Chapter 2

Neurology, Trauma, Well-Being, and Mental Health in Our Schools

For the first time in more than 50 years, the worldwide prevalence of children's mental-health diagnoses has surpassed those of physical injury and illness. The annual direct and indirect costs of mental illness have surpassed $48.5 billion in Canada. According to Statistics Canada:[1]

- It is estimated that 10 to 20 percent of Canadian youth are affected by a mental illness or disorder – the single most disabling group of disorders worldwide.
- Today, approximately 5 percent of male youth and 12 percent of female youth, ages 12 to 19, have experienced a major depressive episode.
- The total number of 12 to 19 year olds in Canada at risk for developing depression is a staggering 3.2 million.
- Mental illness is increasingly threatening the lives of our children, with Canada's youth suicide rate the third highest in the industrialized world.
- Suicide is among the leading causes of death in 15- to 24-year-old Canadians, second only to accidents; 4,000 people die prematurely each year by suicide.
- Schizophrenia is youth's greatest disabler, as it strikes most often in 16- to 30-year-olds, affecting an estimated one person in 100.
- Surpassed only by injuries, mental disorders in youth are ranked as the second highest hospital care expenditure in Canada.
- In Canada, only one out of five children who need mental health services receives them (Smetanin et al. 2011).

Think about that. Can you imagine if only 20 percent of children who had a broken leg, measles, or even cancer got the treatment they need? Why is it that only 20 percent of youth with mental illness get the help they need? Do we not care? Or is the stigma so great that students and their families hesitate to seek treatment? Our experience tells us it's both. We care, but we have not, until recently, acknowledged the mental-health needs of our children. We believed it was a private family affair and something to be kept private. The stigma of mental illness remains significant.

1 See <https://cmha.ca/media/fast-facts-about-mental-illness>

Biologically, the separation of mental illness from physical illness makes no sense. All illnesses involve both biochemical and environmental factors. Genetics, organ malfunction, chemical imbalance, emotions, trauma, stress, and so forth affect cancer and heart disease, depression, and anxiety. If we take the example of diabetes, we are dealing with a malfunction of an organ in the body, the pancreas, not properly secreting the chemical it is supposed to, insulin. If insulin levels are only slightly off, then changes in diet, exercise, and behaviour may be sufficient to control the illness. If, however, the disease is significant, then we replace the missing insulin with insulin modern medicine has developed. If we look at ADHD, we are dealing with a malfunction of another organ in the body, the brain, not secreting a chemical it is supposed to, dopamine. If levels are only slightly off, then changes in diet, exercise, and behaviour may be sufficient to control the illness. If, however, the disease is significant, then we replace the missing dopamine with dopamine modern medicine has developed, called "methylphenidate" (Ritalin). If we look at depression, we are again dealing with a malfunction of the brain. The brain may not be secreting enough of the chemical serotonin, or it may lack receptors for it. If levels are only slightly off, then changes in diet, exercise, and behaviour may be sufficient to control the illness. If, however, the disease is significant, then we replace the missing serotonin with an antidepressant modern medicine has developed that blocks the serotonin reuptake. While the above is a very simplistic description of three illnesses, the point being made is valid. In all cases, an organ in the body is malfunctioning, causing a chemical imbalance, and modern medicine has developed ways of correcting the imbalance. Why is it then, that if a parent gives their child insulin to treat their diabetes, no one bats an eye, but if a parent gives their child Ritalin, they are accused of "drugging their child?" Why is there shame in taking an antidepressant, but not an antibiotic? Why do individuals feel stigmatized by seeking counselling, but not physiotherapy?

Indigenous Views of Mental Health and Well-Being

Canadian society has much to learn from Indigenous cultures. Traditional ideas of health in Indigenous cultures do not separate mental health from other aspects of well-being. Indigenous peoples' connections to the land and community (including all living beings around them) and everyday activities needed for survival include a spiritual dimension that maintain harmonious relations and balance (Health Canada).

Mino-Pimatisiwin

Mino-Pimatisiwin is most easily translated as "leading a good life." Some Indigenous Elders describe it as "walking in a good way." What is critical to understand is that the Indigenous worldview of well-being reflects the interdependent worldview of Indigenous culture. While "living the good life" in Western society is seen as an individual accomplishment, often based on monetary success, Indigenous views of well-being are a mixture of self-actualization and

playing a valued role in one's community. In fact, among Indigenous peoples these two concepts are interconnected. They could not self-actualize without developing the gifts they had been endowed with from the Creator and contributing them to their community. This is not the same as destiny, which is individualistic. This definition of well-being and actualization is not a predetermined end goal, but rather a suite of gifts that one learns how to carry and use to serve.

