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Council**

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Comhairle Siorrachd  
Chlach Mhanann

## Clackmannanshire Education Service



### ***'BOOSTING BRAINS, BOOSTING LEARNING'***

***A BRIEFING TO SUPPORT EDUCATOR UNDERSTANDING OF THE  
'READINESS FOR LEARNING' (R4L)  
APPROACH***



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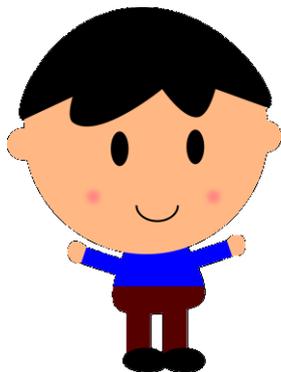
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## 1. OVERVIEW

*The Readiness for Learning (R4L) Approach is intended to support all children and young people, as everyone experiences Adverse Childhood Experiences (ACEs) or stressors at some point in their education. How the brain manages stress is a normal biological process and we all need to feel safe at these most challenging times in our development.*

*The R4L Approach is based on helping all children and young people to regulate – or ‘manage’ – their brains at times of stress to help them feel safe, settled and ‘ready to learn’. The approach is about using the best practice from **Attachment Theory, Nurture Principles, Trauma-Informed Approaches and Neurosequential Model** to help children and young people become the best learners they can be – the key task of all educators.*

*The R4L Approach should support the structure and delivery of the curriculum so that children can be the best learners they can, and achieve the best possible outcomes.*



## 2. INTRODUCTION

This briefing paper outlines Clackmannanshire's commitment to supporting the mental health, wellbeing, attainment and achievement of children and young people educated and looked after in the Council. This is reflected in Clackmannanshire's Local Outcome Improvement Plan, in Clackmannanshire's Integrated Services Plan (2015-2018), in the Education Service's Strategic Plan (2014-2017) and in the Education Service's Health and Wellbeing Strategy 2017. This briefing paper should also be read in conjunction with the 'Boosting Brains, Boosting Learning' Supporting Guidance for Education Staff in Clackmannanshire.

The overall aim of this briefing paper is to provide an integrated and staged approach to supporting children and young people's emotional wellbeing and 'Readiness For Learning' (R4L) for all practitioners – thus ensuring consistency in terms of practice, processes and evaluation across the Council.

The following statement is taken from National Improvement Briefing for Scottish Education (NIF 2016). The NIF outlines the Scottish Government's intention to reduce the equity gap in our society and to improve outcomes for all. It contextualises the need for the R4L approach in Clackmannanshire to support all children and young people in our schools and nurseries. Figure 1 is taken from the NIF and shows how delivery on national priorities and outcomes leads to improved outcomes for children and young people. This briefing paper outlines how we propose the R4L Approach will allow us to do this.



*Figure 1 – National Improvement Briefing*

### **3. NATIONAL AND INTERNATIONAL CONTEXT**

#### *Social and Emotional Learning*

It is widely acknowledged that a child or young person's wellbeing affects not only their social and emotional development, but also their academic outcomes. Wellbeing is a key factor in determining how able a child or young person is to meet the demands of the classroom or nursery. In other words, children and young people need to be 'emotionally ready' to engage in learning.

A recent large scale study of the impact of over 200 programmes that taught social and emotional learning (SEL) in the USA found increased academic performance (e.g., scores were an average of 11 percentile points higher on standardised achievement tests), and a higher rate of positive attitudes and behaviours (e.g.: greater motivation to learn, deeper commitment to school, increased time devoted to schoolwork, and better classroom behavior) amongst the pupils that had taken part in these programmes compared with those that had not. The study also found lower rates of negative behaviours (e.g., decreased disruptive class behavior, noncompliance, aggression, delinquent acts, and disciplinary referrals), and less emotional distress (e.g., fewer reports of student depression, anxiety, stress, and social withdrawal) amongst the pupils who had taken part in the programmes compared with peers who had not.

#### *Adverse Childhood Experience (ACE)*

There is a variety of data showing that many of our children and young people experience significant challenges to their wellbeing, in terms of Adverse Childhood Experience (ACE). As a result of demographic, social and cultural changes over the last three decades (including access to the internet and social media), there has been a general increase in the number and frequency of significant ACEs – such as family breakdown, parental ill-health, substance misuse, poverty – that all our children and young people are at risk of experiencing. Additionally, neurodevelopmental difficulties such as Autism or ADHD can further contribute to the level of stress a child can experience, and in turn, these children can be more vulnerable to the effects of trauma due to their difficulties with social communication and / or emotional regulation. In the USA, the Centre for Disease Control (CDC) and Kaiser Permanente surveyed over 17,000 individuals (known as the 'ACE Study') and found that the higher the number of ACEs that people had experienced, the poorer their health - see Figure 2 on the following page.

