Supporting (Pre)K-12 education clients to implement programs/projects associated with a Safe Return to Operations and implementation of initiatives designed to support a phased Return to Service.
In order to return people to school, immediate steps should be taken to create a safer learning and work environment. These steps are based on examples of practices that could be implemented in relation to the spread of coronavirus based on CDC and WHO guidelines. A successful return will also rely on addressing individual and group behaviors as well as school culture.
AECOM is offering to help rapidly analyze your data, convene the problem holders with the problem solvers to create immediate, integrated short, medium and long term solutions.

**RESPONDING IMMEDIATELY – PLANNING THE FUTURE**

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**SHORT 0-30 DAYS**
Immediate Planning
- Return cohort priorities Program priorities
- Staggered learning options
- Staggered enrollment change, curriculum + activity migration

**MEDIUM 30-60 DAYS**
Assemble Resources
- Virtual vs physical equity
- At-risk student priorities
- Testing and access criteria
- Acquire information technology for home/classroom

**LONG 60-90 DAYS**
Implement + Return
- Determine critical, essential, at-risk employees
- Workplace/remote working changes
- Employee / student school behavior
- Academic + business scenario modeling
- Budget development, Spending priorities
- Ongoing financial management
- Health + safety policy Capacity + suitability
- Acquire space Procure construction and cleaning services
- Undertake construction and cleaning
- Change teams structure + direction
- Individual / departmental roles and responsibilities
- Communicate training for behavior and operations
Digital tools enable rapid planning and response
Returning to a school environment: Prioritize by age, or location, or program?

- PreK-Kindergarten
- Grade school
- Middle school
- High school

- Public transit vs. individual (small group) transportation
- Bus network capabilities for social distancing
- Availability of partner educational facility
- Availability of partner non-educational facility
- Hotspots and testing
- Urban / Suburban

- Cohort model to reduce mixing
- Staggered start and finish times of classes
- Remote vs. in-person classes
- Frequency of students in-person check-ins at school
- Administrative staff location
Prioritizing age groups is key for considering how phasing can be used in reopening a (Pre)K-12 school environment as it lays the groundwork of their educational learning experience. By understanding the age groups and the priority behind each one and considering all other local needs and specifics, a phased approach on reopening a school can be fully understood.

**PreK – Kindergarten**
During this age, many students are learning the experience of being away from their parents/loved ones for the first time on a daily basis, while embracing the fundamentals of the school learning environment. This adjustment is a major step in the learning process and development of a child’s maturity. Most of the classrooms designed for Kindergarten types of classes could be considered to be self-sufficient environments, especially since very often they are equipped with their own bathrooms and sinks. This is very helpful in efforts to achieve social distancing. Having a self-sufficient classroom allows the learning environment to be contained in the event of an outbreak within, or also “protected” in the event of an outbreak outside the classroom.

**Grade School**
During this time, students are learning the crucial fundamentals (such as reading, writing, socializing with fellow students) that provide the foundation for the rest of their educational lives. To keep the required social distancing in the learning environment, facilities and classrooms typically used for Middle School and High School, could be leveraged for the Grade School students during early phases of the return. These larger spaces could provide better protection for grade school students, and allows schools to leverage these facilities while Middle School and High School students continue learning from home. Bringing this student age group back to school allows parents more flexibility to work during the day, as these students tend to require the most parental attention.
Middle School
This age group can work well with a curriculum that consists of both digital classroom and a hands-on classroom environment. However, these students are still developing their learning process (more than high schoolers) and therefore would benefit from hands-on learning to drive learning concepts home in “lecture” and “lab” types of courses. Also, this age group requires more face-to-face social interaction than younger students, which may not be possible outside the school institution. Therefore, these students could come in twice a week, as weekly check-ins to make sure the concepts they are learning on-line are fully understood as well as allowing for time to complete their lab-type classes.

High School
This age group is the one to be most proficient in a curriculum that consists of both a digital classroom and a hands-on classroom environment. Students can take most of the required curriculum, lecture-type classes (such as Mathematics, English, Social Studies) in an on-line format from home and then come in once a week to receive hands-on learning for lab-type classes (such as Science, Art, Music) and overall guidance. Most of the lab-type classes are held in specialized classrooms already and therefore, rooms where lecture-type classes were held for these students can be used for other age groups. This age group is also the most likely to be able to stay home while parents attend to work every day.
A Phased Implementation Approach

Grade School (Including PreK)
Full Return: 75% to 100%
- Prioritize equity of access for all grades
- Publish safety + density protocols
- Disinfected and clean + contained facilities
- Infrastructure/MEP hygiene
- Gated campus, controlled buildings with secure entry
- Dining/Recreation arrangements
- Sports + culture arrangements
- Health test before entry
- Adhere to State and Local directives

Middle School
Some Return: 50% to 75%
As left, plus:
- Select priority programs
- Asynchronized classes
- Extended school hours
- Modify + disinfect and clean specific facilities
- Select/train priority faculty/staff
- Workplace/home working strategy
- Adhere to State and Local directives