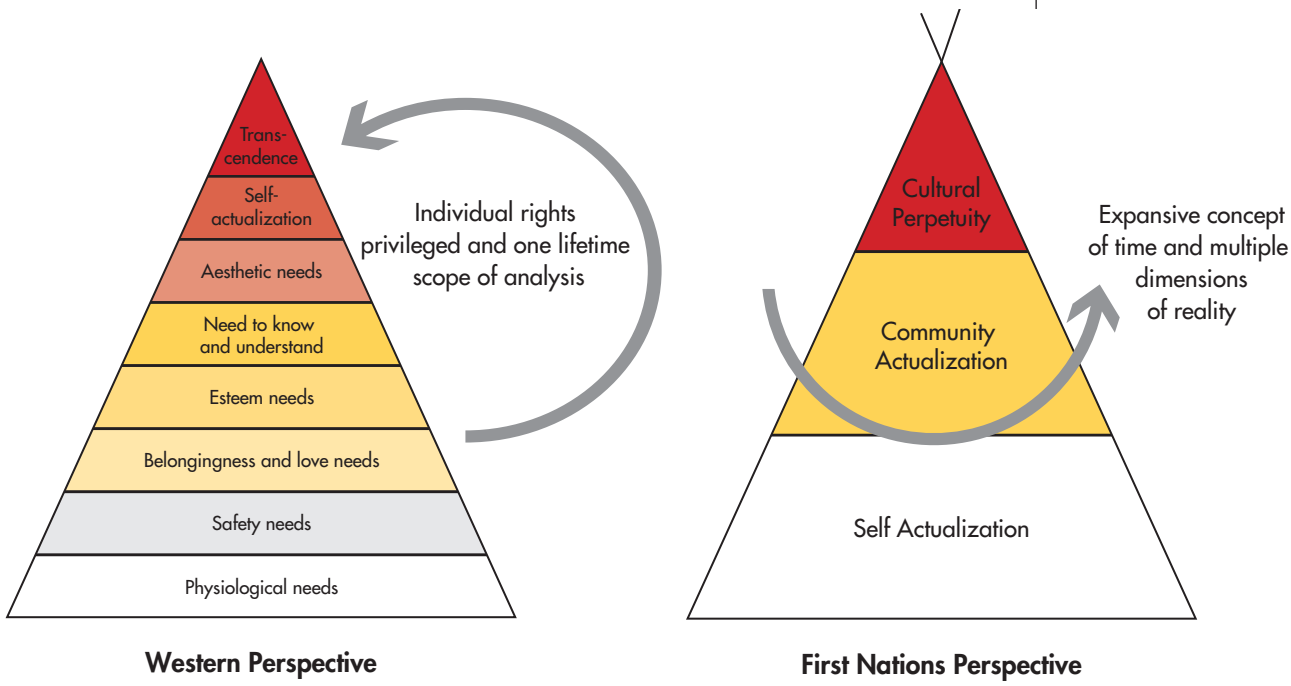

Figure 2.1 Maslow's Hierarchy of Needs (informed by Siksika Nation, Alberta). *Huitt, 2004; Blackstock, 2008; Wadsworth*

The clan system of government was also about personal relationships. Membership in a clan defined what role was expected of you, and your community counted on you to serve the greater good of the collective. Obligation was to the community over oneself. This was not thought of as self-sacrifice, but rather that "there is no me without the collective." Interestingly, it is now understood that Abraham Maslow's hierarchy of needs was based on teachings he received from the Kainai people in Alberta while doing research there. However, Maslow stepped further back than did the Siksika and stopped at the development of the individual; his triangle stops where the Siksika triangle begins. The triangle, shaped like a tepee was meant to have self-actualization as the foundation, with community actualization in the middle, and cultural perpetuity at the top. In other words, development of the self led to, and was aimed at, the strength and development of the collective. By contributing in this way, one's life contributes to a legacy that continues long after death – cultural perpetuity.

Mino-Pimatisiwin involves walking in a good way – toward being the individual you are meant to be. In pursuing that, moments of self-doubt, hardship, and trial become lessons that allow for an expression of a good life – resilience and the ability to use trial toward self-actualization.

Figure 2.2 Abraham Maslow with his anthropological team and Siksika interpreter, circa 1938

In contrast to the emphasis on the individual in many Western societies, the concept of the healthy person in Indigenous cultures relates to their role in the community, their impact on others, and the support of others for them. Interdependence, rather than independence, is valued. From a spiritual perspective, relations in Indigenous cultures include ancestral ties, which teach youth a respect for Elders and lineage, and in turn provide a sense of connectedness across time. Because of the trauma of cultural oppression and abuse, combined with this collective worldview, in Indigenous communities mental health is seen as a collective need for healing rather than as an individual failing. (In Part II, we will introduce programming to address this issue further.)

The Four Spirits

The four spirits, often represented through a visual such as the medicine wheel, reflect a contemporary view of Mino-Pimatisiwin. Although Western cultures relate to this with words such as *holistic* or *balance*, it is more than that. The 2D visual of the four spirits represents four separate concepts (physical, mental, emotional, spiritual), but these are actually intertwined. In fact, there are traditional teachings that differ from medicine wheel teachings (e.g., seven directions, which reflect a multidimensional view of human development, rather than four).

Indigenous peoples recognize you can't think about wellness without talking about the entire person. Being intellectually healthy but not spiritually healthy means an individual is not "walking in a good way." Some Indigenous Elders have articulated a developmental view that involves four stages of life (infancy, teenage, adulthood, senior/elder), each of which has four elements (mental, physical, emotional, and spiritual). Thus, emotional health for a teenager looks different than emotional health for an older person. Modern psychology recognizes this as stages, but Indigenous teachings were less defined and more of a continuum – a person could be in infancy physically, and teenage development intellectually. By Western standards, this is seen as "abnormal psychology" or "asynchronous," but among Indigenous peoples, this is a normal part of learning how to develop one's gifts.

The Circle of Courage

Martin Brokenleg developed a framework for exploring well-being that is based on the medicine wheel, which many schools use with their students. The circle of courage (COC) combines Indigenous beliefs about well-being and Mino-Pimatisiwin, and modern research on resilience. Brokenleg identifies four main human needs for growth and well-being: mastery, generosity, independence, and belonging. Mastery is developed when youth are given graduated levels of challenge and experience success, whether that is in the mental, physical, spiritual, or emotional realm. Students who experience constant failure and, therefore,

