Guide to remote learning for students with special education needs

2021

Ontario

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Introduction

Although distance learning and online learning are established options for schooling in Ontario, the closure of bricks-and-mortar schools around the world in response to the COVID-19 pandemic required education systems to rapidly adapt to maintain continuity of instruction, at unprecedented scale, for all learners.

This guide provides recommended approaches to supporting students with special education needs remotely regardless of cause, informed by educational research and by effective practices used and developed by school boards and school authorities in Ontario during the COVID-19 pandemic. Framed by expectations outlined in the Ministry of Education Policy/Program Memorandum (PPM) No. 164 (2020) and by the Ministry of Education's Learning for All (2013), this guide focuses specifically on ways of thinking, planning and doing that centralize the human rights and abilities of all learners to participate fully in remote learning. This guide will help support those engaged in remote learning, whether as a choice, or due to the public health situation requiring a pivot to system-wide remote learning. While in-person learning is the ministry's priority, it is important to be prepared for all scenarios, and support those who choose remote learning, and ensure they have a positive experience.

What does remote learning mean?

The definition of remote learning and requirements for its provision are outlined in PPM 164 (2020a). Remote learning shares many features with online learning, and best practices from remote learning can also support students who enroll in online courses. In many cases, remote learning will combine synchronous and asynchronous elements.

Synchronous learning can include a wide range of real-time learning activities that take place during a designated block of time. Although synchronous learning can take place via one-to-one telephone calls or via conference calls for groups of

learners, videoconferencing is most often used when broadband internet services are available. Whatever communication tool is used, **synchronous** learning signals the need for students and educators to come together in real time.

Asynchronous learning includes the distribution of learning materials that students will access and interact with when and as they can, rather than during a particular block of time. Materials can be provided to learners via a Learning Management System (LMS), through packets of materials that can be mailed or delivered to students' homes, or through broadcast media (e.g., radio or television).

This guide provides effective practices to promote inclusive, equitable synchronous and asynchronous learning for students with special education needs using online systems, in the context of emergency remote learning or online learning undertaken by choice.

What do 'special education needs' mean?

In Ontario, the term students with special education needs "includes all students who are receiving special education programs and services, whether or not they have been identified as exceptional" (Ontario Ministry of Education, 2017, p. 2). To reflect this broad understanding of special education, this guide focuses on how educators can provide multiple levels of access for students with a range of strengths and needs. Specific examples are provided that reflect the profiles of students identified within the ministry's five categories of exceptionalities, listed in Table 1. Whether identified as exceptional or not, students with special needs are a diverse group and suggested practices should be considered with the specific learner in mind.

Table 1. Ontario Ministry of Education Categories of Exceptionalities (2017).

Category	Sub-Category
Behavioural	Behavioural Exceptionality
Communicational	Autism Deaf and Hard of Hearing Language Impairment Speech Impairment Learning Disability
Intellectual	Giftedness Mild Intellectual Disability Developmental Disability
Physical	Physical Disability Blind and Low Vision
Multiple	Multiple Exceptionalities

Networks of support

Effective remote learning practices for students with special education needs is a collaborative effort. All learners are best served when multiple levels of access are supported through tiers of intervention, and through the collaborative efforts of students and those surrounding them.

'Networks of supports' include everyone involved directly or indirectly in the design and delivery of remote learning: school board administrators, special education program specialists, school administrators, teachers, learning support teachers, remote learning resource teachers, families and community-based professionals who provide therapies or specialized services.

Research highlights the positive outcomes for students with special education needs when family, educators, inclusive and special education supports and administrators work together with students to identify goals, contribute expertise, and engage in shared decision-making (Huberman et al., 2012; McLeskey et al., 2017).

During times of emergency remote learning, regular systems of support may be disrupted. Experiences during the COVID-19 pandemic suggest that students with special education needs benefit when schools prioritize collaboration and connect with families in ways that equip them to support students during at-home learning (Parmigiani et al., 2020). For example, some Ontario school boards developed virtual school-based teams, to replicate those typically used for in-person learning in many schools. In some cases, teams may include classroom teacher(s), the principal, resource staff if applicable, guidance teachers and/or a student success teacher and should ideally include students and families as well, particularly when parents are involved in providing and supporting learning at home (Ontario Ministry of Education, 2017).

Irrespective of the specific structure in place, communication, collaboration and coordination within and among stakeholders are essential for remote learning for students with special education needs.

Who is this guide for?

This guide is for anyone in Ontario who is responsible for the design of remote learning, who is teaching in remote learning contexts, and/or providing supports to educators and/or learners involved in remote learning. The structure of the guide reflects the understanding that when learning remotely, all learners benefit from networks of human and technical support, but that human support is essential for learners with special education needs to fully and equally participate in remote learning. This guide addresses how school boards, educational leaders, educators and education workers, families, and professionals who provide

exceptionality-specific supports to students can work together to build on students' strengths, while also working to remove barriers.

How should this guide be used?

This guide offers a range of effective practices to anyone planning for, teaching or providing specific supports to students with special education needs in remote learning contexts in Ontario.

Section 1 describes Tier 1 concerns of access in remote learning contexts and provides an overview of Universal Design for Learning (UDL) with strategies that support accessibility and inclusion for all learners.

Section 2 offers Tiers 2 and 3 specific recommendations for thinking, planning and doing that may support a range of students, but are included as they are especially relevant for students with special education needs.

Section 1:
Tier 1 access considerations

Planning for remote learning requires that school boards anticipate and remove barriers for students with special education needs. Networks of human and technical support must be in place for all educators and learners, and accessibility includes the human rights, and dignity of all students as full participating members of any remote learning classroom.

Digital equity and inclusion research suggests that learners are served when three fundamental levels of access are supported. These are Tier 1 considerations and include (a) material access, (b) skills access and (c) sensemaking access (Gallagher et al., 2019; Hargittai, 2010; Lussier-Desrochers et al., 2017). The three levels of access are described below.

Material Access refers to all of the physical and digital resources, connections, tools and technologies that help students participate in remote learning. This can include broadband internet services, access to learning management systems, to email, and access to computers that facilitate synchronous and asynchronous participation. For students with special education needs, this may also include a range of assistive technologies (Bouck, 2017). Depending on a student's needs, these assistive technologies may include ergonomic keyboards, text-to-speech readers, access to alternate-format books (e.g., in braille), noise-cancelling headphones, or mobile devices such as tablet computers that are ergonomically accessible.

Skills Access refers to both teachers' and students' capacity to use materials. Knowing how to login to digital applications, including learning management systems, how to type, how to use voice-activated transcription applications, how to navigate learning management systems, how to upload/submit and share files, how

to download information, to save and organize digital files, to participate in collaborative writing activities using cloud-based applications – all of these skills (and many more) are required for participation in a range of remote learning activities and need to be taught (Conseil supérieur de l'éducation, 2020).

Sensemaking Access refers to the need for students and educators to be able to think with and through digital systems. Sensemaking access goes beyond the learning of digital skills or knowing how to complete tasks in a digital environment. Sensemaking access is sensory, cognitive, social and emotional. For educators, it is important to consider how the digital learning context shapes student thinking. A digital classroom like a physical classroom frames the learning context. If learning is situated (Brown, Collins & Duguid, 1989) and embodied (Glenberg, 2010) then the digital environment is the learning as well. Sensemaking access includes the consideration of how learners can use their senses to learn in digital classrooms (Mills, Unsworth and Exley, 2018). Sensemaking access also includes teaching that equips learners to use the social and cultural practices that frame activity in and around digital tools (Leu et al., 2013; Pangrazio, 2019).

Recommended approaches for school boards and administrators

This section describes each level of Tier 1 access in detail with suggested practices informed by those developed and implemented in Ontario during the 2020-2021 COVID-19 pandemic.

Remove material access barriers

In a physical classroom, services and supports can be adapted and delivered in real time as needs evolve. In remote learning classrooms, access to the tools, technologies and services of schooling is distributed across time, and space and is often dependent on Internet services. The learning context will differ for every student, and inequalities related to social determinants of health and safety may be

exacerbated. For students learning remotely, it is important that coordination of material supports for learners who may experience heightened levels of risk are prioritized.

> As with other District School Boards, at one Ontario board, families were contacted by the school principal to arrange to pick up of their SEA-funded equipment. In addition, all families were asked to complete a survey of tech needs, which were addressed by principals with support from the board. For families who were unable to travel to the school for pick-up, deliveries were made by school staff to students' homes.
>
> A school authority had bus drivers deliver inquiry kits and equipment in order to provide material access, while also maintaining relationships.

Internet services in community

Although broadband internet services continue to expand, access to high-speed connections that enable participation in synchronous videoconferencing and the sharing of digital files is not yet universally available across Ontario households. Rural and northern areas, and some Indigenous communities may have limited access to high-speed internet services.

During periods of remote learning, communities that cannot count on adequate internet infrastructures may rely on other methods. For example, schools can provide paper-based assignments and supporting resources. Material access may be provided in the following ways:

- Local radio and television stations can be asked to provide information in the languages used in the community so that families can learn how to access learning materials.
- Radio and television stations can collaborate with local school boards, and with local Indigenous communities to co-develop and broadcast educational materials. During the COVID-19 pandemic, for example, TV Ontario was

made available free of charge to Videotron, Bell and Rogers subscribers. The network broadcast daily educational programming on a range of themes for K-12 learners.

