Interactive learning to de-traumatize kids

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(Medical Xpress)—Spending long hours on computers may be stressful for some, but Simon Fraser University researcher Alissa Antle is exploring a way to help traumatized children living in poverty turn their lives around doing exactly that.

On Thursday January 30, Antle, an associate professor in the School of Interactive Arts and Technology (SIAT), will share her latest pioneering development at SFU's Segal Graduate School of Business. She will deliver the next lecture in the SFU President's Faculty Lecture Series.

Antle will discuss how she's using neuro-feedback and multi-touch tablet-computer technology to help the world's poorest children succeed in school. She is working with a Canadian non-governmental organization (NGO) and Nepalese children.

"Even with access to education many children are unable to focus on learning due to multiple traumas they have suffered," explains Antle. "These traumas may be layered and include poverty, domestic violence, parental mental illness and addictions, homelessness and civil war."

Neuroscience research suggests that mindfulness practices, including meditation and yoga, can improve executive brain functioning and help reset the limbic system in trauma victims. One of the proven ways to learn "affect regulation" through mindfulness practices is with neuro or biofeedback.
(Affect is the short-term expression of emotion through behaviours and affect regulation is a set of processes individuals use to manage their

affective responses on a day-to-day, minute-to-minute basis.)

To help vulnerable Nepalese children at an NGO-funded school in the slums of Pokhara succeed in class, Antle is working with one of the school's counsellors. They are developing a series of affect regulation (or mindfulness) games on a neuro-feedback-controlled Android tablet.

For example, the children may play a simple game in which they need to modulate their breathing and relax—which changes their brain state—in order to make a pinwheel spin.

"One of the biggest challenges is building an app/system the kids can use when they are illiterate, don't speak English and have no computer experience," says Antle. "I want them to know what to do right away to create calm or attentive brain states—no small challenge."

"The main research outcome is to help children improve their ability to regulate affect: to relax, focus and pay attention through daily practice with mindfulness neuro-feedback-based games," explains Antle.

"The games motivate repetitive practice, which may actually change their brain (think neural plasticity) and improve their ability to manage anxiety, settle themselves when stressed and better focus on educational materials.

"A successful strategy could enable us to help children with different levels of trauma overcome their challenges and lead a happy productive life. Our core technology could be used to develop culturally sensitive games. They could help child soldiers, children with chronic pain and those with attention deficit hyperactivity disorder learn better coping strategies to manage their situation."