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NATIONAL SCIENCE EDUCATION LEADERSHIP ASSOCIATION

FLINN SCIENTIFIC

What will teaching Science & STEM look like in this Covid-19 'next normal' setting?

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What are Schools Going to Look Like when they Re-Open for Science Teachers & Students?

As your trusted lab partner, FLINN understands there will not be a 'one-size-fits-all' solution that can be applied universally to school systems. **Each unique school situation will require its own tailored solution to accommodate the students, teachers, support workers and other stakeholders in the educational community.**

When the time comes, we are prepared to help you develop and execute the best solution for you. In this document, we will take a look at some background information that will help to guide the decision-making process in school re-openings for science & STEM educators.

Pulling from the guidelines provided by the Centers for Disease Control and Prevention (CDC), World Health Organization (WHO), North American Center for Threat Assessment and Trauma Response (NACTATR)* and the Organization for EconomicCo-operation and Development (OECD) and more, we have organized this document into four sections that reflect the categories outlined by top physical and mental health organizations

OVERVIEW OF THIS SESSION

1. Planning for the Continuity of Learning
2. Synchronous vs Asynchronous Learning
3. What Will Teaching Science Look Like Now?
4. Potential Instructional Models & Considerations
5. Sanitation & Hygiene Management
6. Suggestions for Science Subject Areas
7. Prep Room Concerns when returning to school
8. Ordering materials for 'Back-to-School'

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Planning for the Continuity of Learning

In the case of absenteeism/sick leave or temporary school closures, support continued access to quality education.

This can include the following:

- **Use of online/e-learning strategies**
- **Assigning reading and exercises for home study**
- **Radio, podcast or television broadcasts of academic content**
- **Assigning teachers to conduct remote daily or weekly follow up with students**
- **Review/develop accelerated education strategies**

1. CDC Considerations for Schools

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Planning for the Continuity of Learning

Exploring the possibility of a ‘blended approach’ to teaching and learning that involves some in-person and some remote learning is a strategy that is being discussed and investigated across the globe.

There will not be a ‘one size fits all’ formula that can be applied to the unique needs of every school or district, but there are some valuable insights into what applications have been successful and the implementation strategies and lessons learned from others which can be shared to accelerate the acceptance and delivery modes for teachers and students alike.

At Flinn, we began with our Flinn At-Home Science campaign and continue to develop the tools you need to go from distance learning to school and back again without losing the continuity key to student learning.

1. Flinn Scientific Inc. Professional Learning Series Summer 2020

Synchronous vs Asynchronous Learning Applications

We recognize that there are some communities that do not have the digital delivery mechanisms readily available. Because there is no live internet connection or access to tablets, there are options to provide students continuing learning opportunities being developed that will allow for as much understanding as possible.

Synchronous learning also presents some privacy concerns that are addressed by school districts and by teacher unions…

Teacher / student training and access to the technology can be limiting factors to this style of e-live online education.

Providing worksheets for students is not necessarily the best format to provide asynchronous learning, and this will evolve quickly as we move forward with these learning and teaching experiences. **Many districts, publishers, school suppliers, and corporations are working towards curating genuine solutions to enhance student learning and facilitate teacher instruction.**[1]

1. Flinn Scientific Inc. Professional Learning Series Summer 2020

Asynchronous and Synchronous Learning

Synchronous remote learning has a place in the new educational environment and when used correctly, can be a beneficial modality to the learning continuation of students in all grades.

The COVID-19 outbreak brought to light the inequities in broadband and device access both on and off-campus.

Addressing digital equity for all students continues to be a challenge and stakeholders must work to ensure not only equitable access to broadband and devices in class, as well as away from campus. Every child...deserves equitable access to personalized, student-centered learning experiences to prepare for living and working in the digital age.[1]

Asynchronous delivery models need to be explored and refined to bridge the gap between worksheets and summary explanations to more involved, inquiry approach learning opportunities.

1. State Education Agency Considerations for CARES Act Funding Related to Digital Learning

How to Incorporate Asynchronous Learning in 2020 Science Classrooms?

Many science teachers are currently recording lessons and having them accessible online to their classes. This is a great way to transfer the knowledge and provide a platform for students to learn at their own pace.

Many are performing activities for their students or showcasing key pieces of their curricular objectives for their classes.

This asynchronous method works best when the teacher posts lessons and then has ‘office hours’ for students combined with some personal video or interaction with students.

Asynchronous learning does not imply that there is no collaboration or communication between student – student or student –teacher but that it is not always in ‘real-time’. Delivering content is not the focus of asynchronous learning.

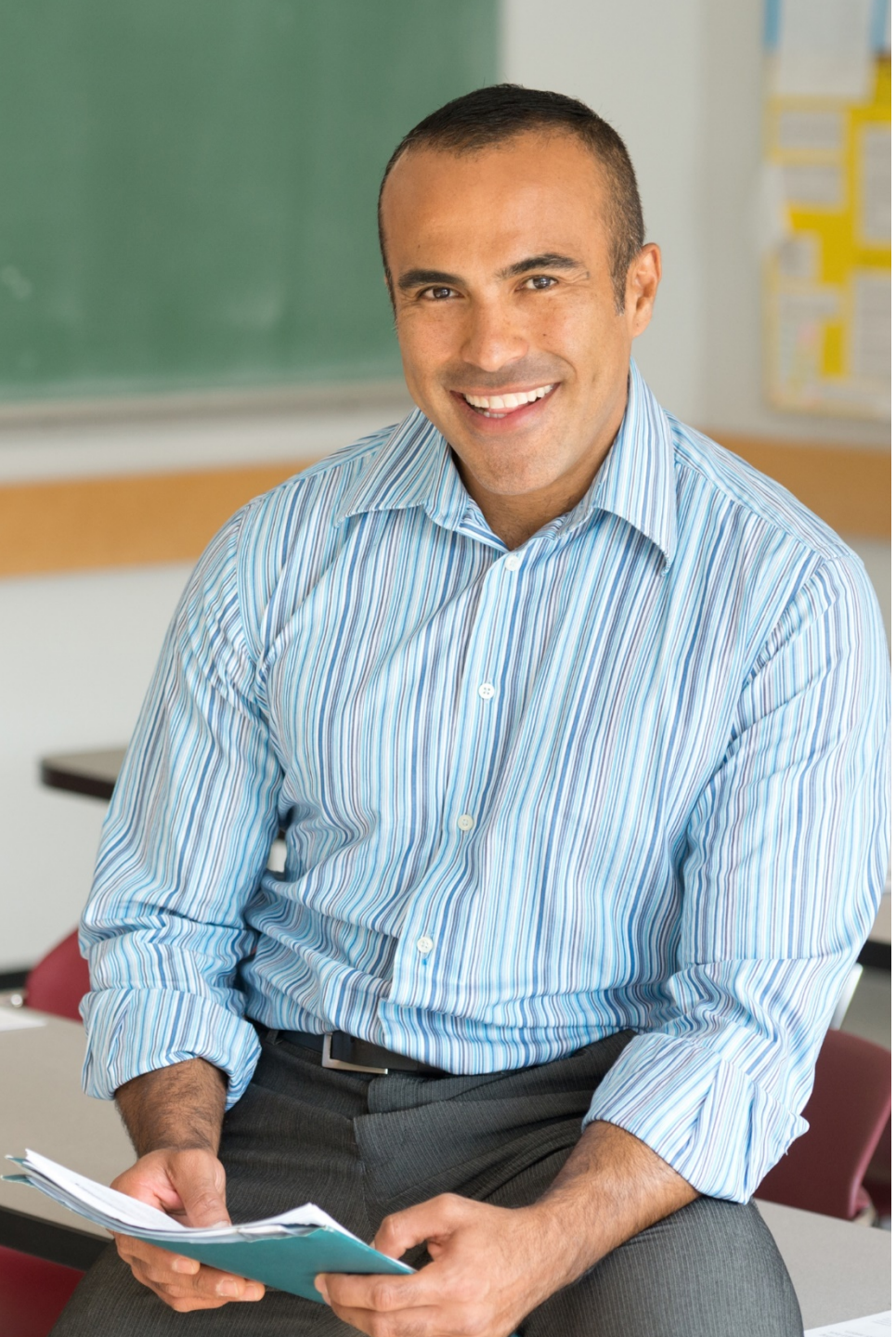
1. Flinn Scientific Inc. Professional Learning Series Summer 2020

