

# -Fund for Quality-

Expanding Early Childhood Education in Philadelphia

# CHILDCARE CENTER DESIGN FOR ALL

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This reference guide provides information on the planning and design of high-quality early childhood spaces that meet the needs and abilities of all children and adults who use the space. This guide is an extension of the Child Care Design Guide that was published in 2017, which conforms to the licensing regulations of the Pennsylvania Department of Human Services (DHS) and the City of Philadelphia.

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A classroom scene with children playing with blocks and a teacher at a desk.

# OVERVIEW

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Childcare facilities present with unique design characteristics that require special consideration. The *2017 Childcare Center Design Guide* was written to help current and future providers move from an idea to a completed facility that will allow them to design successful childcare centers (Reinvestment Fund & Philadelphia Health Management Corporation, 2017). This companion 2019 publication, *Design for All*, raises the bar. It has been assembled to promote the design of facilities that will meet the needs of children (ages 0-5) with disabilities<sup>1</sup>.

*Design for All* builds upon the 2017 publication concept that a childcare center should encourage ALL children's social, physical, intellectual, creative, and emotional development through play and learning. *Design for All* also calls attention to the unique needs of adults with disabilities who work in or visit a childcare center. *Design for All* should be viewed as a collection of **new items** that current or prospective providers can incorporate into the renovation or design of a childcare facility. Similar to the 2017 Design Guide, implementing the *Design for All* concepts will require concurrent consideration of regulatory requirements and recommended practices.

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<sup>1</sup>Convention on the Rights of Persons with Disabilities (CRPD) states that persons with disabilities include those who have physical, mental, intellectual or sensory impairments which in interaction with various barriers may hinder their full and effective participation in society on an equal basis with others (Convention on the Rights of Persons with Disabilities. New York, United Nations, 2006).

The International Classification of Functioning, Disability and Health: Children and Youth Version (ICF-CY) regards disability as neither purely biological nor social but instead the interaction between health conditions and environmental and personal factors (International classification of functioning, disability and health: children and youth version. Geneva, World Health Organization, 2007).

Children with disabilities include those with health conditions such as cerebral palsy, spina bifida, muscular dystrophy, traumatic spinal cord injury, Down syndrome, and children with hearing, visual, physical, communication and intellectual impairments. A number of children have a single impairment while others may experience multiple impairments. Very young children with disabilities who receive early intervention services may require less long-term interventions compared to children who do not receive services early in life.

The complex interaction between a health condition or impairment and environmental and personal factors means that each child's experience of disability is different (Early childhood development and disability: discussion paper. Geneva, World Health Organization, 2012).

To assist providers towards achieving the goals of *Design for All*, we added a new item to the **DESIGN PROCESS** items of the *2017 Child Care Design Guide* and listed below.

## **DESIGN PROCESS ITEMS:**

1. Promote easy accessibility to families for function, as well as provide spaces that will encourage family involvement.
2. Promote the design of adjacent childcare space that supports the children's classrooms.
3. Provide learning spaces and common areas that accommodate the required child group sizes and staff-to-child supervision ratios.
4. Provide examples of ancillary and classroom space planning with suggested equipment content and proximities to allow for supervision of children at all times during a day.
5. Incorporate, whenever possible, sustainable, energy-efficient, recycled and durable materials in the design to be responsible stewards of the environment.
6. Help providers think about and consider the following functions in a quality childcare center:
  - a. Activity areas that will allow children to choose from a variety of age-appropriate activities.
  - b. Location of activities within the classroom that incorporate wet and dry regions, quiet and messy spaces.
  - c. Boundaries that allow for movement of children in a safe mode and that do not restrict opportunities or freedom to explore but also allow for privacy.
  - d. Storage that is flexible to allow for changes in the room layout, needs of the children, and changes in the children's interests or programming changes.
  - e. Equipment and materials that are of high quality that both educate and stimulate children's play.
  - f. Safe drop-off/pick-up of children and adequate parking facilities for staff and families.