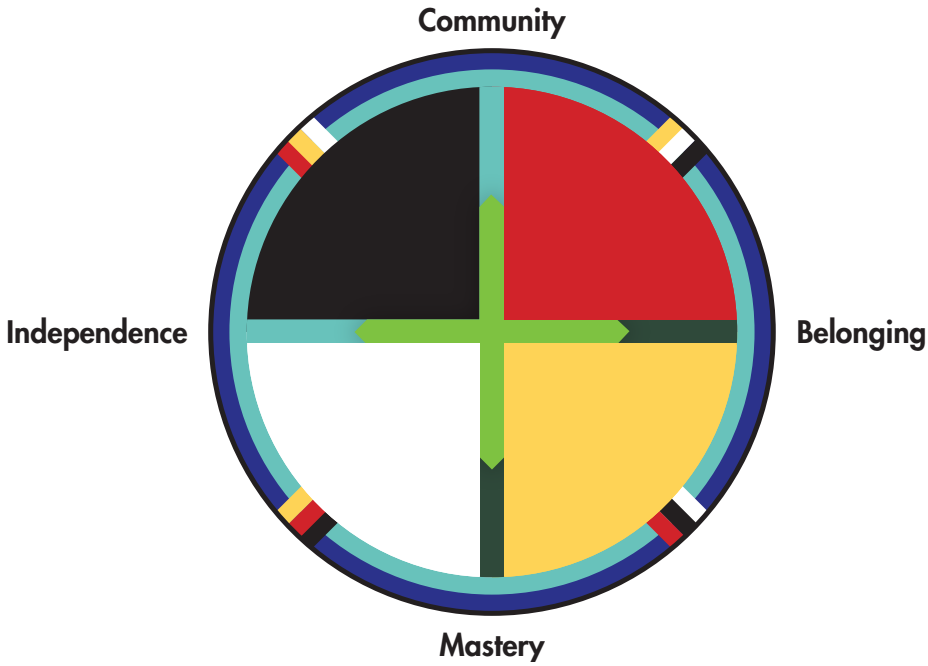

Figure 2.3 The Circle of Courage

lack self-worth and self-efficacy, are likely to demonstrate frustration, sadness, and anger – verbally, physically, and behaviourally. Generosity is nurtured in children when they learn to serve others, to appreciate the needs of the collective, and to place them ahead of their own. When students are made to feel they have nothing to offer, or when survival and trauma lead to a sense of isolation and the need to protect one's life, generosity is lost. Yet, it is generosity, the opportunity to help others, that can lift an individual out of trauma and create belonging. Independence in the COC is equated to autonomy and self-regulation. Adults are encouraged to guide, but not to direct. To learn how to self-regulate their learning and their relationships, children must be allowed to make choices, and mistakes. Finally, the sense of belonging is key in the COC. In youth, belonging is expressed through trust, friendship, and intimacy. Teachers must foster a learning community that accepts and values diverse learners to develop a sense of belonging. The circle of courage explores the needs of youth for positive development and can be used in schools as a planning tool to meet these needs.

Mental Health: Contemporary Western Views

In the rest of this chapter, we will use terms such as *mental health* and *mental illness,* because it is in keeping with the field. However, I challenge the reader to let go of any difference between mental health and health, and between mental illness and illness, and to consider the role of community and connection over the impairment of an individual.

The rest of the health field has not gone as far as eliminating the term *mental illness*. However, there has been a shift to recognizing the focus should be less on illness and more on health. For instance, the World Health Organization (WHO) defines mental health as "a state of well-being emerging from the realization of individual potential, ability to cope with normal life stressors, working productively and contributing to the community." Health Canada defines mental health as "a state of well-being that allows us to feel, think, and act in ways that enhance our ability to enjoy life and deal with the challenges we face." In both definitions, we see the balance of self-actualization and happiness, with the need for resiliency and the ability to interact with others, and less focus on illness from a diagnostic point of view.

Mental Health and Social and Emotional Learning (SEL)

At times, the two terms *mental health* and *social and emotional learning* (SEL) are used interchangeably in the literature, for understandable reasons. Both share a vision of living a life that is fulfilling to self and contributes to community. Let's have a look at the factors involved in the definitions of SEL and of mental health.

SEL	Mental Health (WHO)
Self-awareness	Realize individual potential
Self-management	Cope with normal stressors
Social awareness	Work productively
Relationship skills	Contribute to community
Responsible decision making	

Figure 2.4 SEL and Mental Health

A closer look at the above table reveals that SEL defines some of the key skills needed to achieve mental health. For example, to realize one's potential, an individual would have to develop self-awareness; to cope with normal stressors, one would need to develop self-management. In that sense, mental health is inclusive of SEL. However, mental health expands beyond it to include clinical illnesses, spiritual well-being, and more. Thus, when we refer to mental health we are talking about the big picture, and when we refer to SEL, we are focusing on some targeted skills to achieve mental health.

Positive Mental Health

Corey Keyes (2005) expanded on the dimensions of SEL and definitions of mental health with the dual continuum model of mental health. This model fits with WHO's recognition in 2004 that mental health is not simply an absence of mental illness, and incorporated both skills and the larger paradigm of mental health. In Keyes conceptualization of mental health, it is conceived as a syndrome, with measurable symptoms and diagnostic requirements. Keyes showed that data support the existence of two distinct continua (mental illness and mental health) and identified 13 "symptoms" of mental health:

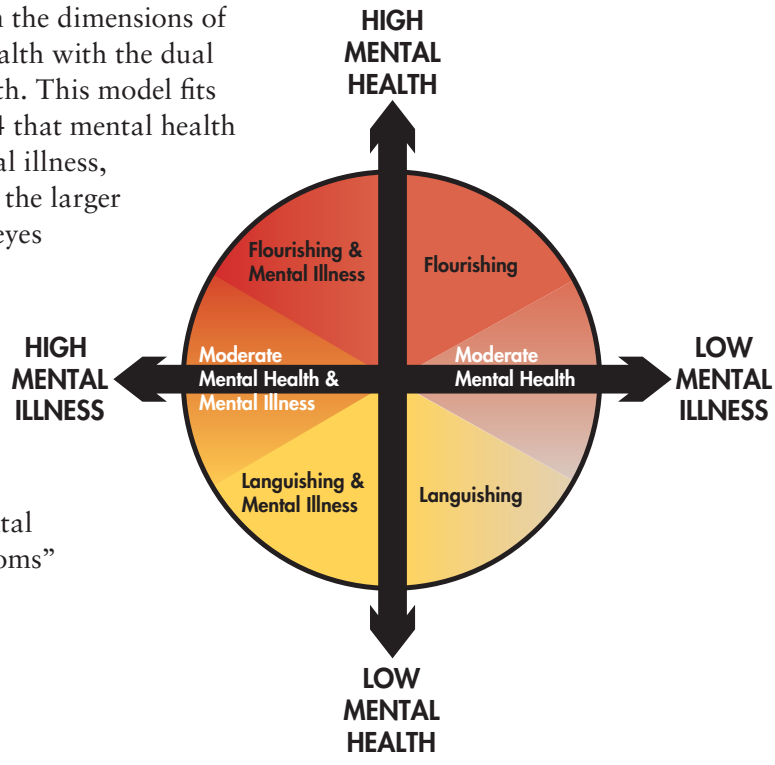

Figure 2.5 Dual Continua of Mental Health

- High emotional well-being, defined by 2 of 3 scale scores on appropriate measures falling in the upper tertile.
  1. Positive affect
  2. Negative affect (low)
  3. Life satisfaction

Positive feelings about life, such as being "in good spirits," being hopeful about the future, and satisfied with the present.

- High psychological well-being, defined by 4 of 6 scale scores on appropriate measures falling in the upper tertile.
  1. Self-acceptance
  2. Personal growth
  3. Purpose in life
  4. Environmental mastery
  5. Autonomy
  6. Positive relations with others

Six factors contribute to positive functioning (self-acceptance, personal growth, etc.): individuals feeling good about who they are, having goals and believing they are growing toward them, having positive intimate friendships and relationships, being able to meet their needs in their environment, and having a sense of personal power and choice.

