

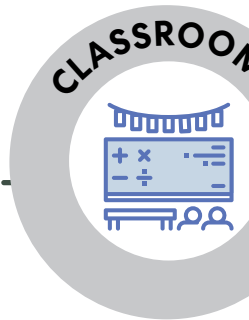
Restrooms

Healthy Schools by Design

2022

Perkins&Will





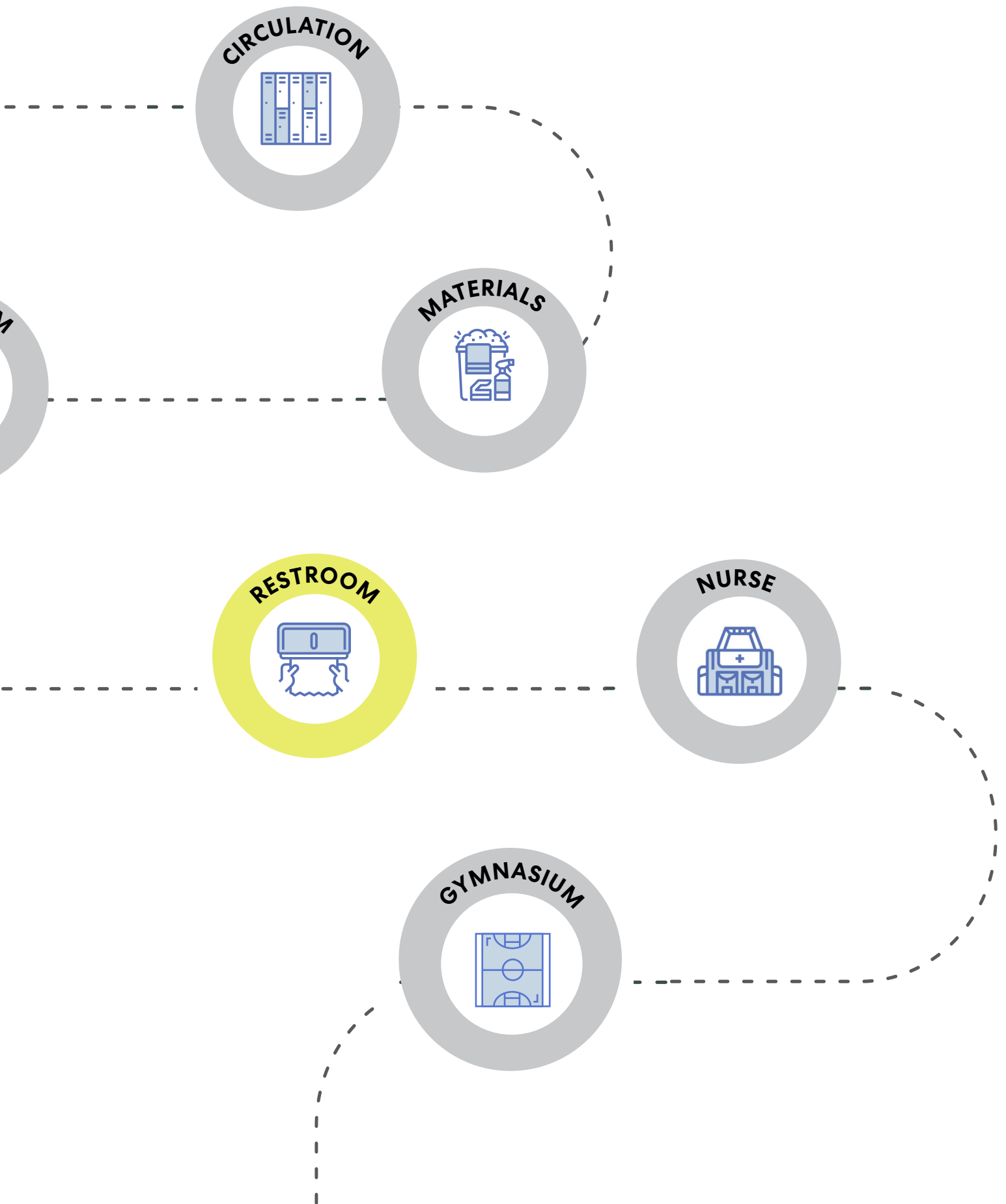
A DAY IN THE LIFE

Meet Riley

In the pages that follow, we invite you to imagine how these design interventions will impact Riley, an imaginary—but very real—student. We owe it to students like Riley to make school buildings as inviting, safe, and healthy as they can be.