- Telephones and teleconferences could be used to check in with students and provide support throughout the week.
- Completed assignments could be dropped off at agreed upon locations.
- Where possible, teachers could put together packages for students and families that include school supplies, blank journals, art supplies and age-appropriate books.
- School boards could send home learning packets in newspaper or flyer delivery, as in Nova Scotia (Saltwire Network, 2020).
- Local libraries may offer support services and materials loans, in agreement with partner school boards and the Ministry of Education and thus can become learning hubs (UNESCO, 1994).

In communities where internet services are reliable, students require access to an adequate internet connection and a device (e.g., laptop, tablet, desktop computer) to participate fully in remote learning programs. Students with special education needs also need access to assistive technologies

> During the COVID-19 pandemic, many school boards explored creative ways of equipping families and/or students with access to internet. One northern board, for example, paid for cell phones with data plans for some families to access the internet for remote schooling.

Remove skills access barriers

Coordinate training for educators, staff, students and parents

A lack of training in the use of digital systems, tools, applications and platforms for educators and for students alike can hinder remote learning (Ria & Maugen, 2020). Supports for the technical and skills-based aspects of remote learning access must

be provided, where possible. These may include online, in-person and/or video resources to assist educators, students and families supporting remote learning. Telephone support services that allow students, teachers and parents to connect directly to board-level Information Technology (IT) services, and to professionals who can provide the necessary supports may be effective. It is also important for students, families and staff to have access to training on the LMS being used.

> "What really needs to be underscored here is the importance of training (both students and parents) on the technology that kids were using to stay connected. We provided clear and concise guidance (both in verbal and written form) and made sure that someone was always available to trouble-shoot with families encountering issues. Westgate's Special Needs Class Teachers even gave out their personal cell numbers to families. Providing readily accessible tech support (especially in the beginning) was critical to the successful delivery of a virtual program."
>
> -A northern Ontario District School Board

To provide skills access to teachers, students with special education needs and their families in their communities during remote learning, some French-language school boards developed multi-faceted systems of support. Resulting effective practices include:

- Provide increased technology support (for example, from IT technicians) to students as well as school staff to address any device-related technical challenges.
- Implement a proactive strategy to provide assistive technology training in a variety of formats (audio or video, visuals, graphics, charts, checklists) to support remote learning. Training and resources can be offered to educators, education workers, and parents.
- Provide targeted supports for parents whose children attend school entirely remotely.

- Develop or identify specific resource lists for students with special education needs.
- Offer training sessions for families with external partners.

> One southern Ontario board has developed a repository which includes information on the accessibility features that learners with special education needs can use while connected to various technologies. Text-based and video information tutorials are designed to help students, educators and families learn to use a range of accessibility features including the built-in immersive reader which allows students to change the font, font size and font spacing of texts, the document background and lighting, to chunk more complex words into syllables, to identify parts of speech that may support text comprehension, to translate texts, and to enable the text-to-speech automated read aloud function.
>
> This website provides a central access point for school staff, students and families affiliated with the board to recommended resources, information and training on the use of tools that can make remote learning more accessible for students. The one-stop spot for high-quality resources minimizes confusion and allows for streamlined communication and access to critical information.

Recommended approaches for educators

Sensemaking access – or the ability to think with and through digital tools and systems -- begins with considerations of how to design and implement remote learning systems and activities that align first with principles of Universal Design for Learning (UDL) as outlined in Learning for All (2013) while also prioritizing the specific sensory, cognitive, social, cultural, mental health and emotional needs of learners who have identified exceptionalities. This section details how to leverage UDL to create remote learning that is accessible to all.

Universal design for remote learning

It is essential to plan and implement virtual learning for any students, and particularly those with exceptionalities, within the inclusive framework of Universal Design for Learning (UDL; Basham et al., 2020; Obiakor et al., 2010). UDL is based on the understanding that approaches to teaching, learning and assessment that respond to the particular needs of a student or groups of students can be useful for all. UDL is intended to ensure that teaching is tailored to draw on the strengths and meet the needs of all students (Learning for All, 2013). The Center for Applied Special Technology CAST (2018) defines UDL as providing multiple means of engagement (the 'why' of learning), representation (the 'what' of learning) and action and expression (the 'how' of learning). By designing remote learning in ways that recognize differing learner experiences as a first principle, the weight on educators to make multiple specific alterations is reduced, increasing the range of students who can successfully access the curriculum. Examples of the three broad areas of variability that guide UDL according to CAST (2018) are listed in Table 2.

Table 2. UDL Guidelines (CAST, 2018)

Provide multiple means of **Engagement**	*Provide multiple means of* **Representation**	*Provide multiple means of* **Action & Expression**
Provide options for **Recruiting Interest** -Choice, autonomy, relevance	*Provide options for* **Perception** -Flexible material, auditory + text + visuals	*Provide options for* **Physical Action** -Response options, accessible tool & technologies
Provide options for **Sustaining Effort & Persistence** -Goal-setting, feedback, collaboration	*Provide options for* **Language & Symbols** -Access to languages & concepts	*Provide options for* **Expression & Communication** -Supports, diverse tools, scaffolding
Provide option for **Self-Regulation** -Motivation, coping skill, self-awareness	*Provide options for* **Comprehension** -Connections, patterns, application	*Provide options for* **Executive Functions** -Goal-setting, planning tools, self-monitoring

*The full guidelines can be found at the CAST website: https://udlguidelines.cast.org/
The US Center on Online Learning and Students with Disabilities has developed a UDL Scan Tool that boards, schools or educators can use to reflect on the approaches or products they are using and "consider what might be missing in order to best meet the learning needs of ALL individuals" (2021).

Differentiated instruction

With the broad principles of UDL in mind, educators can draw on differentiated instruction (DI) in order to plan instruction and assessment based on the strengths and needs of their students. Learning for All (2013) speaks to this, "in differentiated instruction, teachers scaffold and tailor instruction to individual students' needs and understanding, providing the emotional support and opportunities for practice they need" (p. 18). PPM 164 (2020) states that educators should provide differentiated support for all students, including those with special education needs, during periods of remote learning.

Educators use key elements such as personal response and choice, flexible groupings, respectful tasks and shared responsibility for learning, many of which

can be seen in the UDL guidelines (Table 2), to differentiate the content, process, product and environment according to student readiness, interests and learning profile.

Specific examples of differentiated assessment and evaluation practices in online environments that could be implemented during times of remote learning are included in teacher-specific recommendations section of this guide. Generally, however, planning for assessment and evaluation during remote learning will take into consideration the contextual realities of the moment for students and families, the technical affordances and constraints of the learning environment for gathering information about what the student can do, show or share as evidence of learning, and the extent to which the approach centres human needs (Shelton et al., 2020). In the design of assessments, Shelton et. al. provide a set of three big questions that can guide critical decision making about how to create inclusive, humanizing assessments during times of disruption (p. 127).

Reflective questions

Do assessments focus on meaning?

- Does the assessment strategy ensure that students can express their thinking (or make their thinking visible) in a variety of ways?
- Are assessments open enough to accommodate a variety of student responses?
- Are expectations and success criteria clear?
- Are assessments valuable but not “high stakes”?
- Does the formative assessment plan allow for varied feedback from the instructor, peers and self-evaluation?

Do assessments connect to social realities?

- Are assessments designed in full consideration of the range of students’ Internet connectivity, the number and type of devices in the home, and the range of supports that may or may not be available to learners at home, and at different times of the day?

- Are deadlines flexible to accommodate multiple realities during times of remote learning?
- Do assessments connect learners to ideas and experiences of value to them, and to their communities?

Do assessments include multiple modes of engagement, representation, action and expression?

- Do students have choices?
- Do assessments encourage the creative use of digital tools in ways that support content learning, and also support the development of digital skills and digital literacies practices such as participation and sharing of work?
- Does the assessment plan ensure that multiple forms of evidence of student learning are gathered over time?
- Can evaluation decisions and reporting be based on a body of complementary evidence rather than information gathered using one approach, or at a single moment in time?

Tiered approach

In addition to UDL and differentiated instruction, practices for remote learning also use the tiered approach to prevention and intervention that is in place in school boards across Ontario.

The tiered approach "is based on frequent monitoring of student progress and the use of assessment data, focusing on learning rate and level, to identify students who are facing challenges in learning and to plan specific assessment and instructional interventions of increasing intensity to address their needs effectively" (Learning for All, 2013 p. 24). A tiered approach can guide instruction, assessment and social-emotional and mental health supports (SMHO, 2021).