- High social well-being, defined by 3 of 5 scale scores on appropriate measures falling in the upper tertile.
  1. Social acceptance
  2. Social actualization
  3. Social contribution
  4. Social coherence
  5. Social integration

Individuals' experience of connection and belonging. Social coherence reflects a person's feeling of "fitting in"; that is, a sense that society's values and practices are coherent with one's own. Social actualization refers to an individual's perception of society as moving forward—the hope that "things will get better." Social integration and acceptance are feelings of being included and valued by your community. Social contribution refers to the perception that the individual is making an important contribution to society.

Symptoms of emotional well-being are determined based on participants' responses to questionnaires or interviews and relate to positive feelings about life, such as being "in good spirits," being hopeful about the future, and being satisfied with the present. In addition to these emotional states, Keyes wanted to quantify how individuals functioned in their lives, much as functioning levels are measured for depression, or disability.

Psychological well-being represents the intrapersonal, or internal, processes that an individual experiences. By contrast, social well-being represents an individual's experience of connection and belonging. Social integration and acceptance are similar to the sense of belonging referred to in the Three-Block Model (TBM) (see pages 53–55) – a feeling of being included and valued by one's community.

Similar to the specific criteria used for diagnoses of mental illness, Keyes proposed that individuals must exhibit at least 7 of 14 "symptoms of hedonia or emotional vitality" and "positive functioning" to be diagnosed as "flourishing in life." Furthermore, he proposed that under this new understanding of mental health,

intervention programs must focus not only on decreasing the prevalence of mental illness, but also focus on helping individuals flourish and achieve a mental health state that includes "high levels of emotional, psychological, and social well-being." Thus, the focus of SEL expanded beyond the original five components (self-awareness, self-management, social awareness, relationship skills, and responsible decision-making) to address the larger goals of developing both the skills needed to flourish, as well as those required to mitigate mental illness. When distinguishing between happiness as short-term gratification and as longer-term flourishing, flourishing is presented as involving the search for meaning – a spiritual perspective.

The Pan-Canadian Joint Consortium for School Health (2013) elaborates:

> These positive mental health themes include: social and emotional learning, positive (strength focused) youth development, protective factors and resiliency, diversity, acceptance and understanding of student mental health needs, connectedness, strength-based perspectives, mental fitness and self-efficacy.

NOTE: In this text, we use the term *mental health* to refer to this expanded understanding of wellness, and the term *SEL* when referring to specific research, programs, and skills based on the Collaborative for Academic, Social, and Educational Learning's (CASEL's) model (see pages 15–16).

Languishing and Flourishing: The Implications for Youth

Languishing mental health is characterized by alienation, isolation, hopelessness, and the lack of a social support network. Youth who have friends and positive relations with significant adults are far less likely to have languishing mental health. In turn, adolescents who have close friendships and support at home and at school generally have higher levels of self-confidence and self-esteem. Similarly, according to Health Canada, opportunities for social interaction support the development of trust between people, a deeper sense of meaning in life, and an enhanced sense of coherence, control, and positive self-regard. These psychosocial factors then contribute to improved mental and immunological health. Flourishing mental health and positive self-esteem enable an individual to connect with and embrace a community of people. Belonging to a supportive community contributes to mental health by providing support in times of crisis, grounding in one's cultural roots, and opportunities for creativity.

So, how are our youth doing? Most students are doing well. Four out of five students report they rarely or only sometimes feel left out. That needs to be acknowledged. Nevertheless, 20 percent of our youth are suffering, and that's not okay. According to a WHO survey, approximately one in five boys and girls in grade 6 in Canada report that they often feel lonely or left out. A higher percentage of boys than girls feel they do not belong at school. This peaks in grades 8 and 9, where approximately 23 percent feel they do not belong at their school. Stress in youth is often first manifested physically, with symptoms such as headache, stomachache, backache, and dizziness. At other times, symptoms can

be mental or emotional, including feeling low or depressed, irritable, nervous, and having problems sleeping. One in four grade 6 students in the survey reports having at least one of these symptoms daily, with no difference between girls and boys. Beginning in grade 7, a greater percentage of girls than boys report daily symptoms; by grade 10, the percentage among girls is 35.7 percent, or one in three girls.

And what is the number one source of stress? School.

Stress in school often presents as challenging behaviour, withdrawal, avoidance, truancy, and anxiety. Students with high stress levels react aggressively and without the ability to exercise judgment (see the next section on the effects of cortisol). While educators often assume that the stress comes from home, this denies the fundamental truth that, for many students, school is stressful. Students who struggle with the demands of traditional schooling, such as the abilities to read and write, sit still, process large amounts of auditory information, and navigate social and cultural expectations that may not be familiar to them, can find school extremely stressful and demeaning. Think about the one thing you find the hardest to do. Now imagine being asked to do it for six hours a day, five days a week, for twelve years. Don't complain, don't avoid the task, cooperate with your peers who find that task easy, and, oh, don't be oppositional! For me, that task would be sewing (I have very poor fine-motor skills). If I was asked to be a seamstress all day, every day, and a manager came by my workspace and told me to stop fooling around and finish what I was sewing, I'd exhibit oppositional behaviours, too!

The Role of Trauma, and the Promise of Plasticity

Today, neuroscience has much to contribute to classroom practice. Research has demonstrated that what happens in the mind affects the body, emotions, and spirit, which, in turn, influence learning. Our emotions regulate learning and memory. Our experiences affect us on every level. Studies in epigenetics and brain plasticity (see page 33) have provided additional promise, and questions, for the field of education.

Trauma

Trauma affects brain function. Chemical release during times of stress affects brain function and, over time, structure. When we perceive ourselves to be in danger, our brains release cortisol, a stress hormone related to adrenaline, into the bloodstream. It activates the fight-or-flight mechanisms of the brain in response to danger. Our heart rates rise, we go on alert, and we become totally focused on survival. Our brain shuts off the cortex (the part of the brain responsible for thinking and judgment) and uses only the lower, instinctual brain so that we can act quickly (e.g., throwing our hands up in front of our face to protect ourselves). This state of mind is called "fight or flight," because we look to escape the danger if we can, and otherwise fight for survival. It is an appropriate response when we are truly in danger (e.g., when in a car accident, or when chased by a dangerous animal). After

the danger is gone, the brain stops releasing cortisol, and it is slowly metabolized out of our systems. Our heart rate comes down, our breathing returns to normal, and we can begin to think clearly and determine our next course of action.