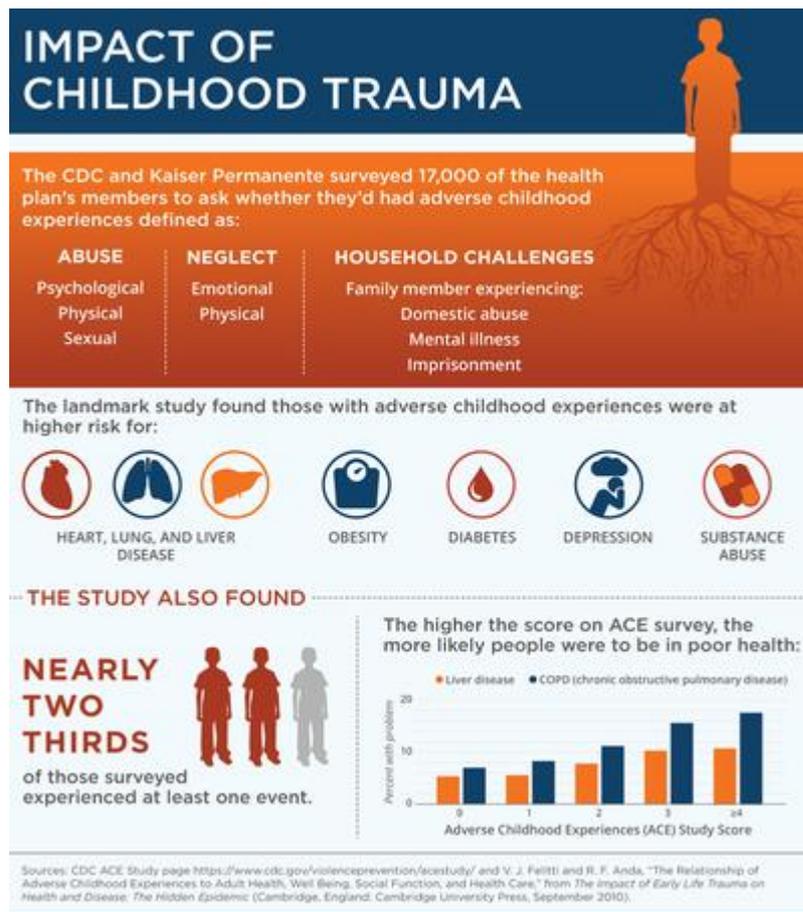


Figure 2 – Adverse Childhood Experience Study

Based on this study, the CDC have gone on to propose that ACEs affect development throughout the lifespan: by influencing a child's early neurodevelopment and subsequent acquisition of social, emotional and cognitive skills; leading in adulthood to high-risk health behaviours, linked to poor emotional and physical health, and eventual premature death – see Figure 3.



Figure 3 – Impact of ACE through the Lifespan

Figure 4 is an attempt to represent the implications of the original ACE Study for schools, generated using data from Washington State in the USA. It shows that within the average mainstream classroom in that area, a teacher can expect to have 30% of his or her pupils to have experienced four or more ACEs.

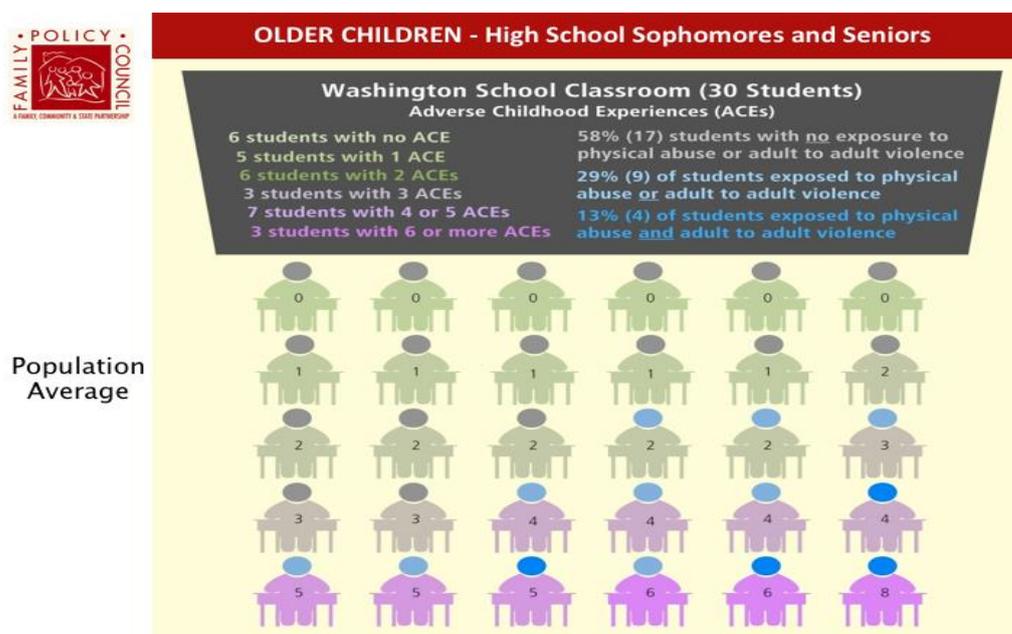


Figure 4 – ACE Study Implications for the Average Class in Washington State, USA

### Government Policies and Legislation

In the United Kingdom, there has been an increasing awareness of the importance of wellbeing for a variety of outcomes for children and young people as outlined above, including academic performance. However, a study of overall child wellbeing in 21 developed countries by the United Nations Children's Charity, Unicef, in 2007, found that the UK's children were ranked lowest for overall wellbeing. A more recent follow-up to this study, looking at overall child wellbeing in 29 developed countries, found that the UK's ratings had improved but still fell only in 16th position. This finding suggests that the UK must continue to work pro-actively to improve wellbeing for all children and young people.