High School
Minimal Return: 0 to 50%
As left, plus:
- Appropriate classes on-line
- Postponed labs based learning
- Ramp up student support
- Invest in IT platforms
- Higher quality online experience
- College/Partner facilities
- Business/Operations/Financial changes
- Adhere to State and Local directives
Things that we can do to help

Spatial Tracking
A key Center for Disease Control (CDC) guideline for re-opening is the ability to trace recent (up to 14 days prior) proximity contacts that have occurred with individuals who have been tested positive with COVID-19. When students or staff are diagnosed with the virus, the place where they are enrolled or work will need to swiftly identify and alert those individuals potentially exposed. Traditional contact tracing may be used. The utilization of global positioning systems (GPS) or Bluetooth low energy (BLE) transmissions for spatial tracking can provide a supplemental or alternative solution. These technologies are both present in cellular devices. With prior, voluntary approval by the owner of the cellular device, these technologies can enable the quick identification (cellular number) and alerting of those individuals who may have been in proximity of the infected person and potentially exposed to the virus. These technologies offer a data-derived, time and labor-efficient solution.

COVID Self-Health Reporting and Alerting
A key component of the CDC’s guidelines for re-opening is the efficient and robust testing of individuals who may be infected with the novel coronavirus. For constituent institutions, the ability to (1) receive self-health information from students and staff, and (2) efficiently alert and refer those individuals who feel ill or who may have been exposed, is paramount to mitigating future flare ups. The industry currently has several digital, downloadable “self-health” applications that support these requirements.

AIM (AECOM Information Management)
AIM is AECOM’s cloud solution for storing, managing and presenting Environmental, H&S and Sustainability data. The system allows our teams to collect, manage, analyze and report EHS data in a consistent, streamlined and efficient way. Our EHS professionals spend less time processing data and more time identifying systematic compliance issues and developing comprehensive solutions.

Data Integration and Management
Key to prudent, sound decision making is the availability of key data, benchmarks and metrics related to infection, testing, recovery, health care and facility capacity. This data and information must be acquired, integrated, managed and published in displays and reports that fosters understanding.

Student and Parent Outreach and Call Center
The distribution of accurate and timely information to students and staff is key during a post-disaster re-opening. Many questions, rumors and concerns will arise and must be pre-empted and responded to quickly. A coordinated public information campaign and 24-7 Call Center will enable students to have up to date information and answers to questions.

Biohazard Decontamination
A key strategy for schools towards preventing and mitigating new cases is the decontamination of facilities and high traffic locations that may be contaminated with the virus. Categories of potential facilities might include entry space, gyms, cafeteria, libraries, and student centers. The decontamination of facilities should be performed prior to re-opening and periodically based on defined schedules.

Integrated Design Solutions
Transform spaces into more COVID applicable spaces utilizing integrated design solutions. Create flexible design solutions that accommodate new regulations such as design for the temporary conversion of gyms and auditoriums into additional learning spaces to maintain social distancing, as well as designing “cleaning stations” at building entries.
Things that you should consider based on your local needs and environment:

- **Creative approach for return to school service** for those families in most need of social services, working families (both parents are working).

- **Direct/personal contact by the principal and class teacher** to each student to understand new (changed) family environment, and their needs, and to “categorize” the student for R2S options.
  - Student is in the hometown or not
  - Both parents are working
  - Grandparents are not available to help
  - Student has a close friend (or siblings)

- **New technologies to deploy in schools** – health related; pathogen self-cleaning materials and temperature scanners.

- **Re-organize the classes** based on the number of students that would like/need to attend in-person. Merge 2-3 “partial” classes into one group (keeping social distance).

- **Real estate venture for alternative classroom space** - With office space needs in cities likely to decline (working from home options), education departments need to seek real estate venture for alternative classroom space.

- **Utilizing school’s Gym, Auditorium and Lunchrooms** as “alternate learning spaces” for proper distancing. Distancing will impact classroom sizes.

- **Extend and make more often outdoor time/activities** for younger students, including teaching math, social studies, etc. as part of outdoor play.

- **General “cleaning station” prior to entering the building**. hand washing stations at building entrance, changing into “school-only” clothes and prohibition of gum chewing disposal and spitting at building entrances. Younger kids especially tend to touch surfaces more than older, and their clothes will touch other surfaces more frequently (the younger even lay on the floor, push each other, etc.).

- **Extend/improve different “end of school time”** (and pick-up routine) for each class/grade, as well as staggered class ending times.

- **Curriculum to be adjusted**, so most “difficult teaching” material to taught in person in typical environment (science). The rest of classes only on-line– so everyone has a chance to attend (Art class, etc.).