Our brains are programmed to prioritize danger and safety messages, which makes sense. The problem is, our brains have not evolved to discern emotional from physical danger. Whether a tiger is chasing you, your boyfriend has broken up with you, or a pet has died, the brain's reaction is the same. It doesn't matter whether the threat is real or perceived – each results in cortisol release, fight-or-flight reaction, and, therefore, avoidance and/or aggression. A student who is worrying that they will be embarrassed in front of their peers because they can't read well, or that they will be bullied at recess, will react as if in danger. A teacher who thinks parents are being critical, colleagues or admin are not supportive, or has challenges at home, will respond similarly. As a result, students (and teachers) who are under chronic stress – who perceive themselves to be unsafe emotionally or physically – retain high levels of cortisol in their systems. These are the students who are constantly in avoidance or anxiety mode; who react to others looking at them, talking to them, or touching them; and who are aggressive and defensive over seemingly "minor things." Students in this state of being *cannot* "be rational" or "problem solve" – their cortex is not functioning well. No one reaches in on a cornered animal that is growling out of fear. We lower our voice and try to show that we are harmless and won't hurt it. So, why do we react to our students in aggressive, power-based ways and then act surprised that we "get bit"? Why do we react to an overwhelmed colleague with judgment rather than with compassion?

Long-term, ongoing stress or trauma leads to continuously high levels of cortisol. In turn, cortisol reduces the brain's ability to produce serotonin, a chemical responsible for mood and anxiety. As a result, ongoing levels of stress gradually wear down our ability to manage our emotions, and depression and anxiety are the result.

When students enter a classroom or school that feels safe to them, their cortisol levels will reduce. Regardless of what is happening to students at home or in the neighbourhood, if we create safe havens for them at school, they will be healthier and better able to learn. Even 10 minutes of meditation in a school day results in better outcomes both behaviourally and academically.[2]

But what about staff, families, and communities? Anxiety and stress look slightly different in adults – avoidance of stress in adults often presents as resistance to change or additional demands, aggression may be expressed as verbal conflict, refusal to interact/collaborate with peers, and more. The myth of resistance to change is a dangerous one. No one I know would resist a pay raise, an opportunity to travel, or other positive changes, even if there is stress involved and it requires significant effort (e.g., planning a wedding or a big trip). People resist change when they see it as overwhelmingly stressful in a negative sense, or when they

2 In the book *Teaching to Diversity*, we discussed programming to create safe spaces in which students' cortisol levels can be reduced. Programs such as Spirit Buddies, democratic classrooms, and the Respecting Diversity program all can help to reduce students' perceptions of danger in our classrooms.

believe themselves incapable of succeeding. So, how do we create safe, supportive environments on a larger scale? This is a critical question if we are truly to build inclusive schools. We will discuss this in detail in chapters six and seven, but a shift in our perspective must take place if we want to create schools of healing and well-being.

Complex Trauma

Most often we think of trauma as occurring due to a single, horrific event. However, researchers have begun to understand that ongoing exposure to high-stress events can also cause a form of post-traumatic stress that can have devastating effects on a child's physiology, emotions, ability to think, learn and concentrate, impulse control, self-image, and relationships with others. Complex trauma results in high rates of addiction, chronic physical conditions, depression and anxiety, self-harming behaviours, and other psychiatric disorders in later years.

Complex trauma results from repeated exposure to abuse, significant neglect, and fear for safety or survival on a day-to-day basis. Children who grow up in communities where food insecurity is common, where homelessness looms as a constant possibility, where domestic violence and addictions are common are likely to experience complex trauma. The constant fear results in damage to brain development, attachment and relationship skills, and more. The young of mammals naturally count on their parents to keep them safe and comfortable. When a parent cannot meet this need, a child's sense of safety and trust becomes threatened. They live their lives in survival mode, avoiding all possible triggers, and choosing survival over flourishing. We see these students in our schools on a regular basis, and wonder why they sabotage relationships, fight seemingly minor requests, and would rather be suspended than trust themselves or others. They are often very reactive to others' moods and behaviours – a teacher with a headache can result in a student reacting with aggression, because their perception of the teacher's facial expressions and tone of voice is that the teacher is unhappy or angry. In a home where an angry parent is dangerous, the survival reaction of the child makes sense. Unfortunately, these adaptations to a dangerous world often condemn students to a life of danger, because they may prevent positive relationships that would surround them with love, nurturing, and health.

Intergenerational Trauma

When trauma results from oppression over time and history, the negative consequences can be passed down to future generations. Intergenerational trauma has affected the health and well-being and the social disparities facing Indigenous peoples in Canada and other countries. In Canada, stress caused by the horrors of residential schools and the Sixties Scoop had significant impact on parenting, employment, education, and other aspects of Indigenous life and communities.

Intergenerational trauma can be seen on both individual and communal levels. For example, the trauma may be evident in a family where the parents

or grandparents were forced to attend residential schools, and each subsequent generation of that family continues to experience trauma in some form. On a communal level, intergenerational trauma can be seen when a people have been oppressed or traumatized, and, thus, culture, parenting, and more affect the community across generations.

Direct survivors and intergenerational survivors of these experiences often transmit the trauma they experienced to later generations when they don't recognize their trauma or have the opportunity to address their mental health and well-being. Many self-destructive behaviours can result from unresolved trauma, including depression, anxiety, family violence, suicidal and homicidal thoughts, and addictions. Over time, these often-destructive behaviours become normalized within the family and their community, leading to the next generation suffering the same problems.

Epigenetics

There is a new field of neuroscience that I believe will inform, and transform, education in significant ways in the years to come. Epigenetics is essentially the study of the heredity of experience – how one's life experiences affect children through the transmission of genes and their expression. It has been shown that the children and grandchildren of Holocaust survivors have inherited certain responses to danger signals that concentration camp inmates were exposed to (e.g., the music of Wagner, which was played over the loudspeakers in Auschwitz). Some grandchildren of survivors will show stress reactions to Wagner's music, even if they have never heard it before and don't know what it is. As incredible as this sounds, it makes sense. How does a kitten know to be afraid of a dog? We have a system of passing on "danger" to our offspring, and now we realize that trauma experiences can be passed on.

