

## ENVIRONMENTAL SCAN

# (ARCHIVED) Environmental Scan of School Reopening During COVID-19

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### ARCHIVED DOCUMENT

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## Key Findings

- Kindergarten and elementary schools tend to be reopened earlier than high schools based on evidence that COVID-19 incidence and severity is lower among young children, and the benefits of having this group of students back in school.
- Infection prevention guidance for school reopening from various jurisdictions typically includes guidance on: keeping ill people away from school; encouraging physical distancing; promoting hand and respiratory hygiene; reducing indoor exposure time; limiting exposures between groups; and/or using masks for source control. Local adaptation by schools of the guidance developed by their government is encouraged based on local epidemiology and implementation considerations.
- An increase in COVID-19 incidence was seen following school reopening in 6 of the 18 countries reviewed. Strict physical distancing/'lockdown' measures were not implemented in 2 of these countries, while restriction measures were relaxed around the time of school reopening in the 4 other countries. Three countries (Japan, South Korea and Israel) had to close some schools again. Where information is available, easing of social and economic restrictions is thought to have contributed to the exponential rise in incidence (in Israel).
- Sporadic infections have been reported in children and school staff but outbreaks of COVID-19 have been few. The school setting has rarely been implicated as the source of these infections.

## Objectives and Scope

As part of the response to Coronavirus Disease 2019 (COVID-19) pandemic, school closures have been implemented in Ontario since March 13, 2020, combined with multiple other layers of individual and community-based public health measures. This environmental scan includes a global jurisdictional scan and more detailed contextual information from key informant consultations in Canadian jurisdictions that have reopened schools. This environmental scan aims to equip decision-makers with evidence and experiences from other jurisdictions to support decision-making during the pandemic as it relates to

school reopening planning. Information on protocols, guidance, and health effects in other jurisdictions was included which aims to assist in moving into operational planning for reopening.

## Background

As the COVID-19 pandemic stretches into the fifth month of public health measures, many countries and jurisdictions have flattened their epidemic curves and are in varying phases of reopening their societies. As of mid-July, the number of confirmed COVID-19 cases in Ontario continues to decrease. Currently ([as of July 15, 2020](#)), children  $\leq 19$  years represent 5.1% (1,905/37,052) of all COVID-19 cases in Ontario, with one death reported.<sup>1</sup> Most of Ontario (24 public health units) will be moving into Phase 3 (as of July 17, 2020) of the provincial reopening plan. Ontario schools have been closed for in-person attendance since March 13, 2020. As COVID-19 community transmission remains relatively low, school reopening planning is important for a safe return to school in September.

The reopening of schools is a complex process involving multiple stakeholders. A balance between ensuring the health and safety of students, teachers, and school staff, and providing children supportive learning environments is critical. Schools provide more than education; they are settings where children socially interact with their peers and teachers, and access nutrition, immunization, and mental and psychological supports.<sup>2</sup> Safe reopening of schools can be seen as crucial for the health and wellbeing of children, recognizing that negative consequences of pandemic school closures have been established such as effects on mental health, decreased physical activity, poor nutrition, and loss of education.<sup>3</sup> The United Nations Educational, Scientific and Cultural Organization (UNESCO), in collaboration with the United Nations Children's Fund (UNICEF), the World Bank, and the World Food Programme published a *Framework for Reopening* to aid policy makers in their decisions related to school reopening.<sup>2</sup>

In the PHO review *Rapid Evidence Review of COVID-19 Pandemic School Closure and Reopening Impacts* which summarized the effectiveness of school closures and transmission within schools, it was noted based on modelling studies that school closures contributed to reducing the reproductive number ( $R_0$ ) of COVID-19 and the cumulative number of cases. However, the review did not find evidence of widespread outbreaks of COVID-19 in school settings. It is not clear if this lack of transmission in schools is because most schools closed relatively quickly after the pandemic was declared, if children are less efficient as spreaders of COVID-19 or if children have not been tested (due to prioritized testing or less severe symptoms). The inconclusive evidence on infection rates due to school attendance requires decision-makers to act with a level of uncertainty, and with a mindset to balance possible risks related to COVID-19 infection and transmission, with the benefits of school attendance.

Although there is general consensus that children and youth will benefit from being back to school in-person in the fall, there is little consensus on how this should be done to mitigate the risks of infection and transmission. The purpose of this environmental scan is to collect the best available evidence and experiences from jurisdictions which have reopened schools before July 2020, to inform guidance to policy makers on school reopening recommendations.

## Methods

- The jurisdictional scan involved searching government websites and online media reports for information on school closure and reopening during the COVID-19 pandemic.
- Epidemiological data were mainly obtained from the World Health Organization website, supplemented by reports from individual provinces and states where needed.

- To supplement the global jurisdictional scan, two consultations were conducted with four key informants (KIs) from British Columbia and Quebec with experiences of school reopening in the Canadian context.
- The objective of the key informant consultations was to understand the experiences of other Canadian jurisdictions that reopened schools prior to the end of the 2019-2020 school year.
- Consultations were conducted by a public health physician (PHO) and a PHO staff member taking detailed notes. A list of key questions were drafted and reviewed for clarity and relevance. Each consultation was approximately 60 minutes in length. Post-consultation, notes were reviewed by the KIs and any necessary changes, additional details or incorrect information were subsequently added or removed. Notes were then synthesized into key findings related to school reopening.

## Results

In this section, the results of the environment scan are organized by jurisdiction and as follows:

- School reopening strategy
- COVID context at reopening
- Any reported outbreaks, cases or transmission in schools post-reopening
- Public health measures applied in schools (e.g., masks, physical distancing)

Additional details by jurisdiction for relevant dates, population size and epidemic peak are found in the Appendix. In noting epidemic peak, school reopening during the pandemic has generally occurred post-epidemic peak with lower levels of community transmission, or in the context of well-controlled, low community spread at the outset of the epidemic in their jurisdiction. While there has been resurgence of cases in some jurisdictions after school reopening, this also reflected increases in broader community transmission. Measures to maintain low levels of community transmission other than school closures thus appear to impact the ability for schools to stay open. Many jurisdictions that have reopened schools to date did so with schools integrated in their early societal reopening plans in relation to the epidemic peak, potentially reflecting prioritization of school reopening as part of an overall strategy.