### **NEW DESIGN PROCESS ITEM**

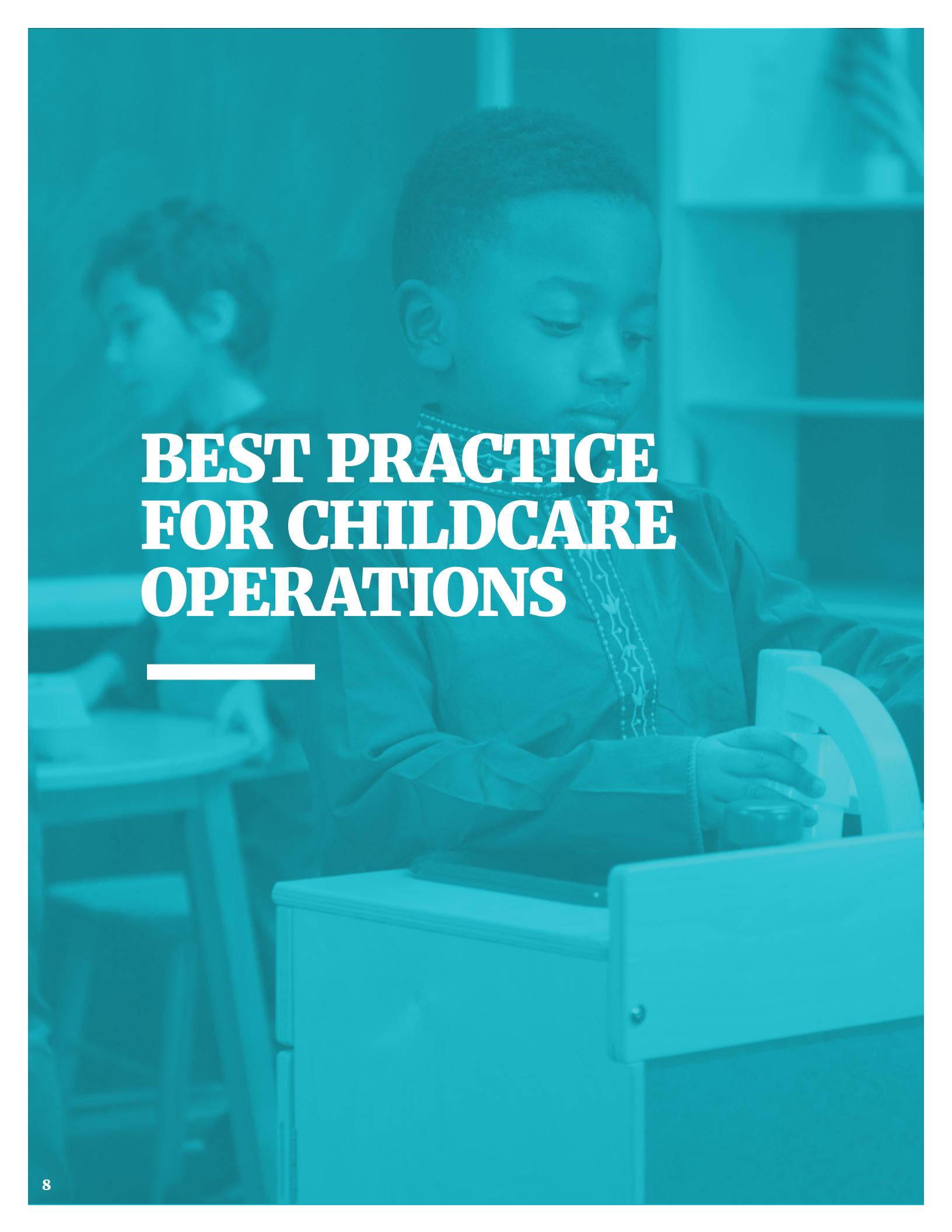
7. Use a design approach that results in a facility that is accessible to, and promotes the participation of and use by, ALL current and future children and adults to the greatest extent possible. In doing so, the facility will be prepared to withstand the dynamic nature of a childcare program's enrollment and children's ongoing development.