This is important, because it means students whose parents have experienced trauma, or who have experienced trauma themselves, can also be affected, in terms of wellness, learning, and brain structure and function. The type and number of brain cells made, the formation of neural pathways, and the release and reception of neurotransmitters at synaptic connections occur in response to children's experience and genetics (Kessels and Malinow 2009; OECD 2007). A student whose family has had negative experiences with school may be entering our buildings feeling a sense of fear or dread and *not know why*. With the knowledge that students whose parents have experienced trauma, or who have experienced trauma themselves, can be affected in terms of wellness, learning, and brain structure and function, the importance of holistic educational systems greatly increases.

Think about it:

- What does this knowledge – that parents' trauma affects their children – mean for students whose parents had a negative school experience?
- What does this mean for Indigenous students, who likely have epigenetic cultural trauma embedded in their DNA?

If we know that beginnings may be difficult, and students need to feel safe in order for cortisol to reduce, how might this change what kindergarten, September, and morning start-up look like?

Neuroplasticity

There is some good news. Research has shown that because of the ongoing plasticity of the brain, the building of healthy peer and staff relationships at school is key to promoting long-term outcomes of health and well-being (Konishi et al. 2010; Troop-Gordon and Gerardy 2012). Trauma causes significant impairment in the brain, *but caring can lead to healing.* Despite early exposure to an environment of risk, brain pathways retain their plasticity to some extent, so an enriched environment in later years can promote well-being.

We have long known the impact of enculturation, socialization, peer modelling, and so forth. Neuroscience has begun to discover physiological systems that are responsible for these social connections and influences. Mirror neurons cause us to take on the emotions, habits, and patterns of those around us. Chemicals released by one person affect another, as in the case of pheromones. All illnesses are both physical and environmental (Polderman et al. 2015). Biochemistry and environment, genetics and life experiences, stress and grief, joy and resilience all play a role in cardiac disease as much as in depression, and early life experiences affect the later development of illnesses we term both *mental* and *physical*.

Neurocognitive research investigating the links between emotions and learning has demonstrated that for students to learn, the diversity of their needs must be recognized by teachers, and then classroom learning environments created that address social and emotional well-being and belonging (CASEL 2016). According to Hertzman (2012)

> Developmental systems theory is now the dominant paradigm in understanding children's development, and it is also now well established that the early experiences of children become biologically embedded. That is, experiences influence biological development (Nelson, Kendell, and Shields 2013, 241).

Youth who experience chronic stress incur changes in the structure and function of areas of the brain that then affect their ability to regulate emotions, process information, and remember. Cognitive functions, including neurocognitive processes, such as the ability to pay attention, retain in memory, and process language, are all mediated by social, emotional, and mental-health factors.

As teachers, we must be aware of our students' well-being. It is non-negotiable, and more important than any curriculum.

School-Based Mental-Health Services and Programs

Preventative programming can affect students' emotional resilience and well-being. In today's world, schools are the only institution that have access to all of our youth. Religious institutions do not, psychiatrists do not, family doctors do not.

As a result, schools are the only place where universal programming can occur. This reality has resulted in school-based SEL programs aimed at maximizing SEL while concurrently reducing the risks of maladaptive behaviours and mental-health problems. The conceptualization of what school mental health and SEL look like in application is emerging more fully, as an equitable partnership between schools, communities, and families. Unfortunately, the era of high-stakes testing and the pressure on teachers and schools to perform has often marginalized school mental-health programming. Yet, the need to create classroom environments that are safe for all students persists, and the evidence is mounting that doing so actually has more impact on academic achievement than many instructional practices do. For example, a large longitudinal study of SEL programs found that students who participated in such programs in grades 1 to 6 had an 11 percent higher grade-point average and significantly greater levels of school commitment, attachment, and completion at age 18. As well, school failure was reduced – 14 percent in SEL classes versus 23 percent of students in a control group. At age 18, students in the same study showed a 30 percent lower incidence of behaviour problems, a 20 percent lower rate of violent delinquency, and a 40 percent lower rate of heavy alcohol use when involved in SEL programming (Hawkins et al. 2005).

Improved mental well-being is associated with increased positive outcomes, including physical health, life expectancy, educational achievement, skills and employment rates, social interaction and participation, and fewer negative outcomes, including reduced health-risk behaviours (e.g., smoking and alcohol misuse), reduced risk of mental-health problems and suicide, and lower rates of anti-social behaviour and crime. Perhaps as a result, many governments around the world have proposed school-based mental health programming. In England, the National Institute for Health and Clinical Excellence promoted comprehensive mental-health programs involving both universal approaches (aimed at everybody) and targeted approaches (aimed at children at risk or with specific difficulties).

Often educators and governments that are proponents of the accountability agenda form of schooling look to Asian school systems that score highly on international tests. At what cost? Japan's Cabinet Office recently examined the country's more than 18,000 child suicides from 1972–2013 and found distinctly larger numbers of suicides at the end of August and beginning of September, as well as during the middle of April. The former coincides with schools reopening after summer vacation; the latter, as the Japanese school year begins. Pressure on our youth to perform and not disappoint has a cost. Japanese educators and government officials are now piloting universal school-based mental-health programming in an effort to address the suicide rate.

In Canada, as in the United States, the delivery of mental-health services in schools has been promoted and recognized as having the potential to fundamentally enhance the number of youth engaged in treatment. However, despite significant evidence for mental-health intervention in schools, implementation remains inconsistent within school districts in North America. Schools are the first line of defence in mental-health promotion. Mental-health

concerns often first present as poor academic outcomes or behaviour in school, so teachers play a critical role in early intervention. Mandatory attendance at school and the natural setting of services may help address access issues, including transportation, time, cost, and cultural beliefs. As well, schools provide an opportunity for skills related to mental health, such as social skills, emotional regulation, and stress management to be practised, in a natural setting – for youth, school is the place where they will encounter many of the challenges socially and academically that are an everyday part of their lives, and where they will need to apply the coping skills being taught.

Traditionally, educators have debated whether their focus should be on knowledge development or on their role in the development of youth's social, emotional, and mental well-being. Modern science teaches us that this argument is moot, as cognitive function (including neurocognitive processes such as the ability to pay attention, retain in memory, and process language) are all mediated by social, emotional, and mental-health factors. Thus, even if one's goal is solely to improve academic achievement, the well-being of students has to be considered.