## Canada

### BRITISH COLUMBIA

- Although schools in British Columbia (BC) were closed as of March 17, in-person learning opportunities remained available for children of essential service workers requiring school care, children in remote locations, vulnerable children requiring in-person support and learners with diverse needs.<sup>4</sup>
- **School reopening strategy:** As of June 1, BC entered stage 3 for resuming class instruction:<sup>5</sup>
  - Kindergarten to grade 5 attend school half time.
  - Grades 6 to 12 attend school about one day a week depending on the risk of transmission. 5-day school is available for children of essential service workers, those with disabilities or diverse abilities, and those requiring additional support.<sup>6</sup>
  - Children of essential service workers and those requiring additional supports could choose full-time school attendance.

- **COVID context at reopening:** Incidence remained at low levels for most regions in BC.<sup>7</sup>
- **Outbreaks/cases:** As of July 9, no school outbreaks had been reported and the number of reported cases in children remained low.
- **Mitigation measures** recommended by the government include:<sup>6,4</sup>
  - Staff to assess for COVID-19 symptoms daily before entering the school.
  - Parents and caregivers to assess their child for COVID-19 symptoms daily before sending them to school.
  - Arrangements should be in place for sending symptomatic persons home.
  - Minimizing physical contact and spreading people out into different areas (keeping 2 m between people is considered challenging for small children).
  - Avoiding groups or gatherings of students in hallways or other common areas.
  - Cleaning of school building at least once a day, and of high-contact surfaces at least twice a day.
  - Hand sanitizing and cleaning stations be available and well stocked; hand hygiene performed before entering school property.
  - Staggered drop-offs, lunch and recess breaks, with increased time outdoors.
  - One student per seat on school buses unless children are from the same home.
  - Consideration of installing a physical barrier between school bus driver and passengers.
  - Not sharing food or personal items. However, no limitation on the distribution or sharing of books or paper-based educational resources to students.
  - Mask-wearing not recommended (particularly for children) but permitted.

## QUEBEC

- **School reopening strategy:** Preschools and elementary schools in Quebec outside of Montreal, the Regional County Municipality of Joliette and the town of l'Épiphanie reopened as of May 11, secondary schools remained closed until the end of August. On July 2, learning support groups with less than 15 students can be organized for elementary and secondary students with learning difficulties, with disabilities, or deemed to be at risk.<sup>8</sup>
- **COVID-19 context at reopening:** COVID-19 incidence in Quebec has been declining rapidly since early May and stabilizing as of late June to less than 600 new cases per week.<sup>9</sup> As of July 14, transmission has extended to all regions of Quebec but it is said to be under control.<sup>10</sup>
- **Outbreaks/cases:** Two weeks into school reopening, a survey of 60 out of 72 school boards conducted on May 25 found 19 students and 22 staff members infected, with the highest incidence in the Laurentians and Montérégie regions north and southeast of Montreal (10 cases each).<sup>11</sup> Another news report noted that close to 50 students and more than 30 staff members were infected across Quebec in the first three weeks of school reopening.<sup>12</sup> The Minister of Education said schools were likely not the source of those infections.<sup>13</sup>
- **Mitigation measures for elementary schools** recommended by the government include:<sup>14,15</sup>
  - Avoid greetings that involve physical contact.
  - Groups must take recess and move about the school at different times.
  - Avoid sharing items as much as possible.
  - Limit items carried between school and home.
  - Bring one's own lunch.
  - As of June 22, distance of 1 m was allowed between children 16 years and under; bubbles of 4-6 children would be formed. However, children and adults were to remain 2 m apart.
  - Tissues are provided for students and staff to support respiratory etiquette.

- Alcohol-based hand sanitizer, soap and disposable paper towels are provided for students and staff to encourage frequent hand hygiene practice.
- Rooms cleaned daily. Washrooms and frequently touched surfaces to be cleaned several times a day.
- Face coverings not required for staff in elementary schools but will be provided to teachers who request them. In addition, a mask will be given to anyone who develops symptoms compatible with COVID-19 during the day (the person will also be isolated in a room).

## United Kingdom

### ENGLAND

- England closed all schools as of March 18.
- **School reopening strategy:** On June 1, kindergarten, primary schools (year 1 and year 6) resumed in-class learning. On June 15, in-person support to supplement remote education for secondary schools (year 10 and year 12) began, as these classes had to prepare for examinations next year. Secondary students started later than primary ones as they are more likely to use public transport to get to schools that are typically further from home. Secondary students also are typically educated in mixed groups based on the subjects they selected. Children and students (up to 18 years old) who are medically vulnerable are encouraged to continue home-based education.<sup>16</sup>
- **COVID context at reopening:** COVID-19 incidence in England has been on the decline since early May. The number of school outbreaks reported has been increasing from the week of June 1 to the week of June 15, which coincides with an expansion of national testing and contact tracing.<sup>17</sup>
- **Outbreaks/cases:** no information retrieved.
- **Mitigation measures** recommended by the government for all school levels include:<sup>18</sup>
  - Encouraging hand hygiene and good respiratory hygiene
  - Cleaning high-touched surfaces often and thorough cleaning of rooms at the end of day.
  - Minimizing contact and mixing by altering, as much as possible, the environment (such as classroom layout) and timetables (such as staggered break times).
  - Mask wearing is not recommended.
- Additional measures for secondary schools include:
  - Ensuring that no more than 25% of students are in school at any time.
  - Keeping a distance of 2 m where possible.
  - Reducing class size to half or smaller.
  - Ensuring children and young people stay in the same small groups at all times each day and use the same classroom or area throughout the day.
  - Ensuring that the same teacher(s) and other staff are assigned to each group every day as much as feasible.
  - Using outside space as much as possible.
  - Reducing the use of shared resources.
  - Adjust transport arrangements where necessary.
  - Parents, carers and settings do not need to take children's temperatures every morning.