What Will Teaching Science Look Like Now?

There is not going to be ‘right’ way and a ‘wrong’ way to teach science going forward. There will be established protocols from the DOE and local school districts that must be strictly followed. Science teachers will find a modality and a rhythm once they get back into their labs again.[1]

- **How can I teach “X” without all of my class present? Do I need to teach the same lesson multiple times to different students in my class?**
- **Do I need to do the labs myself and record them digitally and share with my classes? I need to have someone else with me in the lab for safety.**
- **Do I need to sanitize everything in the lab before and after each class? Do we have the PPE needed at school?**
- **What instructional model is my school going to use to maintain the continuity of learning for our students?**

1. CDC Considerations for Schools



Potential Instructional Models to be Implemented

There are many potential instructional models being discussed today as a best-fit for return to school planning and these are the foundation for the rest of the layers of the educational frameworks being discussed (Child-care, transportation, food services, Janitorial/Sanitation etc.)

The model selected will drive the decisions and the needs for the students, teachers, and support workers all aimed at providing a student success platform and a healthy and safe learning environment.

1. Flinn Scientific Inc. Professional Learning Series Summer 2020

Instructional Models Being Discussed for Safe School Re-Entry planning

A best-fit universal instructional model does not exist. Period. This will be the result of multiple factors across the spectrum and there is not one state or area that has a uniform model – by that I mean that among states, there will be localized areas of higher community spread of COVID-19 and areas of lower transmission…. The instructional models will be different to reflect that. The most popular models being discussed are as follows:

1. **Return to School with a full contingent of students and staff (this is the ultimate goal)**
2. **Continuation of a complete remote/distance learning environment for students and staff**
3. **Blended Learning (Hybrid of Cohorting / Staggered Entry / Offset instruction) involving partial in-person and on-line instruction**

1. CDC Considerations for Schools

Model 1: Returning to School Brick and Mortar Buildings With All Staff and Students

Return to school physical buildings with the full contingent of students and staff with some additional sanitation and hygiene protocols in place.

There would be modifications to timetabling and the layout and flow of the school and restrictions in place but the overall model is face-to-face instruction where possible.

Population density plays a large role here, and affects mostly urban areas… And there is still research being performed about how students could be vectors in the COVID-19 transmission.

1. http://www.oecd.org/coronavirus/policy-responses/youth-and-covid-19-response-recovery-and-resilience-c40e61c6/

Model 2: Remote/Distance Learning For All

Complete Remote/Distance Learning (like what occurred since March in much of the country where students are at home and incorporating some aspect of collaborative learning using some form of technology such as Zoom, MS Teams, or other **programs that allow for real-time synchronous learning and teaching while providing a virtual social stimulus for students.**

Some versions of the remote learning instruction involve having teachers in their actual classroom streaming their coursework to their classes… **but there is a technology and access inequity that exists which is a major hurdle to overcome in certain areas.**

1. http://www.oecd.org/coronavirus/policy-responses/youth-and-covid-19-response-recovery-and-resilience-c40e61c6/

Model 3: Blended Learning/Cohorting/ Offset Instruction

Blended Learning / Cohorting models that have a reduced number of students such as a Day 1 half-class vs a Day 2 half class on alternating days with students learning at school and doing asynchronous learning when they are not in-school.

There are many hybrid models of this format or a variation on it – and it tends to work better at the elementary level than at the secondary level, but educators are exceptionally creative and they will devise a program that covers the essentials in the curricular framework for each grade and course.

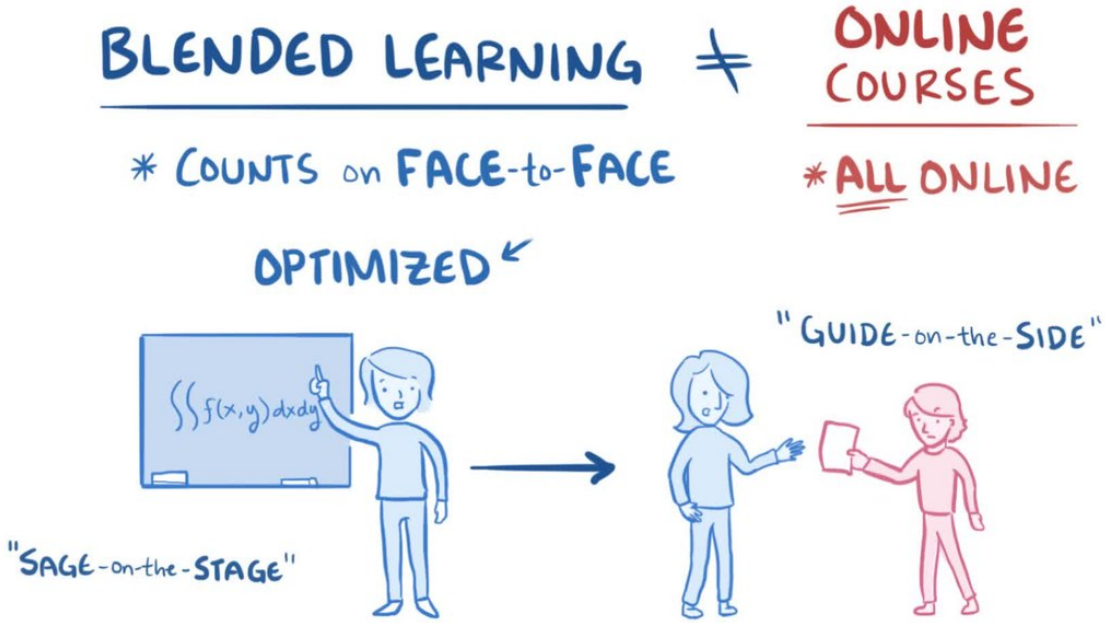
1. http://www.oecd.org/coronavirus/policy-responses/youth-and-covid-19-response-recovery-and-resilience-c40e61c6/

Understanding A ‘Blended Approach’ To Learning (In-Person And Remote Education)

Some schools are planning to operate with a ‘Day 1’ and ‘Day 2’ cohort of students where the class is split into two groups that come to school on alternating days to provide the physical distancing needed resulting from COVID-19 protocols.