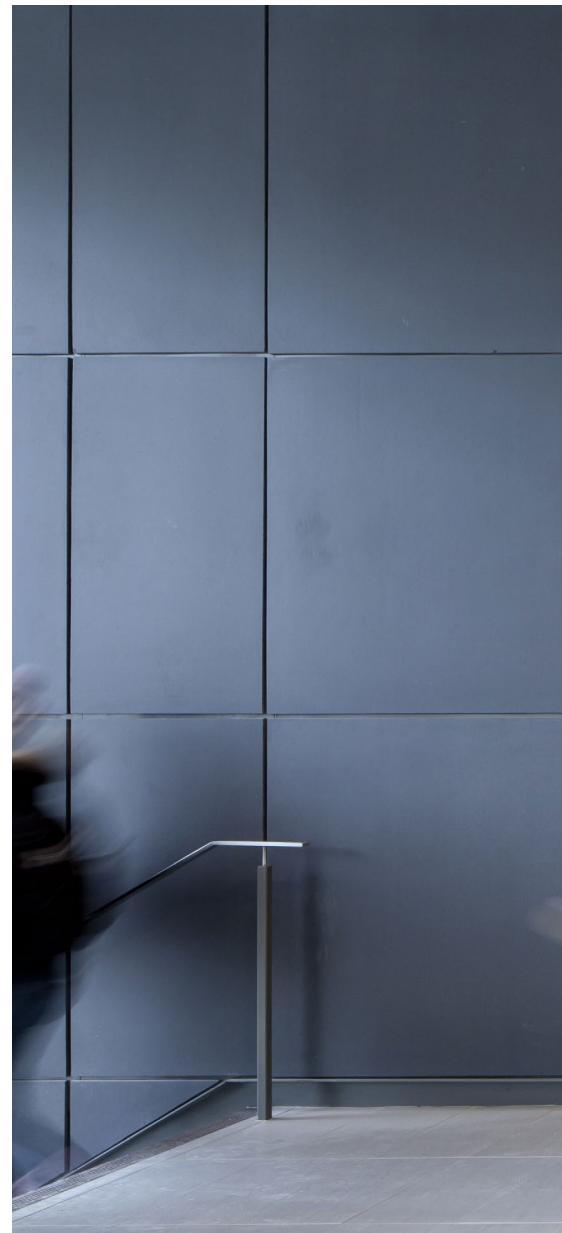


Follow Riley's journey through school at
healthyk12.perkinswill.com/



Why you should read this!

- The World Health Organization (WHO) recognizes access to toilets as a priority for public health as part of the Water, Sanitation, and Hygiene Strategy.
- Healthy restrooms are not only good for your health, but student performance. A study of 95 elementary schools in New York City found that school sanitation facilities played a factor in both student academic success, as well as school attendance.
- For the **1.4 million homeless students** that attend U.S. K-12 schools, this may be the safest, most reliable restroom they access all day. Providing an environment that is safe, clean, and private can promote resilience and health.



Our Goal



Kawartha Trades and Technology Centre

This series is focused on translating research into practical design solutions that promote child and staff health in our K-12 schools. These documents will continue to be updated to reflect novel findings and community input. This primer is not a comprehensive list, and some strategies may not be achievable in existing buildings. Our goal is to identify opportunities where design and operations decisions can improve human experience.

The guidance provided is based on the available information as of the date of publication and does not replace federal, state, or local public health recommendations. It aggregates best practices and innovative solutions at the intersection of buildings and school health. We encourage schools to reach out and seek expert advice on their unique circumstances.

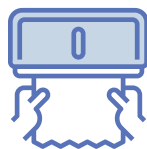


Project: Confidential Child Care Center



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— Restrooms

The term restroom is a uniquely American word from the early 1900s. Coming from a history of upscale restaurants offering a place for guests to “rest” comfortably near the toilet area. In K-12 schools, we see restrooms not just as places of bodily necessity but self-expression, socialization, and relief from academic stress.

Hygienic restrooms are also essential for student and staff safety. As Water, Sanitation, and Hygiene Strategy, the World Health Organization (WHO) recognizes access to toilets as a priority for public health.

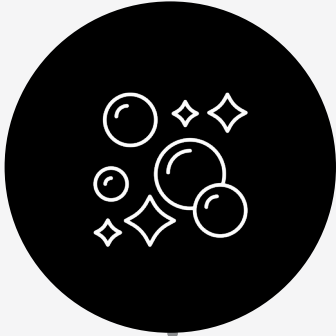
Today and to support future-ready goals, holistically healthy restrooms require cleanliness, sanitation, and a dedicated approach to inclusivity.

We are redefining “healthy and inclusive” restroom design beyond the mainstream definition and towards a more holistic approach that considers all of the following aspects



Cleanliness and Sanitation

Design to optimize cleanliness and sanitation



Privacy

Design to increase visual and sound privacy



Hand-Washing

Design to promote healthy behaviors



Personal Identity (Culture and Behavior)

Design to realize culture and behavior to allow for self-expression



Religion

Design to accommodate multiple religious views

Environmental Quality Considerations



DID YOU KNOW?

Although student health is of utmost importance, research shows us that clean restrooms not only impact health, but also student success. A study of 95 elementary schools in New York City found that school sanitation facilities played a factor in both student academic success, as well as school attendance.



CLEANLINESS AND SANITATION

Schools with clean sanitation facilities that include safe drinking water, adequate handwashing, and hygienic toilet facilities can promote health. **A systematic review** found poor sanitation facilities were associated with higher rates of infectious, gastrointestinal, neuro-cognitive, and psychological illnesses. Per the study “ensuring ready access to hygienic toilets that offer privacy to users has great potential to beneficially impact children’s health.”

A **2018 study** of elementary schools, highlighted common issues, including lack of security or privacy, hygiene, and comfort. Similarly, the Bradley Corporation **2019 Healthy Hand Washing Survey** found that 68% of high schoolers felt school restrooms were poorly maintained and students reported the following reasons for not using the restroom:

- 37% don’t need to use it
- 36% not enough time between classes
- 35% avoid using school restroom
- 32% restroom usually dirty or smelly
- 28% don’t feel comfortable using it when others are in there

Additionally, a 2018 **Society for Women’s Health Research survey (SWHR)** noted students lack consistent and reliable access to restrooms. Holding in urine has been documented to have **detrimental health effects**, such as increased bacteria spread, weakened bladder muscles, leakage, and makes people more susceptible to urinary tract infections. According to the American Urological Association, **1 in 5 young girls have bladder and bowel dysfunction (BBD)** and carry these problems into adulthood.



PRIVACY

Visual and auditory privacy are essential for the safety and comfortability of restroom users. It is especially important for those who menstruate. Menstruating people are **less likely to use the restroom** if they do not have adequate privacy, cannot dispose of materials, or feel discomfort from the cleanliness level.

In the SWHR survey, 75% of respondents said bathrooms were not well-stocked with menstrual products. When students do not have access, they may miss class, or use the same sanitary product for a prolonged period. This may result in other health issues, such as bacterial vaginosis, yeast infections, and even, toxic shock syndrome.