In recent years, Scottish legislation reflects a recognition of the need to improve wellbeing for all of our children and young people. This is emphasised in policies such as:

- Curriculum for Excellence (CfE)
- Children and Young People (Scotland) Act and
- Getting it Right for Every Child (GIRFEC).

Scottish Government policies and legislation for the benefit of children and young people continue to affirm that *'closing the gap in attainment,*

*achievement and wellbeing between children and young people in our most and least deprived areas is the key challenge for Scottish education.'* (HGIOS4).

Moreover, these laws and the principles that underpin them emphasise that to raise attainment, we need improved collaboration with partners in considering contributing factors including (but not limited to):

- implementing effective early intervention
- improving the health and wellbeing of children and young people
- promoting positive relationships and behaviour in our educational establishments
- keeping children and young people safe and
- respecting the rights of the child and young person throughout our processes.

### **LOCAL CONTEXT**

The unique profile of the Clackmannanshire Council population and history has been central in developing this briefing paper.

#### *Clackmannanshire ACE*

Locality data shows that **some ACEs are more prevalent in Clackmannanshire** than in other parts of Scotland and the UK. Furthermore, the social geography of Clackmannanshire is such that there is very little social mobility, and therefore **the impact of ACEs may be greater than in other areas, due to the effects of inter-generational trauma and a lack of opportunities for positive changes in circumstances.**

A variety of surveys of the incidence of trauma in Clackmannanshire schools took place during the period 1998 - 2003, and together with a survey of 820 schools in four Scottish Local Authorities (including Clackmannanshire) in 1998, results indicated that small-scale traumatic events (such as hospitalisations) affecting the lives of children are not uncommon within our population. Indeed, Clackmannanshire displayed a higher than statistically expected rate of small-scale trauma amongst its children and young people, with **98% of pupils surveyed having reported experienced at least one traumatic event.**

In response to the findings in the trauma surveys above, a specific trauma project was developed within the Educational Psychology Service, called Interventions for Recovery. The project was funded through a variety of sources over a sustained period of fifteen years. The service provided by Interventions for Recovery was unique in Scottish local authorities.

#### *Neurosequential Model in Education*

More recent data from the Education Service's implementation of The Child Trauma Academy's Neurosequential Model in Education (NME, Perry, 2014)

is also available. The initial pilot, in a number of identified high-need schools within the authority, has produced some data in terms of pupils' ability to self-regulate (essentially, to be 'ready to learn'). For example, Executive Functioning Score (EFS) is a measure specific to NME that is intended to assess pupils' ability to use executive functioning skills such as threat response, affect (mood) regulation and communication skills. All of these abilities are necessary for success in learning, and ability to manage within traditional behaviour management models in schools. Initial data within the pilot schools suggested that, overall, approximately a third of pupils assessed appeared to have an EFS below what would be expected for their chronological age when compared with a population-wide sample of peers. Executive functioning is a way of describing the ability to regulate yourself and be ready to learn - if at least a third of pupils in a class appear to have difficulties self-regulating, this will have an enduring negative impact on their ability to learn, as well as that of their classmates.

Assessments of the relationship styles of pupils in these pilot classes (using Golding et al.'s Attachment Observation Schedule) indicates that, on average, as many as 28% of pupils assessed appeared to present with a disorganised attachment style. This is significantly higher than would be expected in the population as a whole (usual estimates range between 5-10%). Children and young people with disorganised attachment styles need significantly more intervention around becoming 'ready to learn' compared to other pupils, as they need targeted support to work on their sense of 'safety' before any challenge – such as learning tasks – can be introduced successfully.

#### *Local Policies and Documents*

The recognition of the high level of ACEs that affect many of our children and young people in Clackmannanshire, is reflected in a number of key documents within the Council:

- the Local Outcome Improvement Priorities (LOIP) states that a key priority is “to improve support for disadvantaged and vulnerable families and individuals”
- the Corporate Parenting Strategy (2013-2018) has one of its main aims being to “respect and nurture our looked after children and young people”
- the Education Service's Health and Wellbeing Strategy (2017)
- the Children and Young Peoples Strategic Partnership (CYPSP)

Clackmannanshire Council is also one of the nine attainment authorities identified by the Scottish Government, who have been awarded funding to deliver targeted interventions. These fall into three categories:

- Raise attainment in numeracy- and literacy-rich learning
- Leadership of learning
- Health & wellbeing, families and communities.