This blended approach to school means essentially that while the teacher is in the school daily, the students would arrive every other day for in-person instruction and assessment. The students at home would be doing work assigned or potentially following the class through a remote collaborative portal for learning.

This approach creates scheduling issues for classes, communal use areas such as cafeterias, gymnasiums, libraries, and playgrounds. This also creates child-care concerns for parents of younger children.



http://www.edu.gov.on.ca/elearning/blend.html

Blended Learning Summary

Blended learning uses the tools of a learning management system (LMS) to teach and support learning in a face-to-face class. Through blended learning, K-12 students can access high-quality course materials, course calendars, and assignments during and outside school hours. This is not E-learning, but a blended synchronous approach to education.

Students can also take part in face-to-face lessons and communicate with their teacher and classmates using a suite of secure online tools inside the password-protected LMS. These tools help students learn or review key concepts, stay organized, show what they have learned, submit assignments, track their achievement, and communicate with others. This suite of online secure tools includes:

Blogs	**Calendar**	**Checklist**	**Content**
Discussions	**Dropbox**	**Email**	**ePortfolio**
Grades	**Journal**	**Locker**	**News**
Pager	**Progress**	**Quizzes**	**Survey**

1. http://www.edu.gov.on.ca/elearning/blend.html

Considerations for Instructional Model Choices will not be the Same Across the State Or Region.

The fact is that the community spread occurring is localized and is not uniform across large geographies which in turn means that there is difficulty to apply an ‘across the board’ solution to instructional model use. The fact is that that some parts of the school district may have a lower transmission rate than others, which means that each school may need to be treated independently based on the local needs.

Schools are central pillars of the neighborhoods that they are built in and are essential for community organizations, events, and the social, cultural, and artistic elements that they provide in addition to academics and enrichment opportunities for all students. This makes planning the correct model that much more difficult and more important due to these multifaceted inter-connections.

1. http://www.oecd.org/coronavirus/policy-responses/youth-and-covid-19-response-recovery-and-resilience-c40e61c6/

What to do When Someone is Unwell at School

The guidance is crystal clear on the protocols in place when someone inevitably becomes sick or tests positive for COVID-19. **The schools and people in close proximity will follow the steps to notify families, deep clean the school, have people tested and self-isolate until they meet the re-entry requirements. This will greatly impact both the student and staff physical and mental well-being and may also result in schools having to close for a short-term in order to minimize community spread of COVID-19.**

Ultimately the school district instructional model will be selected that minimizes the potential spread of the virus and minimizes interactions between large groups of people until we have a vaccine or herd immunity in the community at large.

Basically, you need to be prepared for a school-home-school cycle until the community spread of the virus is controlled and manageable.

1. CDC: Public Health Guidance for Community-Related Exposure

Collaboration is Key to Mitigate Concerns

The need to consider such tradeoffs calls for sustained and effective co-ordination between education and public health authorities at different levels of government. Such collaboration should be enhanced with forms of local participation and autonomy that enable the contextualization of responses. Many survey respondents indicated that school re-openings are planned to be progressive, beginning in areas with the lowest rates of transmission and lowest localized risk.

However, several steps can be taken to manage the risks and trade-offs. It is important to develop clear protocols on physical distancing, including banning activities that require large gatherings, staggering the start and close of the school day, staggering meal times, moving classes to temporary spaces or outdoors, and having school in shifts to reduce class size.

Equally important are protocols and practice on hygiene, including handwashing, respiratory etiquette, use of protective equipment, cleaning procedures for facilities and safe food-preparation practices.[1]

1. https://www.hm.ee/sites/default/files/framework_guide_v1_002_harward.pdf

Communal Spaces: Libraries & Science Labs

Libraries and Science Labs have unique challenges, and protocols will need to be adjusted to reflect the new practices of physical distancing, minimizing exposure and extra vigilance on disinfection and sanitation.

The Institute of Museum and Library Services offers a COVID-19 Resources for Libraries and Museums, including articles covering best-practices for cleaning play and learning spaces.[1]

In the science lab, the same classroom considerations regarding distance and disinfection apply.[2] High touch science equipment, such as microscopes and scales, will need to be sanitized before and after use.[3] This extra time required to perform these tasks will need to be built-in to the lesson planning.

1. Institute of Museum and Library Services
2. LabManager.com: Lab Health and Safety
3. CDC Considerations for Schools

Increased Disinfection of Surfaces and Apparatus in the Science Lab

Make sure that ALL LAB EQUIPMENT such as microscopes, hot plates, digital balances, autoclaves, dissection tools and other apparatus are cleaned vigilantly before and after each use.

PPE including goggles should be cleaned appropriately after use with an approved liquid disinfectant solution and/or UV sterilizer.