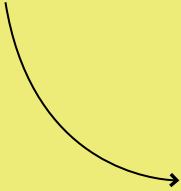


HANDWASHING

School restrooms need to offer basic supplies. A national survey of middle and high schoolers found that often, **restrooms lack basic supplies** like hand soap, toilet paper, and paper towels.

According to the CDC, in 2019, **22 million school days** were lost annually due to the common cold. This number could be reduced with proper hygiene and handwashing behavior. **Handwashing at least four times** daily can reduce gastro-intestinal illnesses and related absences by more than 50% according to a study of students in Detroit. **The National Association of State Board of Education** suggests, “at a minimum, schools should have a hand washing policy for students and teachers.” Signage can promote the policy, as **57% of students** say they are more likely to wash their hands if there is a reminder.

The design of public restrooms to support user diversity considerations has undergone numerous changes throughout history in the hopes of ending the discrimination that was embodied in its design based on race, gender, and disability.

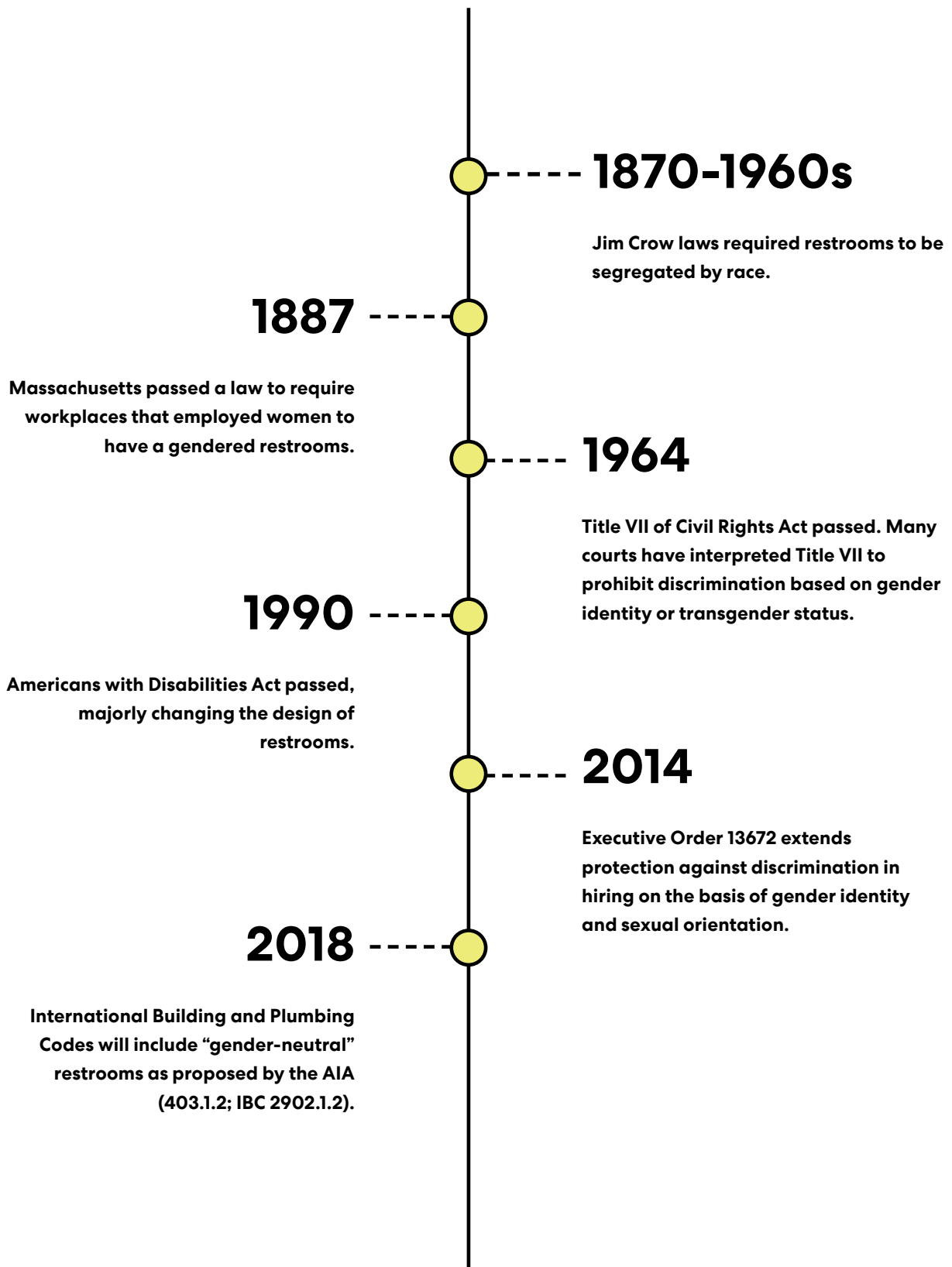


Inclusivity and the design of public restrooms can be traced back to major victories in civil rights movements in the United States. One highlight is the movement that ended the Jim Crow Law; a law that called for separating public restrooms, drinking fountains, and other public facilities by race and enforced the racial order using “Whites Only” and “Colored” signage.

Another major civil rights victory was the Americans with Disabilities Act that included design guidelines focused on the space and fixtures within public restrooms, with the goal of making them more convenient for people with disabilities.

Additionally, an 1887 Massachusetts state law required sex-segregated public restroom facilities as women began entering the workforce and often faced discrimination in restroom availability. Now, the LGBTQ+ community and movement continue to challenge the laws behind gender-segregated public restrooms to highlight its failure to recognize the non-binary nature of gender.

As we move forward with a more nuanced understanding of inclusivity, designers must understand the contested history of public restrooms and the discriminatory policies it perpetuated through the design of its space, its fixtures, and signage. Barriers (visible and invisible) to individuals with diverse needs and challenges should not be overlooked.



User Diversity Considerations

HOLISTICALLY INCLUSIVE

Inclusive restrooms are not only a gender issue, but also a privacy, safety, accessibility, religious and cultural issue.