As described in the Aligned and Integrated Model (SMHO, 2021), Tier 1 can be described as good for all, Tier 2 as necessary for some, and Tier 3 as essential for few. There is significant overlap between 'Tier 1' instructional supports and what is

recommended within UDL and DI frameworks. An integrated approach that simultaneously considers academic and social-emotional strengths, needs and approaches and reflects the social determinants of health and of learning, will be the most effective (Noddings, 2012). Key Tier 1 foundational supports include creating welcoming environments, fostering student engagement and belonging, understanding and knowing students, promoting mental health through instruction and assessment and partnering with home, school and community (SMHO, 2021). Creating positive climates and classroom communities allows for learning to take place. (OME Supporting Minds, p. 17). Hagerman and Kellam refer to the need to "create the conditions" in online courses that enable "students to feel safe, supported and connected to their teacher(s) and to their peers" (2020). For many students with exceptionalities, these practices will be essential to their successful access to and full participation in virtual environments (Cavanaugh et al., 2013).

> Developing and maintaining relationships among students and between students and staff remotely is crucial for the social, emotional, and academic well-being and development of students. Many school boards in Ontario have developed creative approaches to maintaining relationships for students with special education needs while engaged in remote learning. For example, one school board has a "social virtual hour" for secondary students in special education programs, hosted by the secondary virtual teacher.
>
> "Maintaining social hour has translated into exceptional confidence building of students, networking among students at different secondary schools and student leadership. The group includes activities such as a social bingo and virtual crafts which were organized at the request of students."

Well-being and learning are not separate goals for students. Creating instruction and assessment that is accessible and which addresses the specific strengths and needs of students is also part of developing inclusive, welcoming classroom

environments. Many of the practices listed below are important for in-person learning but are critical for remote learning.

Tier 1 practices: Welcome, understand & partner

As the course or class begins, educators develop social and physical environments while getting to know students. This builds relationships, trust, and a climate that supports learning for all students.

- Connect with students and families at the start of the course. Find out about their hopes and needs. Check if they have the supports and resources they need to access and navigate the virtual course. Let them know how and when staff can be contacted.
- Begin to establish a social presence in the course. Share personal information that might help students and facilitate student sharing. Virtual icebreakers can help create community in early days of the course. Tools that allow for shared brainstorming or short videos can support community building as well as technological skill development.
- Start classes for the term by getting to know students and collecting specific information needed for planning and instruction, for example, with a survey or an orientation meeting. Include questions that invite information specifically related to access and inclusion that might not be obvious in an IEP such as the specific assistive technologies that work best for the learner, information about Internet access, and recommended ways of communicating.
- Digital 'check-ins' each day are used by many teachers when classes start. Depending on the context this could include prayer, a land acknowledgement, rotating sharing of a special moment or event by students, brief discussion of a news piece or current event, taking the 'temperature' of the group using a virtual poll or survey tool (e.g. how are you feeling out of a 10 today? Are you at a red energy level?).
- Offer opportunities for students to learn more about one another and their teacher (e.g. create & post introduction videos that include name pronunciation & preferred pronouns, have a group of students share each week about a particular interest, experience or skill).
- Create learning spaces that reflect the community of learners (personalized avatars, images that reflect diversity, a range of student work displayed/shared).

- Connect beyond the classroom for learning (e.g. bring in guest speakers from students' community, virtual field trips, connect with students in classrooms in other cities/provinces/countries, have students' family members contribute expertise or experience that relates to curricular expectations).

Tier 1 practices: Engagement, representation, action & expression

Alongside the development of welcoming, inclusive climates, the three areas of UDL can guide planning, instruction and assessment.

Engagement:

- Maximize opportunities for choice and autonomy for individual students and the whole class.
- Reflect student interests in teaching materials and assignment choices.
- Reflect linguistic and cultural diversity in options provided for instructional materials and assignments.
- Co-create and model guidelines for respectful virtual interactions and for online discussions. Have clear expectations and consequences for when guidelines are not followed.
- Discuss digital privacy as a class. Many school boards have existing student and staff guidelines for acceptable use of technology that can be reviewed.
- Establish communication guidelines for synchronous classes.
- Create leadership opportunities for students (e.g. create & share music playlists for breaks, act as discussion leaders, lead a genius hour, pose a 'why' question to spark a class inquiry, create class committees that organize weekly events, virtual social activities, daily physical activity, etc.)
- Make some classroom activities collaborative, where success is dependent on student contributions through a range of roles.
- Offer opportunities for formal and informal learner-learner engagement (e.g. small group collaborative projects, time for chats).
- Invite feedback regularly and honour student voice, for example, with anonymous surveys (e.g. google forms) or exit cards.

Section 2:
Specific practices for students and educators

Recommended practices for students

Students and their success during remote learning are at the centre of this guide. How well they are able to manage the complexities of remote learning will depend on the networks of support available to them. A student's ability to self-advocate is important in remote learning because, as committed and as well-intentioned as parents, teachers, and school board leaders are to inclusive remote learning, they will only know what is or not working for a student when the student communicates their successes and their needs.

Online interactions can limit in-the-moment observations and teachers may miss essential information, easier to note in a face-to-face classroom (e.g., facial expressions, body postures, tone of voice, attentional focus). Students might need to tell or write to teachers to convey how they are feeling, and how their learning is progressing. Younger students will rely on their parents to help them self-advocate. Older students should be encouraged and supported by their families to communicate their experiences, and to ask for what they need.

Managing time and space

Some students with special education needs benefit from maintaining a consistent weekday schedule while engaged in in-person or remote learning. Setting an alarm and transitioning from 'home' to 'school' mode, even if a student's workspace is a few feet away, can help establish and reinforce the mindset of "being at school". Some remote learning models for students with special education needs attempt to

replicate the flow of the in-person school day, with the same meeting or circle, snack, work periods, recess, and gym times. Having a visual schedule near a student's workspace that is like what they would use in-person is one way for students to adapt to remote learning routines.

Students' IEPs should be considered with respect to environmental accommodations that may apply to the home setting. Students may need:

- A dedicated workspace that meets their needs in terms of visual stimuli, lighting, noise, space, seating/standing/moving options (e.g. chair, stationary bike, exercise ball, standing desk or high table).
- Headphones, with noise-cancellation option and a microphone
- Assistive devices or software or adaptive equipment

Managing the work

Remote learning can be an organizational challenge. Remote learning can place higher demands on students to "self-regulate their own learning" (Basham et al., 2015, p. 43). For this reason, it is key for students to have training on the digital tools they will be using, and to know who and how to ask for help.

Once students understand the digital environment, they can use a range of strategies to organize, and keep track of their work, including:

- A folder system for different subjects or courses with labels. Colour coded folders on a computer desktop, for example, help improve access to materials.
- A schedule of meetings, courses, work periods and assignment due dates that is created by, with or for the student, with embedded links to materials or meetings. Some prefer a web-based calendar with reminder alerts for upcoming events and others prefer a paper-based system (Anderson & Sorenson, 2017).

- Auditory or visual timers and/or alarms to help students manage their time (Anderson & Sorenson, 2017).
- Asking for regular one-on-one check-ins with the teacher and/or with resource support professionals to review expectations, and to plan for upcoming work.

Participating in learning

Participating in remote learning classes and activities can help students increase their academic success, as well as their social-emotional health (Guseynova & Manuilova, 2020; Reed et al., 2008; Turula, 2017). Depending on the needs of the student and on their IEP (if applicable), there are various ways that students with special education needs can participate in remote learning. Students with special education needs should communicate with teachers (independently or with parent support) about how, when and why they prefer to participate online. (Garrison & Arbaugh, 2007).

Students with special education needs can participate in the following ways:

- **Synchronous participation**: Students can turn on their camera and/or their microphone to allow for real-time presence and social interaction during synchronous lessons. Being seen and having signals and body language acknowledged by educators and peers can increase engagement for some. Some students prefer a mix of turning their camera off in large group settings or if they become overwhelmed by the social demands of being seen on a screen. Others prefer to turn on their camera during small group or 1:1 sessions, and/or choose to use a photo of themselves or an avatar in place of turning on their camera.
- **Asynchronous participation**: Some students prefer to ask questions in a chat box if there is one, or to make notes during a synchronous class and send thoughts or questions to the teacher once they have had a chance to think about or review content. Discussion boards can be useful supports for students who appreciate seeing what others think before they post or share

their own ideas. Some students with special education needs prefer asynchronous discussion to give them time to compose their thoughts without social or time-related pressures that can come with synchronous participation.

Some research shows that students who regularly participate and complete weekly tasks in their online courses are more likely to be successful (Bae Kwon, et al., 2019).

> One school board has a webpage summarizing online learning etiquette for students, including participation suggestions and links to board code of conduct.

Engaging in self-advocacy

Self-advocacy refers to "the individual's ability to effectively recognize and articulate one's needs and rights" (Holzberg et al., 2019). With any of the strategies and supports considered for students, self-advocacy, including communication between the student (and families if applicable), and educators is essential in remote learning contexts.

Students can help others understand their needs by:

- Contacting their teacher(s) early in the semester to identify specific strategies and supports that will be essential or helpful for their learning. At the beginning of a course, students describe, either in a written note, email, or verbally through a short audio or video clip, what is important for the teacher to know about them. Any preferences with respect to discussion, participation, communication approaches, social considerations etc. can be raised as well as specific accommodations such as alternative formats for assignments or sensory needs during synchronous classes.
- Collaborating with the school team on developing and revising an IEP if applicable. Students may need to tell learning support teachers about how

the remote learning context is and/or is not serving their needs. Adjustments to an IEP are always possible.