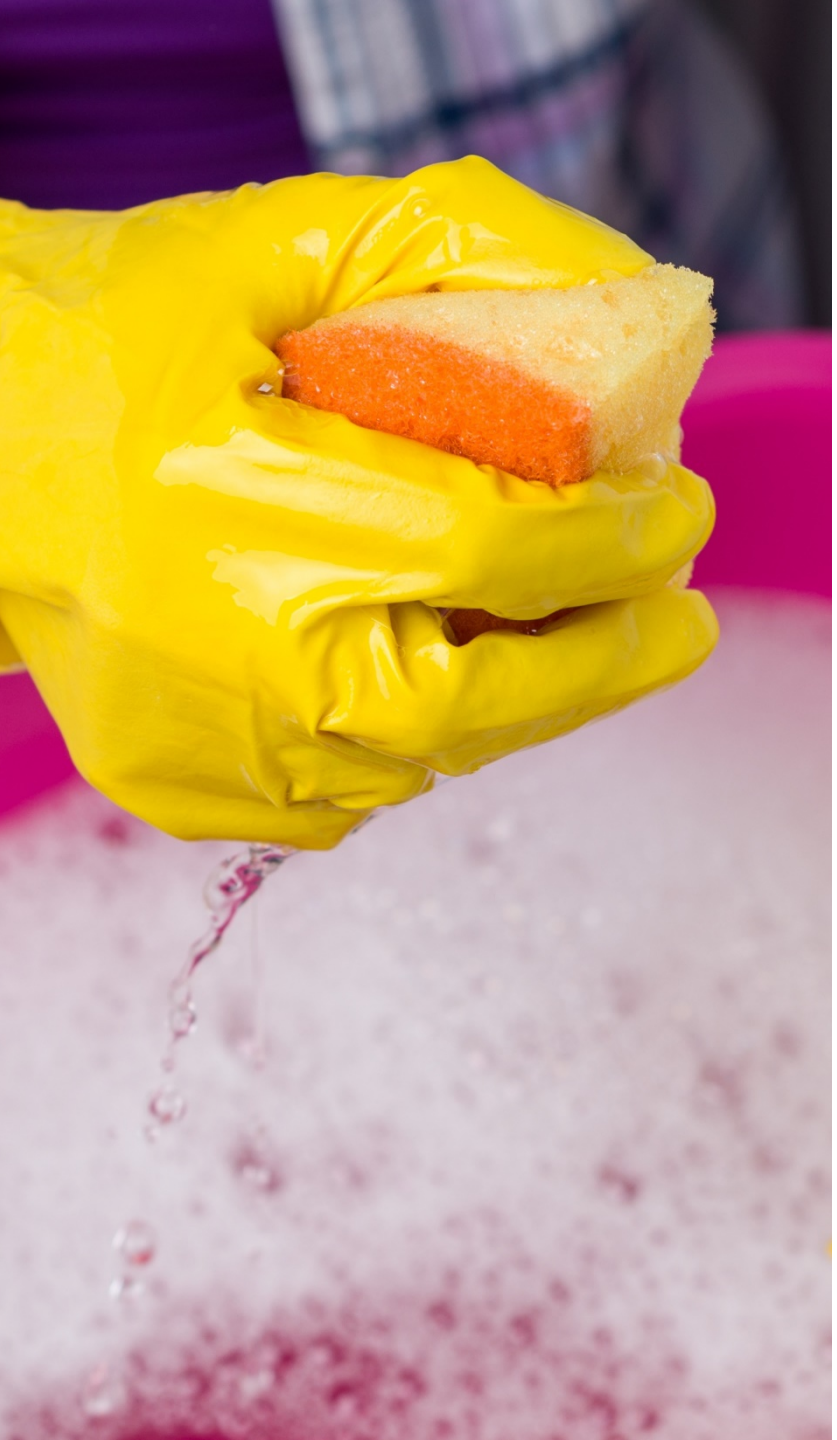
Disposable gloves are for one-time use only and follow procedures to remove them safely – and ensure they are discarded appropriately according to local protocols.

Make sure that hygiene protocols are followed from the CDC, WHO, UNESCO and the Federal, State/Provincial officers of health and safety.

EPA Disinfectants for Use Against SARS-CoV-2

CDC Considerations for Schools

https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html



Recommendations to Sanitize Science Equipment

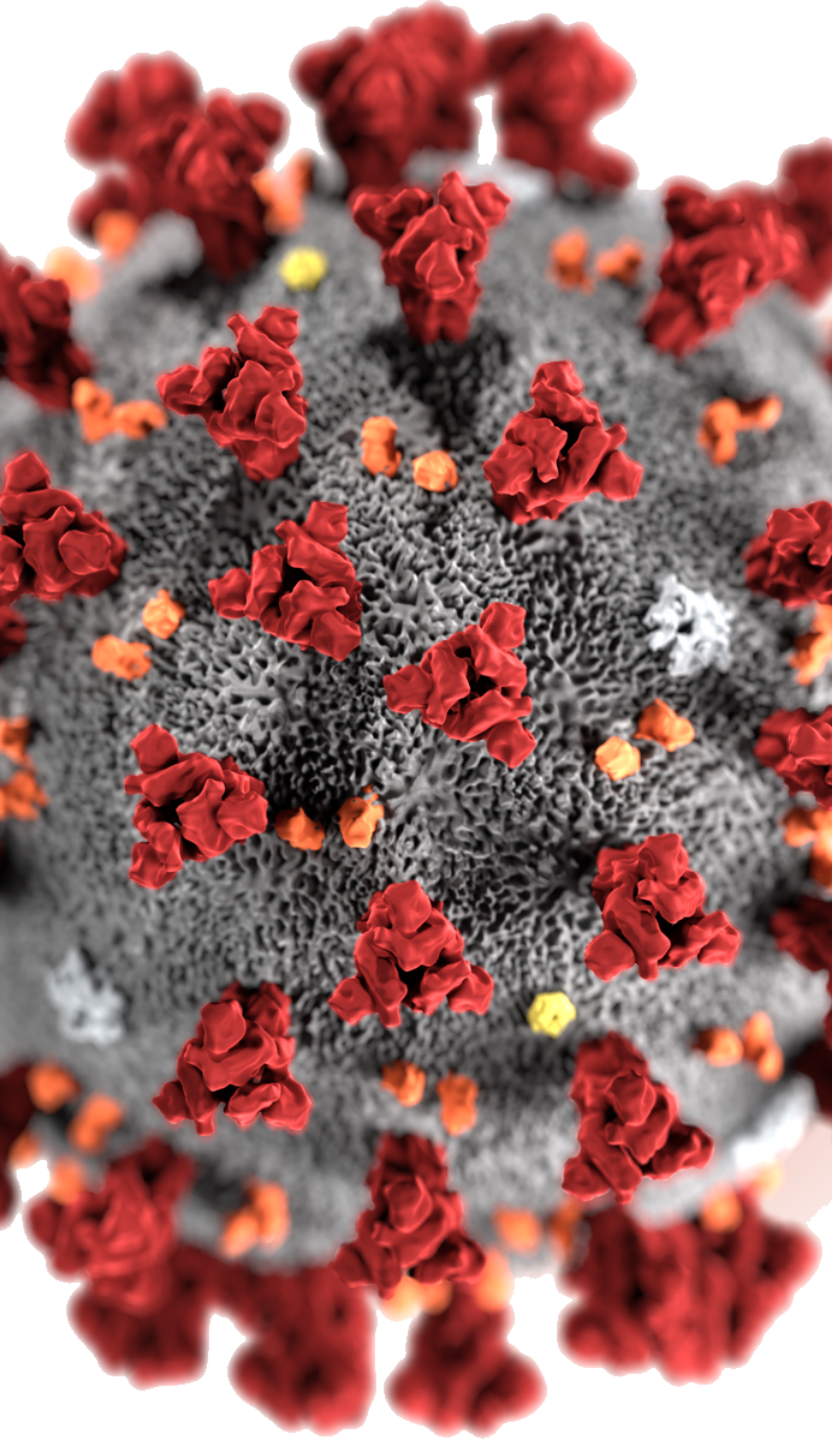
The WHO, CDC, OECD, Unicef and other large authorities are recommending that high-use items be sanitized pre and post usage. Lab equipment would be considered a high-touch item. Others in this category are art supplies, math manipulatives, toys, sports equipment and other tactile learning products.

The recommendation is to use warm soapy water when possible, and to use disinfectant or sanitizer when appropriate such as on electronic and delicate instrumentation.