Project: *University of British Columbia Life Building
Interior Renovation*



Unfolding the diverse needs of the user is crucial to support all and encourage healthy school environments.

To achieve this holistically, we suggest:

- Determining community goals,
- Asking a variety of questions
- Following the building codes.

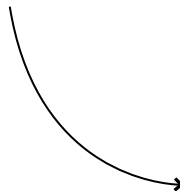
PHYSICAL AND MENTAL ACCESSIBILITY

In 2020–2021, the number of students ages 3–21 who received special education services under the Individuals with Disabilities Education Act (IDEA) was 7.2 million, or 15 percent of all public-school students.

As specified in the Individuals with Disabilities Education Act (IDEA): “students between the age of 3–21 are entitled to experience the “least restrictive environment” in their school settings. This means that students should be placed in an environment where they have the greatest possible opportunity to interact with children who do not have a disability and to participate in the general education curriculum. This is commonly referred to as mainstreaming or inclusion.” Standards of **ADA accessible design** for physical disability is required by building code in which many school restroom design succeed in accommodating for physical disability while often overlooking accommodations that are not visible or mental. Among students receiving special education services, the most common category of disability was specific learning disabilities (33%), followed by speech and language impairment (19%), other health impairment (15%), Autism (12%), developmental delay (7%), intellectual disability (6%), emotional disturbance (5%), multiple disabilities (2%), and hearing impairment (1%).

Increasing inclusivity in the design process

- Refer to school data to gain an understanding of the full spectrum of disabilities you need to accommodate for.
- Create a focus group to engage with students with disabilities and hear from them directly.
- Always use a universal design approach when selecting bathroom accessories, fixtures, and signage. Try to accommodate for wheelchair accessibility, light and sound sensitivity, color blindness, and autism. You never know who will enter your restroom.



Remember Not Every Disability is Visible

Check it out: *Why can restrooms be a challenge for young people with Autism*

User Diversity Considerations



GENDER

The stress and stigma of being a sexual orientation or gender identity minority can increase developmental risks for lesbian, gay, bisexual, transgender, questioning, queer, asexual, or intersex children and youth. Bullying in schools and educational needs of children and youth who are sexual or gender minorities, or those who are **questioning their sexual and gender identities** are issues in schools. In a survey of the transgender population in the United States, a notably high rate of discrimination was reported in a variety of settings and forms. 78% of transgender people reported being harassed at school by students, teachers or staff, while 35% reported being physically assaulted and 41% reported attempting suicide at some point in their life. **Read more about** the stress harassment in gender-segregated bathrooms.

While gender-neutral toilets provides safety for transgender community, it also benefits students with disabilities who need caregivers to accompany and assist them regardless of their gender.

Increasing inclusivity in the design process

- Encourage school administration to develop policies supportive of students exploring gender and develop anti-bullying efforts.
- Allow for visibility in the public space of the restrooms to increase supervision that can minimize bullying and encourage positive interactions between students.

Check it out: *The Change Room Project*



AGE AND DEVELOPMENT

"As children approach **adolescence**, they increasingly focus on their appearance and physical attraction. Adolescence begins with puberty and is characterized by significant changes in hormone levels, physical appearance, and psychological and social characteristics. According to **research**, adolescence is associated with a specific vulnerability to mental image disorder and body dissatisfaction is prevalent. Additionally, physical and mental body changes during puberty leave students vulnerable to increased anxiety, which can negatively affect academics and socio-emotional development.

Schools have a significant role in the physical health and the perceived body image of their students. Restroom spaces are suitable for promoting healthy physical and mental development and can support students through safe, well equipped, and approachable design. Beyond the physical space, schools can promote health programs and online resources.

Increasing inclusivity in the design process

- Encourage the school to recognize its role in non-academic areas by developing and promoting health programs and implementing safety measures.
- Discuss with school stakeholders to consider using online health programs that offer easy-to-scan QR codes and services.

Check it out: *This NPR podcast the case for laws related to period equity*



PERSONAL IDENTITY (CULTURE AND BEHAVIOR)

Across America and across different generations, bathroom walls specially in public schools have been a place where students express themselves through scribbles of text or art.

In an interview with a high school student at Franklin High School, the student commented, *“I relate it to bathroom graffiti many people use these stall walls to express themselves while at high school. It really just adds character to this school. Many feel the walls of Franklin High School are “too blank” and cause a type of dissociation with the schools community.”*

While graffiti can be an act that is not encouraged, schools can turn this phenomenon into a positive one. Students often draw on the walls to create a sense of belonging. With this understanding, **some schools** are turning bathroom walls into an inspiring space by including murals and allowing for community involvement.

Increasing inclusivity in the design process

- Work with school stakeholders to identify spaces for positive interactions, for example, a waiting space that can function as a social nook.
- Engage with students to understand behaviors and culture that can be accommodated into the design.

Check it out: *25 School Bathroom Makeovers That Prove Any Space Can Be Inspiring*



RELIGION

Just like many places around the world, public schools reflect a wide variety of religions and views across America. **A 2019 survey** of American teens shows religious expression is relatively common. For instance, over half of teens in public schools (53%) say they often or sometimes see other students wearing jewelry or clothing with religious symbols.

Given the religious diversity of students, some non-gendered bathrooms can contradict certain cultural ideas around modesty, gender, and gender segregation. Some religions and cultures prohibit sharing intimate spaces like toilets with unrelated people of the other sex.

Because inclusive design should not prioritize the needs of one group more than another, one possible solution is to allow space for both gendered and non-gender bathrooms. Schools and designers should ensure equal attention is paid all populations within the school community.

Increasing inclusivity in the design process

- Refer to data to understand the religion makeup within the school and surrounding community.
- Create a focus group to engage students of diverse religious views to achieve a more holistic design.