## **4. READINESS FOR LEARNING (R4L) APPROACH**

As stated above, many of our children within Clackmannanshire experience significant Adverse Childhood Experiences (ACEs), which we know have an impact both on their relationships with others in general, and on their ability to engage in learning within an education setting. Whilst not all our children and young people experience significant ACEs at all times through their childhood, a significant minority do, and an even greater percentage experience at least some stress at some point in their schooling. Therefore, **we need to have an approach that can support *all children to manage any stressors they may experience in their lives (no matter how big or small, or how short-term or long-lasting, or whether caused by ACEs or the result of a neurodevelopmental difficulty such as Autism Spectrum Disorder (ASD) or Attention Deficit Hyperactivity Disorder (ADHD) or a combination of these) and to be as emotionally ready for learning as they can, so that they can achieve the best outcomes for now and for the future.***

The Readiness for Learning (R4L) Approach described is based on existing good practice in relation to supporting our children's emotional wellbeing in schools and nurseries, as well as current research findings and developments from the UK and beyond which argue that we need to take into account the impact of any ACE – or stressors – that affect children's brain development. A better understanding of the impact of these stressors on our children's developing brains will help put in place more effective interventions to support their learning.

### ***Rationale for the development of the Readiness for Learning (R4L) Approach***

Traditionally, interventions to support children's emotional wellbeing within schools were based on Attachment Theory and Nurture Principles.

#### **(i) Attachment Theory**

Attachment was first described by John Bowlby in the 1950s (and later refined by Mary Ainsworth in the 1960s) as the bond between a child and his or her primary caregiver. Attachment behaviour is the behaviour children use to get their caregiver's attention, or to keep them close, whenever they are stressed (i.e. tired, hungry, unwell or scared). As a result of how the caregiver responds to their attachment behaviours, children develop one of four main attachment styles: secure, insecure-avoidant, insecure-ambivalent or insecure-disorganised.

There is a link between attachment style and a child's later social and emotional functioning. Children with a secure attachment style (whose caregivers responded in a consistent and sensitive way to the children's requests for attention and closeness) typically develop better than those who have an insecure attachment style, where they were responded to in less consistent and more negative

ways (e.g. not responding to cries, or responding in a way that is frightening or intrusive). These attachment styles can influence how children relate to other people throughout their lives, including peers and teachers, and how they engage in important developmental tasks such as learning.

More recent attachment theorists – including Dan Hughes, Jonathon Bayling, Dan Siegel, Kim Golding, and Louise Bomber – have significantly expanded earlier attachment theory and practice to look at the neurobiology of attachment relationships. Their work describes the key elements to help unstick 'blocked' relationships through the use of approaches such as PACE (P(layfulness) A(cceptance) C(uriosity) E(mpathy) (early 1990's, D. Hughes, personal communication, 31<sup>st</sup> October 2017), together with interventions such as specific 'Attachment in the Classroom' strategies that can be tailored to a child's relational style.

## **(ii) Nurture Principles**

Marjorie Boxall, an educational psychologist, first developed the concept of nurture groups in the late 1960s and early 1970s as a means of providing early intervention for children who had experienced early attachment issues.

Nurture groups are based on the following 6 principles:

1. Children's learning is understood developmentally
2. The classroom offers a safe base
3. The importance of nurture for the development of wellbeing
4. Language is a vital means of communication
5. All behaviour is communication
6. The importance of transition in children's lives.

Since nurture groups began, there has been ongoing research and developments in practice looking at whole school approaches that help provide a solid foundation for embedding nurturing experiences for children across establishments. Schools within Clackmannanshire have a proven track record in embedding the nurture principles within their settings to support the wellbeing of pupils. Examples of this can be seen in the good practice that is evidenced by nurture group provisions set up within mainstream schools.

### **(iii) Trauma-Informed Approaches**

New areas of practice have developed on from attachment theory, including the field of trauma-informed approaches, and the adaptive information processing model. These conceptualisations recognise the impact of trauma on the body, with trauma being viewed as being stored implicitly in the brain. As a result, interventions to support children to begin to resolve their traumatic experiences require 'bottom-up' processes, such as Eye Movement Desensitisation and Reprocessing (EMDR) and Dyadic Developmental Psychotherapy (DDP). These interventions target body memories that may be implicitly stored, rather than 'top-down' approaches, such as Cognitive Behaviour Therapy (CBT), based on access to verbal feeling and body sensations. Trauma-informed approaches emphasise the need for children to develop 1) a sense of safety so that they can begin to explore their experiences without repeating them, and 2) a sense of mastery by discovering new ways of dealing with their emotions and reactions to their past experiences and current trauma triggers.