The Lysol Dip method will be used based on adding an amount of disinfectant to warm water, and then using that to clean the lab instruments or apparatus and letting it air dry.

Safety glasses disinfect in the Lysol solution (1-1/4 ounces Lysol with one gallon of soft or DI water) for 15 minutes, rinsed with water, and allow to air dry. There is absolutely no damage or discoloration to any of the products. Water spots remaining on the lenses are easily removed using lens paper or a paper towel and leave no scratches or marks.

1. EPA Disinfectants for Use Against SARS-CoV-2
2. CDC Considerations for Schools
3. https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html



Cleaning and Disinfection in the Science Lab

You should also clean and disinfect more frequently if you have young children, or if you work in a job where you're exposed to a lot of people who may be ill (e.g., a doctor's office) or you are in regular, close contact with the public or in schools.

When in doubt, disinfect! The easiest and fastest way to clean and disinfect your home is to choose a product that does both. Examples of common products that both clean and disinfect are Lysol™, Virox,™ and Fantastik™. Products should contain sodium hypochlorite, quaternary ammonium, or hydrogen peroxide in sufficient quantities to kill 99.99% of bacteria and viruses that are harmful to people. **Read the label of the cleaner / disinfectant you intend to use to see whether it contains one of these ingredients, and if it claims to be able to kill 99.99% of "germs".**

An alternative to choosing a product which both cleans and disinfects is to first clean with a soap or detergent (such as Mr. Clean™, Green Kitchen Cleaner™, or CLR™), and then disinfect surfaces where bacteria or viruses are most likely to be found with a disinfectant.[1]

1. Public Health Authority of Canada Guidelines on Disinfection in the Workplace

Cleaning and Disinfection – Continued

How should I clean?

- **Disinfect commonly used fixtures and equipment often, or when visibly soiled.**
- **Clean and disinfect other fixtures, furniture and equipment on a regular basis.**
- **Disinfect waste baskets as needed.**

An easy way to prepare a disinfectant solution is to mix 1 part bleach to 100 parts water (e.g., 10 ml bleach in 1 liter of water). It's better to prepare a solution with the disinfectant, dip your cloth or sponge into the solution, and then wipe it onto the surfaces you want to disinfect.

Spraying products may damage expensive furniture or expensive equipment, like computers. Some cleaning products will damage surfaces – when in doubt, check with a janitorial supply store. And always wear rubber gloves when handling disinfectants.

1. Public Health Authority of Canada Guidelines on Disinfection in the Workplace

Recommendations to Sanitize Science Equipment & Apparatus

The use of a disinfectant on a cloth which is then used to clean the surfaces is encouraged. Some people will prefer to use a disinfectant wipe and dispose of it accordingly after use.

Many recommendations are based on the use of a disinfectant wipe on science equipment both pre and post usage. Ensure that all products used for cleaning and disinfection are FDA / EPA approved. Only use 1 wipe per item – no cross-contamination from using it on multiple items.

Pump sprayer bottle tops allow for the alcohol-based sanitizer to be accurately aimed towards the surface being cleaned with minimal overspray or waste.

DO NOT spray alcohol-based sanitizer on any lab equipment that is hot or warm such as a hot plate, recently used Bunsen burner or soldering iron.

1. EPA Disinfectants for Use Against SARS-CoV-2
2. CDC Considerations for Schools
3. https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html

Cleaning and Disinfection of Science Equipment, Apparatus, Materials and Workstations

Develop a rigorous schedule for increased, routine cleaning and disinfection. Follow directives from school district and DOE policy.

Ensure safe and correct use and storage of cleaning and disinfection products,[1] including storing products securely away from children. Use products that meet EPA /FDA disinfection criteria.

Cleaning products should not be used near students, and staff should ensure that there is adequate ventilation when using these products to prevent children or themselves from inhaling toxic fumes.[2]

1. EPA Disinfectants for Use Against SARS-CoV-2
2. CDC Considerations for Schools

Overall Suggestions for Teaching Science

Having the teacher perform the activity and having it recorded for the class will provide a consistent platform for learning and for basing questions and inquiry activities if doing ‘blended learning model’.

Doing the same activity more than once so that the students have the hands-on tactile learning appreciation from the lab activity if ‘staggered day model’.

Collaborating with colleagues so that there is a combined framework or rubric used for teaching students with a digital element in combination with a sharing of resources and equipment to offer a safe and solid science program.

Following guidance from the school district and State/Provincial education authorities on best-practices and tools to integrate this pedagogical style into the mainstream school systems.

Always model proper safety protocols in your lessons and wear your PPE to demonstrate expected behavior in the lab. NEVER work alone in the lab – have a partner with you for safety and compliance.

1. Flinn Scientific Inc. Professional Learning Series Summer 2020

Suggestions on Dealing with Physical Distancing in Science Laboratories

With the expectation that there is a 6 foot (2m) distance between students, this will be difficult to implement in schools and in science labs in particular. The small lab stations used cannot be used to accommodate more than one student.

Lab work in science is typically a team effort, and without being able to have a lab partner physically present, the activities may need to be modified to suit the new single-person observation mode.

Offset seating, all facing in one direction, and with minimal social interaction can contribute to increased anxiety and stress while at school.

Traditional lab layouts are not conducive to this separation model and require considerable time and energy to devise a plan for student learning that provides a robust platform for growth.

1. http://www.oecd.org/coronavirus/policy-responses/youth-and-covid-19-response-recovery-and-resilience-c40e61c6/

Suggestions for Biology Lessons

Teaching biology concepts such as physiology and anatomy systems are greatly enhanced with dissections, the use of a microscope to investigate, and models to illustrate various biotic processes.

Having students perform lab investigations is essential to their overall understanding and application of these fundamental concepts.

Capturing the activity being performed from an angle and perspective from the student will increase their grasp of the activity (dissection, microscopy, anatomy, etc.)

The use of narration over the images can be valuable as a teaching tool for many students and allows for review of the concept.

Consider the application of some digital biology programs to enhance learning such as digital dissections and other solutions for teaching.

1. Flinn Scientific Inc. Professional Learning Series Summer 2020

Suggestions for Chemistry Lessons

Teaching chemistry involves the use of multiple chemicals, glassware, and apparatus in the science laboratory. Chemistry involves the observation and understanding of multiple chemical interactions, processes, and reactions in a controlled environment. This can be a challenge in a traditional school setting.