Humans universally try to attain a sense of belonging. Being included and including others, giving and receiving acceptance, are all fundamental human needs. We are “social learners” (Vygotsky, 1978). For many young children, social learning takes place in childcare facilities. At the core of Design for All is the concept of inclusion. Inclusion is not a place; inclusion is a concept guided by an evolving cycle of collect, act, reflect (Milbourne, Kennedy, Mester, 2018). Inclusion requires creativity, problem solving, and persistence. The reality is that “inclusion” is not ever fully reached, rather, inclusion is a process of aiming for and accepting, respecting, and honoring individual differences—those characteristics that make each person an individual with unique gifts and talents, strengths and weaknesses, likes and dislikes, abilities and capabilities (Campbell, Milbourne, Silverman, 2002). Generally speaking, inclusion is an essential aspect of developmentally appropriate practices (NAEYC, 2009).

There are many different perspectives about why children with disabilities should be included in settings with children who do not have disabilities or special needs. One perspective is **legal** – for children, the IDEA (Individuals with Disabilities Education Act), and for children and adults, the ADA (Americans with Disabilities Act), establish a philosophy that individuals with disabilities may not legally be excluded from settings participated in by individuals without disabilities, including community childcare and preschool programs.

A second perspective values diversity and is rooted in early childhood education **recommended practices**. Being able to accept and address diversity is an essential component of quality practices in any childcare program. Within this frame of reference, children with disabilities are viewed as a group whose unique considerations enable providers to enrich and improve childcare programs. The DEC Recommended Practices (2014) support children’s access and participation in inclusive settings and natural environments and address cultural, linguistic, and ability diversity.

A third perspective is that held by the **families and children** themselves – the consumers of community childcare programs. Families of children with disabilities most often want their children to be accepted and welcomed into the various opportunities offered by their communities. Families of children with disabilities make decisions on behalf of their children just as they would if their children did not have a disability. A family who needs out-of-home care for their child wants safe, convenient, reasonably priced, quality childcare irrespective of whether or not the child has a disability. The parent of a child with a disability may raise, request and/or require additional considerations in order to have both the child’s general developmental and special needs met while at childcare.



# **BEST PRACTICE FOR CHILDCARE OPERATIONS**

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Generally speaking, plans and design that make provisions for children with disabilities benefit all children and adults. Well-designed childcare facilities anticipate and minimize to the greatest extent possible various barriers in the facility such as physical access, way-finding, communication, and cognitive fatigue. A sample of the critical elements typically addressed include: Entrance doors, entrance vestibules, interior doors, corridors, toilet rooms, telephones and TeleTypewriters (TTYs), drinking fountains, visible and audible alarms, signage, wheelchair seating in assembly areas and dining facilities, service counters, and ramps or elevators where changes in level are necessary (US, GSA, 2003).

All young children require special design considerations in childcare facilities. A small portion of children live with some type of disability (e.g., physical, sensory, cognitive) that requires special consideration, but children as a whole have special needs determined by their levels of maturity and skill (Moore & Cosco, 2007). We recommend that the **new items** in the list of *Design for All Design Considerations* be used to design childcare facilities for the widest array of children who may possibly enroll in the program (Darragh, 2007). For existing facilities, the **new items** should be used when renovating the childcare facility, even if the program may not have children with identified disabilities enrolled at the time of the renovation.

## **PREDEVELOPMENT ACTIVITIES AND BEST PRACTICES**

The 2017 *Child Care Design Guide* includes 16 DOS OF PLANNING. This *Design for All* guide adds four new best practices, bringing the number of DOs of Planning to 20, listed below.

### **THE DOS OF PLANNING**

1. **DO** Discuss with local and regional agencies that connect families to childcare centers. Understand the need and type of programs that may be needed and successful in your footprint. Also, refer to the Childcare Map that is explained in Appendix 5 of the 2017 guide.
2. **DO** Evaluate the supply of childcare providers in the proposed area of operation by determining the overall childcare needs of the community.
3. **DO** Determine the affordability of your services to families in your current or potential geographic area of operation.
4. **DO** Determine the availability of governmental or other financial assistance for families with lower incomes in your area.