## Europe

### AUSTRIA

- **School reopening strategy:** Schools were incompletely closed in Austria during the COVID-19 pandemic, allowing continued attendance by children who could not be looked after by their families. Primary schools were closed first, as of March 11 (replaced by childcare), with the intention to reduce exposure to grandparents providing child care.<sup>19</sup> By March 16, all schools were closed. Reopening began with primary schools on May 4, extending to other schools on May 15.<sup>20</sup> Senior students (age 15 years and above) not in their final years started returning to school as of May 29.<sup>21</sup>
- **COVID context at reopening:** COVID-19 incidence in Austria was dropping from mid-May to early June. It rose sharply with about 600 new cases a week during the last week of June and first week of July.<sup>22</sup>
- **Outbreaks/cases:** no information retrieved
- **Mitigation measures** taken by some schools include:<sup>21,22</sup>
  - In-person attendance on alternate days
  - Mask-wearing
  - Frequent hand washing and reminders posted at school entrance
  - Keeping social distance

### DENMARK

- **School reopening strategy:** After closure of all schools in Denmark on March 11, kindergarten and primary schools reopened on April 15, followed by grades 6 to 9 on May 10.
- **COVID context at reopening:** COVID-19 incidence in Denmark has been dropping since mid-April and remained fairly stable in June.<sup>22</sup>
- **Outbreaks/cases:** No major outbreaks have been reported in schools.<sup>23</sup>
- **Mitigation measures** taken by some schools include:<sup>23,24</sup>
  - Desks spaced 2 m apart for primary schools on reopening. The distance was reduced to 1 m in mid-May to accommodate the return of grades 6 to 9.
  - Staggering class times.
  - Reducing class size.
  - Maximizing time spent outdoors.
  - Washing hands on arrival and at least every 2 hours.
  - Cleaning washrooms and frequently-touched surfaces twice a day.
  - Marking school playgrounds in zones in which small groups of young students are allowed to play.
  - Encouraging keeping social activities within the same groups of students every day.
  - Prohibiting sharing of toys, food; as well as physical contacts such as handshaking, high fives, kiss on the cheek and hugging.

### FRANCE

- **School reopening strategy:** Kindergarten and elementary schools in France re-started on May 11, followed by reopening of secondary schools on May 18.<sup>23</sup>
- **COVID context at reopening:** National incidence also started dropping rapidly from about two weeks after secondary schools reopened thereafter.<sup>22</sup>

- **Outbreak/cases:** Although 70 new COVID-19 cases were reported in schools in France a week after elementary schools reopened, almost all of these cases were believed to have acquired the infection from exposures outside of the school.<sup>26</sup> Meanwhile, two weeks after school reopening, 70 schools were closed or had to delay reopening on discovering infections in students or staff members.<sup>26</sup>
- **Mitigation measures** recommended by the government include:<sup>23</sup>
  - Capping class size to 10 students for kindergarten and 15 for others.
  - Parents are to take their child's temperature every day before leaving for school.
  - Masks are prohibited for kindergarten students and not recommended for elementary school students. However, mask-wearing is compulsory for teachers and staff.
  - Desks spaced at least 1 m apart.
  - Contact sports are banned.
  - Classrooms are ventilated before student arrivals, during recess and lunch time, as well as during cleaning in the evening.
  - Exercising strict hand washing.
  - Parents are not allowed into school buildings

## GERMANY

- **School reopening strategy:** School closing in Germany began on March 16, as of April 20, each of the 16 federal states in Germany has been in charge of its timeline for reopening schools. By early May, most states have resumed in-person learning for some students in their final year of schooling.
- **COVID context at reopening:** COVID-19 incidence in Germany has been declining since early April and remained low as of early June.<sup>22</sup>
- **Outbreaks/cases:** A surveillance study conducted in 13 schools in Dresden and the districts of Bautzen and Górlitz in May and June found seroconversion in only 12 (0.6%) persons, out of 2,045 persons tested in May and June. Around 1,500 children aged 14 to 16 years, and about 500 teachers were tested. These regions were said to have a low prevalence of COVID-19.<sup>27</sup>
- **Mitigation measures** implemented by some schools include:
  - Staggering classes
  - Reducing class size

## NETHERLANDS

- **School reopening strategy:** On March 16, all schools in the Netherlands closed except for some that remained open with a handful of students whose parents worked in essential services.<sup>28</sup> Two months later, primary schools reopened on weekly rotation on May 11.<sup>29</sup> On June 2, high schools that could maintain 1.5m distance between students reopened, mostly with one day a week in-person learning.<sup>30</sup>
- **COVID context at reopening:** COVID-19 incidence in the Netherlands peaked in early to mid-April and has been dropping thereafter.<sup>22</sup>
- **Outbreaks/cases:** There are reports of two primary schools closing in June after infections were reported: in one school in The Hague, infections were reported in two teachers working at different locations;<sup>31</sup> in another school in Vlaardingen, at least 3 parents, 2 students and a teacher tested positive for COVID-19.<sup>32</sup> The sources of these infections were not reported.
- **Mitigation measures**, partly determined by each school district, may include:<sup>28,29,30</sup>

- Reducing class size to half with weekly rotation for in-person learning or on having students come on alternate days.
- Keeping 1.5 m between children and adults, and between adults and adults, but allowing children to interact freely.
- Ensuring secondary students are kept 1.5 m apart.
- Being mindful of hand hygiene and environmental cleaning without strictly enforcing them.
- Installing plastic shields around desks.
- Mask wearing by teachers may or may not be mandatory.
- Organizing special transport for students who live too far to walk or cycle to school.<sup>30</sup>

