# OLTD 508 Major Project

How does mobile learning support social & emotional learning in students with special educational needs?

Wendy Preston

What is Social & Emotional Learning?

The Collaborative for Academic, Social, and Emotional Learning (CASEL) defines SEL as "the process through which children and adults understand and manage emotions, set and achieve positive goals, feel and show empathy for others, establish and maintain positive relationships, and make responsible decisions."

CASEL identify five core competencies to consider when developing programming for social and emotional learning.
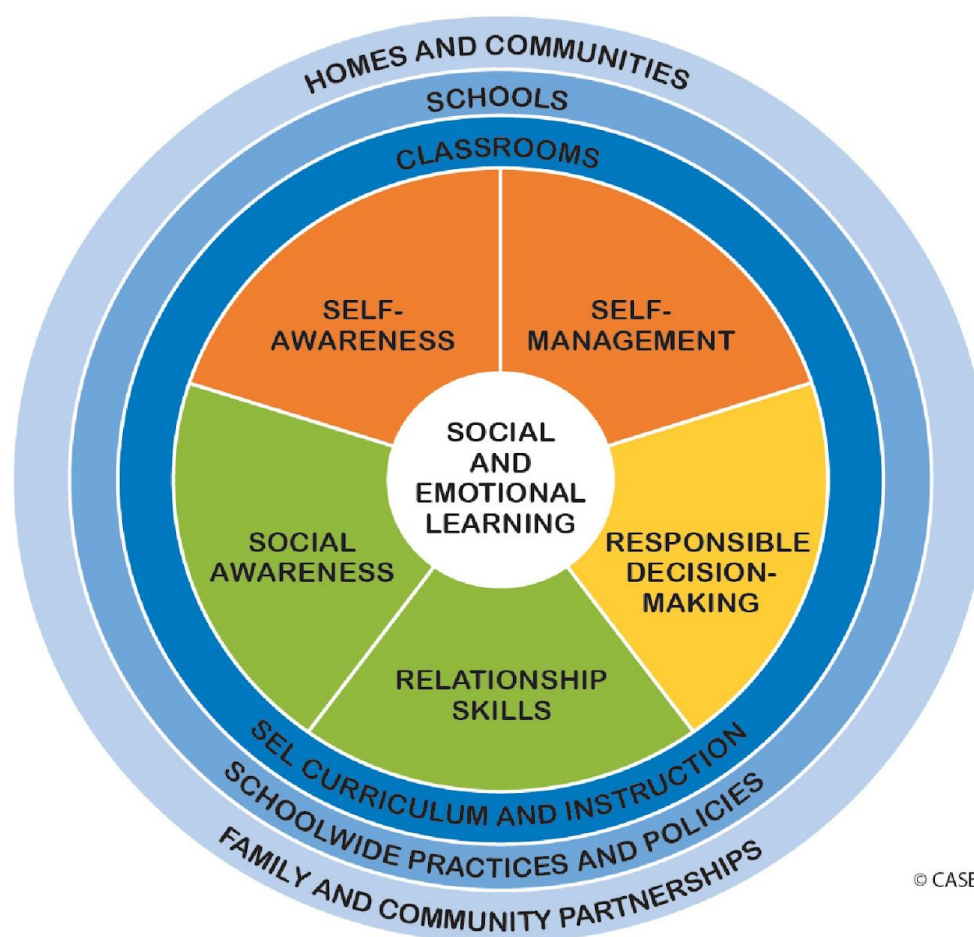
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As can be seen from the diagram, social & emotional learning (SEL) is not taught in one domain but should be embraced by the wider family and community groups, and should also inform all areas of school practices and policies. It is a topic which should be truly cross curricular in nature and embedded in school philosophy.

Why is SEL important?

In many areas school curricula are developing into far more holistic documents. Our own redesigned BC curriculum recognizes the need to teach the whole student rather than segmenting subjects and outcomes. By introducing core competencies, the new curriculum identifies three key areas that should be addressed in any learning situation

The BC curriculum wheel is not unlike that designed by CASEL in a simplified form. It is also important to note that the authors of the BC curriculum recognize that the core competencies are not limited to the school experience. They begin in the home environment and continue into postsecondary education and the workplace. It is more than the acquisition of facts, but embraces different ways of thinking and competent communication skills together with self-awareness and empathy for others.