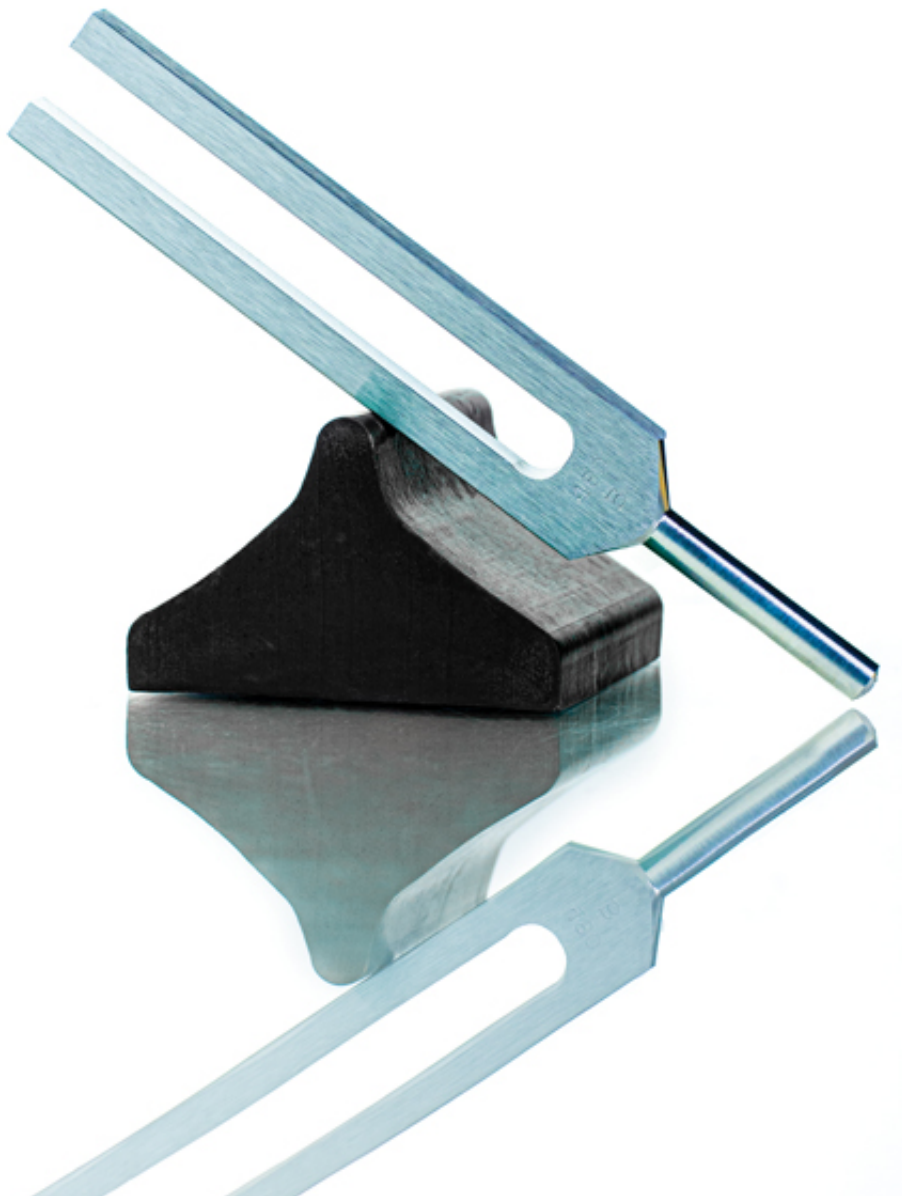
Having students perform lab investigations is essential to their overall understanding and application of these fundamental concepts.

Capturing the activity being performed from an angle and perspective from the student will increase their grasp of the activity (dilution, titrations, heating, mixing etc.)

The use of narration over the images can be valuable as a teaching tool for many students and allows for review of the concept.

Opportunity to engage some online learning solutions for chemistry such as digital labs, chemical interactions and periodic table interactions are possible.

1. Flinn Scientific Inc. Professional Learning Series Summer 2020



Suggestions for Physical Science Lessons

Teaching physics can be challenging in a traditional setting. The understanding from the combination of various scientific laws and their application to society are essential to engineering, technology and science advancement overall.

Having students perform lab investigations is essential to their overall understanding and application of these fundamental concepts.

Capturing the activity being performed from an angle and perspective from the student will increase their grasp of the activity (motion, magnetism, density, thermodynamics, optics, waves etc.)

The use of narration over the images can be valuable as a teaching tool for many students and allows for review of the concept.

Integration of some physics simulation software may be useful for demonstrating various models to students and benefit their learning continuum.

1. Flinn Scientific Inc. Professional Learning Series Summer 2020

Suggestions for PPE usage in Science Labs

The OH&S laws are very clear that ‘every person in the lab must have appropriate PPE accessible to them and they must wear it properly when conducting science activities…’

With an emphasis on PPE due to the COVID-19 outbreak, there is likely going to be an increase in the use and consumption of many items including masks, gloves, and safety eyewear.

The frequent use of a UV goggle sanitation cabinet is a trusted disinfection method used in healthcare facilities to sanitize eyewear after use. (*UV-C wavelength bulbs*)

Having more than the traditional amounts of gloves on hand is recommended for the increased frequency of use and disposal after handling science equipment and apparatus.

Face coverings will be a local decision, but when mandated, these must be available to students and teachers in the school.

Hand hygiene behaviors including the use of trusted soap and water, hand sanitizers, and wipes will likely become mainstream events with scheduled hand hygiene reminders and times.

1. https://www.osha.gov/laws-regs/regulations/standardnumber/1910/1910.1450

Basic Safety Protocols in Elementary School

Being proactive (prevention) is the best remedy to any situation. **Teachers modelling proper behaviors in the classroom (wearing goggles or gloves) is a solid foundation towards setting the culture in the classroom. Safety exists as a standard in the workplace – and so it should be the same standard in the school classroom.**

Additionally, teachers having an awareness of the potential hazards that exist with the use of tools, science equipment and apparatus, and especially with the use of chemicals is very important. Make sure that the students are washing hands often and that you sanitize all equipment and tools prior and post usage with the class. This is the new normal.

Teachers should be able to properly recognize safe procedures in the classroom and to identify areas of concern to minimize the risk of injury to students. This is often referred to as a '**Hazard Identification or Assessment' across various platforms of teaching.**