## NORWAY

- **School reopening strategy:** All schools in Norway were closed as of March 13. Kindergarten students were the first group to resume in-person learning on April 20, followed by grades 1 to 4 on April 27, and grades 5 to 13 on May 11.
- **COVID context at reopening:** COVID-19 incidence in Norway has been falling since early May and remained low thereafter.<sup>22</sup>
- **Outbreaks/cases:** no information retrieved
- **Mitigation measures** for grades 1 to 7 were legislated by the government while encouraging local adaptation by schools. Areas covered by these measures include:<sup>33</sup>
  - Policies and procedures to ensure no sick people would enter schools
  - Provision of hand hygiene facilities
  - Teaching students handwashing procedures and respiratory hygiene
  - Putting up reminders for hand hygiene and respiratory etiquette
  - Staggering schedules for use of outdoor space
  - Dividing outdoor areas to prevent mixing of different cohorts
  - Limiting sharing of stationery and equipment
  - Ensuring a safe distance in class and during activities and meals
  - Planning school transport and avoiding using public transport for school trips
  - Cleaning measures that address frequency and methods.

## SWEDEN

- **School reopening strategy:** In Sweden where a large proportion of families have both parents working, kindergarten to grade 9 remained open during the COVID-19 pandemic, while higher grades were closed. However, individual schools could choose to close based on their local situation.<sup>34,35</sup>
- **COVID context at reopening:** COVID-19 incidence in Sweden was increasing from late March to mid-April, remained more or less stable in May and rose again in early June. Incidence has been dropping since late June.<sup>22</sup>
- **Outbreaks/cases:** no information retrieved.
- **Mitigation measures** recommended by the government to keep schools open include:<sup>36,37</sup>
  - Keeping sick people from attending school. However, infected children can attend school two days after symptoms resolve. People can also continue attending school if they live with an infected person who is asymptomatic.
  - Frequent hand washing
  - Daily cleaning of school premises at the minimum

- Reducing class size to pods of around 12 for elementary schools
- Avoiding large gatherings of students
- Spacing out desks
- Staggering classes, recess and lunch times
- Planning more activities outdoor
- Reducing mixing across pods by having each pod taught by one teacher in one socially distanced classroom, and each pod taking lunches and playing together

## Australia

- **School reopening strategy:** School closures beginning in mid-March; states and territories were responsible for implementing various policies, such as extending school holidays, and keeping schools open for students who are unable to learn at home, and closing schools in some regions.<sup>38</sup> As of July, schools are open, with the exception of temporary closures occurring in response to identification of sporadic cases at the school or restrictions imposed due to increased COVID-19 activity in the area.<sup>39-40</sup>
- **COVID context at reopening:** Schools began opening in late April/early May,<sup>41,42</sup> by which time there had already been a steady decrease in cases beginning in early April.<sup>22</sup> Recently, case incidence has begun to increase and the country is currently experiencing a second peak which started in late June.
- **Outbreaks/cases:** An investigation into COVID-19 cases at schools in New South Wales found that from March to mid-April 2020, 18 cases of COVID-19 (9 students and 9 staff) from 15 schools (10 high schools and 5 primary schools) were confirmed. Overall, 863 individuals (735 students and 128 staff were) identified as close contacts of the 18 cases. Of the 863 close contacts, only two students were identified as confirmed cases and a review showed that “it was most likely, but not certain, that these two children were infected by transmission in the school environment.” There were no secondary cases among staff or teachers.<sup>43</sup>
- In the state of Victoria, several outbreaks have been identified at schools (K-12)<sup>44,45</sup> including an ongoing investigation into an outbreak at a local K-12 educational institution where 147 of the region’s 4,224 cases have been linked as of July 14, 2020.<sup>46</sup> According to a recent news report, which cites information provided by Victoria’s Department of Health, among the 147 cases, 76 are students, 28 are staff, 16 are close contacts and 27 remain under investigation.<sup>47</sup> In addition, according to media reports, various schools have been closed across the provinces and territories due to reports of sporadic cases identified within the school.<sup>48-50</sup>
- **Mitigation measures:** Different mitigation measures have been implemented in various provinces and territories and include:
  - Reduced mixing of children by separating them into groups (including the staggering of meal and play times).<sup>51,52</sup>
  - Children are not required to observe physical distancing as per the Australia Health Protection Principal Committee (AHPPC) guidelines, based on the limited transmission risk associated with school children in the school environment. All adults must maintain physical distance of 1.5 meters from each other, including teachers and support staff, and parents/caregivers.<sup>53-55</sup>
  - Enhanced cleaning of high touch areas/surfaces.<sup>53,55,56</sup>
  - Staggering drop-off/pick-up and meal and break times to reduce contact and avoid risk of congregation.<sup>57,58</sup>

## New Zealand

- **School reopening strategy:** Country-wide school closures began on March 24.<sup>59</sup> On April 29 schools began to open at limited capacity, for those needing to attend school (e.g., children of essential workers) and by mid-May all schools had re-opened.<sup>59</sup>
- **COVID context at reopening:** Case incidence began to decrease in early April and continued to remain low as school re-opened from late April to mid-May.<sup>22</sup>
- **Outbreaks/cases:** No information was found regarding reports of COVID-19 transmission in schools following re-opening. Confirmed cases in the country have markedly decreased since mid-April and have remained low since school re-opening. Overall, 467 confirmed cases were reported in April (39 among individuals  $\leq 19$  years of age), followed by 15 (4 among individuals  $\leq 19$  years of age) in May, 24 (2 among individuals  $\leq 19$  years of age) in June, and 19 (none among individuals  $\leq 19$  years of age) from July 1-15.<sup>60</sup> As of July 15, 2020 there are no active cases among individuals 0-19 years of age<sup>60</sup> and there are no active clusters (defined as ten or more cases) in the country as of July 6.<sup>61</sup>
- **Mitigation measures:** Mitigation measures in New Zealand schools are laid out for each level of the country's four level "alert system." Currently at alert level one:<sup>62</sup>
  - Contact tracing registries are no longer required, however attendance and on-site visitors continue to be recorded.
  - No restrictions on personal movement: all staff and students are able to return to school, including those at higher risk of severe illness from COVID-19.
  - Physical distancing is not required but where possible is encouraged when individuals are around others they do not know.
  - Regular cleaning and disinfecting of commonly touched surfaces is recommended.
  - No restrictions on school gatherings or visitors.
  - Teachers are able to teach more than one group/class of students.
  - Many activities can proceed as normal (e.g., use of playgrounds, schools libraries, musical practices/performances).