In the paper "New Vision for Education: Fostering Social and Emotional Learning through Technology", the authors discuss the needs of 21st century learning and the importance of SEL. They identify 16 skills they consider necessary for lifelong learning, and they also comment that children entering school now will probably take jobs that don't even exist currently. This means that skills taught in schools need to be transferable to many different life situations. Skills such as creativity, collaboration and the ability to think outside the box will be more sought after than ever before. As with the previous articles, the authors also discuss how it is important that SEL be taught not only at school, but also in the home setting. This requires parental buy-in and education. The parents need to see the value of this type of program.

Exhibit 1: Students require 16 skills for the 21st century

21st-Century Skills

Foundational Literacies
How students apply core skills to everyday tasks

1. Literacy
2. Numeracy
3. Scientific literacy
4. ICT literacy
5. Financial literacy
6. Cultural and civic literacy

Competencies
How students approach complex challenges

7. Critical thinking/problem-solving
8. Creativity
9. Communication
10. Collaboration

Character Qualities
How students approach their changing environment

11. Curiosity
12. Initiative
13. Persistence/grit
14. Adaptability
15. Leadership
16. Social and cultural awareness

Lifelong Learning

Note: ICT stands for information and communications technology.

SEL and Students with Special Educational Needs

If SEL programs are to feature widely in our schools, it is vital that they are far reaching and accessible to all members of the school community.Whilst accepting that SEL programs are important for students in mainstream education, I feel they are more important for vulnerable students with special educational needs. Such programs have often featured in special educational programming, particularly for students with autism spectrum disorder. So many of the challenges faced by students with special needs can be addressed by an effective SEL program. Looking at the CASEL competencies, it can be seen that every area covered is of vital importance to a student with challenges.

Self-regulation/self-management covers a gamut of behavioural challenges and such programs seek to stop problems before they happen. Often students with ASD fail to recognize social cues and nuances that many take for granted. This often leaves them isolated in social groups and they often suffer from communication challenges.

In order to be successful, such programs need to be easily accessible and used independently by students. Teachers will need to implement the initial program, but after that the student will need the tools to apply these skills in everyday life, and this is where mobile technologies may be useful.

Social & Emotional Learning and Mobile Technology

Whilst researching what technology was available to support social and emotional learning, I was surprised at the range that is currently available, and how much of this would be accessible to students with challenges. The University of British Columbia provides a research site for those seeking SEL resources http://www.selresources.com/. It is very user-friendly and well catalogued meaning that users can search by SEL competencies and age group. It also covers mental health challenges. Within this website are mobile technologies applicable to SEL.

In an EdTech article about SEL and technology, Eli Zimmerman points to classroom based technology creating opportunities for SEL with three pieces of technology:

- Collaboration Platforms (G-Suite, Office 365)
- Artificial Intelligence
- Mixed reality (virtual & augmented reality).

Zimmerman states "'educators often focused on creating SEL-specific curricula. Although such classes were often rich in information, they **failed to contextualize the lessons**. More effective, he said, is to incorporate SEL into daily classroom activities to show students what these competencies look like in practice." Technology may now be available to fill the gap of contextualization.

https://edtechmagazine.com/k12/article/2018/12/social-emotional-learning-competencies-get-boost-classroom-technology-perfcon

Some of the available technologies have naturally evolved from pre-existing successful programs. One resource which has been used successfully for many years is The Zones of Regulation. Zones has been specifically geared towards students with ASD and ADHD and centres around the concept of self-regulation, which is often so challenging for these students. Based on cognitive behavioural theory, Zones teaches students to be self aware and recognize their state of being at any given time.

THE FOUR ZONES: OUR FEELINGS & STATES DETERMINE OUR ZONE

The **Red Zone** is used to describe extremely heightened states of alertness and intense emotions. A person may be elated or experiencing anger, rage, explosive behavior, devastation, or terror when in the Red Zone.

The **Yellow Zone** is also used to describe a heightened state of alertness and elevated emotions, however one has more control when they are in the Yellow Zone. A person may be experiencing stress, frustration, anxiety, excitement, silliness, the wiggles, or nervousness when in the Yellow Zone.