Check it out: *Learning about different religions can help students understand the world better*

Strategies

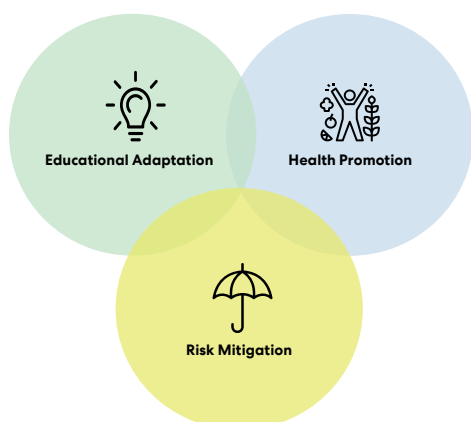
The below is meant to be used as a checklist that can easily be followed by school stakeholders to help ensure their learning spaces are as healthy as they can be for all students, staff, and the community.

STRATEGY	CATEGORY	NEW/EXISTING	IN YOUR SCHOOL?
R.1 Disperse gender-neutral and binary restrooms throughout the building for convenient access (Refer to: Gender: Page 14). Within the gender-neutral restroom space, consider fully-equipped and enclosed gendered washrooms to accommodate for users with diverse religious views (Refer to: Religion: Page 15).	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable
R.2 Incorporate principles of universal design in space planning, fixtures, accessories and furniture to support inclusion for people of all capabilities. Remember that not all disability is visible (Refer to: Physical and mental accessibility: Page 13).	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable
R.3 Space plan separate entry and exits if possible to reduce bottleneck and improve flow, alternatively consider a wide combined entry and exit space.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable
R.4 Remove the main entry restroom doors to reduce touchpoints; if doors need to remain to provide adequate privacy, retrofit with hands-free hardware.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable
R.6 Specify touchless technology plumbing fixtures and toilet accessories (e.g. toilets, faucets, paper towel dispensers, and hand dryers).	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable
R.7 Avoid sightlines from mirrors to stalls. Large gaps in doors can reduce user privacy and comfort.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable
R.8 Specify durable toilet partitions that have “no gap” to increase privacy. For the most privacy, toilet partitions should extend 4” AFF to the ceiling.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable
R.9 Include both touch-free hand dryers and paper towel dispensers to offer choices to users and encourage handwashing.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable
R.10 When possible, include indicator lights or hardware that indicates when stalls are occupied and unoccupied.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable
R.11 Specify finishes that are resistant to mold and mildew.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building	☐ Yes ☐ No ☐ Not Applicable

Strategies

STRATEGY	CATEGORY	NEW/EXISTING	IN YOUR SCHOOL?
R.12	Utilize cove tile base to create seamless transitions between walls and floors to keep water and moisture out and avoid sharp right angles that are hard to clean.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building O Yes O No O Not Applicable
R.13	Include free of charge menstruation products and proper sanitary napkin disposal cannisters for people who menstruate (Refer to: Age and development: Page 14).	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building O Yes O No O Not Applicable
R.14	Incorporate inclusive signage at restroom entrances. This includes non-gendered bathroom signage or gendered signage when needed.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building O Yes O No O Not Applicable
R.15	Include signage promoting proper hand-washing techniques.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building O Yes O No O Not Applicable
R.16	To discourage undesired graffiti around the restroom space, designate a self expression wall space that can encourage positive self-expression and a space for socialization (Refer to: Personal identity (culture and Behavior: Page 15).	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building O Yes O No O Not Applicable
R.17	Include transparency and views outside of the restroom to support passive monitoring from students and staff to reduce the possibility of bullying and support safety.	Risk Mitigation Health Promotion Educational Adaptation	New Construction Existing Building O Yes O No O Not Applicable

Our aim is to support holistically healthy buildings, but we understand that each learning community is unique and has their own health priorities. Use these strategies as a starting point!



RISK MITIGATION

Strategies for reducing adverse environmental exposures that influence school occupant health and performance.

HEALTH PROMOTION

Strategies that promote physical and mental health, social cohesion, and a sense of belonging and safety.

EDUCATIONAL ADAPTATION

Strategies that support behavioral, logistical, and technology flexibility during shifting teaching needs.

Design Hypothesis

DESIGN HYPOTHESIS

Consider an overall non-gendered restroom area that contains adequate hand-washing, mirrors, and typical hygiene accessories. Within this space, also provide a fully-enclosed restroom facilities for complete personal privacy and religious accommodations.

To achieve access and comfort for all users, we propose breaking bathroom spaces into three different zones:

- Social Node (Public Zone)
- Washing and Grooming (Semi Private Zone)
- Toilets (Private Zone)

AN IMPORTANT NOTE

When designing new or renovated toilet facilities, consult applicable local codes for acceptable plumbing fixture types and toilet configurations. Consideration should be given to design configurations that allow building owners the option to use toilet compartments in both a binary and gender inclusive way. While more costly, consideration can also be given to multiple, single use rooms that allow full flexibility of use and assignment.

Design Goals:

Visibility:

Design for transparency and visible sight lines to allow for increased monitoring and encourage a safe use of space against bullying

Privacy:

Design to accommodate complete visual and sound privacy while using the private space. Students with anxiety, body image issues which increase during teenage years, or even students with diverse religious views will require a private space to feel safe using the restroom.

Tailored:

Design to include special fixtures, furniture and accessories throughout the space to accommodate a wide range of Physical and Mental disability. It is also important to include the appropriate hygiene and menstrual products.