5. **DO** Investigate all zoning, building, fire codes, environmental assessments, and other governmental requirements needed prior to the start of the project. Zoning and building code requirements are significant issues. Prior to beginning a project, you should seek professional assistance from an architect, engineer, and/or attorney to guide you through the process. You should not enter into a lease or a sales agreement until all of the above issues are thoroughly investigated.
6. **DO** Develop the project's capital budget. A capital budget process is defined as determining the cost of land, buildings, and equipment needed to bring the project to fruition and within all licensing requirements. It is also suggested that you calculate non-capital start up costs such as the cost of licensing, permits, legal and architecture fees, travel, etc., in developing your center plans.
7. **DO** Estimate the amount of funding available for the project to fund the capital budget from internally generated funds, bank financing, and any grants or awards that may be applied for.
8. **DO** Develop a three- to five-year operating budget projection for the center incorporating the information derived from items 1 through 4 above (capacity, ages of children to serve, ratios, etc.). The operating budget will allow you to estimate the center's revenue from tuition and other sources and develop the corresponding costs associated with operating the center. A sample operating budget for a one-year period is attached in Appendix 1.
9. **DO** Evaluate and plan for the impact of the construction, including temporary space requirements and safety issues if the project is a renovation of an existing center.
10. **DO** Interview architects that have experience designing childcare centers if possible, and request an estimate of fees and timelines for the development of schematic drawings, project specifications, building cost estimates, construction documents, and regulatory review.
11. **DO** Ensure that the new center or classrooms will meet all licensing and regulatory requirements established by the Commonwealth of Pennsylvania and the City of Philadelphia (Please refer to the checklist in Appendix 2).
12. **DO** Attend the Pennsylvania Department of Human Services (DHS) orientation for new childcare centers within 12 months of your application for a license. This mandatory forum will give you the opportunity to ask questions as the interpretation of the regulations may vary from different regions.

13. **DO** Plan for the center to provide gross motor space that will meet the square footage requirements for licensing of such space. The outdoor and/or indoor space shall provide 65 square feet per preschool child, 50 square feet per toddler, and 40 square feet per infant. Note: Public outdoor spaces or playgrounds will not be considered gross motor space for the center's license to operate. (DHS 3270.62)
14. **DO** Develop your organization's vision and mission for the childcare center.
15. **DO** Solicit the input of your childcare staff, if the childcare center is currently in operation. What do they envision for the design that will promote the center's educational philosophy while upholding the vision and mission of the program?
16. **DO** Develop a staffing plan for each age group. Employed staff must meet DHS minimum requirements (DHS 3270.31 to 37) or exceed the recommended requirements established by Keystone STARS, ERS, and/or NAEYC, including staff qualifications.

## **NEW DOS OF PLANNING**

17. **DO** Create partnerships with the local early intervention and early childhood special education service agencies and request that they consult on design considerations specific to children with a wide array of abilities.
18. **DO** Engage families of children with disabilities in a dialogue about the design of the facility at the very beginning of and throughout the design process.
19. **DO** Identify and solicit input from adults with a wide range of disabilities on the design of the facility.
20. **DO** Approach a design school (e.g., architecture, interior design, industrial design) and/or allied health (e.g., occupational therapy) program and present the opportunity for students to prepare and present as part of their class assignment a childcare facility design plan specific to your program mission and vision.



# DESIGN CONSIDERATIONS

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# GENERAL DESIGN

In addition to the **10 GENERAL DESIGN – Best Practice Recommendations** listed in the *2017 Child Care Design Guide* childcare staff and those assisting with the design or modification of a childcare facility should address these new recommendations, which brings the number of recommendations to 27.