- Providing ongoing feedback to teachers about things that are working well with remote learning, and areas where help or changes are needed.
- Asking for help as soon as possible.
- Developing peer networks within classes if possible and/or access peer mentorship opportunities developed by schools or within classes. Some questions are easier to ask another student than a teacher. (Basham et al., 2015).

Recommended practices for parents and families

Parents and caregivers are crucial to supporting successful learning for students. When communication and collaboration exist between home and school, outcomes are significantly better for students with special education needs, whether in remote or in-class settings (Parmigiani et al., 2020). Positive relationships between families and school staff include shared knowledge and understanding about the student, including their strengths, needs, and goals. Other elements include a common understanding of systems, processes and options. By building trust with families, checking biases and ensuring that cultural and linguistic considerations are in place, and adopting a collaborative problem-solving approach, positive relationships can be more easily developed (Whitley et al., 2020).

In remote learning, relationships between home and school usually need to shift to digital formats. When virtual learning is synchronous, a students' home life may be on display for others to see. Families are often more immediately involved in student learning, from providing access to internet and technology, to printing out required materials and finding a quiet space in the house for the student to work, to taking on a teaching role as they work alongside their child during asynchronous periods (Basham et al., 2015). Some students with special education needs rely on support from a family member or caregiver to engage in any form of remote

learning. In creating targeted-to-individual-need learning options for students during the COVID-19 pandemic, one school authority emphasized the role of family engagement required for success, "the key to our success was building capacity in our teams and family supports, as we considered what learning looks like for our students". The authority created digital family engagement activities to accompany at-home learning kits/materials in an effort to maintain strong connections between home and school.

The availability and capacity of families to fulfil these roles varies (Whitley et al., 2020). In some instances, remote learning may be unexpected and families will need to adjust time and resources to take on a more active daily role in their child's education; others will not have the supports necessary to engage regularly with their child's schoolwork.

Communicating clearly & regularly

Discuss the most effective way to engage in regular communication. Agree on an approach that works for everyone. Is there a school-based communication platform that parents can easily access and use? Is e-mail the preferred means? Would a virtual communication book work? Is a weekly phone or video check-in more efficient and effective than a written exchange? What is an expected length of time for a response to a message? Is there one member of a student's school-based team who will take responsibility for maintaining regular contact?

Discuss expectations with respect to availability, resources and providing supports. The capacity of families to engage in co-facilitating a child's education is variable. It is important to have a clear understanding when remote learning is beginning about what families and school staff are each going to provide and what resources are available. Do families need access to internet or technology? Do they have enough devices? What do parents expect from school staff? What do school staff expect from parents? Are these expectations realistic for each? Does the daily schedule need to be adapted for some students and families?

Building knowledge & understanding of special education

Parents may benefit from information about inclusive and special education. School boards have guides for parents who are new to inclusive and special education programs and services, including the referral process, how to better understand individual education plans (IEPs), identification, placement and review committees (IPRCs), and the many services, supports that may be offered by a school board. Some boards have these guides available in different languages. For example, one Greater Toronto Area Board has parent-specific guides available in 12 languages. Some of these guides also provide information about terminology which can be helpful given the many terms and acronyms that are unique to schools and boards. It is important that parents understand terminology and processes to be able to collaborate in the planning of inclusive and special education supports and services whether the learning is in person or remote.

Parents also need information about remote learning. Some boards have created guides for parents that are specific to remote learning. For example, one English-language board has family tip sheets created by the Special Education Services Team. One French-language board's Educational Services team developed a website dedicated to online learning, which includes (francophone) Kindergarten to Grade 12 resources for students from in literacy, numeracy, culture (Catholic, Francophone and Indigenous as well as Newcomer Support Programs and English as a Second Language (ESL)). This site also includes family mental health and wellness resources.

Video tutorials for specific tools or platforms can also be shared if available, as well as specific human resources (e.g. helplines) for parents seeking assistance to navigate various programs, platforms, accessibility tools, etc. Information about cyber security, privacy and other aspects specifically related to web-based learning should be reviewed by parents and children, ideally together. For some students with special education needs, parents and teachers may need to explicitly teach and reinforce safety and security guidelines, through approaches such as social stories.

> In one board, families of students who use technology through Special Equipment Amount (SEA) can book virtual synchronous appointments with the Assistive Technology support team to receive training on how to best use the tools at home.

Preparing & organizing

Many remote learning models require greater autonomy for students to be able to track due dates, complete work independently, and plan and manage their time during the day. Navigating multiple platforms and files requires flexibility, and a high level of organization multitasking. For many students with special education needs, these demands can be barriers to accessing the learning activities and content and demonstrating their understanding of material (K-12 Education Standards Development Committee, 2020). Frustration with technical demands alongside the actual content can also reduce motivation.

Parents may need to support their children at home, learning remotely differently than they do when a student is learning in the classroom. The different strengths and needs among students with special education needs, as well as the individual age, grade and skillset of the student, means the support needed by parents will vary. Some students might require a visual schedule for the day's activities, tasks and assignments with physical transitioning provided by parents. Others might need close monitoring and frequent reminders throughout the day, while others might only require a daily or weekly check-in and responding to issues as they arise.

In general, parents can support their children by:

- Setting up structures such as calendars, virtual or for some, paper-based, with specific dates and reminders noted. Parents can also sync their own calendars if their child need reminders from them.
- Working with their child to choose a place in the home to work. For some students, this is in a central spot where a family member can be nearby and for others, a private area in a bedroom is a better choice.

- Ensuring that their child takes frequent movement breaks, varies their sitting/standing positions and spends time outside if possible, during the day.
- Having conversations with their child. Is the child becoming overwhelmed with aspects of remote learning? Would they benefit from problem-solving with a parent or reaching out to a teacher?
- Prioritizing the well-being of the child. Are there mental health concerns emerging? Contact the school if a child might benefit from wellness supports.

(Branstetter, 2020)

Promoting student advocacy, self-efficacy & self-regulation

Parents can be a sounding board for students and collaborate with them in sharing their voice with their teacher and peers. Other ways parents can support student self-advocacy include sitting alongside a student in drafting an email to their teacher to ask for help or instruction on an assignment, having students set their own timers as they work through chunked assignments, or giving children and adolescents choice on when and where they complete their school work.

Planning for teaching, assessing & programming

Communicate child-specific information to school staff: Families have unique insight into how remote learning is working for their child. Flexibility in participation requirements for students in synchronous learning is key to inclusive remote practices. How long in one sitting can the child participate in synchronous learning? What works best for engaging the child? Does the child feel they can participate fully in online discussions? Are they able to understand material in the way it is presented? Are remote assignments a good fit for the child or do they need to be adapted? What is working well at home that school staff can benefit from knowing about? Could schools support the child by providing options they typically have in their classroom like fidget toys, wiggle seats or noise-cancelling headphones?

For parents who are partnering with school staff in working towards IEP goals, one board created an example of a tracking tool that could be shared between school and home to note effective strategies and outcomes daily. This type of communication tool supports collaboration and skill development for students with special education needs.

Communication, knowledge-building and program planning, takes place through another board's monthly virtual newsletter for parents of students with special education needs that includes topics such as at-home learning options, tips for supporting speech and language development, strategies for transitioning to or from school, and key dates and events.

Recommended practices for classroom educators & support staff

This section includes recommendations for classroom teachers and that complement or extend beyond the Tier 1 Access and UDL recommendations outlined earlier in the guide.

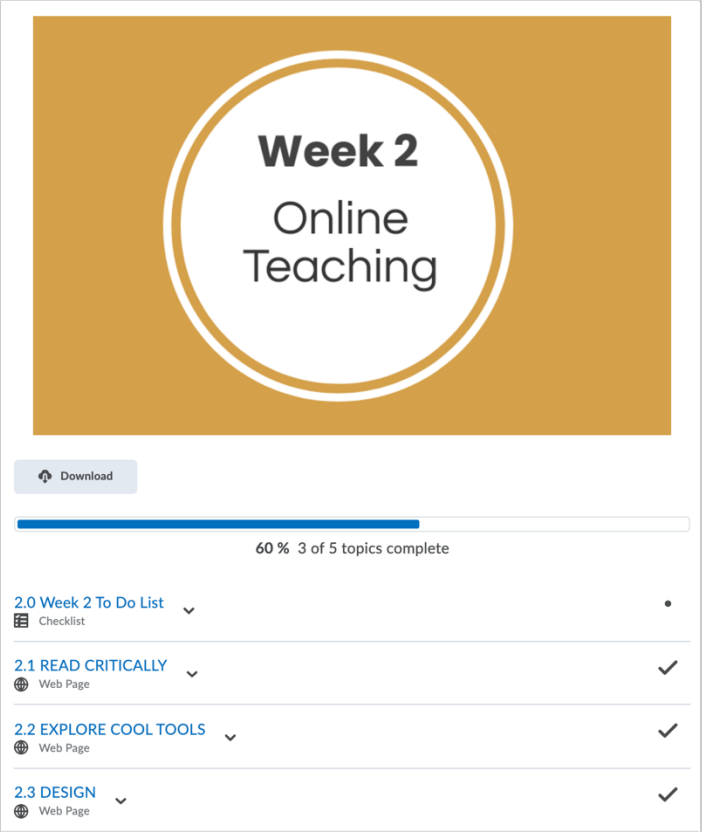
Teachers, educators and education workers are in direct contact with students every day. In addition to planning for student learning in ways that align with curriculum expectations, teachers also assess, evaluate and report on evidence of student learning, using evidence gathered over time from student work. Educators create inclusive, safe classroom environments where students, including those with special education needs, can experience and develop positive social relationships with peers and adults (Ontario College of Teachers, 2021).