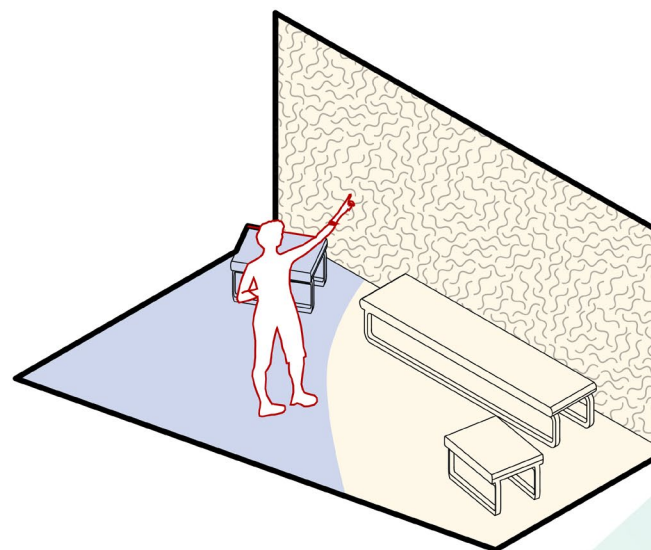
Self Expression:

Design to intentionally allow for self-expression and socialization as an aspect of social-mental development for students and to discourage common negative social behaviors like graffiti and bullying by allowing space for interactions and self-expression to happen safely.

Hypothesis 04:



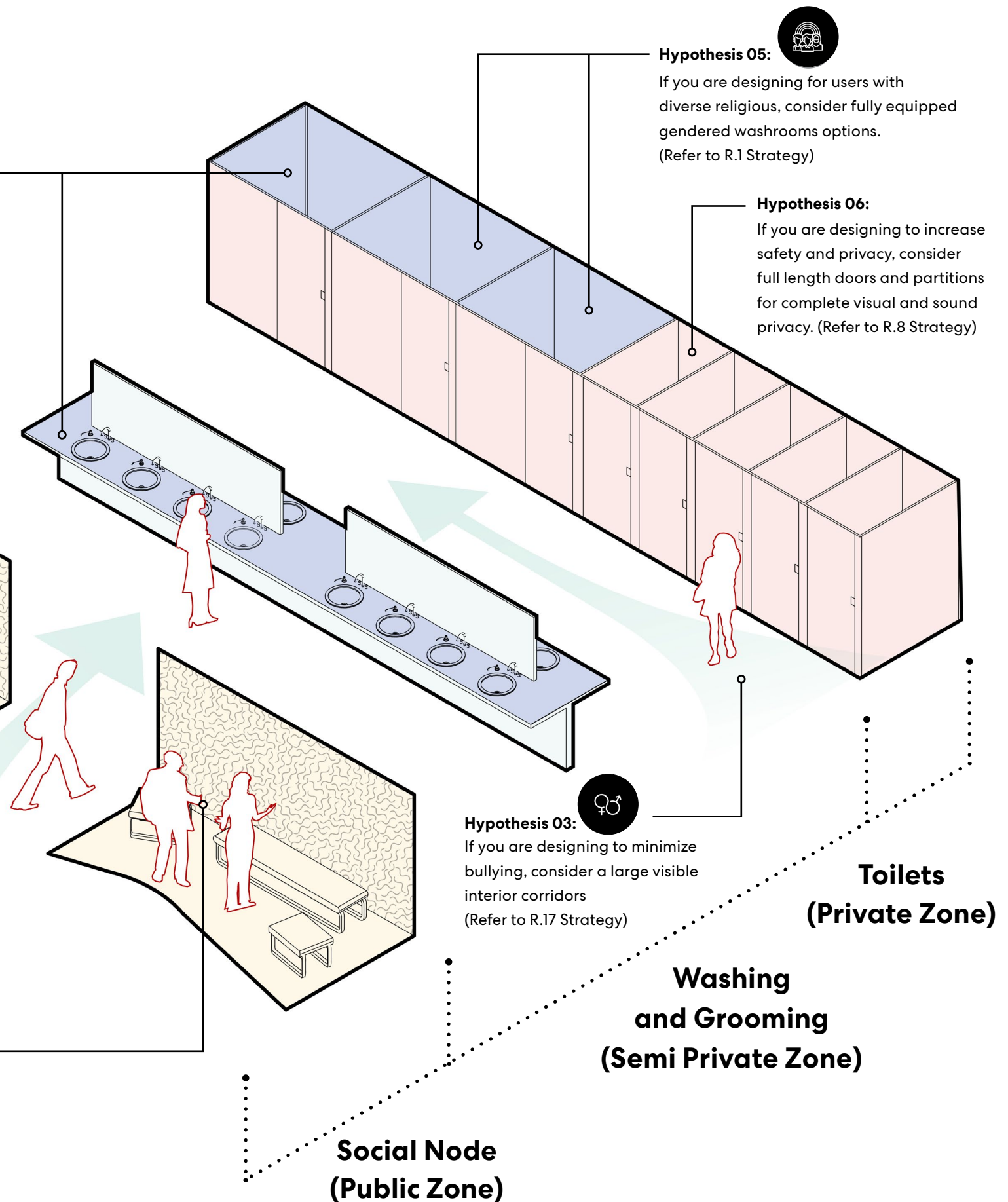
If designing to accommodate for a large range of mental and physical disability while also considering people with menstruation cycles, consider applying universal design standards, accessible fixtures, hygiene products and accessories. (Refer to R.2 and R.13 Strategies)



Hypothesis 02:



If you are designing to minimize damage and wall graffiti, consider designating a self expression wall. (Refer to R.16 Strategy)

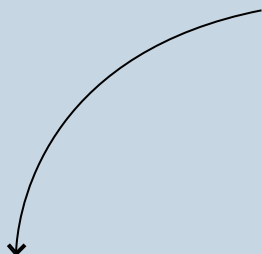


Work that Inspires Us

Codes are changing to allow multi-user restrooms:

The 2021 International Plumbing Code

(IPC) states: (403.2 Exception 6) Separate facilities shall not be required where rooms having both water closets and lavatory fixtures are designed for use by both sexes and privacy for water closets is provided in accordance with Section 405.3.4.



Stalled - Gallaudet Case Study

Stalled - Airport case study

Work that Inspires Us: Stalled!