## Asia

### CHINA: HONG KONG SAR

- **School reopening strategy:** Schools in Hong Kong remained closed in late January after the Lunar New Year break. On May 20, international and private schools started reopening and on May 27, local schools also reopened.
- **COVID context at reopening:** There had been no locally acquired infections since school reopening until the end of June, when 60 locally acquired cases and 134 infections epidemiologically linked with local cases were noted for the reporting period of June 30 to July 13. However, only 1 of these locally acquired cases is of school age.<sup>63</sup>
- **Outbreak/cases:** Schools were closed on July 10 as incidence began to rise in late June. However, there were no cases in children attributed to schools as the source since school reopened.<sup>64</sup>
- **Mitigation measures** taken by some schools include:<sup>64</sup>
  - School hours shortened to half day to accommodate staggered classes, to reduce social contact, and to avoid taking lunch together unless staggered lunch time can be arranged.
  - Desks spaced 1 m apart.

- No sharing of stationery.
- Installation of thermal cameras and hand sanitizing stations at school entrance.
- Sterilized mats for shoe cleaning on entry to school.
- Submission of a health and travel declaration.
- Mask-wearing by students and teachers while in class.

## JAPAN

- **School reopening strategy:** After universal school closure since March 2, schools in some regions of Japan reopened on April 6 but had to be closed a week later when COVID-19 incidence rose in Japan and peaked in mid-April. Schools in many regions reopened with staggered attendance as of May 18.
- **COVID context at reopening:** Incidence dropped to a low level of about 300 new cases per week.<sup>22</sup>
- **Outbreak/cases:** Clusters of infections were reported in some schools and national incidence began to rise in late June, therefore some schools had to be closed.<sup>65</sup>
- **Mitigation measures** taken by some schools include:<sup>65</sup>
  - Parents taking the children's temperature every morning and recording results for teachers to check on arrival to school.
  - Alternate days of school attendance and with shorter hours.
  - Masks to be used by teachers and students.
  - Maintaining physical distance, e.g., having markings on floor, eating lunch at one's desks facing forward in silence.
  - Prohibiting singing in music lessons.

## SINGAPORE

- **School reopening strategy:** After closure on April 7, schools in Singapore started reopening on a weekly rotation schedule as of June 2 (in-school learning for a week, home-based learning on the following week). Kindergarten fully reopened as of June 10, and by June 29, all levels of school were reopened.
- **COVID context at reopening:** COVID-19 incidence in Singapore has been falling slowly since peaking in late April.<sup>22</sup>
- **Outbreaks/cases:** Sporadic infections in students and school staff have been reported since school reopened<sup>66</sup> but there have been no school outbreaks to date.
- **Mitigation measures** recommended by the government include:<sup>67,68</sup>
  - Daily temperature taking and visual screening for all students and staff.
  - Daily disinfection of school premises with more frequent cleaning of high-touch surfaces
  - Frequent hand washing and wiping down tables and shared equipment after use.
  - Reducing interclass mingling.
  - Physical distancing in class, canteens (fixed groups of up to five from the same class allowed).
  - Staggering arrival, dismissal and recess times.
  - Mask wearing by students and staff (or face shields where masks may not be practical (e.g., students with health conditions)

## SOUTH KOREA

- **School reopening strategy:** Kindergarten and schools in South Korea started reopening as of May 20. According to the Ministry of Education, 838 schools of the 20,902 nationwide that were supposed to reopen on May 27 did not, including in Seoul, and hundreds closed on May 28 in Seoul, Bucheon and other cities due to high infection rates in the community.<sup>69</sup>
- **COVID context at reopening:** COVID-19 incidence dropped rapidly after peaking in early March and reached a low level of less than 100 new cases per week in late April and early May. Around the time of reopening, incidence increased to around 300 new cases per week.<sup>22</sup> Hundreds of schools were closed again in late May due to high infection rates in their communities.
- **Outbreaks/cases:** Infections in students have been reported,<sup>70</sup> including a 6-year-old who is thought to have acquired his infection from his art teacher.<sup>71</sup>
- **Mitigation measures:** Schools are responsible for developing their mitigation measures which may include:
  - The use of masks by teachers and students.
  - Disinfection of environmental surfaces.
  - Installation of plastic barriers to separate students while they eat and learn.

## TAIWAN

- **School reopening strategy:** After schools in Taiwan reopened on February 25 after two weeks' closure, COVID-19 incidence went up and peaked in mid- to late March, then fell to less than 10 cases a day by early April.
- **COVID context at reopening:** Other than a one-day peak with 19 new cases on April 19, only sporadic cases were reported since late April.<sup>72</sup>
- **Outbreaks/cases:** none reported
- **Mitigation measures** taken by some schools include:<sup>73</sup>
  - Checking students' temperature on entering and leaving schools.
  - Taking lunch at one's desk (some have dividers set up at the desks at lunch).
  - Sanitizing hands and shoes on entering school.
  - Mask wearing by teachers and students.