1. Flinn Scientific Inc. 2020 Elementary Science & STEM Safety Academy

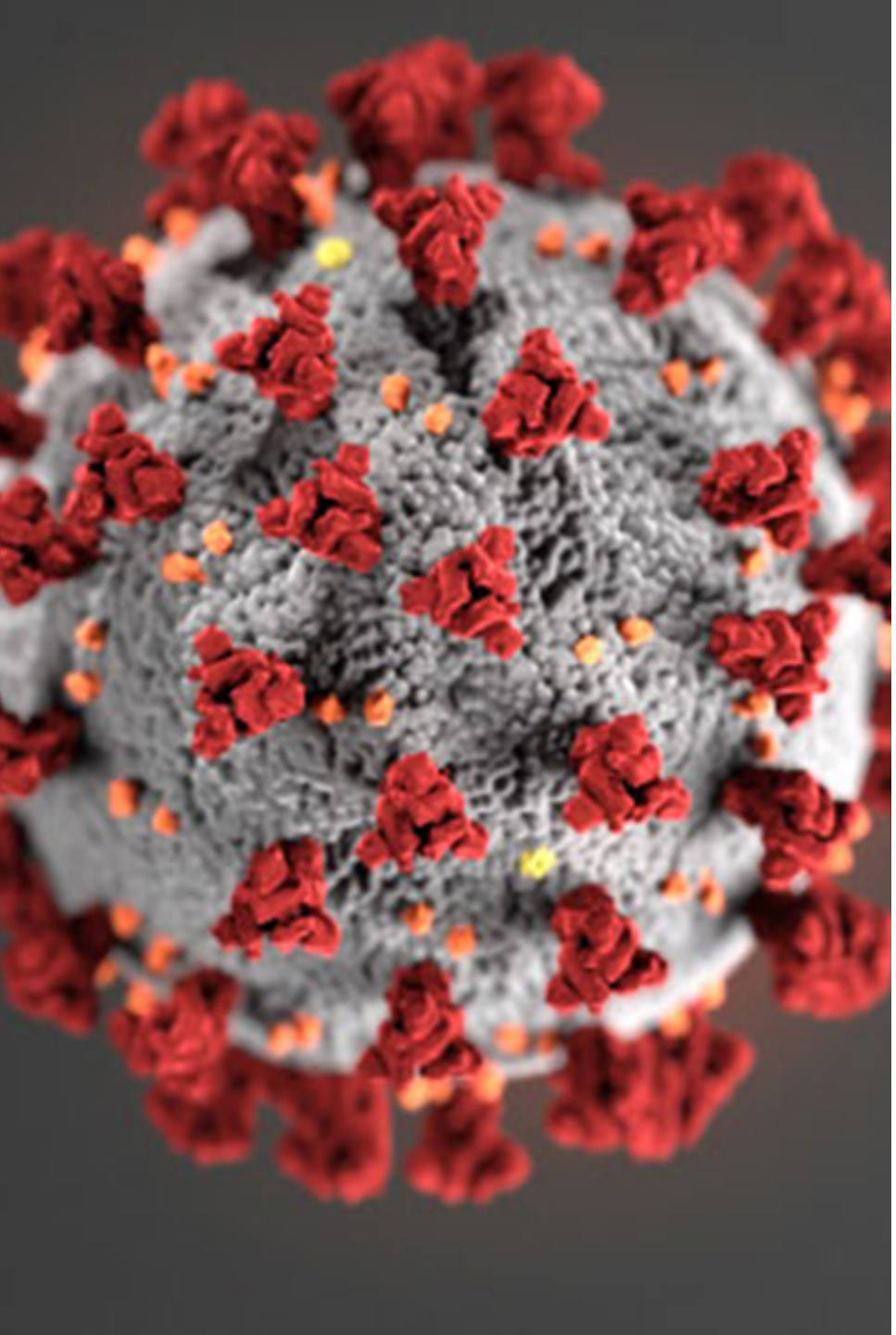
Types of Preventative Measures We Can Take to Minimize the Spread of a Contagious Virus

Wash your hands! It seems very basic, but this is highly effective mechanism to prevent this virus from spreading through contact. 20 seconds of rigorous hand washing is the accepted amount of time. Soap and water is ideal, followed by alcohol-based sanitizer gels or liquids if you cannot access soap and water.

Sanitize your mobile phone, computer keyboard and work area. Use a disinfectant wipe to thoroughly clean your workspace before and at the end of your work or school day. Viruses can survive on surfaces for long periods of time. The same applies to the science equipment and hand tools used in the STEM classroom. Be vigilant about cleanliness.

Social distancing has also proven effective since maintaining a safe distance from a person who is coughing or sneezing (2m or 6 feet or more) minimizes the potential that the small liquid droplets released by the sick person will be inhaled or absorbed by you. The COVID-19 virus could be inside the droplets – so be mindful for your sake!

1. CDC Considerations for Schools



Prevention – continued

Don’t touch your face, eyes, ears, nose or mouth. Your hands are in contact with many surfaces and these are all potential sources of the Coronavirus or similar virus. By then touching your face and other organs, you increase the chance of contaminant transmission to your body and getting sick. It’s amazing how often you touch your face in an average day. **This is why sanitizing your classroom is important and non-negotiable in the STEM environment including items used. Students are not always the most sterile people.**

Make sure you and your students cough or sneeze into your elbow or some tissues. Seems simple, but it minimizes the droplets being distributed and increasing the chance of viral spread. Employing common sense hygiene techniques are effective. The virus can survive on your hand, clothing smartphone and work area tools and utensils for hours and potentially days just waiting to be transmitted through touch. **Ensure your students follow your lead in this action.**

1. CDC Considerations for Schools

Shared Objects

Discourage sharing of items that are difficult to clean or disinfect.

Keep each child's belongings separated from others' and in individually labeled containers, cubbies, or areas.

Ensure adequate supplies to minimize sharing of high touch materials to the extent possible (e.g., assigning each student their own art supplies, equipment) or limit use of supplies and equipment by one group of children at a time and clean and disinfect between use.

Avoid sharing electronic devices, toys, books, and other games or learning aids..[1]

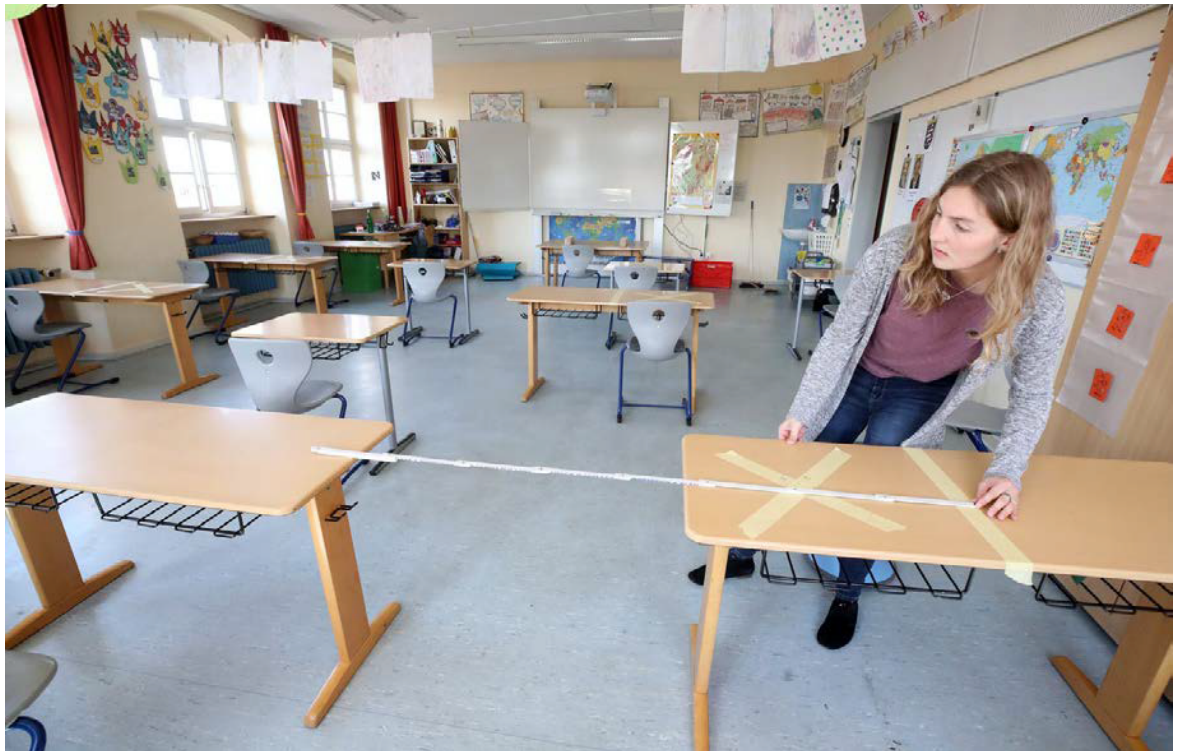
1. CDC Considerations for Schools

How Can You Minimize Potential Risks/Injury in the Classroom?

