization of your classroom and you will find it inspires your students to use their imaginations more fully. No classroom is too small for this task. Brain environments researcher and writer Eric Jensen \( (2008) \) suggests that teachers enrich the classroom environment through contrasting it as much as possible with students’ daily experiences. The picture (right) shows an Under Water role-play area, which enabled students to interact with some of the concepts being explored whilst using relevant vocabulary in a context that was meaningful to them – play! More recently, through exploring living and non-living things I surprised the students by creating a forest in our classroom. The students loved this idea but took it one step further and asked if we could have garden centre in the classroom too. Of course I agreed and in the picture (left) you can see students using soil and preparing pots for planting seeds. Inquiry based learning experiences in simulated settings creates new challenges for students that can enhance neural connections \( (Duman, 2010) \)

### Surprise your children at least once a day!
Experienced teachers can attest to the impact of novelty on student engagement. While consistency in the classroom, particularly in terms of expectations and general classroom routines and procedures, is important, finding opportunities to surprise your students through active participation in an unusual activity or allowing them to view a new resource can promote increased student learning. What we now know about the brain is that in a rich and stimulating environment neurogenesis is possible – this means that the human brain is capable of growing new neurons \( (Eriksson et al, 1998) \). In order to create the ‘enrichment effect’ \( (Jensen, 2008) \) a number of aspects must be considered - novelty, challenge, meaningfulness and time. Surprising your students to create this new and yet challenging effect could take any number of forms. Essentially, it involves the creation of a more multisensory and sometimes mobile environment. I
have tackled this in a number of ways including adding music, aromas, altering the classroom environment in small (and large) ways, creating interactive display areas, going on outdoor walks or visiting other classrooms, and inserting meaningful activities that really capture students interest. During the past few months I have surprised students by inserting cookery spots into morning activities making meals such as green eggs and ham, fraction fruit salads and rainbow cakes, all of which had meaningful connections to our Units of Study!

Connect novel ideas to prior learning or experiences and you are really maximizing the possibility of your students’ brains developing greater neural networks and as such achieving deeper and more meaningful learning.

Give your students ownership of their environment. Developing effective classroom management strategies and maintaining a well run classroom environment can be quite a challenge for teachers. As unusual as it may sound, increasing students control over their classroom environment, making them more responsible for maintaining a well organized classroom and becoming a greater facilitator of student learning experiences rather than a classroom manager, can actually support a more comfortable, calmer and positive learning environment for all. There are so many ways that you can accomplish this and teachers should be creative and choose strategies that are most appropriate for their given situation. Some strategies that I have tried and found useful are:

1. Encouraging students to become involved the design of the classroom environment. In asking them where they think resources should be housed I have had some insightful feedback. I found that it also promotes a greater sense of ownership by the children within the classroom.

2. Work without a desk! It may quite seem a challenge but I found that removing the teacher desk from the classroom was a positive experience. For an improved environment for students, I needed additional space - removing the desk created the space required! Too often we can think of classrooms as belonging to the teachers who utilize them. When we try to focus on the room as belonging to the students, we can be even more creative because all needs are student centred.

3. Young children are eager to please and love to be given important jobs to do. As we let go of the reigns and offer greater freedom, children will surprise us by demonstrating just how responsible they can be. When we do everything for them, we remove opportunities for them to learn and grow. Let children make mistakes; let children make a mess; these are great learning opportunities! I have real rice and pasta in the kitchen role-play areas. It’s definitely messy but I have found that the children develop roles much more fully while learning good fine motor skills.

Be the inspiration you would love to see in the children you teach.
Enjoy the journey of shared learning.