Planning

In remote learning, planning requires teachers to think in new ways about the contexts in which learning will happen. Students with special education needs benefit from predictable, consistent organizational structures and systems and

from regularly scheduled communications that include information about what is expected and how to complete learning tasks. For this reason, a clear daily agenda and a predictable, consistent organizational structure for all content posted in the learning management system is important. Figure 1 presents one example of what a predictable learning module can look like.

Figure 1. Example of a Learning Module Structure



Note: This example includes a to-do list, a sequential numbering system to identify the order and number of tasks, and consistently used headings that identify types of content. These same headings would be used each week as an organizational structure. Week 3 numbering would follow the same format:

3.0 Week 3 To Do List
3.1 Read critically
3.2 Explore Cool Tools
3.3 Design

(image: M.S. Hagerman)

Critical questions for planning remote learning

Answers to the following questions -- explored and negotiated with colleagues and learning support specialists as needed -- will be important as teachers plan for remote learning in ways that meet the needs of students with special education needs.

- In the Learning Management System (LMS) that I use, how can learning materials, units of study or learning modules be organized?

    - With what I know about the LMS, how can the course be organized so that there is a predictable, logical structure that makes it as easy as possible for all students to find, follow, and participate in the learning?
- How will students know what to expect each day and each week?
- How will students know when assignments are due?
- How will students know where and how to submit their work?
- What types of files can be added and used for the sharing of information?
- What skills and literacies are required for students interacting with these materials?
- Based on what I know about my students, what technical skills and literacies will I need to teach explicitly?
- How can I interact with learners through this environment, and what technical skills are required?
- What possibilities exist for students to interact with one another via this mode of remote instruction? Which of these will be most inclusive? Who gets left out if we use audio or video or asynchronous chat? How can these barriers be removed?
- Given the technical possibilities and access barriers of these systems, what methods of assessment and evaluation are possible? Of these, which options allow for multiple means of representation and allow learners to share understandings by leveraging their strengths and skills?
- What pacing is realistic in this environment and in this context?
- In this remote learning modality, how will students know how much time to spend on each learning activity?
- What instructional videos or tutorials would be beneficial to help students complete assigned tasks and exploration opportunities?

Depending on the needs of the student, their Individual Education Plan may need to be adjusted. The daily schedule that has been planned for the students' class

may be a good fit for them, or it may need to be adapted and the IEP updated. Some students may benefit from having paper packages or lessons delivered so that students can complete activities at home and email photos of their completed work to their teachers.

Many school boards have developed ways of providing small group instruction, individual sessions with educational assistants, and/or therapeutic sessions with specialists through virtual means. For some students with special education needs and their families, regular support from educational assistants, particularly those with whom a student has a pre-existing relationship, is crucial to accessing the curriculum or their program.

Accessible Learning Materials. In remote learning contexts, teachers often create learning materials using digital applications (apps). Learning materials that provide sensemaking access are Perceivable, Operable, Understandable and Robust (POUR; National Center on Accessible Educational Materials, 2021).

Perceivable means that, online, all students can hear and see all content. To design perceivable learning materials:

- Include closed captioning on screencasts and videos. Closed captioning removes sensemaking barriers for some students who are D/deaf or hard of hearing and will benefit language learners too. Choosing video that has audio (not just music with gestures) can assist students with low vision.).
- Use styles and headings in text documents consistently. These conventions allow students who are blind or have low vision to access content with text-to-speech screen reader apps.
- Add text descriptions to images that include essential thematic or content connections.
- Provide adequate colour contrast in documents. Black text on a white background will be easier to see than black text on a blue background, for example.

- Use colour contrast checkers to check accessibility (e.g., TPGI (2021) Color Contrast Checker).
- Adding alt text to images, adding long descriptions to tables/interactives can also make materials more accessible

Operable means that students can navigate and interact with learning materials. To design materials that are operable:

- Use descriptive headings consistently. This will provide structural and organizational cues that help learners to make meaning from content.
- Make hyperlinks descriptive. "Masking" hyperlinks behind descriptive or alt text provide more information than the pasting of a URL without a description.
- Check keyboard accessibility of web documents and apps. Can students use the TAB key to navigate to hyperlinks or other interactive elements? If not, consider another resource.
- Provide sufficient time to complete activities. Students using assistive technologies may need extra time to access, navigate and make sense in web documents.

Understandable means that language is clear, and the organizational structure of the learning materials are predictable and consistent. To make learning resources understandable:

- Use plain language.
- Use consistent language to describe common course elements.
- Use consistent conventions (e.g., underlining of hyperlinks, numbering of tasks) to signal particular types of information or to signal required actions.
- Enhance usability by providing an orientation guide or synchronous learning session during which you explain how to use important functions.

Robust means that students can access your content on any type of device, anytime. To make robust materials and check accessibility:

- Design materials with platforms and authoring tools to which your students have access.
- When possible, check the student view of content in the Learning Management System.
- Ask students if they are able to find, download and interact with learning resources and adjust as needed.

Teaching

Remote learning teaching practices that serve students with special education needs focus on skills and sensemaking access. Tier 1 considerations (outlined in the first section of this guide) are fundamental. The selected exceptionality-specific teaching strategies provided below (Ontario Ministry of Education, 2017), will enable teachers to remove known barriers to remote learning for students in synchronous and asynchronous modes of instruction. Table 3 includes strategies for removing sensemaking barriers during synchronous teaching. Table 4 includes strategies that can be considered during asynchronous instruction.

Each student has unique strengths and needs and knowing your student is key. Students may benefit from a range of practices that may or may not be associated with their particular exceptionality below.

Table 3. Synchronous Teaching Practices

Exceptionality category	Strategies that remove known sensemaking barriers
Behavioural	• Explain the day's events before class begins. Use announcement or similar feature in the LMS or send an email (Ontario Teachers' Federation, n.d.). • Use consistent rules and routines (Ontario Teachers' Federation, n.d.). • Affirm and reinforce desirable behaviours (Ontario Teachers' Federation, n.d.).

	• Integrate peer collaboration and small group activities that support feelings of connection, belonging and affirm meaningful contributions • Do not require students to activate the camera; provide alternative participation options • When behavioural supports such as token-systems or behavioural contracts are regularly used, coordinate and collaborate with at-home caregivers and learning support professionals to develop adapted versions for the remote learning context (Truchlicka et al., 1998). • Plan for breaks and social time that allows peers to interact in unstructured, playful ways (Sullivan and Cousins, 2015) • Integrate exercise, movement, relaxation and moments for mindfulness as part of regular synchronous remote learning schedule • Support engagement by integrating games from time to time (e.g., Kahoot!, Quizizz) • Modify screen time as needed in collaboration with students and parents (Ontario Teachers' Federation, n.d.) • Monitor attendance. Call parents or send a personal note to check in on students who are not attending.
Communicational	• Remove all technical barriers so that pictures, signs and speech can be used. • Use subtitles and simultaneous closed captioning (Canadian Hearing Society, 2015). Consider if these formats work for the particular student in the class. • Use gestures that support student learning and understanding • Model speech patterns and create opportunities for students to use these patterns during synchronous participation (University of New Brunswick, n.d.) • Be patient when students are speaking; do not rush them (Do2Learn, n.d.)

	• Focus on interactive communication and active listening (Autism Training and Technical Assistance Project, 2020). • Integrate high interest texts • Ensure students have ways to express wants and needs (Autism Training and Technical Assistance Project, 2020). • Reinforce communication attempts when student is non-verbal or emerging verbal (Do2Learn, n.d.) • Paraphrase what student has said or indicated • Speak clearly and at an audible tone (National Deaf Center, 2020) • Encourage use of speech therapists when needed and allow them to participate in class with student(s) (Do2Learn, n.d.)
Intellectual	• Provide instruction focused on social norms in digital spaces; model ways of interacting in the online environment (Lussier-Desrochers et al., 2017) • Support technical skill development through modelling, 1:1 check-ins and small-group discussion (Parmigiani et al., 2020) • Monitor and adjust pacing based on student feedback. • Prioritize social interaction; create time for playful social time with peers in addition to regular recess breaks. • When and as possible given at-home supervision and context of community disruption, integrate high-interest, relevant at-home activities into instruction (e.g., baking, fixing, making with materials on hand) • Gifted learners particularly benefit from: o Development of virtual peer connections with students in other classes or schools based on shared interest o Opportunities to spend time in higher grade classes o Flexibility in pacing to allow for acceleration or compacting (Stargardter, 2021).

