

PRINCIPAL SABBATICAL REPORT

**Brain-based
Teaching
and Learning**

Catherine Ryan
St Ignatius Catholic School
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Acknowledgements

I wish to acknowledge the board, staff and school community of St Ignatius Catholic School for supporting my application and time on sabbatical. My thanks to educators who willingly took the time to share their practice and experiences with me, and who show such great care and dedication to the children who enter their school gates each day.

Executive Summary

The time on sabbatical to refresh and recharge has been invaluable. The opportunity to further develop my understanding and knowledge of the research underpinning brain-based education I hope will enhance and strengthen our desire at St Ignatius to become a school “with the brain in mind.”

Of the schools I visited only a small number were explicitly making decisions about learning and teaching linked to current brain research. Of the others visited many of their practices and strategies support brain-compatible education.

Therefore for the purpose of this report I have included all those practices and strategies being implemented by schools that can be identified as having a brain-based connection.

The area of inquiry “*How are educational leaders using their knowledge of research to enable conversations with other educators?*” has not been reported on mainly because those investigating brain based education were still at the beginning of their learning and knowledge of the relevant research and conversations were informal.

Purpose

The purpose of my sabbatical was firstly to investigate the extent to which schools are connecting advances in cognitive neuroscience to support and enhance learning of students, staff and community.

Secondly it was an opportunity for professional reading and reflection on the refinement and development of the culture of learning through a critical, creative and caring thinking curriculum already begun at St Ignatius school.

Rationale and Background Information

The Board of Trustees at St Ignatius view their staff as the schools most important asset and strongly support staff learning and growth through professional development. As a result we have had many valuable opportunities to learn from education experts such as Lane Clarke, Guy Claxton, Jenny Mosley, and Eric Jensen to name a few.

It was at one of these opportunities that we were first challenged to consider how and why we make the decisions we do about the delivery of learning at our school. Lane Clarke's question, "What do you know and understand about your learners most important learning tool - their brain?" began our journey on becoming a school "with the brain in mind." We set out on the path to learn more about how the brain grows, develops and learns in order to support our children in becoming successful learners for their future.

Methodology

- Reading
- Contact with schools
- Interview key staff around areas of inquiry
- Collate information and write up findings
- Share final report

Findings

What evidence is there that cognitive neuroscience research can help educators?

"During the last two decades, research in the neurosciences has revealed new understandings about how the brain grows, develops and learns. This information has important implications for what educators do in schools and classrooms."

(The Leadership Brain, David A. Sousa)

From this growing body of knowledge and understanding an approach to learning called "brain-based" or "brain-compatible" learning has developed.

So what is brain-based or brain-compatible learning?

In his book "The Leadership Brain" David A. Sousa describes it in the following way:

*"Brain compatible curriculum and brain compatible instruction are **not** programmes neatly packaged in kits that can be distributed conveniently throughout the school. **Rather, they represent a frame of mind whereby***

the educator recognises that new information is being revealed periodically about how the brain learns, and that this knowledge may translate into new initiatives and teaching strategies that can help students reach higher levels of achievement.

Eric Jensen states that:

Brain-based education is the “engagement of strategies based on principles derived from an understanding of the brain.”

(A Fresh Look at Brain-Based Education)

He argues that it would be unwise for educators to base decisions on one science alone.

“...today we know that brain-based learning cannot be founded on neuroscience; we have learned that it requires a multidisciplinary approach.”

(A Fresh Look at Brain-Based Education)

This multidisciplinary approach includes sciences such as cognitive science, sociology, philosophy, education, technology, sports psychology, creativity research, and physics.

Using a multidisciplinary approach Renate Nummela Caine and Geoffrey Caine developed the following list of twelve brain/mind learning principles.

1. The brain is a complex adaptive system.
2. The brain is a social brain.
3. The search for meaning is innate.
4. The search for meaning occurs through patterning.
5. Emotions are critical to patterning.
6. Every brain simultaneously perceives and creates parts and wholes.
7. Learning involves both focused attention and peripheral attention.
8. Learning always involves conscious and unconscious processes.
9. We have at least two ways of organising memory.
10. Learning is developmental.
11. Complex learning is enhanced by challenge and inhibited by threat.
12. Every brain is uniquely organized.

Caine R.N. and Caine G. (1997)

Caine and Caine support Sousa and Jensen in that they do not prescribe these as a package but rather guidelines and a framework for teaching and learning. They also acknowledge that this list is not conclusive but open to change as we learn more about the brain.

From their findings they also identified 3 understandings of the conditions needed to maximise this process:

1. An optimal state of mind that we call **relaxed alertness**, consisting of low threat and high challenge.
2. The **orchestrated immersion** of the learner in multiple, complex, authentic experience.
3. The regular, **active processing** of experience as the basis for making meaning.