## ISRAEL

- **School reopening strategy:** Schools in Israel began reopening in small capsules of students as of May 3. On May 7, limits on class size were lifted and by May 17, all schools reopened.
- **COVID context at reopening:** National COVID-19 incidence dropped after peaking in early April.<sup>22</sup>
- **Outbreaks/cases:** Incidence started rising exponentially to peak in early June, when 301 students, teachers have tested positive for COVID-19 and another 13,696 people had to be quarantined.<sup>74</sup> As of June 8, 110 schools were closed after reopening in mid-May.<sup>75</sup> The government attributed the jump in new cases to the easing of restrictions on movement, economic activity and gatherings that were put in place to contain the virus.<sup>74</sup>
- **Mitigation measures** taken by some schools include:
  - Mask-wearing by teachers and students
  - Staggering arrival time
  - Closure of any school when a COVID-19 case is identified

## Key Informant Consultations

This section describes two key informant (KI) consultations conducted on July 13-14, 2020. One consultation was conducted with a key informant from BC, and one was conducted with three KIs from Quebec. Questions focused on the experiences of school reopening including what measures were in place, experiences with COVID-19 cases, exposures, outbreaks, and other consequences/ unintended effects in schools and on students, families, and staff.

## Reopening Strategies for End of 2019-20 School Year

The school reopening experiences of BC and Quebec at the end of the school year were different and provide experiences from varying contexts. Quebec has, to date, the highest number of confirmed COVID-19 cases in Canada (>50,000 cases), while BC was able to more effectively control community transmission (~3000 total confirmed cases).<sup>76</sup> Quebec used a regional approach and reopened schools to all elementary school students (6-12 years) on May 11, except in certain areas with higher transmission, including Montreal. Secondary school students did not return. BC used a gradual reopening strategy, starting on June 1, with grades K-5 attending for 2.5 days/week and grades 6-12 attending 1 day/week. However, attendance for K-12 was very low, around 30%.<sup>77</sup> It is important to note that the context for earlier school reopening in the pandemic, with approximately 4-6 weeks left of the school year, may have allowed a gradual approach to attendance which may not be transferable to other jurisdictions.

The following sections describe some of the experiences implementing mitigation measures in schools:

### Rationale for phased reopening by age

- Evidence demonstrating younger children were becoming ill at a lower rate and there seemed to be lower transmission in their age bracket.
- Quebec informants reported that they needed the space in the high schools to be able to properly spread children out due to maximum class sizes of 15 and to help maintain physical distancing of 2 m.

### Transportation on school buses

- For both BC and Quebec, transportation on school buses was a challenge to accommodate public health measures such as physical distancing.
- In BC, some areas chose to install plexiglass shields for drivers and some had masks for drivers.
- In Quebec, 2 m physical distancing was recommended in the bus even though difficult to apply. In September, no physical distancing will be necessary, but masks will be required for high school students and recommended for elementary school students.

### No additional adults in school building

- In BC and Quebec, parents were not allowed into the school building. Drop off was done outside. For kindergarten, it is typical for parents to take children to the door, however this is now limited and helps school staff feel safer. There were assembly points outside for classes and teachers to pick up the children and bring them inside (reversed for pick-up). Any meetings with teacher/principal were done online or by phone, and if an in-person meeting was required it was done outside school hours.

## Transmission and Outbreaks

- Despite the different approaches in both provinces, there were some sporadic cases in students and teachers, but no large outbreaks related to school reopening.
- In Quebec, an outbreak in an emergency daycare centre for children of essential workers was reported but unrelated to the wider school reopening. There were some sporadic cases in schools with variability in transmissions dynamics with some cases of transmission between students, staff to students, and students to staff, but overall the number of outbreak cases remained low. Schools that were opened were in places with low community spread.
- In BC, there were no reported outbreaks in schools.

## Surveillance

- With the low proportion of students that attended school following re-opening, reasons for student absences were not tracked.
- No information on surveillance and testing strategies were provided by KIs.

## Management of Individuals with Symptoms and Cases

- In BC, if staff were sick they were supposed to report by phone and leave the building. If students were sick they would go to the health room, be supervised from 2 m away until the parents arrive to pick them up. No reports of symptoms were due to COVID-19. Initially there was a low threshold for a single symptom (e.g., being sent home for a sneeze). However, the school board and public health worked out how to manage return to schools for students with symptoms of allergies.
- BC Schools drafted communications to be used in the event of a confirmed case. All communications are also provided through the school district website. In BC, one case caused the shutdown of a school for a day to clean, but students and teachers returned to school the next day.
- In Quebec, the general recommendation is if students or staff have symptoms then stay home and get tested. There has to be one clear COVID-19 symptom (e.g., dry cough) to be kept home and get tested.

## Lessons Learned

### COMMUNICATION WITH TEACHERS AND SCHOOL STAFF

There was an emphasis on the importance of clear communication between public health, school boards, principals, teachers and parents. Many teachers reported being anxious about going back into the school building. However, once the teachers arrived at the schools (two weeks before students) and saw the added preventive measures, there was a sense of relief. Having early and frequent conversations with staff, and engaging the school board and public health in these was beneficial. Other successes included: using the leadership of principals; many meetings were held (virtually) to prepare, giving time to prepare the schools (e.g. signage), normalizing the environment for staff in the building, having staff communicate with others in their social networks, having many hand sanitizer stations, and ensuring office staff felt safe.

Preparing tools for implementation of the public health measures, checklists, and guidelines for schools and teachers may have helped the reopening process. Concrete information about the new guidelines

and rules helped parents understand. As well, it was important to have a clear plan for teachers and school administrators when a case was identified.

## IMPORTANCE OF CONSISTENT GUIDELINES

With multiple stakeholders involved in the reopening of schools, there will be the involvement of multiple government ministries providing guidance to each sector. As the Ministry of Health provides guidance to public health, Ministry of Education to school boards, and Ministry of Labour/Occupational Health and Safety to teachers' health and safety in the workplace, alignment among these guidance helped to reduce confusion.