The challenge is that many teachers feel ill-equipped to provide universal supports or programming, let alone to recognize signs of illness. If we are to support the well-being of our youth and educators, training in and implementation of school-based mental-health programs is imperative. At the same time, teachers feel pressured to "get through the curriculum" and prepare students for exams. This reflects a lack of understanding that *investment in SEL and well-being will actually raise test scores more than another worksheet will*. Unfortunately, meeting children's mental-health needs is often viewed as the mission of some other agency. In turn, mental-health professionals do not always accept the criticism that their interventions for children must be more related to the core mission of school, which is learning. It is here where, once again, we must weave our systems of support together to best meet our vision for a holistic educational system. It may also involve the restructuring of some of our roles. For instance, psychologists are often used as evaluators, counsellors as academic advisors, and so forth rather than for their more professional skills supporting the well-being of staff and students.

Teacher Impacts

Implementation of school-based mental-health programming also affects teachers. Teachers exhibit high levels of stress and burnout compared to most other professions. Their unusually high stress levels have been linked to high incidences of both depression and anxiety. Research around the world, including in Australia, Germany, the United Kingdom, and Japan, have all found significant numbers of teachers meeting the criteria for having a mental-health problem – double that of the general population. High rates of languishing mental health in teachers in turn affect student learning and behaviour. A cycle of ill health is created, as factors in teachers' stress affect students. Thus, there is a need to address both student and teacher wellness in schools. Fortunately, training in school-based

mental-health programs has shown to be positive. Teachers who implement programming for students in cognitive–behavioural strategies such as problem-solving, building social support and social skills, developing assertiveness and cognitive restructuring strategies to promote positive self-perceptions have shown reduced teacher stress and improved job satisfaction. Trainers in mental health are often positively affected, resulting in changes in attitude, emotional well-being, confidence, and self-awareness. However, training requires specific supports – not just professional development, but also coaching and appropriate human resources (e.g., counsellors or psychologists) – to help problem solve or provide feedback. Tyson, Roberts, and Kane (2009) state:

> With the high number of teachers seeking stress leave from work each year, and the increasing prevalence of internalising disorders in children and adolescents, this is an issue that needs to be addressed. Using teachers to run a mental-health program within the classroom could be a cost-effective way of promoting mental health for both teachers and students.

Changes in teachers' well-being might then have a positive influence on the climate of their classrooms, which, in turn, would affect students' attention, frustration levels, and acting-out behaviours.

Story 1: Ms. P

There is a heart beat underneath it all....

A few years ago I started becoming desensitized to the bad things that were happening to others. I avoided news stories that would tell of harm coming to people in the world and, in particular, children. Through all the vicarious trauma that I experienced at my old school of children going in the night and not getting that goodbye with them and being privy to CFS involvement in my students' lives, etc. In my second year of teaching, I was spending two nights a week tutoring one of my grade 5 students who was placed in the witness protection program with his family and shortly thereafter moved away with a new name and new life. I began to shut down. I know I did. In such a short time I stopped feeling deeply about not having that goodbye with my students, not being able to help them more because it was hurting too much. I placed it in a box. And it began to happen in my personal life too, but I just didn't realize it. When I did realize it the only way I could explain it to others was to say that I just wasn't feeling human. I wasn't feeling emotions as deeply as I knew I should and it was bothering me so much. This was definitely a small factor in seeking a change in schools.

I remember clearly the day that I was driving to work this year and began crying at the image of a bald child on the side of a bus. It was an advertisement for the children's miracle network and this child had clearly braved chemotherapy treatments. I realized at that moment that I had released my heart. Finally. Since then, big things and little things from world events to the feelings I have and the delight I experience from my own children have pulled on my heart.

Sounds silly now, but until this point I have attributed it to the simple act of changing buildings and removing myself from the vicarious trauma I was experiencing there that I

don't experience "here". It is more than that. This change is because of the professional work that I have done with UDL, because it is always, always, always impossible for me to remove the personal aspect. Through this work I have grown as a person. I am a better mom, wife, teacher, and human. I love my kids, my husband, my students, and… I am learning to love myself more.

I have found my heart beat.

Impacts on Families and Communities

Clearly, the well-being of students affects their families. In early research, the term *family burden* acknowledged the effects a child with mental illness has on parents and siblings. Such effects included, but were not limited to, economic disadvantage (because one parent often had to stay home to be caregiver, costs associated with therapy, and potential costs related to violence or destruction), emotional stress, isolation (parents often report no longer being invited to family/community functions), and marital difficulties. More recently, the term *family impact* is being used, to remove the subjective perception of negativity inherent in the term *burden*. Families' reactions to anxiety, depression, and other mental-health conditions vary. Behaviours that one parent is distressed by and perceives as withdrawal, sadness, or nervousness, another parent perceives as sensitivity, introversion, and gentleness.

The economic costs of mental-health disorders to communities at large are estimated to be in the billions of dollars. These are in part direct costs, as when an employee takes stress leave, and indirect, as when a parent leaves the workforce, or is less productive at their job, because of the need to care for an unwell child. Social, emotional, and cultural costs are much more complex and nuanced. Socially, relationships between individuals, families, and communities may be disrupted due to languishing mental health or mental illness in individuals. Direct effects of behaviour, such as aggression or suicide, mix with indirect factors, such as disagreement over how best to respond to an individual with mental illness (e.g., jail/treatment, discipline/compassion). Families, communities, and governments must spend considerable resources responding to individuals: health-care systems, schools, police, and legal systems are all affected. One need only watch the news on any given night to witness tragedy caused by mental illness – and the impacts extend like a spider web to the doctors, nurses, teachers, police officers, and more who interact with individuals struggling with mental illness. At the same time, many of our greatest minds have at some time been touched by mental illness. It is impossible to quantify the influence of depression on Picasso's blue period or on Thoreau's writings, on Buddha's epiphanies or on Lincoln's speeches. Their impact on society is significant, despite, or perhaps because of, mental illness. Thus, while we look to reduce stress and support flourishing mental health, it is critically important we not dismiss or assume those who live with illnesses such as depression or anxiety need to be "fixed." What they *do* need is to learn how to manage these illnesses in their day-to-day lives.