Physical	• Invite assistive support professionals such as notetakers, sign-language interpreters where needed. • Check navigability of videoconferencing platform; ask students/caregivers to identify what they need to participate fully; check in to find out what worked and didn't work. • Use simultaneous transcription applications (e.g., Otter.ai). • Adjust screen time requirements in consultation with students and families.
Multiple	• Consult with students, parents and learning support professionals to understand the student's interests, strengths and their needs in terms of digital skills, required assistive technologies, communication needs, and physical needs in a synchronous videoconferencing environment • Offer alternate methods of participation, communication, action and representation that align with the student's unique strengths and needs (Lombardi, 2019)

Table 4. Asynchronous Teaching Practices

Exceptionality category	Strategies that remove known sensemaking barriers
Behavioural	• Be flexible with deadlines and responsive to students' emotional needs. • Use video instructions that enable students to revisit expectations (Anderson & Sorenson, 2017). • Design alternative assignments for students who are struggling with the demands of remote learning. • Use analytics in Learning Management Systems to monitor participation. If students are not participating, check in quickly with a personal note or telephone call.

	Participation is a significant predictor of success in online learning (Bae Kwon, DeBruler & Kennedy, 2019).
Communicational	• Provide incremental opportunities for success so students are able to tackle more complex tasks over time. • When appropriate and needed, ensure that learning materials such as adapted books, math manipulatives, picture-word cards, augmentative and alternative communications devices, and visual schedules are provided. • Integrate high-interest texts. • Check that all learning materials are Perceivable, Operable, Understandable and Robust (POUR). • Integrate approved resources for literacies and numeracies instruction (e.g., Empower Reading; NetMath; Calcularis). • Encourage and teach use of assistive technologies such as speech-to-text, text-to-speech, translation applications, and text summarizers that can enable students to work independently (e.g., Read & Write, WordQ, Kurzweil 3000, DeepL, Google Translate, MS Interactive Reader, Quillbot, TextCompactor) (Pierson, 2021). • Invite use of Voice Recordings, Video Recordings for student assignments using built-in assistive applications such as Voice Notes or smart-phone cameras (Ontario Teachers' Federation, n.d.).
Intellectual	• Send updates at a predictable time each week; don't overwhelm students with too many alerts or updates. • Where possible, use settings in the Learning Management System to manage the release of updates to students.

	• Anticipate and remove navigational barriers; reduce the number of clicks needed to find, reply, participate, submit
	• Use consistent, predictable structures in the presentation of tasks
	• Prioritize organization. Use checklists, to-do lists, visual schedules, visual cues such as icons that signal organizational structure or task type (Disability Issues Canada, n.d.)
	• Encourage and teach use of assistive technologies that can reduce online distractions (e.g., focus mode) and provide multimodal access to ideas (e.g., text-to-speech) (see above)
	• Provide access to additional resources that enable interested students to explore high-interest topics independently
	• Introduce digital platforms that support communication, expression through multiple modes, choice and autonomy (e.g., Flipgrid, Padlet)
	• Gifted learners particularly benefit from:
	  • Pacing options (curriculum compacting, acceleration)
	  • Ensuring enrichment opportunities are pre-established on digital platforms.
	  • Using discussion boards for critical/creative thinking (Potts, 2019).

Physical	• Provide access to printed materials in accessible format (screen readers, Braille, large print, magnification) (Ontario Teachers' Federation, n.d.). • Offer enlarged print versions of assignments or different size text on platform (Ontario Teachers' Federation, n.d.).

	• Ensure font size and type are legible (Ontario Teachers' Federation, n.d.). • Use alternative text for all images. • Work with assistive technology specialists, students and families to determine alignment between assignment expectations and the assistive technologies that students are using at home.
Multiple	• Ensure all digital learning materials are Perceivable, Operable, Understandable and Robust (POUR) • Monitor participation • Communicate quickly and regularly with the student, parents and learning support professionals to build relationships, and networks of support around the student.

Assessing and evaluating

As teachers plan for assessments as, of and for learning (Ontario Ministry of Education, 2010; 2016; 2020) they can use a range of methods to gather information about student learning through synchronous and asynchronous modalities. When considering the particular learning needs of students with special education needs, it is essential to know what barriers the digital tool might introduce and which ones it can remove.

Synchronous assessment

When planning for assessment and evaluation in moments of synchronous interaction (i.e. in real time through videoconferencing) it is helpful to consider what information can be gathered through a range of student actions, given the technological environment.

The "ticket in the door" is a common way to gather information about what students remember, are thinking about or know before teaching a new concept.

Online, these quick checks for understanding can happen via polls or with a survey tool. Using “share screen”, teachers can share class responses. Emergent readers can also benefit from seeing graphic representations of class data. Teachers can use the “ticket” data to orient the focus of the lesson, or as a way to invite students to elaborate on their answers in break-out or large-group discussions. Depending on the purpose of the task, teachers can choose to gather student identifiers or to permit “anonymous” replies. When the number of clicks required to access the poll or form are minimized and the poll is POUR compliant, this type of interaction can be inclusive for most learners. These same tools can also be used for self-assessment and peer feedback.

Online synchronous assessment can include time for thinking and sharing ideas in interactive message or chat boards. Some “whiteboard” applications allow for individuals or groups of students to post ideas in digital “sticky notes” that can be arranged in various ways according to the task purpose, interests and needs of learners. These environments allow learners to share text, images and videos and will support any student who needs time to process their ideas, benefits from collaboration or seeing examples of other students’ thinking or language used as they construct understandings and compose their own contributions.

Videoconferencing allows for small group and one-on-one conversations with students about their work. This is a good approach for regular check-ins with learners. Portfolio assessments can include one-on-one conversations where students talk about selected tasks. Presentations, prepared in advance, but shared during synchronous class time can include a range of media – images, graphs, text, video -- and can allow for assessment as, for and of learning (Ontario Ministry of Education - Growing Success, 2010; 2016; 2020b).

Asynchronous assessment

Asynchronous assessment and evaluation are not as constrained by time, although it is important to anticipate and monitor the amount of time it takes students to complete assessment and evaluation activities during times of significant disruption. Pacing expectations should be adjusted and taken into consideration of

the broader context of remote learning, internet speeds, and device access and learning supports at home during the school day or evenings. Asynchronous designs for assessments of, as and for learning can be as diverse and inclusive as those designed for in-person learning, but careful attention needs to be given to the material barriers, skills barriers and sensemaking barriers that digital tools may introduce.

Interactive resources

Math platforms such as NetMath, Prodigy, IXL, and Calcularis use principles of gamification to engage learners in a range of computational and problem-solving activities that adjust over time in response to student progress. Teachers can receive progress reports on each student that help them to know which skills are mastered and which skills need more practice. For literacy, interactive libraries such as Epic or Boukili allow students to choose high-interest books and respond to comprehension questions; teachers can receive progress reports to inform ongoing instruction. Importantly, Epic and Boukili include read-to-self or read-to-me options that allow emergent readers and second language learners and second language learners to hear books read to them.

Screencasting and screencapture

One way to capture students' learning as they interact with web content, or other digital materials, is to ask them to use screencaptures (also called screenshots) that they can annotate with text, graphic elements, or voice memos. Students can also create screencasts that video record what they are doing on their screen. Students can think aloud about a process or describe a product they have created by enabling voice recording. Students can also enable picture-in-picture video to record themselves speaking.

The possibilities for this method are many and can be designed to centre student choice. "Record a screencast of yourself using a simulation related to our course content and think aloud as you figure out the problem" or "Capture three images of your process as you solve an engineering problem and explain what you figured out

in each" are two examples of prompts that allow teachers to capture students' learning processes.

To capture a screenshot, students can use specific keystrokes:

- On a MacBook, the command is COMMAND+ SHIFT + 4 to get the crosshairs that allow a user to select an area to capture; COMMAND + SHIFT + 3 will capture the whole screen.
- On a Chromebook, the keystroke command is SHIFT+CTRL+ShowWindows Button.
- On a PC, use Windows Button + PrtScn (printscreen).

To add annotation to screenshots, there are several options:

- Snagit by Techsmith allows users to annotate screencaptures to demonstrate a process.
- On Macs, the default .pdf browser is called Preview. In Preview, users can annotate images with text, highlight sections, draw arrows or shapes to draw attention.
- Microsoft's Snip+Sketch app on Windows machines also allows users to easily annotate screencaptures.
- On Chromebooks, and in the Google Suite of Tools, Images can be annotated in Google Drawings or in Google Jamboard that also allows for collaborative annotation.

Screencasting tools include Screencastify for Chrome, QuickTime (on a Mac), Screencast-o-Matic (free recording up to 15 minutes) and on tablets, Explain Everything Whiteboard.

Digital portfolio development

Many apps, such as Ontario's VLE, allow students and teachers to create portfolios of digital resources. Multimodal, flexible and student-centred by design, digital portfolios can be used to curate evidence of student learning over time. Videos,

photos, infographics, documents, screenshots, graphs, interactive timelines, blog posts, think-aloud voice memos and more can be placed in digital portfolios and used to support assessment and evaluation of student learning in ways that prioritize students' strengths and interests.