Stalled! was created in response to national debates around transgender access in public restrooms and have tackled this as an issue that can be solved through thoughtful design. The Stalled! design team worked with a faculty committee from Gallaudet University to push the boundary of the current plumbing code and reimaged the restroom as we know it.

Using the single occupancy restroom, better known as the gender-neutral restroom, as their starting point, Stalled! proposes a “multi-user solution” that eliminates sex-segregation to create a single open space with private single occupancy stalls. The typical doors were removed to create a permeable extension of the hallway where communal lavatories are located to help activate the circulation path. A passthrough corridor with multiple ways in and out limits entrapment and allows users to visually monitor one another, helping to reduce the risk of violence. Floor to ceiling doors create fully enclosed stalls that can be used by anyone, creating a more inclusive restroom for those who feel stuck between the two traditional options. Comprised of ADA, ambulatory, and standard stalls, as well as caregiver rooms, this design is more inclusive to a wide range of people. Stalled! takes it a step further and shows how this model for multi-user restrooms can be used in other high traffic public restrooms, such as in an airport.

Although this design is not yet acceptable by the current building codes, this organization aims to also address this topic through education and legal initiatives in order to codify this solution. Stalled! has used this as a catalyst to a larger conversation around the relationship between the built environment, the human body, and social equity.

Key Takeaways:

01.

Safe and Secure

Ensure we are designing safe and inclusive restrooms for everyone.

02.

Multi-User Solutions

Use a multi-user solutions approach when envisioning holistic bathroom environments.

03.

High Traffic Restrooms

These design solutions are optimized for high traffic public restrooms.

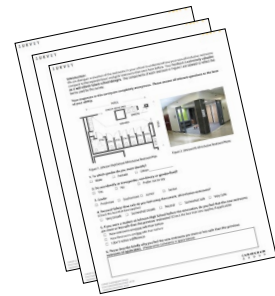
Community engagement is at the core of understanding user diversity, encouraging a sense of belonging, and achieving inclusive design.

Supporting adolescent health in school requires both a tailored and universal approach to account for the social determinants of health at the individual and community-level. Characterizing the upstream drivers of child well-being requires thoughtful pre-occupancy and post-occupancy engagement of all school users to identify healthy and inclusive priorities.



Practicing an Inclusive Mindset in the Design Process: Use the 5 E's

1. **Engage**
your users
2. **Embrace**
other values and identities
3. **Embed**
in the community to build trust
4. **Empathize**
with participants by practicing radical listening
5. **Embolden**
marginalized populations



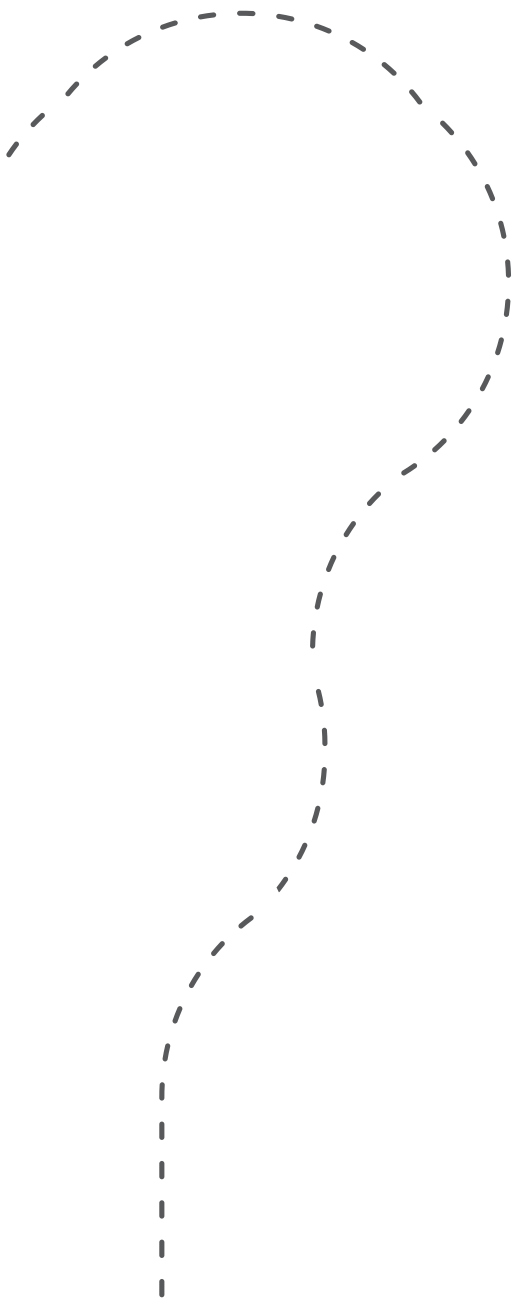
Post Occupancy survey example — [Read More](#)