## NON-MEDICAL FACE MASKS

In BC and Quebec, there are challenges around conflicting guidance on wearing non-medical masks in general public settings and in a school setting. In both provinces, masks were not recommended for students however public advice is to wear masks when you are in public indoor spaces. The different messaging for schools and the public created confusion. Furthermore, recommendations to wear masks are coming from multiple levels of government, national (Dr. Theresa Tam, PHAC), provincial (e.g., Dr. Bonnie Henry, Provincial Health Officer, BC), and in some municipal settings it is mandated. Teachers and staff in schools could choose to wear a mask, but schools did not provide them. Although they did provide training for staff on how to wear and clean masks. Students could also choose to wear masks, but they were not recommended, especially for young children.

KIs described efforts to approach face mask guidance using a more intersectoral process with experts in child health and development, infection control, and occupational health. It is in the best interests of all stakeholders to find an approach that protects teachers and staff and also mitigate the impact on children as much as possible for their health and wellbeing.

## Discussion

This environmental scan highlights the varying school reopening strategies and mitigation measures implemented in multiple jurisdictions in Canada and internationally. Where possible, the context of COVID-19 infection in each jurisdiction at the time of school reopening was reported. The key informant consultations provided insight into some successes and challenges of the mitigation strategies in schools, as well as some key lessons learned during implementation.

In almost all jurisdictions, schools reopened gradually in a phased approach with primary schools opening first and secondary schools opening subsequently. The exception was Germany, where schools only resumed for students in their final year of primary or secondary school. There is a strong rationale for getting younger children back to school first, including evidence of low disease severity and number of cases among children, importance of school for healthy growth and development, as well as logistical reasons (i.e., needing added space in secondary schools to accommodate physical distancing measures or class size restrictions). It is important to note Ontario's schools will have been closed for almost 6 months, which may have implications for reopening as it relates to the gradual approach applied in other jurisdictions, given the duration of closure.

Many jurisdictions implemented some form of staggering, alternating or rotating schedules to help spread out students in classrooms, and avoid crowding at arrival and dismissal, except in Israel where small class restrictions were lifted within a week of reopening, and all schools were open within 10 days.

In BC's phased approach, elementary schools returned for half-time on consecutive days (Monday-Tuesday, Thursday-Friday) to maintain physical distance. Consecutive days also reduced the number of deep cleaning sessions, rather than children present on alternating days. Cleaning of high-touch surfaces was also recommended twice a day in multiple regions.

In jurisdictions where schools reopened and reclosed, this seemed to be a result of an overall increase in community transmission rather than specific outbreaks in schools. In Israel, where school outbreaks have been highly publicized, it was noted that overall community measures were not adhered to. Further, it was reported that social distancing on school premises was challenging given the crowdedness in Israeli schools.<sup>86</sup> The KIs from BC and Quebec also noted that many of the recommendations for social/physical distancing on school buses and in schools when more students return to class in September will be difficult to adhere to. In South Korea, some teachers reported not following schools' recommendations and not enforcing social distancing.<sup>70</sup>

In most European countries and in BC and Quebec, masks for source control were not recommended for students, but they could be worn if students desired. Similarly, for teachers masks for source control were not mandatory but were recommended when physical distancing was not possible and masks as personal protection equipment were recommended if dealing with a symptomatic student. In many Asian countries, masks were recommended for students and teachers. Parents were also required to do temperature checks on their children and present the information to the school. In general, parents were responsible for checking their children's symptoms before school, however, there was overall a paucity of information on symptom screening. Guidance from multiple levels of government on mask use has caused confusion for parents and teachers in both BC and Quebec, as recommendations for the general public and for school environments differs. One key lesson was to have clear communication with all stakeholders (parents, teachers, public health) as early as possible to prepare normalizing the added mitigation measures in daily school routines.

## Limitations and Strengths

Strengths of this review include an extensive search of grey literature for relevant records, as well, the consultation with key informants provided added detail to the publically available information. The question explored in this review is timely and contributes to better understanding how schools have reopened during the COVID-19 pandemic in various jurisdictions.

Countries and jurisdictions that have reopened schools were identified using reports on school reopening published by governmental and nongovernmental organizations. Governmental websites and media reports in the English language were then scanned for policies and guidance on school reopening, and for reports on any transmission events after reopening. As such, it is likely that jurisdictions that recently reopened their schools, as well as information not published in English, may have been missed. Also, accuracy of various media reports may vary and content verification was not feasible given the time and resource constraints. The records included were examined by one reviewer and were not assessed for methodological quality using a quality appraisal tool.

## Conclusion and Next Steps

- The context of COVID-19 infection in jurisdictions informs school reopening planning. Ensuring low community transmission through the use of community-based public health measures, and

measures within schools as appropriate, will help keep schools open and children attending in-person learning full-time.

- There are many mitigation strategies that can be implemented in schools to reduce the risk of COVID-19 introduction to and transmission in schools. All jurisdictions implemented a bundle or layered approach to measures, as opposed to focusing on one specific strategy.
- BC and Quebec had generally successful school reopening with no reported school-related outbreaks. However, attendance in May and June was relatively low, especially in BC, and it was acknowledged that maintaining the same level of physical distancing measures in September will be logistically difficult.
- Similarly, restrictions on class size, cohorting of students, and class mixing will require careful consideration for school reopening planning in September. The information in this environmental scan can be used to inform subsequent planning for Ontario.