Story 2: Ms. D – Resiliency in Care

School can be a protective factor in the lives of children in care. For many children who have grown up foster care, or as a ward of the Child and Family Services system, there is a recognition that school was a consistent and reliable safety net in life filled with uncertainty and tumult. Of course, for many educators navigating the complexity of the CFS system is a daunting and time-consuming task. Accessing records, getting permission slips signed, keeping track of kids after they have been moved from one home to the next, advocating for children to not be transferred out of a catchment area so that they can stay with their home-room friends and teacher; these are all difficult tasks. But as difficult as they are for teachers, they are nothing short of traumatic for children. Given the vulnerability of these children we believe that any contact between student and teacher, however short, is an opportunity to enrich their lives with those experiences that are most important to their success at school; namely belonging, care, compassion, a strong sense of efficacy and agency at school, consistency and reliability, and an opportunity to give of themselves and contribute in a meaningful way. No one knows this better than Chantelle Desorcy. Desorcy, who is currently a teacher in rural Manitoba, grew up as a child in care. Her story has very much informed the type of teacher that she has become, and is informative for us as a case study of working with children in care from a UDL perspective. As an Indigenous woman she first had the opportunity to engage with her own culture as an adult in University, something she believes children should have the opportunity to do much earlier on in life. In her own words…

Behind closed doors, there are worlds that have been shattered, truths hidden, lies, secrets, and darkness. But every door is made to be open, and eventually some light is allowed to trickle through. As I have survived and continue to live my life, I have chosen to come out beyond my room, and look back into the darkness not as a threat, but a reason to live.

As a child, you always look at life like there is another day. You don't stare watching your feet as you walk along, but you look up towards an adult, leader, mentor, or advocate. You don't understand that they may be doing the wrong thing; you look up at them to teach and to guide you, trusting your whole life to them. It is only until we grow up and look at society as a whole, do we then compare hardships, unfairness, betrayal, and morality. As a child you depend on those who are stronger than you, and those who have walked before you. You live every day knowing there will be a next, and dream of the future. My story is to inspire, not to bring hurt, anger, or pain. It is only because I once had eyes of a child, that I still survive today. With my story, I hope to remind adults of the perspectives we once had, and to remind our youth to keep our childlike focus because there is always a better future as long as we keep looking up.

I have no recollection of womb memories, but the story goes that I was beaten out of my birth mother four months premature. I was less than 30 centimeters long, and weighed 3 pounds. My birth father was violent, and affiliated with a Filipino gang, and my birth mother coped with cigarettes and alcohol. The effects on my physical body were noticeable, but my eyes were opened to life the moment I was born.

As we all get second chances at life, my mother had the same opportunity. Unfortunately she grew up in the system, and, well, history has a way of repeating itself.

At six and a half months, my two-year-old brother was pleading to 911 for help, for himself and his baby sister, because our mother was laying on the floor not far from me, bleeding, because she had been stabbed by one of our father's gang-affiliated friends. She ran out of chances, we ran out of time. We were permanently admitted into CFS.

As I turned 1, then 2, 3, 4, 5, 6, and 7, life is faded. Memories are gone except the few that taught me some critical lessons. Lessons that I never learned in school but in the wee hours at night when everyone else was sleeping. Here, in this moment of my life, I can look back as a teacher and understand what happens when you say to the student at the end of the day, "Bye, see you in the morning! Have a good night!"

As a child in the system every *bye* feels like the last time because you just may end up looking at your foster parent the wrong way – and get beat for it so bad you have to wait at home until the bruises lighten, or sent to another home. You hold onto the "see you in the morning!" because you get to have a chance to become a kid, a student, someone who can be a child, free… oh ever so free the next morning. And when you say – "have a good night", those words can help a child hold on in those late nights of being sexually abused, beaten, locked in a room with no food. Those end-of-the-day goodbyes are a child's lifeline for kids in care.

As a teacher, after a long day, you get caught up thinking about the child who chooses to crawl on the counters in the classroom instead of listening to the 100th different way you have shown them to do simple addition. As you sit and stare into the distance that night, on the couch, of why this student punches another student, or tries to bungee jump off the school play structure, or touch adults inappropriately, or says things that are just so not funny… You scream into your mind and wonder… *Why can't this kid be normal!!!* How much time and energy can we put into these children who just seem like they don't want to be there??? After so many ways of showing them how to read, or write, or do simple math, *how do they not get this!!*

And as any great teacher, after our poor-me, my-life-is-so-hard-as-a-teacher rant, you start to self-reflect. You start to question, "What am I doing wrong? What can I change to make this child change?" We start to blame ourselves and miss the big picture.

That child fights with their fists because that's all they've been taught how to communicate. The child lunges off of any play structure or plays life-threatening activities because they have never been taught how to have fun – how to play and what that even looks like. That child touches or speaks inappropriately because they have not processed what inappropriate looks like because they have not yet been shown what is appropriate. Touch to them is love, not dirty, sick, or sexual. And lastly, that child does not want to focus about how you can get 2 plus 2 in 50 different ways, orally, pictorially, symbolically, and with manipulatives because *they know.*

They have learned how to ration food because they don't know where the food will come from next. They don't need to understand money, because they will do whatever it takes to survive, to make their younger sibling happy, to get a gift for a friend because everyone else's parents bought brand new presents for a class party and, well, their cupboards may very well have a lock on them at home. That child knows what they need to survive, and in their perspective, to survive is the best knowledge you will ever need in life, and well, school – let's just say it is not a priority to get top marks, to earn a scholarship when they graduate, to win a paper award for good behavior.

School, for these children like myself, was a vacation and a chance to be a part of society. A place where I could have the chance to be who I wanted to be, or experiment

with who I wanted to be like. And this is the reason why I chose this path to be an educational leader. I chose to be that one adult in that child's eyes that I can connect with. I can be that one adult, who says I look forward to seeing you in the morning – because I do. I want them to hold on, and I will make sure – everyday, that in the few hours with them, I can show them the light at the end of the tunnel. With my past, I can understand the path these children walk after school. I can make their time at school relevant because I know what is behind closed doors. Even today, as I do not walk in those shoes anymore, I find, on those really hard days when I am asking the same questions, and come to realize: Never once, as a child did my role models ask to change who I was, but modeled a life in which I could live. They modeled how I was supposed to be treated, how I should act in public, how to play and use my imagination. Today, after my educational degree, having two children, and being a teacher, I still suck at math. But I always look towards tomorrow as another day, and hope to see that child in the future, as successful as I am.

I remember my past through the eyes of a child. It has helped me survive today and will help me to help students tomorrow. You see, if I look back on my past through my eyes now, it stops me from living my life to the fullest. It steals my courage to move on. With eyes of a child, you see nothing but the future. You walk the circle of courage, seeing belonging and generosity in someone or anything, no matter what the situation is. You learn independence and you strive for mastery just so you can reach the next step. You never give up. Every day is not about survival but adventure and hope.