The **Green Zone** is used to describe a calm state of alertness. A person may be described as happy, focused, content, or ready to learn when in the Green Zone. This is the zone where optimal learning occurs.

The **Blue Zone** is used to describe low states of alertness and down feelings such as when one feels sad, tired, sick, or bored.

http://www.zonesofregulation.com/learn-more-about-the-zones.html

By being aware of the particular "zone" they are in, students learn about what changes the state of their emotions and what can be done to either avoid this, or coping mechanisms to use if this happens. Often students who are not able to self regulate will jump from a green zone state to a red one without much control.

Zones have been used very successfully for many years and there is now a Zones of Regulation app to supplement the program, rather than replace it. It is used as an interactive tool on mobile devices, which the students can use on their own time outside the classroom. Using the app, students can learn different strategies and tools to manage each zone state and different calming techniques. Using their individual preferences, they can then build a toolbox of strategies that work for them. The producers of the app do add the caveat that parents or educators should "closely monitor the student's progression through the App, asking probing questions and facilitating discussions about how the App's content can be generalized to the student's real life." As such the App is not intended for

independent use, but instead adds a layer to the program and helps with student engagement.

Technology geared towards younger students often works for students with special educational needs, as there is less reading involved and the concepts are easier to grasp and use independently. Sesame Street has brought out an app called Breathe, Think, Do. This app is intended to teach skills such as problem solving, self-control, planning and task persistence.
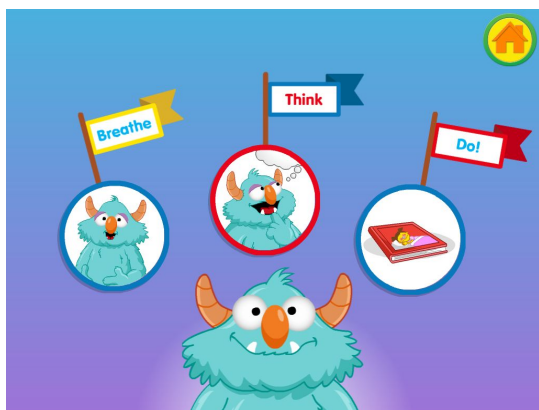
The app can be used for de-escalation techniques, mindfulness, problem solving and conflict resolution. It is a fun and friendly way for younger children to practice these skills and reinforces content already covered in the classroom or at home.

Many students with challenges find it hard to recognize and deal with states of emotion. The app Touch and Learn-Emotions, by Innovative Mobile Apps is designed to provide students with pictures of different emotional states. Touch & Learn-Emotions offers a visual-based approach to help children who are at the first stage of learning about emotions and facial expressions. This app is specifically designed for children who may have difficulty learning to talk and to read, or to interpret facial expressions, such as those with Down syndrome, other visual learners and those with ASD. This is helpful when learning to read different emotional states, facial expressions and body language. The app receives good reviews from both parents and educators who praise the fact that students can learn to use it fairly independently after initial training.

Touch and Learn - Emotions: Innovative Mobile Apps
https://apps.apple.com/us/app/touch-and-learn-emotions/id451685022

Virtual Reality and SEL

Virtual reality and its uses have been expanding beyond the entertainment industry for several years. Research into the use of VR to train emotional and social skills in children with autism spectrum disorder has been carried out recently by Sze Ngar Vanessa Yuan and Horace Ho Shing Ip, funded by the Centre for Innovative Applications of Internet and Multimedia Technologies, University of Hong Kong. The authors developed a VR-enabled training program to examine its efficacy on emotional and social skills using six VR scenarios depicting the typical lives of children living in Hong Kong. As ASD is often characterized by impairment in social communication, social stories about social situations can be useful in teaching students with this condition together with how to form socially appropriate responses. A total of 94 students diagnosed with ASD completed the research study with results demonstrating that children who participated in the training program scored higher on emotional expression and regulation after the training.

There were also very encouraging reports from the parents of the students involved in the study, with comments that children were much more proactive in greeting and communicating with neighbours and relatives.

The researchers did note some difficulty with some students showing reluctance to wear the VR headsets due to anxiety and previous bad experiences. However, they found with reassurance and support the students were able to wear the headsets after only 3 sessions. They also noted that the trainer involved in the research project played a large role in facilitating the learning, using briefing and debriefing sessions to bridge the gap between the VR experiences and reality.