1. Teacher training and planning-ahead for science / STEM activities can help to mitigate possible risks/hazards/injury.
   - **Could you identify the safety hazards in the activities you have planned?**
   - **Did you sanitize/disinfect the tools and equipment prior to use?**
2. By planning for the classroom materials you will use and where they will be placed/handed out to the class
   - **Do you typically leave materials in one area and let students work independently or do you employ station-based learning?**
   - **Did you sanitize/disinfect the tools and lab equipment prior to storing them away?**
3. Teachers need to demonstrate proper safety practices (scissors, tools, sharp blades, goggles etc.) and tell students why these are critically important rules to be followed.
   - **Do you review the instructions with your classroom prior to the activity?**
   - **Demonstrate washing hands and sanitizing work spaces often and ensure students do the same.**
4. Teachers should also plan for potential problem situations and how to manage them.
   - **Do you practice fire drills? How about safety rules if a student was injured? Consider a role-play activity for students around safety.**

Modified Classroom Layouts

Schools in other countries have begun opening and making modifications to the classroom with safety in mind. Physical distancing and PPE are very critical pieces to the safe re-opening of schools globally. Follow direction from your local health and education authority.



Elementary school in Heppenheim, Germany, April 21, 2020[1]

Gymnasium Steglitz school in Berlin, Germany, April 20, 2020[2]

1. Alex Grimm, Getty Images. From: USA Today What schools will look like when they reopen
2. Alex Schmidt, Retuers. From: Retuers: Germany Cautiously Reopens Schools

Additional Modified Classroom Layouts

Hong Kong, China, April 24, 2020[1]

1. Jerome Favre, Reuters. From: Reuters: Masked Hong Kong students take final school exams after coronavirus delay

Physical Barriers and Guarding Guides

Install physical barriers, such as sneeze guards and partitions, particularly in areas where it is difficult for individuals to remain at least 6 feet apart (e.g., reception desks).

Provide physical guides, such as tape on floors or sidewalks and signs on walls, to ensure that staff and children remain at least 6 feet apart in lines and at other times (e.g. guides for creating “one way routes” in hallways).[1]

Photo: Teacher installs a plexiglass frame in an elementary school in Heppenheim, Germany, April 21, 2020[2]

Plexiglass / acrylic barriers are not designed for use continuously in certain lab situations, and could become cloudy or cracked in the presence of many common lab chemicals. Be mindful of the products used in the lab and adherence to social/physical distancing and PPE requirements.
https://www.cdc.gov/coronavirus/2019-ncov/lab/lab-safety-practices.html

1. CDC Considerations for Schools
2. Alex Grimm, Getty Images. From: USA Today What schools will look like when they reopen

Storage and Prep Room Organization

Keeping prep and storage rooms clean and organized is a never-ending task. Flinn has many helpful resources for you.

We recognize that in the unexpected school closures there are likely some levels of ‘messiness’ in the prep area as a result of not planning to be away for an extended period of time.It can be overwhelming to address organizing your prep room when a school closes abruptly, or if you only have limited time in your school.

First, make sure all safety equipment is easily accessible including: Fire extinguisher; fire blanket; spill kit; PPE; UV goggle sanitizer; drench shower; eye wash station; first aid kit; master shut-off switches; smoke detectors. There needs to be clear access to these items.

Storage and Prep Room Organization

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Many school science departments keep certain lab reagents and consumer commodities in there (including eggs used for lab activities which will expire and smell really bad…) or milk products used for dairy labs etc. These will need to be purged ASAP to minimize potential odors & bacterial growth. If you cannot get into the school, you should alert your principal and the janitor/maintenance people to remove any products/items from the fridge when they can.

Make it a priority to organize the prep area once you are back in the building and that may require the removal of clutter. Student projects, textbooks, lab activities, glassware, boxes, random science items and bottles of chemicals are the usual contributors to the disorganization.

Key Points for Prep Room Safety & Compliance during extended closures

Keep room and chemical cabinets locked	Make sure chemicals are stored properly	Empty the lab fridge ASAP	Unplug all electrical items for storage
Ensure there is adequate ventilation	Make sure biological specimens are stored properly	Shut off gas lines for duration and lock valve into ‘OFF’ position	Fill ‘P’traps for plumbing in sinks and floors to prevent odors
Remove any clutter & mess from the Prep Room	Generate a current chemical inventory of what is on-hand	Have a plan for live animals and plants in the science area	Communicate with your school administration

Suggestions on Ordering Lab Supplies

Based on the style of learning and the student population, you may need to adjust your ordering of science supplies to align with thetransitoning instructional model / learning strategy.

If your school is opening with a traditional classroom / lab with a full class enrollment set-up, then minimal disruption to your traditional ordering should occur. If using a ‘blended learning’ approach, you may need more supplies than you typically used if you plan to have students individually complete certain lab activities with your supervision.

Make sure that you have an abundance of PPE readily available and that you follow hand hygiene and disinfection protocols with the students and that you model safe PPE usage and behavior.

Ordering sooner to ensure that you have the products needed for your science program will ensure that you are not searching for needed items for your activities and investigations with your classes.

Contact FLINN for your complimentary Purchase Guides based on each grade and subject area.

1. Flinn Scientific Inc. Professional Learning Series Summer 2020

Should I Be Ordering My Supplies for when I Get Back To School?

We are happy to accommodate any requests for orders and a future shipment date or even shipping to a secure location in the school district.

Flinn wants to ensure that you have the science equipment, apparatus, specimens, chemicals, glassware, PPE, and related materials when you get back to school.

Please let us know how we can work within your school district policies and help you deliver a solid, safe science program in your school.

1. Flinn Scientific Inc. Professional Learning Series Summer 2020

FLINN SCIENTIFIC

Ask about our custom district solutions designed to support a safe return to school:

- Custom safety and professional development/learning proposals to ensure full school safety
- Full PPE for students, faculty, and support staff
- Blended science learning solutions that provide continuity of lab instruction for both onsite & remote learners

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