### **(iv) Neurosequential Model**

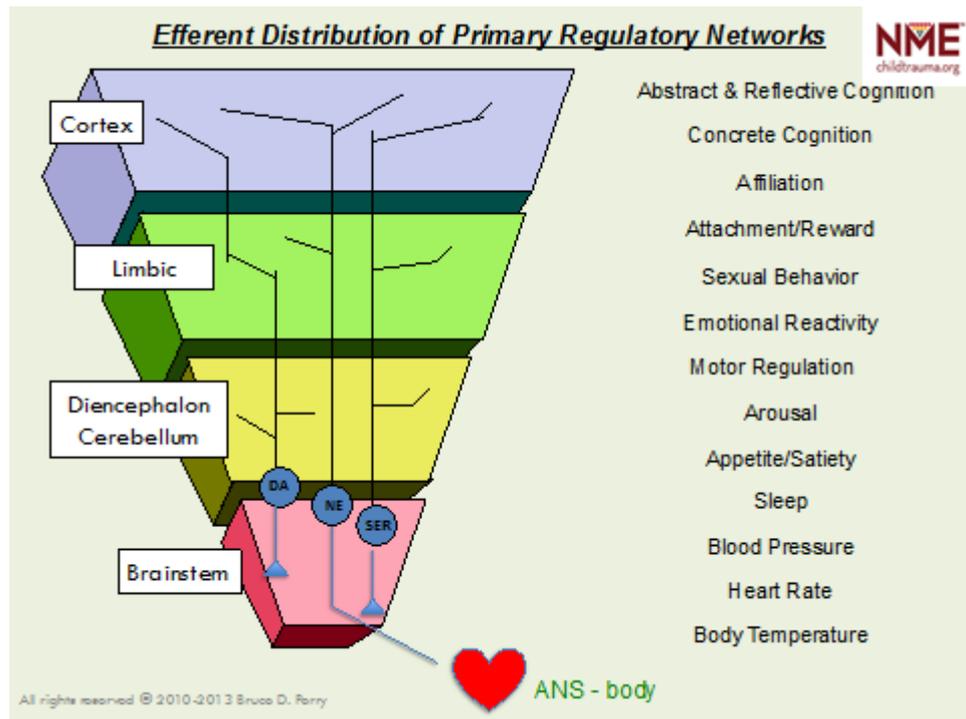
Over the last twenty years there has been an increased focus from the fields of neuro ('brain') development and neuro ('brain') biology on understanding how children's brains grow and learn, with regard to the impact of early adversity on neural ('brain') connections and functioning. Dr Bruce D Perry, an eminent child psychiatrist and founder of The Child Trauma Academy in the USA, asserts that:

*"without understanding the basic principles of how the brain develops and changes, one cannot expect to design and implement effective interventions." Perry and Hambrick, 2008*

Perry promotes neurodevelopmental and neurobiological approaches as highly relevant for educators because:

- *Education is a brain-based activity*
- *A fundamental task of teaching is to change the brain*
- *Brains prefer a relationally ('people') rich environment, i.e., one with many opportunities for positive interactions with a variety of people.*

Perry has developed the Neurosequential Model, which recognises the successive development of the brain: from the lower, more basic brainstem functions involved in keeping the body alive, which begin to develop pre-birth; to the higher order, cortical ('thinking') parts of the brain, which become established in later childhood and beyond – see Figure 5. The majority of brain growth and development occurs during the first four years of a child's life, which is why early developmental trauma and stress have such a disproportionate effect on brain development and later functioning.



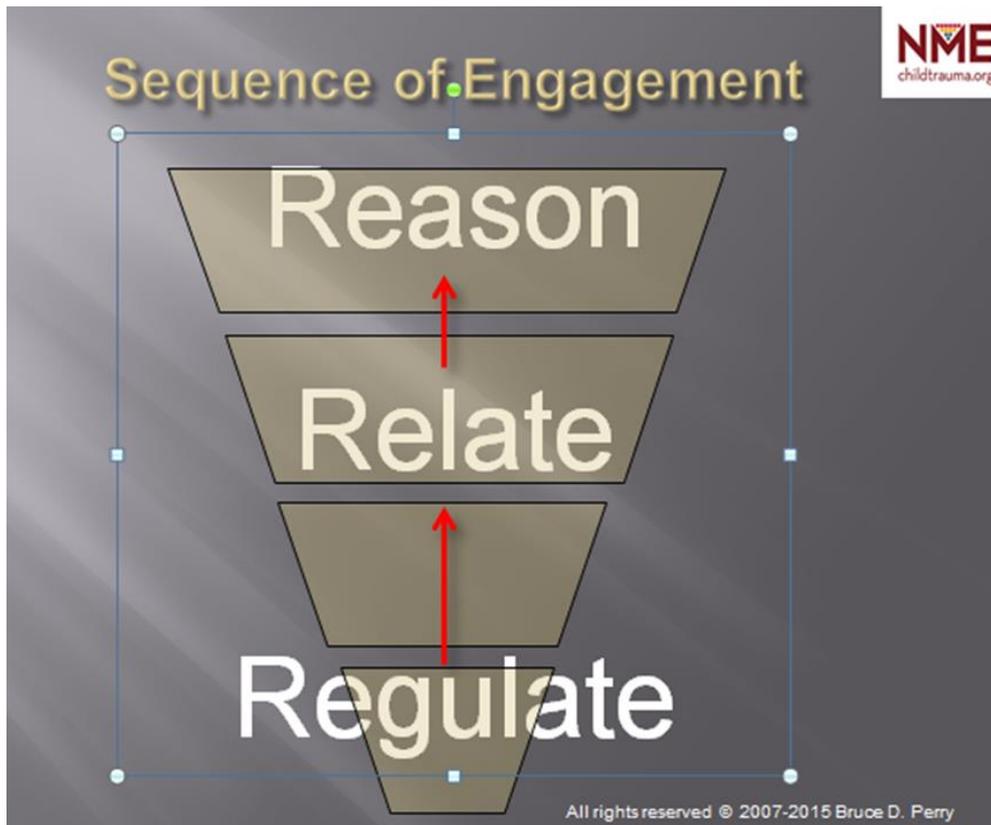
*Figure 5 – Sequential Model of Brain Development*