Video discussion

Many discussion forums or apps, including Ontario's VLE, allow for students to post short video messages in response to a prompt and to respond to one another according to pre-determined settings. These video exchanges can be asynchronous. They can support social connection and provide an alternate means of expression and engagement for learners. In some platforms, closed captioning is automatic.

> One board created a series of tables to help teachers transition from the traditional bricks-and-mortar classroom provision of assessment accommodations to the design of virtual options. Table 5 includes selected suggestions.

Table 5. Suggested assessment accommodations for remote learning (NCDSB, 2021)

Instead of This	Try This
Highlighted/chunk material	Break up assessment into separate docs
Large print	Magnification on computer
Minimize visual and auditory distractions	Noise cancelling headphones; white noise; muting microphones
Verbatim scribing	Video recordings, speech-to-text, voice typing in Google Docs, uploading recordings to Google Drive (with closed captioning)
Visual aids and concrete materials	Virtual manipulatives, online calculators, formula sheets, embedded videos, video modelling

Feedback on student work is especially important during remote learning, because it helps students to remain connected to school and supports student learning (Hattie, 2009).

Teachers should provide students with feedback in a range of ways, using:

- Telephone calls
- Emails
- Voice recorded feedback using apps or integrated voice feedback systems in the LMS
- Video feedback
- Annotations using built-in features of the LMS

Carefully composed responses to student work focused on strengths and next steps, which is good practice, become particularly important for students who are

feeling socially isolated and disoriented due to disruptions to routines during times of remote learning.

Communicating

In physical classrooms, communication is spontaneous, non-verbal and dynamic. Students and teachers can work in large groups, small groups, and participate in 1:1 conversations. Teachers can use proximity, verbal cues and gestures to redirect, to emphasize ideas, to affirm, to question or to get a laugh. But with online interactions, communications can feel constrained for students and teachers. Turn taking, sharing screens, chat boxes, and emoji reactions can limit interactions and make full participation impossible for some. For this reason, communications using any and all available means during remote learning is key as teachers work with students and their families. For students with special education needs, it is especially important for teachers to model positive and effective online communications.

Families appreciate regular updates on classroom activities, as well as regular check-ins focused on their child's particular learning needs. Two school boards, for example, recommend that teachers consult with parents to establish agreed-upon success criteria that align with the curriculum and reflect the unique impact of remote learning on families. A classroom website is a good place to share current updates. Weekly or biweekly newsletters can also be effective in supporting families.

Professional learning

Collaborations among education colleagues that come to develop new technological pedagogical content knowledge has always been essential (Mishra & Koehler, 2006; Morsink et al., 2011; Mueller et al., 2008). Collaborations centred on the sharing and co-development of remote learning practices, particularly with special education specialists, are fundamental for student learning outcomes (Parmigiani et al., 2020). Tapping into networks of support with school and board level colleagues and specialists allow teachers to be informed, to receive important

training, and to develop the human relationships that can sustain them through times of uncertainty and change.

> One school invites school staff to share their feedback on a weekly basis. The main purpose of this feedback is to identify specific needs or issues, to request additional support, to share good practices, and to review student attendance and engagement.

Virtual learning offers unique opportunities for teachers to observe and learn from each other. One board spoke to encouraging teachers to observe a unique music-based speech and language program being offered by a therapist, to enable them to integrate the practices into their own teaching.

Recommended practices for specialized staff

Alongside teachers and parents, the network of support surrounding students with special education needs may include a range of school-, board- and community-based staff. These staff may be the most effective at the Tiers 1 and 2 levels. Collaborating, and in some cases, co-teaching with teachers of inclusive education is an effective practice for students with special education needs and allows for skill development on the part of teachers that benefits all learners (Scruggs & Mastropieri, 2017).

Many of the recommendations for teachers apply to support and specialized staff as well. In Tiers 2 or 3, they may also provide small group, circle, or individual support for students. Other roles for specialized staff in remote learning environments include sharing resources with families and teachers, adjusting student programming to reflect the remote learning environment, and providing coaching, collaboration and support for teachers.

Offering individual and small group supports

Targeted virtual small group options (e.g., break-out rooms) for students with special education needs, offered as part of the school day and beyond, can complement inclusive classes socially and academically. For example, one northern board has allocated an Early Literacy Intervention teacher to support 8 classrooms in delivering a phonological awareness program for elementary students. One school authority offered one-on-one targeted reading lessons with the teacher librarian. Educational assistants (EAs) often guide small groups of students during synchronous learning periods. Some students benefit from EA support in asynchronous periods as they are completing assignments. Many boards have developed specific guidelines for individual sessions with students to address safety and privacy.

Some school boards provide virtual skills development programs, during or after school, for students with a range of exceptionalities, including Autism Spectrum Disorder. These may be led by a Child and Youth Worker, resource teacher or an Applied Behaviour Analyst specialist. Summer programming for students with special education needs was also offered by many boards.

For example:
In the summer of 2020, one board hired a Speech Language Pathologist and a Certified Music Therapist to support primary students requiring speech and language supports. Together they facilitated an intensive intervention program for two weeks. When additional funding was allocated by the Ontario Ministry of Education to address the needs of online education, the board expanded the initiative, through the development of staff capacity to incorporate music at the Tier 1 level, as well by offering group sessions for students referred by teachers. The music initiative facilitated student participation and engagement despite the challenges of the virtual environment, and helped to develop communication, social, cognitive and academic skills.

With the proper consents from parents and students, clinical services can be offered by Psychologists, Social Workers, Attendance Counsellors or other professionals. Ensuring high-level security of platforms, and clear guidelines regarding the use of individual or group therapy is key. There is growing research showing the efficacy of virtual clinical and therapeutic sessions for students with mental health needs (Doan et al., 2021).

> One board developed secure virtual platforms to ensure access to mental health services for students, regardless of the model of learning they were taking part in. A similar commitment was made by another, where group sessions, for example for students from different schools experiencing anxiety were developed and moderated virtually by a Social Worker.

Benefits of virtual therapies such as speech pathology needs to include the possibility of parents becoming more involved, thus increasing support for strategies and skills in the home. One English Catholic school board described virtual consults provided by Speech and Language Pathologists to parents focused on ways of supporting communication strategies at home.

For secondary students with special education needs, who are at greater risk of failing to complete high school than their peers, remote learning can provide many advantages, including self-pacing, reduced social demands, and flexibility in learning and possibilities for individualized learning (Serianni & Coy, 2014). Some aspects of remote learning, however, can present challenges. Remaining engaged in synchronous course offerings, navigating course work which may be offered in compressed semesters, coordinating the varied expectations, assignments, tools and platforms used by different teachers and drawing on what may be a limited skill set to motivate heavily self-directed learning can all present barriers for students (Lewis et al., 2014; Olugbenga & Qiu, 2020). In addition to strong Tier 1 supports, and the many effective practices of parents and teachers, some students will require considerable support from a range of educators and specialist staff to be successful.

Many boards have organized virtual access to resource teachers and/or learning centres in particular for secondary students. For example, one board created virtual success centres where individual support is offered to students by resource and student success teachers.

Secondary students with special education needs benefit from mentors, based at the students' home school if in a blended setting, or in a virtual space otherwise, who are specifically assigned to them, outside of a set course (Cavanaugh et al., 2013; Sinclair et al., 1998). Mentors, who may be classroom teachers, attendance counsellors, Child and Youth Workers, or Indigenous student support coordinators, can be assigned a case load of students to check in with regularly, connect to resources where necessary, flag issues and referrals to learning resource staff where required and provide a consistent, non-evaluative presence in the lives of students with special education needs.

Facilitating professional learning

In some school boards, specialists such as resource teachers, Speech Language Pathologists, Applied Behavioural Analysis (ABA) leads, or itinerant teachers for students who are D/deaf or hard of hearing develop resources and lists of curated websites and software that parents can access for support depending on the needs and profile of their child.

Staff with expertise in inclusive and assistive technologies can provide support in developing resources, 'how-to' guides and videos, working alongside educators as they set up their courses and offering office hours and help lines for parents and/or teachers. At one northern board, staff have offered sessions for colleagues during virtual professional development days on topics such as supporting students with special education needs in using assistive technology or drawing on Applied Behaviour Analysis in virtual settings. At another, resource teachers offer virtual office hours solely for parents and students to support them in a range of ways.

Monitoring and supporting implementation of student programming

Specialized and support staff are key members of the student's school team as they gather feedback and information from various sources and consult with students, families and teachers about the best ways of meeting student needs. Some boards have specific learning resource teachers assigned to virtual schools or to act as liaisons between a virtual teacher and a students' home school. One board created a position for a virtual differentiated learning resource teacher to support students in developing assistive technology literacies as well as other skills. Resource staff also continue the necessary processes of organizing Identification, Placement, and Review Committee (IPRC) meetings and developing and revising IEPs in collaboration with the classroom teacher(s) through virtual means. Transitions to and from remote learning will often necessitate adjustments to IEP accommodations.