## GENERAL DESIGN Best Practice Recommendations

1. Provide easily navigated corridors for strollers and buggies by reducing or eliminating any barriers.
2. Provide indoor play space in addition to outdoor play space to allow for variation and gross motor activities during inclement weather.
3. Design a traffic pattern that allows for children to get to the gross motor play area safely. Consider a door leading directly from the classroom area into the gross motor play space.
4. Develop the classroom spaces to allow for eating and sleeping and taking into consideration the materials used in those areas along with the supervision during these activities.
5. Provide clearly visible documentation spaces that exhibit the children's artwork/ classroom projects (NAEYC 9.A.09).
6. Provide mailboxes dedicated to the needs of families/staff.
7. Provide a central, relaxed location that promotes investigation, conversation, and collaboration between families in a home-like setting (NAEYC 9.A.09 and 9.A.10).
8. Provide private spaces for conferencing of staff, children and/or families (NAEYC, 4.E.03).
9. Provide spaces for teacher preparation, including wall mounted telephone and computer data outlets at an adult height surface for use in documentation.
10. Allow and plan for adequate storage. Each classroom should provide locked storage for the teacher's coat and personal items (ITERS 34, 5.2), as well as a general storage area, inaccessible to children, for cots, bedding, and classroom materials.

## NEW GENERAL DESIGN Best Practice Recommendations

11. Provide a covered drop-off/pick-up area for at least one vehicle at the facility's main entrance to provide weather protection for individuals needing extended time loading or unloading from a vehicle (e.g., a parent transferring a child from a wheelchair into a car; adult using a wheeled personal oxygen tank cart).
12. Install automatic operating building access doors and interior doors.
13. Install audible and visual fire and smoke alarms; consider audible and visual door alerts for classroom doors to monitor children who may wander or attempt to escape.
14. Consider using signage that provides access for individuals with visual impairments and duplicate signage or wayfinding symbols at child eye level.
15. Provide external and internal storage areas for large equipment (e.g., wheel chair; large stroller).
16. Provide a transition or quiet room close to the facility entrance that is acoustically treated to reduce sound transmission in and out.
17. Provide a withdrawal or quiet room close to toilets and with direct access to a secure outdoor learning area.
18. Provide a bathroom that includes a shower (with shower head on a hose) and adequate space for staff assistance with toileting and showering.
19. Provide a bathroom with adequate space for a toilet chair, hydraulic diaper change table (not a fixed bench) and diaper/waste disposal container.
20. Provide paper towel dispensers (no electric hand dryers) for hand drying.
21. Provide lever faucet handles on all sinks.
22. Provide lever handles on all doors.
23. Design window sills sufficiently narrow to prevent children from climbing them.
24. Install power outlets with covers at a height of 60 inches from the floor or inside lockable cupboards.
25. Install lights throughout the facility with dimming capability and use dimmable bulbs to avoid ambient noise.

26. Install one or more captioning telephones, ideally ones that also have an amplification system for individuals hard of hearing or hearing impaired.
27. Install an accessible drinking fountain with consideration for height from the ground and ease of operation.

DESIGN CONSIDERATIONS	
Topic	Guide, Page Number
Age-Specific Classroom Spaces	2017, page 42   <a href="#">2019, page 16</a>
Access and Mobility	<a href="#">2019, page 16</a>
Ancillary Center Spaces	2017, page 46
Ceilings	2017, page 23
Cognitive Fatigue	<a href="#">2019, page 17</a>
Doors	2017, page 28
Electrical	2017, page 36
Fire Protection	2017, page 38
Flooring	2017, page 21
Furnishings & Equipment	2017, page 53   <a href="#">2019, page 18</a>
General Design	2017, page 19   <a href="#">2019, page 16</a>
General Safety	2017, page 41   <a href="#">2019, page 16</a>
Heating, Ventilation and Air Conditioning (HVAC) & Indoor Air Quality	2017, page 30   <a href="#">2019, page 19</a>
Kitchen/Food Preparation Areas	2017, page 50
Lighting	2017, page 36   <a href="#">2019, page 19</a>
Noise	<a href="#">2019, page 20</a>
Plumbing and Accessories	2017, page 32
Restrooms	2017, page 34
Security	2017, page 39
Telecommunications/Technology	2017, page 40
Toxins	<a href="#">2019, page 22</a>
Visual Simulation	<a href="#">2019, page 23</a>
Wall Finishes	2017, page 24
Windows	2017, page 26