Caine R.N. and Caine G. (1997)

Research related to the brain is still growing but the evidence to date suggests it has much to offer educators not as a “one-stop shop” but as an insight into how learners learn and ways in which we can engage in brain-based learning practices to enhance the learning process.

How are schools connecting brain research to

– curriculum development

- Recognition of the stages of learning and brain maturation
- Designing learning around contexts that are purposeful and relevant for the learner
- Integrated, connected and differentiated curriculum
- Development of learning attributes e.g. Building Learning Power – Guy Claxton, Habits of Mind – Art Costa
- Developing the language of learning
- Understanding of learning styles/smartness
- Explicit teaching of thinking skills/strategies
- Inquiry learning models
- Questioning techniques
- Mastery learning
- Opportunity to practise learning
- Co-operative learning
- Development of programmes that promote emotional and social well-being e.g. Skills for Growing, Quality Circle Time, the Emotional Rooms, targeting children to build their emotional intelligence, Life Education

– assessment

- Feedback and feedforward
- Learners monitoring their own learning
- Development of learning portfolios that show growth over time
- Criterion-based tasks
- Rubrics
- Assessment that evaluates how the learner applies their understanding/knowledge in new situations

– and staff development

- Induction programmes
- Staff lead workshops
- Professional learning groups
- Coaching, mentoring, buddying of teachers
- Links to appraisal
- Attending conferences with a brain-based learning focus
- Engaging brain-based learning experts to lead professional development

Are teachers using strategies based on the science of how our brain works in their teaching practice and curriculum delivery?

Ways in which teachers are using brain-compatible strategies include:

- Movement to refocus and reenergise students at intervals during learning times. For example fitness activities, energisers, movement to music, changing seating arrangement, moving around collecting information
- Rethinking the organisation of the school day around compatible lengths of learning times for optimum engagement
- Music to promote learning states
- Nutrition – Brain foods encouraged and the introduction of brain snack times to ensure that children have the opportunity to eat at more regular intervals as required by their brains.
- Hydration – Learners have ready access to water and are encouraged to drink during the day
- Brain Gym
- Visualisation
- Learning about functions of the brain, brain parts and care
- Redesigning homework e.g. Ian Lillico's "Homework Grid" which encourages a more holistic approach to learning at home

Do professional development programmes include regular review of new information on how the brain works?

In addition to the professional development already noted other strategies schools use to keep up to date include:

- Display boards of brain-based learning strategies and tips
- Structures in staff meetings
- Up to date resources
- Subscriptions to journals such as 'Scientific American Mind'
- Focus on areas such as boys and brains

What ways are schools engaging with their communities to inform them of current discoveries in neuroscience and the impact on learners and learning?

- Newsletter communication e.g. "Parenting with the Brain in Mind" newsletters from John Joseph of Education Focus, Australia
- Running parent education meetings with expert speakers
- Reporting to Board of Trustees
- Inviting parents into classrooms to share learning with their children
- Sharing information as part of parent meetings – parents new to the school, beginning of the year whole school meetings
- Learning with their children through Homework Grid activities
- Community assemblies

Implications and Conclusion

From these investigations it appears that schools are engaging in strategies that support brain-compatible learning but the many of them do not attribute them as “*based on principles derived from an understanding of the brain.*”

Schools that are developing brain-based education struggle with things such as sustainability, leadership when the “brain lovers” move on, buy in from staff to see it as practice to be embedded rather than another add-on. This highlights the benefit of ongoing robust professional development for all members of the staff, finding innovative ways to keep staff abreast of new learning about the brain, and networking with other schools “with the brain in mind.”

Those educators who are pursuing brain learning were energised and motivated by the changes they were making in their practice.. Many of the children who had been learning about their brain were able to talk about their learning styles/smartness and how they could “grow their brain.” Knowing about the physiology of the brain is a start but an understanding and appreciation that the brain is central to all we do at school is crucial.

When considering the research, the areas of emotional and social intelligence call for priority as influences on students’ engagement and success at school.

Eric Jensen suggests that the best place to start is with ourselves as educators. We can be role models by showing our colleagues and students brain-based principles in action. We might learn more about our own preferred learning styles/smartness, or plan meetings with the brain in mind for example.

From reading and reflecting on my own school, some areas for us to consider are the development of the school’s physical learning environments, ongoing review of brain-based practices already in place, ensuring that staff new to the school are given the professional development they need and confirming that the decisions in curriculum and assessment design we make are connected to current research about how the brain learns best.

References

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