- **Push for further thinking** on how available outdoor spaces (playgrounds/ adjacent public parks/non-utilized habitable roofs) can be further utilized to carry primary function spaces typically found inside the school (lunchroom, auditorium, etc.) in a way that allows for social distancing and bigger groups of people. Scheduling of lunch time for all students while taking into consideration social distancing will be a very difficult task.

- **Utilization studies** can be performed for all school buildings in a district/area to understand the complex challenges each building will have with complying with new COVID regulations. Further assessment of how the location of classes and educational structure of that area can be altered can help determine how to accommodate the regulations in a way that achieves the most utilization of the existing spaces while still meeting guidelines.
A Touchless Approach

We are utilizing smart building technologies as one of the enablers for re-occupancy. These once “smart” technologies are now also “safe” technologies that can help provide for a healthier workplace for employees, students and visitors returning to the these facilities. We are utilizing people counters to manage overall occupancy of spaces and Internet of Things (IoT) sensors to provide for touchless interface with digital signage and wayfinding systems, as well as self-service kiosks in school lobbies, to the classroom teaching aids and distance learning interfaces. Our solutions are also providing for touchless control and interface with conference and meeting room collaboration and presentation systems.

Our Services:
- **Site assessment & remote work readiness audit** (focused on providing touchless technologies, rapidly scaling UC, VPN and Cloud services)
- **Virtual presence and collaboration platforms** (the next generation of teleworking, telepresence, conference and meeting spaces)
- **Smart building solutions** (creating smarter & healthier venues through the use of IoT and sensors)
- **Technology that enables wellbeing** (creating healthy environments with biophilia, soundscapes & lighting)
- **Business continuity and resilience planning** (focused on technology and the next generation of threats)

Touchless, safe and smart technology continues to evolve as the science around novel coronavirus develops. Products and approaches are updated continuously, and we monitor and incorporate the most current and best-informed technology and practices in our work. As we enter the next phase of our response, we are focusing on preventive touchless technologies. We are developing solutions that utilize touchless security access control and thermal imaging that is embedded in security video surveillance cameras. These cameras can provide touchless indication of an individual’s body temperature as well as provide massing and occupancy data for a given area.
EARLY DETECTION
FUTURE CONFIDENCE

A phased approach can accelerate wastewater testing and provide up to 2 weeks of advance notification of virus reemergence.

AECOM will harness its prepositioned network of wastewater engineers, clients, and program support systems to execute a three-phased approach that focuses first on the largest wastewater treatment plants, then moves to smaller treatment facilities and specific collection points to provide early warning of the spread or decline of the COVID-19 virus. Continuous sewerage flow monitoring and sampling points will also be implemented at "locations of concern," such as nursing homes, apartment buildings, schools, and correctional facilities.

The Answers Are in Our Wastewater

Global and U.S. studies have shown that the COVID-19 virus can be detected in wastewater, based on the fact that infected individuals shed the virus in their stool, even those who are asymptomatic. With consistent monitoring, wastewater can provide valuable information to national, state, and local governments. Virus concentration trends in wastewater can indicate the upcoming decrease or increase of virus infections in the population of a given area—up to two weeks ahead of reported medical cases.

To assist our clients in effectively responding to and recovering from the impact of COVID-19, AECOM Water specialists have developed an ensemble of operational services around the highly efficient monitoring, testing, and tracking of wastewater. Our strategic approach to wastewater testing allows it to be a critical tool in identifying emerging cases of infection, streamlining individual testing protocols, and helping public officials to determine if their response measures are effective. Currently, AECOM is involved with three major monitoring programs in the United States.

Our strategy to implement nationwide COVID-19 wastewater sampling, testing and analysis will address two key concerns for government officials and the public:

1. How can the government provide confidence that the disease is at low levels to support the re-opening of the economy?

2. How can we receive advance notification that there is a potential for virus reemergence, especially as we approach the fall and winter of 2020?

The Benefits of Wastewater Monitoring

AECOM’s nationwide footprint and significant understanding of wastewater systems will provide the organizational framework for the successful implementation of a complex national program that:

- Provides health officials with insight into the increase or decrease of COVID-19 within specific communities, significantly ahead of the appearance of physical symptoms.
- Provides the public with an indicator of the relative safety of their local community.
- Reveals trends of re-emergence that could expedite the deployment of medical resources to resurgent communities.
- Conveys important health information without compromising individual privacy.
- Facilitates the development of consistent, nationwide testing protocols that allow for distributed laboratory testing across the United States.
About AECOM

AECOM is the world’s premier infrastructure firm, delivering professional services throughout the project lifecycle – from planning, design and engineering to consulting and construction management. We partner with our clients in the public and private sectors to solve their most complex challenges and build legacies for generations to come. On projects spanning transportation, buildings, water, governments, energy and the environment, our teams are driven by a common purpose to deliver a better world. AECOM is a Fortune 500 firm with revenue of approximately $20.2 billion during fiscal year 2019. See how we deliver what others can only imagine at www.aecom.com and @AECOM.

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