References

1. American Public Health Association. Hand Hygiene in PreK-12 Schools and Child Care Settings. (2006). APHA. <https://www.apha.org/policies-and-advocacy/public-health-policy-statements/policy-database/2014/07/07/11/15/hand-hygiene-in-prek-to-12-schools-and-child-care-settings>
2. American Psychological Association. (2021). Gender and sexual orientation diversity in children and adolescents in schools. <https://www.apa.org/pi/lgbt/resources/diversity-schools>
3. Barkhordari-Sharifabad, M., Vaziri-Yazdi, S. & Barkhordari-Sharifabad, M. The effect of teaching puberty health concepts on the basis of a health belief model for improving perceived body image of female adolescents: a quasi-experimental study. BMC Public Health 20, 370 (2020). <https://doi.org/10.1186/s12889-020-08482-2>
4. Bradley Corporation. Students Say Unclean Restrooms Impact Their Perception of School. (2019). PR Newswire. <https://www.prnewswire.com/news-releases/students-say-unclean-restrooms-impact-their-perception-of-school-300902175.html>
5. Cai, J. Homeless Students in Public Schools Across American: Down but Not Out. National School Boards Association. <https://www.nsba.org/Perspectives/2021/homeless-students>
6. CDC. Healthy Schools, Healthy People Statistics. (2003). School Network for Absenteeism Prevention. <http://itsasnap.org/snap/statistics.htm>
7. Chometon, T., Cortey, C., Marchand-Tonel, C., Saunders, L., Cicchelerio, V., Lang, T., Bouali, O., & Claudet, I. (2020). Troubles mictionnels et accès aux toilettes chez les enfants scolarisés : enquête dans l'Académie de Toulouse [Voiding dysfunction and access to toilets among elementary school children: A Toulouse school district study]. Sante publique (Vandoeuvre-les-Nancy, France), 32(5), 441–449. <https://doi.org/10.3917/spub.205.0441>
8. Close, C. School Bathroom Habits Impact Lifelong Bladder Health. (2016). SWHR Interdisciplinary Network on Urological Health in Women. <https://www.urologyhealth.org/healthy-living/care-blog/school-bathroom-habits-impact-lifelong-bladder-health>
9. Duran-Narucki, V. School Building Condition, School Attendance, and Academic Achievement in New York City Public Schools: A Mediation Model. (2008). Journal of Environmental Psychology. <https://doi.org/10.1016/j.jenvp.2008.02.008>
10. Grant, Jaime M, Lisa A Mottet, Justin Tanis, Jack Harrison, Jody L Herman, and Mara Keisling. 2011. Injustice at Every Turn: A Report of the National Transgender Discrimination Survey. Survey Findings, Washington: The National Gay and Lesbian Task Force and the National Center for Transgender Equality.
11. Gattupalli, A. (2022). Designing around debate: The gender-neutral bathroom. ArchDaily. <https://www.archdaily.com/984280/designing-around-debate-the-gender-neutral-bathroom>
12. Jasper, C., Le, T. T., & Bartram, J. (2012). Water and sanitation in schools: a systematic review of the health and educational outcomes. International journal of environmental research and public health, 9(8), 2772–2787. <https://doi.org/10.3390/ijerph9082772>
13. Jasper, C., Le, T. T., & Bartram, J. (2012). Water and sanitation in schools: a systematic review of the health and educational outcomes. International journal of environmental research and public health, 9(8), 2772–2787. <https://doi.org/10.3390/ijerph9082772>
14. Jones DL, Baluja MQ, Graham DW, Corbishley A, McDonald JE, Malham SK, Hillary LS, Connor TR, Gaze WH, Moura IB, Wilcox MH, Farkas K. Shedding of SARS-CoV-2 in feces and urine and its potential role in person-to-person transmission and the environment-based spread of COVID-19. Sci Total Environ. 2020 Dec 20;749:141364. doi: 10.1016/j.scitotenv.2020.141364. Epub 2020 Jul 31. PMID: 32836117; PMCID: PMC7836549.
15. Jones, D. L., Baluja, M. Q., Graham, D. W., Corbishley, A., McDonald, J. E., Malham, S. K., Hillary, L. S., Connor, T. R., Gaze, W. H., Moura, I. B., Wilcox, M. H., & Farkas, K. (2020). Shedding of SARS-CoV-2 in feces and urine and its potential role in person-to-person transmission and the environment-based spread of COVID-19. The Science of the total environment, 749, 141364. <https://doi.org/10.1016/j.scitotenv.2020.141364>

Restrooms

16. Jørgensen, C. S., Breinbjerg, A. S., Rittig, S., & Kamperis, K. (2021). Dissatisfaction with school toilets is associated with bladder and bowel dysfunction. *European journal of pediatrics*, 180(11), 3317–3324. <https://doi.org/10.1007/s00431-021-04111-1>
17. Marsten, W. "SCIENTIST AT WORK: CHARLES GERBA; On Germ Patrol, at the Kitchen Sink." FEB. 23, 1999. *NY Times*
18. Master, D., Hess Longe, S. H., & Dickson, H. (1997). Scheduled hand washing in an elementary school population. *Family medicine*, 29(5), 336–339.
19. McWilliams, J. Most Schools Don't Have Clear Restroom Policies, and That's A Public-Health Problem. (2018). *Pacific Standard Magazine*. <https://psmag.com/education/how-school-restrooms-affect-public-health>
20. Pew Research Center. (2020). Religion in the public schools. Pew Research Center's Religion & Public Life Project. <https://www.pewresearch.org/religion/2019/10/03/religion-in-the-public-schools-2019-update/>
21. Miller, Meg. 2016. "How Architects Are Fighting For Gender-Neutral Bathrooms." *Co.Design*. September 6.
22. Ortman, E. Survey of School Nurses Reveals Lack of Bathroom Policies and Bladder Health Education. (2018). *Society for Women's Health Research*. <https://www.eurekalert.org/news-releases/547855>
23. Perez, J. "Many Children Avoid School Toilets Because They Are Dirty" (2012). *Nursing Times*. <https://www.nursingtimes.net/roles/nurse-managers/many-children-avoid-school-toilets-because-they-are-dirty-05-10-2012/>
24. Upadhyay, V., Mathai, J., & Reed, P. W. (2008). Primary school children: access to toilets. *Acta paediatrica* (Oslo, Norway : 1992), 97(11), 1546–1549. <https://doi.org/10.1111/j.1651-2227.2008.00969.x>
25. U.S. Department of Education, Office of Special Education Programs, Individuals with Disabilities Education Act (IDEA) database. <https://sites.ed.gov/idea/>
26. World Health Organization. WHO Water, Sanitation, and Hygiene Strategy 2018-2025. WHO. <https://apps.who.int/iris/bitstream/handle/10665/274273/WHO-CED-PHE-WSH-18.03-eng.pdf>
27. Your child's rights: Autism and school. *Autism Speaks*. (n.d.). <https://www.autismspeaks.org/autism-school-your-childs-rights>



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