The results from this study are very promising and I can see there is huge potential for the use of VR in training social skills to students with challenges. In such a situation, they can be exposed to certain social scenarios in a safe environment and practice using their social skills without fear of failure of rejection.

Students with sensory issues will often find it hard to use something like a VR headset, but it is encouraging that the researchers were able to get the students to move beyond their fears and participate fully in the program.

The researchers also note the possibility of the use of VR for other disorders such as anxiety, or as a medium to raise public concerns such as reducing stigma.

The Future?

In 2009, Rosaline W Picard submitted a paper entitled "Future Affective Technology for Autism and Emotion Communication." Picard observes that people with ASD often experience emotional or cognitive overload, and that this situation creates challenges for learning and communicating. As a special education teacher, I can relate to the difficulty in reading students' emotions and trying to provide an appropriate response. Autism spectrum disorder is unique in every student who experiences it, and no two students will face the same challenges. Picard states, *"The chasm between what is happening on the inside and what is seen on the outside, coupled with challenges in speaking and being pushed to perform, is a recipe for a meltdown that may seem to come 'out of the blue',"* Picard, R 2009, Future Affective Technology for Autism & Emotion Communication.

She provides a vivid example as an impetus for her research:

"*David is a mostly non-verbal autistic teenager interacting with his teacher during a lesson. He appears calm and attentive. When it is time for him to respond, the teacher encourages him to try harder as he is not doing what she is asking. She knows he is capable from past experiences, and he appears to be feeling fine; he just needs a nudge. All of a sudden—it appears to come out of nowhere—David has a meltdown, engaging in injurious behavior to himself and perhaps to others. Afraid for him and others around him, the teacher calls for help to restrain him. What was intended to be a positive, productive learning episode turns into a harmful major setback, with discouragement and possibly despair ensuing."* (ibid)

She goes on to note that in autism, a person can look differently on the outside than what they are experiencing on the inside, and therefore using technology as a means of measuring what is happening on the inside would be invaluable to anyone assisting a person with ASD. Her belief is that technology holds the key to unlocking what is being felt inwardly and what is being displayed outwardly. She poses the question "Could emotion be recognized by a computer with which you chose to share your physiological signals?" (ibid). I think the element of choice stated here is very important for ethical reasons.

She goes on to explain the research carried out by the MIT Media Laboratories to create new technologies that people with communication challenges can use to improve their abilities to communicate emotion. She notes that it is not an easy challenge to solve. How do you go about measuring emotion?

Working with the autonomic nervous system (ANA) the Media Lab are currently researching four areas:

1. Understanding & communicating ANS activity and behaviours.
2. Providing tools for learning to read facial expressions.

3. Enabling low cost, robust communication tools for people who do not speak.
4. Developing games to improve vocal expression.

The researchers encountered many problems in the development of these tools. Developing a baseline for someone's emotions in a lab setting comes with many inherent problems. This is best explained by one of their test subjects with ASD

…they had one that was just electrodes that attached to a thing that transmits to a computer, which then shows it on a graph. Because there were so many people in the room, my arousal level was really high, it turned out (I wouldn't be surprised, being around lots of strangers stresses me out). But if I sat and rocked and didn't look at the people, it slowly went down. The moment one of them turned her head to look at me, though, it suddenly jumped up again. And this was before the point of eye contact, even, and certainly before I could feel more than a small difference in my stress levels. …

In her conclusion, Picard has no doubt that technology is ready to address challenges that hamper the everyday life of those with ASD - the problem lies within the measurement of the data. She is, however, certain that these problems are not insurmountable and that such devices will be available in due course.

Conclusion

There is a wealth of research geared towards the use of technology to assist the development of social and emotional learning in students with special educational needs. Because of their unique challenges, much of this research is centred around individuals with autism spectrum disorder. Apps currently exist that supplement traditional programs in this area, but the provision of a thorough classroom, school-wide initiative, supplemented with home support, is essential for success.

Looking to the future, the use of virtual reality has obvious merits in training students in social situations in a safe and risk-free environment. In addition, personal devices to help students share their emotional state with their teachers would prevent many of the frustrations and meltdowns common in schools. Such tools would lead to a more independent lifestyle for people with ASD and a greater understanding from the general population.

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