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## Appendix

**Table. COVID-19 Case Trends for Countries or Jurisdictions that Closed and Reopened Schools**

Country or jurisdiction	School closure and reopening dates	Confirmed cases per 1,000,000 population <sup>22a</sup>	Timing of epidemic peak
Australia	Closure: various dates across states/territories Reopened: various dates across states/territories	391	9,980 confirmed cases as of July 14, 2020 1 <sup>st</sup> peak: late March 2 <sup>nd</sup> peak: late June/early July
Austria	March 11: primary schools closed March 16: all schools closed May 4: primary schools reopened May 15: all schools reopened	2,074	18,687 confirmed cases as of July 11, 2020 peak: late March
Canada: British Columbia	March 17: school closed March 30: school care and in-person learning opportunities for select children June 1: stage 3 for resuming in-class instruction	595 <sup>b81</sup>	3,044 lab diagnosed cases as of July 10, 2020 52.7% and 32.4% of cases were in Fraser and Vancouver Coastal health authorities respectively as of July 9, 2020 peak: mid to late March
Canada: Québec	May 11: preschool and elementary schools reopened (Montreal, the Regional County Municipality of Joliette and the town of l'Épiphanie excepted) July 2: pedagogical support services for select elementary and secondary students	6,595 <sup>c78</sup>	56,407 confirmed cases as of July 11, 2020 48.9% of cases were in Montreal as of July 13, 2020 Peak: mid- to late April (about 5,700 to 6,500 new cases each week) <sup>79</sup>

<sup>a</sup> Prevalence data were obtained from World Health Organization's [WHO Coronavirus Disease \(COVID-19\) Dashboard](#) unless otherwise noted.

<sup>b</sup> British Columbia mid-2020 population estimate was based on Statistics Canada: [Population estimates, quarterly](#) [Internet]. Accessed 2020 Jul 11.

<sup>c</sup> Quebec mid-2020 population estimate was based on Statistics Canada's [Population estimates, quarterly](#) [Internet]. Accessed 2020 Jul 11.

Country or jurisdiction	School closure and reopening dates	Confirmed cases per 1,000,000 population <sup>22a</sup>	Timing of epidemic peak
China: Hong Kong	Late January: schools closed May 20: international and private schools started reopening May 27: local schools reopened July 10: school closed again	203 <sup>d80</sup>	1,521 confirmed cases as of July 13, 2020 (12.3% and 6.8% from local and possibly local sources) 1 <sup>st</sup> peak: late March 2 <sup>nd</sup> peak: mid-July <sup>e</sup>
Denmark	March 11: schools closed April 15: kindergarten and primary schools reopened May 10: children 11-16 years old to return to school	2,235	12,946 confirmed cases as of July 11, 2020 peak: early - mid April
England	March 18: schools closed June 1: nurseries and primary schools year 1 and year 6 alongside priority groups re-started June 15: in-person support to supplement remote education of years 10 and 12	4377 <sup>f82</sup>	246,386 confirmed cases as of July 7, 2020 peak: early to late April
France	March 17: schools closed May 11: kindergarten and elementary schools re-started (capped at 10 students for preschools and 15 for other age groups) May 18: secondary schools re-started	2,471	161,275 confirmed cases as of July 11, 2020 peak: early April
Germany	March 16: schools started closing early May: schools reopened	2,370	198,556 confirmed cases as of July 11, 2020 peak: late March - early April

<sup>d</sup> Hong Kong population was based on Worldometer's [Countries in the world by population \(2020\)](#) [Internet]. Accessed 2020 Jul 13.

<sup>e</sup> Worldometer. [Coronavirus: Hong Kong SAR](#) [Internet]. Accessed 2020 Jul 13.

<sup>f</sup> England mid-2019 population estimate was based on the Office for National Statistics UK's [England population mid-year estimate](#) [Internet]. Accessed 2020 Jul 11.

Country or jurisdiction	School closure and reopening dates	Confirmed cases per 1,000,000 population <sup>22a</sup>	Timing of epidemic peak
Israel	May 3: schools began reopening in smaller capsules of students May 17: class size limits lifted	4,093	35,426 confirmed cases as of July 11, 2020 17.9% and 12.4% of cases were in Jerusalem and Bnei Berak cities respectively as of July 8 1st peak: late March 2nd peak: early July
Japan	March 2: schools closed April 6: schools reopened in some regions and closed again a week later <sup>86,87</sup> May 18: schools in many regions reopened with staggered attendance	167	21,129 confirmed cases as of July 11, 2020 1st peak: mid April 2nd peak: starting late June
Netherlands	March 13: schools closed May 11: primary schools reopened on weekly rotation June 2: high schools reopened June 8: primary schools resumed fully	2,979	51,038 confirmed cases as of July 14, 2020 peak: early to mid-April
New Zealand	March 24: schools closed April 29: schools began reopening at a limited capacity (for those needed to attend) May 14: all schools reopened	248	1,195 confirmed cases as of July 14, 2020 peak: late March/early April
Norway	March 13: schools closed April 20: kindergarten reopened April 27: Grades 1 - 4 reopened May 11: Grades 5 - 13 reopened	1,654	8,965 confirmed cases as of July 11, 2020 peak: late March

Country or jurisdiction	School closure and reopening dates	Confirmed cases per 1,000,000 population <sup>22a</sup>	Timing of epidemic peak
Singapore	April 7: schools closed June 2: schools started reopening June 10: kindergarten fully resumed June 29: all school levels fully resumed	7,912	46,284 confirmed cases as of July 14, 2020 peak: late April
South Korea	May 20: kindergarten reopened late May: schools reopened in phases, but many had to close soon due to high incidence rates in the community	261	13,373 confirmed cases as of July 1, 2020 51.4% of cases happened in Daegu city as of July 12, 2020 peak: late February - early March
Sweden	Kindergarten to grade 9 remained open	7,416	74,898 confirmed cases as of July 11, 2020 1st peak: early June 2nd peak: late June Seroprevalence in children and teenagers was 4.7%, compared to 6.7% in adults (20-64 years) and 2.7% in people aged 65-70 years
Taiwan	February 25: schools reopened after 2 weeks	19 <sup>g83</sup>	451 confirmed cases as of July 13, 2020 (55 from local sources) <sup>85</sup> Peak: mid- to late March

<sup>g</sup> Taiwan's 2020 population is based on Worldometer's [Countries in the world by population \(2020\)](#) [Internet]. Accessed on: 2020 Jul 13.

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