## AGE-SPECIFIC SPACES (EXPANDED)

1. Preschool - A major challenge that must be addressed is changing diapers for children who are 3 years or older. The typical solution involves lying the child on the floor in the classroom. The preferred solution is providing adequate room in the bathroom for a cot or wall hung table (not an infant changing station). Generally, the space required for wheelchair maneuvering will suffice for diapering. However, if the diapering station is stationary (e.g., a cot) it cannot interfere with the required space needed for wheelchair maneuvering.

## ACCESS AND MOBILITY

### Requirements

1. With few exceptions, childcare facility design must comply with the Americans with Disabilities Act (ADA). The design must accommodate children and adults with disabilities.
2. The site, as well as the building access to and access within the child care spaces, shall comply with the current publication of the Uniform Federal Accessibility Standards (UFAS), the final rules of the Americans with Disabilities Act Accessibility Guidelines (ADAAG), and local accessibility codes, whichever is most stringent.
3. All entrance, exit and internal doors for adult entry shall be accessible for persons with disabilities.
4. Ramps and door widths shall cater to wheelchair users (this also facilitates access for strollers and wagons).
5. At least one toilet shall be accessible, and available for use as staff/adult toilet.

### Best practices

1. Even facilities that are excluded from the law, shall comply with ADA guidelines.
2. Furniture (including reception counter) shall accommodate wheelchair users and adults of short stature.
3. One cubicle shall be provided in the children's toilet that is large enough for assisted access with space for helpers on both sides of the toilet.
4. Universal access shall be provided to door bells, security control panels, switches and controls.
5. Considerations will be made for the needs of individuals with impaired vision, hearing and severe sensory issues, sometimes referred to as "low incidence disabilities".

## Lessons learned

1. Using a checklist to guide the design process is helpful. One example is the “Place Assessment Rating Scale”, a self-administered checklist used to identify considerations for changing or designing a child care facility for both children and adults with disabilities (Bowden & Gay, 1999).
2. One way to learn about making considerations for a wide range of, including low incidence, disabilities is to attend a disability resource expo or meeting. Another option is contacting disability support organizations such as the Institute on Disabilities at Temple University or the Pennsylvania Early Intervention Technical Assistance program.

## COGNITIVE FATIGUE

### Best practices

1. Specifically plan space for activities that do not require focused attention, such as watching birds at a feeder or fish in a tank.
2. Plan for alternate lighting options in addition to daylight in order to minimize constant exposure to fluorescent lighting.
3. Include stimulus shelters for children and adults in the layout of the facility, inside and outside of the classroom.
4. Follow considerations listed under “NOISE” (below).

## Lessons learned

1. Classroom staff rarely have time to “sit back” and observe classroom activity for extended stretches of time. Having a third person observe and make suggestions for addressing cognitive fatigue may be beneficial. Classroom rating scales may include relevant items including “Social space”, “Boundaries”, “Privacy”, “Personalization”, “Complexity”, “Adjacency”—all of which contribute to cognitive fatigue.
2. Cognitive fatigue is not only an issue related to children’s performance and behavior but also affects adults. For adults, cognitive fatigue is most associated with perceived control over classroom ambient conditions and the noise level of the classroom (Milbourne, 2006; Milbourne, 2007).

# FURNITURE AND EQUIPMENT

Several regulatory requirements are listed in the 2017 guide and specify that the quality and selection of the equipment for each classroom age group should provide for all areas of interest as prescribed by the Early Childhood Environmental Rating System (ECERS), Infant/Toddler Environment Rating Scale (ITERS) and National Association for the Education of Young Children (NAEYC) to ensure the goal of a high-quality program for children. The Children's Physical Environment Rating Scale (CPERS) offers a detailed look at the physical environment. The CPERS offers a scientifically reliable and valid assessment instrument that can be easily used by early childhood educators, architects, other designers, policy makers, and regulators to assess the quality of the physical environment of childcare, preschool, kindergarten and other early childhood education facilities (Moore, 2009).