Perry suggests that the best way of supporting children who have suffered ACEs or other stressors is to look at the timing of these events in terms of brain development: this guides the implementation of developmentally-appropriate brain strategies that help children to address the gaps in their development, and thereby to move forward. According to this framework, failure to support children in this way can prevent any other interventions from achieving the desired positive outcomes for children and young people:

*“Efforts that are well intended may be developmentally misinformed. This is very evident in therapeutic efforts with traumatised or maltreated children”. Perry and Hambrick, 2008*

Perry has collaborated with educators to adapt his original Neurosequential Model in Therapeutics (NMT) approach into the Neurosequential Model of Education (NME): a programme of staff learning and development to help educators deliver specific and timely interventions that are consistent with the sequence of the developing brain. For interventions to be successful, they must ‘activate’ - or seek to ‘repair’ - the brain areas that have been affected by the trauma or stress the child has experienced.

Perry proposes that there is a **sequence of engagement in terms of the types of interventions that are required to maximise brain growth and repair: *Regulate, Relate* then *Reason***. These activities provide the affected brain areas with the repetitive and patterned neural activity necessary for growth and re-organisation— see Figure 6 below.



Regulate:	Relate:	Reason:
if the child experienced trauma or stress very early in life at the time when their <i>brainstem</i> was developing, then interventions need to be put in place that activate brain growth in this region, then <i>somatosensory, self-regulatory activities</i> will be required	if trauma and loss occurred during the period of time when the <i>limbic</i> 'feeling' system was developing, then <i>relational strategies</i> will be necessary	if trauma or stress occurred later in life when the child's <i>cortex</i> was developing, then more verbal and insight-orientated, <i>reasoning strategies</i> will be needed
e.g. music, controlled rhythmic breathing, rocking and drumming	e.g. play and art techniques and interaction games (such as Simon Says or Pat-a-cake)	e.g. cognitive behavioural therapy or 'talking' approaches

Figure 6 – Sequence of Engagement Required to Maximise Brain Growth and Repair

Furthermore, for any specific interventions to be successful, Perry advocates that they need to incorporate the following aspects:

- **Relational** (safe)
- **Relevant** (developmentally matched to the individual)
- **Repetitive** (patterned)
- **Rewarding** (pleasurable)
- **Rhythmic** (resonant with neural patterns)
- **Respectful** (of the child, family, and culture)

Measurement is another key component of NME: if we are using interventions to support children's learning based on brain areas implicated in trauma, then we need to measure progress in terms of improved brain functioning (in addition to more traditional behavioural and observation ratings by staff, parents and pupils themselves). NME has a specific neurodevelopmental assessment tool called the mini-map, which depicts areas of brain development, and yields an Executive Functioning Score (EFS). The EFS and associated brain map together provide an indication of a pupil's level of functioning within the education setting.

Perry argues that because brain development is vastly complex, any interventions that truly address the developmental effects of ACEs on the brain, will be equally complex. Such interventions must take into account that altering the developmental effects of ACEs on the brain takes time and repetition. However, Perry states that when interventions have changed to

*“developmentally sensitive, neurobiology-guided practice, the outcomes (...) have significantly improved”. Perry and Hambrick, 2008*

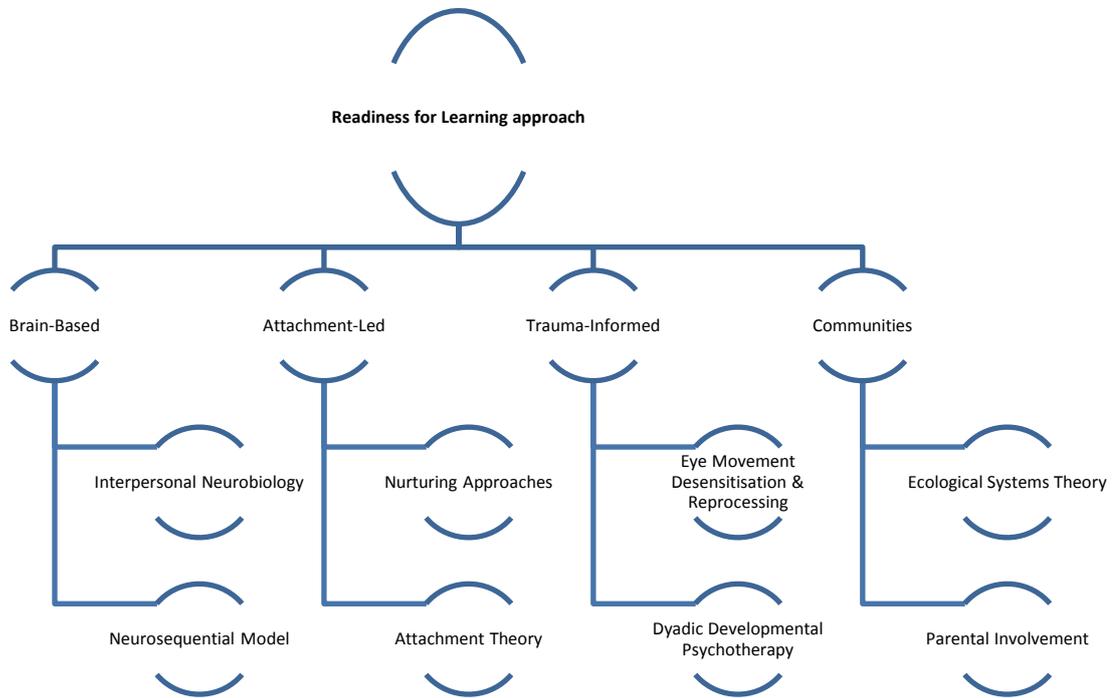
## 5. THE READINESS FOR LEARNING APPROACH