> Many school boards have prepared guides for educators specifically addressing learning during COVID-19 for students with special education. They explore accommodations that can be more easily incorporated into synchronous and asynchronous learning to ensure that the IEP only includes what they "CAN do to support the student". For example, an in-person environmental accommodation might include a quiet setting or alternative workspace. A summary of board-provided examples of accommodations that could be used to substitute those in an IEP intended to be implemented in a physical classroom/school can be seen in Figure 2.

Figure 2. Examples of Virtual Learning Accommodations

Environmental

- 1:1 Conferencing
- Stationary chair with tennis balls on legs
- Noise-cancelling headphones
- Accessibility features to change font size
- Magnifier accessibility feature
- Organized virtual working space

- Breakout sessions
- White noise app
- Screen recordings
- Access to virtual sensory room
- Movement breaks
- Comfortable, flexible seating
- Natural light if possible
- Virtual visual schedule

Instructional

- Virtual manipulatives and representations
- Use of separate forms for chunking
- Bulleted list of concise instructions for chat feature for synchronous sessions
- Virtual white boards
- Online calculator
- Drag and drop virtual schedule
- Digital choice boards
- Virtual choice wheel
- Share document of notes, shared files folder
- Access to scaffolding materials that reinforce concepts
- Transcript of lesson sent in advance
- Lesson outline provided
- Visual timer for breaks
- Movement in lessons
- Assignments chunked into forms/folders
- Digital graphic organizers
- Collaborative groupings
- Raise hand gesture
- Chat box
- Teacher checkpoints
- Math Apps, virtual formula sheets
- Reinforcement built into task completion
- Audio & video modelling
- Calming Apps

Assessment

- Audiotexts/books
- Options for assessment: video recordings, voice typing in docs, oral options
- Digital countdown timer
- Online dictionary and thesaurus
- Break up assessment into separate forms/documents
- Digital exemplars

Recommended practices for school administrators

The role of school administrators is significant during remote learning (Davis et al. 2007; Quillci & Joki, 2012). In blended models, principals may be navigating the needs of students, families and school staff in virtual and in-school settings. In dedicated virtual models, principals may be responsible for an entirely virtual school, navigating how to offer leadership, guidance and resources without being physically present with colleagues and students. Issues of student equity have been noted by school leaders as even more evident and necessary to address during remote learning (Varela & Fedynich, 2020).

Prioritizing relationships & well-being supports

School administrators need to find ways to maintain and develop relationships with students and families remotely. Creating drop-in office hours for parents to connect with principals is one example and sending regular email updates at a predictable time and day is another. Partnering with organizations that support families within communities adds to the network of support for students with special education needs.

Developing processes for identifying and addressing the well-being needs of students, families and school staff is a key priority when planning for remote learning.

The well-being of educators is also "critical to the education, behaviour and mental health of young people" (Roffey, 2019). School leaders can support teachers in remote learning by:

- supporting initiatives requested by teachers (e.g. virtual staff wellness committee)
- promoting a school climate and culture that prioritizes well-being
- being available to collaborate with staff when needed
- gathering feedback from staff and addressing concerns
- tending to their own well-being.

Mobilizing access for students with special education needs and their families

Many students have community-based therapists working physically in schools during in-person learning. School leaders can collaborate to develop creative solutions and local protocols to allow community providers to continue to provide these kinds of services.

> The key to ensuring the special education program is working is to ensure that the principal is part of the conversations and following up regularly. The more the principal is involved, the better the outcomes are.
>
> -Northern Ontario School Board

Centralizing information and resources

School administrators can work with teachers to ensure clarity and consistency in the sharing of information and resources with students and families. Creating and sharing brief guides for students and families on where to get support for learning, technology, and IEP supports, for example, allows for greater access. Deciding as a school how communication will be shared with families (what day, what time, what platform) and from whom is an example of a barrier-reducing process that for families. A school-based website can serve as an information hub with links to supports and resources, calendars and answers frequently asked questions.

Facilitating professional learning and development

Many of the outlined suggested practices for students, parents, teachers and school staff can be reinforced, modelled, supported and championed by school leadership. Principals should ensure that teachers have access to a suite of appropriate technology products, tools and resources to support the delivery of distance learning (PPM 164, Ontario Ministry of Education, 2020a).

School leaders also require their own professional learning. Understanding the various platforms and tools that teachers use in their virtual classrooms informs instructional leadership. As well, principals are ultimately responsible for the implementation of IEPs. Principals need to work with school teams to make sure IEPs reflect the remote learning context and that human and other resources are in place to implement the program.

Recommended practices for boards

School board leadership is fundamental to building strong support networks and providing support to students with special education needs and their families.

Prioritizing well-being supports

For boards, establishing processes for identifying and addressing the well-being needs of students, families and school staff is a first priority for boards in planning remote learning. Boards should leverage partnerships with social and mental health services and communicate with staff and families on how they can access these supports and services.

Centralizing information and resources

Centralizing information means quick and easy access to resources that support remote learning. This practice facilitates collaboration among schools in the board and with members of the students' support network with common information and resources available to all educators, parents and students.

Facilitating professional learning and development

Technology training should be offered to school staff to further their professional learning related to the specific tools and technologies they are using. School staff also require professional learning related to inclusive pedagogical and assessment approaches specific to remote learning. The goal of this professional development is to address access and participation by students with special education needs.

One board prepared a guide for educators specifically addressing learning during COVID for students with special education needs. It includes sample strategies to help parents monitor remote learning based on IEP goals and accommodations.

A French-language board has offered training to teachers and teacher assistants on the use of technology in virtual learning environments for students with special education needs. The board has also offered training to teachers to develop their skills in teaching phonological awareness using interactive virtual activities.

The Inclusive Student Services team in a GTA board has created professional learning opportunities for on-demand learning, through their Professional Learning Hub, as well as providing support directly in virtual classrooms.

Personal learning and development are most effective when collaboration among staff members is encouraged and facilitated, and when professional learning needs and goals are clearly identified. Creating and maintaining formal and informal networks within and across school boards, based on shared interest in a subject, grade, learning platform, technological innovation, area of specialization or other dimension can support the development of collaborative professionalism (Hargreaves & O'Connor, 2018). The growing access to, and use of, technology that has the potential to connect educators across the province and beyond, presents an opportunity for enhanced professional learning in supporting students with special education needs (Ault et al., 2020).

This kind of shared learning provides opportunities for staff to learn from others' practices, reflect on their own, and can improve efficacy and morale. Boards can support these kinds of efforts by funding release time, providing research expertise, offering board-level coaching and mentorship to school-based teams, and by highlighting and celebrating the work of teams.

> During winter 2021, one board conducted data collection to identify teaching approaches and practices used at a distance with students with special needs. The goal is to allow for the identification of their most effective practices in order to establish and systematize successful strategies across their schools.
>
> Another has engaged in regular data collection to determine where educators need support and to gather educator feedback on student participation and needs.

Exploring models of remote learning scheduling and support

School boards in Ontario and beyond have adopted a range of scheduling and support models for remote learning for students with special education needs. Many boards have distinguished between remote learning for students in self-contained special education classes and for students with special education needs placed in inclusive classes.

> A southwestern Ontario board created a special education department for elementary remote learning that included a special education principal and four resource teachers. Each resource teacher supported one quadrant of the board. This approach was viewed a hugely successful in enabling the careful monitoring of individual student and family needs.

Students, including those in self-contained classrooms have a range of strengths and needs. The following promising practices may support students in these settings based on their individual needs and circumstances:

- Keep students with their home school and class, to maintain relationships and routines for classroom staff, students, and families. This continuity helps students when transitions occur between remote and in-class learning, which can be challenging for some students with special education needs.

- Explore blended models, where students spend some time learning in-class and some time learning at home. Consider the readiness of students to engage in frequent transitions when determining the fit of this model.
- Prioritize in-person options for students with complex needs. For some students, remote learning is not a possibility.

For inclusive classes, effective approaches include:

- ensuring availability of learning and well-being supports in virtual environments
- allocating specialized staff to coach and collaborate with teachers in planning and implementing differentiated instruction and assessment (Parmigiani et al., 2020)
- providing a range of 'on-demand' options for students to be able to meet with educators or board-funded tutors or support staff outside of synchronous time
- assigning a mentor to each student with an IEP either at the home school (in blended models) or virtually (if fully remote). Mentors provide regular check-ins for students, coach them on learning-related strategies and advocacy skills, and guide students towards available resources related to technology (Freidhoff et al., 2015).
- providing a range of 'on-demand' options for educators to be able to meet with board-level staff to support needs related to technology, pedagogy and assessment, and mental health. (Ault et al., 2020)
- discussion groups or peer networks developed for courses at the secondary level where students can discuss questions and projects (Cavanaugh et al., 2013)
- flexibility in requirements for synchronous or asynchronous attendance as per the needs and IEPs of individual students

One board used a tiered approach to the design of their remote learning programs in 2020-2021. For students with the highest needs (Tier 3), 1:1 support was provided all day, every day. For students with some particular learning needs (Tier 2) an EA was provided for half of the day, every day. For students whose learning needs could be generally met with Tier 1 level supports, EA supports were provided on an as-needed basis, with EA availability for about 80 minutes per day.

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