Clackmannanshire Educational Psychology Service has developed a methodology to supporting pupils' wellbeing that integrates the key elements of Attachment Theory, Nurture Principles, Trauma-Informed Approaches and the Neurosequential Model to ensure that all children and young people are as 'ready for learning' as they can be: the R4L Approach. We have called the approach 'Readiness for Learning' because it clearly consolidates our practice in attachment, nurture, trauma and neurosequential development in terms of the interaction of these developmental foundations on the *learning* for the child. Many other professions will draw on attachment, nurture, trauma and neurosequential theory (such as Social Work and Health colleagues), but it is our job as *educators* to investigate how these concepts can inform our ability to improve educational outcomes for all – hence, the title of this briefing paper, '*Boosting Brains, Boosting Learning*'.

The strategies and principles of the earlier models of supporting children's wellbeing, such as Attachment Theory, Nurture Principles and Trauma-Informed Approaches on their own are not enough, and nor are they sufficiently specific in terms of the sequence of interventions required to effect maximum change in brain development, as detailed in NMT / NME. As depicted in Figure 7, the R4L Approach incorporates all four of these key components in order to effect the maximum impact for children and young people through the:

- **understanding and use of Attachment Theory** to ensure that all staff recognise and are aware of the genesis and implications of secure and insecure attachment, and that any interventions are matched to the child's relational style
- **six Nurture Principles being taken into account** in terms of overall appropriateness of interventions; inclusive, whole school implementation of nurturing approaches; and the use of the Nurture Principles for self-evaluation purposes
- **use of trauma-informed approaches** funded by the Scottish Attainment Challenge, such as EMDR and DDP, to provide intensive intervention. The Therapeutic Service (TS) is for pupils most significantly affected by ACEs and trauma, requiring the support and intervention of individual, specialist psychological interventions in addition to attachment, nurture and neurosequential approaches
- **introduction of a biologically respectful** (one that takes account of how our brains grow and develop), **neurosequential approach** to emotional wellbeing interventions for children by implementing NME, initially on a pilot basis across the Council

as part of funding from the Scottish Attainment Challenge, before ultimately rolling it out across all schools and nurseries.



*Figure 7 – Clackmannanshire’s Readiness for Learning (R4L) Approach*

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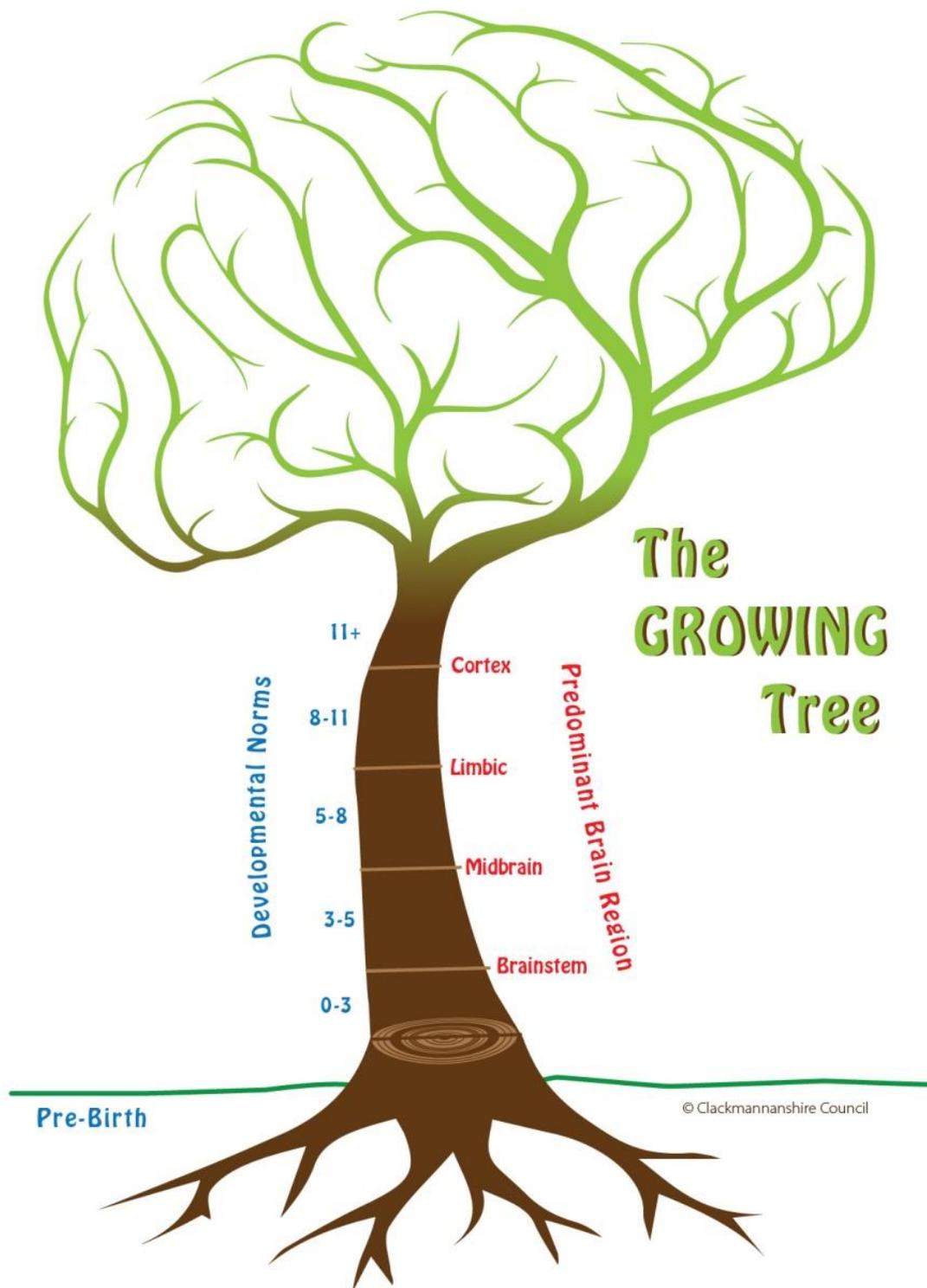
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# APPENDIX ONE

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## ***The Growing Tree***



The Growing Tree diagram offers another way to understand Clackmannanshire Educational Psychology Service's (Clacks EPS) approach to Readiness for Learning (R4L). The philosophy behind the diagram takes inspiration from the saying "from little acorns, mighty oaks grow".

Starting from the ground up, the roots of the tree symbolise the crucial role that brain development in the antenatal period serves in establishing a robust, well-formed foundation on which all further development will build. Seeds require a number of elements to flourish in terms of the physical environment in which they are sown – if these conditions are met, then the seed will grow well and develop to its full capacity. If the soil the seed lands in is of poor quality, lacks nutrients, etc., then the same seed would not flourish as well, and its development, while still proceeding, will not achieve its true potential. Similarly, if a baby is developing in a pre-birth environment which is not ideal – for example, due to the presence of chemicals such as alcohol, illegal substances or cortisol (the stress hormone) – the developing brain of the child may be compromised and not achieve its full potential, before or after birth.

As the tree comes out of the ground and a trunk begins to develop, the environment in which the seed was planted continues to be important in providing nutrients to the tree. However, for the tree to continue to grow successfully, its trunk must become thicker, in order that it can grow taller with in-built strength to withstand stormy weather, attacks from predators etc. Year on year, extra layers are added to the trunk that thicken it, strengthening this resilience gradually over time.

Events that happen in the environment can still have an impact: for example, if the trunk is damaged in any way, sap will leak from the area, and if we were to cut the tree across its midline, we would see the evidence of this 'developmental insult' in the annual growth rings of the trunk. The tree however, can withstand a number of these events and may in fact become stronger over time because of them – in other words, it becomes resilient, having the ability to bounce back from tough times. For children, the 'thickening of the trunk' occurs through the patterned, repeated exposure to

sensitive interactions from a caregiver. Without this, the additional layers that are added to the brain are likely to be thinner. Damage to the trunk can be caused by a range of Adverse Childhood Experiences (ACEs), the impact of which can be felt across the lifespan.

Once the tree reaches maturity, the aim of ongoing growth becomes to develop a large, extensive canopy that is covered in leaves, so that the tree can go on to develop fruit and seeds to complete its cycle. A healthy tree has a complicated system of branches of varying sizes, all of which maintain a link back to the underground root system in order to draw nutrients from the environment. An underdeveloped tree lacking good connections to its lower areas will not be able to develop such healthy leaf coverage, because it can't be as efficient at using the nutrients it has available to it. Good cortical development in children requires the solid foundation, PLUS good connections running up and down the brain for a healthy brain system to develop. Again, these connections rely on sensitive caregiving, which is nurturing and responsive to the needs of the children. This then allows the child to explore all aspects of his/her development at the right time and with the right amount of adult support to moderate and provide meaning to the experiences of the individual.

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