## Best practices

1. Enable children with disabilities to use specialized furniture such as a wheelchair and/or customized equipment, including a communication system or seating supports. It is best practice to understand the circumstances surrounding proper use of the furniture and equipment. Understanding when and how to use the items should be discussed with a child's family and documented. One tool useful is called PEAT's Suite: Supporting a child's physical environment and assistive tool journey, birth to five (Milbourne, Kennedy & Mester, 2018).

## Lessons learned

1. Furniture and equipment for young children with disabilities must not always be purchased from a disability-specific source. Think outside of the box! For example, a young child with cerebral palsy might arrive at your facility using a wheelchair or specialty stroller. To transport the child from the classroom to the playground or gymnasium, you could replace the wheelchair with a wagon<sup>2</sup>. If the child required assistance to sit up in the wagon, you could position the child within a rectangular laundry basket in the wagon and place two paper towel rolls on either side of the child. Using the wagon in this way would not only provide the support needed to transport the child; it would also provide opportunity for a friend of the child to ride along, and tires that might fare better on uneven outdoor terrain.

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2. Be sure to seek input from a child's family and if available, a child's therapist. Family members and therapist can share and try ideas with you.

# INDOOR AIR QUALITY (HVAC EXPANDED)

## Requirements

1. Each of the following indoor air considerations require careful attention. Exposure to particular levels of any one of these substances may cause a disability for children and adults. Work with your local code enforcement office to measure the levels of each and put into action remedies to resolve and/or prevent potential future issues.
  - a. Carbon monoxide
  - b. Mold and mildew
  - c. Volatile Organic Compounds
  - d. Sewer gas
  - e. Radon

## Lessons learned

1. Understanding the potential for exposure to indoor air pollutants can be a daunting task because levels of toxicity may be reached in a one-time exposure to a substance or cumulative exposure over a period of time. The most dependable resources about indoor air quality and preventing toxic exposure come from sources like the National Center for Biotechnology Information where they have helpful documents and on-line tutorials or from the federal Environmental Protection Agency where there are many resources for families.

# LIGHTING

## Requirements

1. Check with your local licensing representative for any light level requirements. The widely used overhead fluorescent lamps are typically not the only means of meeting any such requirements.

## Best practices

2. Daylight has a greater probability of maximizing visual performance than most forms of electric light because it tends to be delivered in large amounts with a spectrum that ensures excellent color rendering.

3. At least some of the windows should be at child height.
4. It should be possible to control lighting, including natural light, to fit the needs of the activities. The effectiveness of daylight for visual performance will depend on how it is delivered. The same applies to electric lighting.
5. Reducing glare in the room will benefit all children but especially those who may have vision challenges.
6. Uniform lighting may sometimes be appropriate, but spot or task lighting may help children with sight impairments to participate in an activity.

## Lessons learned

1. Consider contacting and/or partnering with the local school for the blind to learn more strategies to support a variety of impairments that individuals with disabilities may experience.

# NOISE (SOMETIMES CALLED “ACOUSTICS”)

## Requirements

1. Once state and local building code agencies adopt the ANSI A117.1 code, all new school construction projects in those jurisdictions will have to comply with this standard. Childcare facilities, although not specifically called out in the code, can benefit from adhering to it.
2. ANSI Standard S12.60 for Classroom Acoustics (Part 1: Permanent Schools) addresses the issues of both reverberation time and background noise and their effects on speech intelligibility by placing maximum permissible levels on each. The maximum reverberation time in an unoccupied, furnished classroom with a volume under 10,000 cubic feet is 0.6 seconds, and 0.7 seconds for a classroom between 10,000 and 20,000 cubic feet. The maximum level of background noise allowed in the same classrooms is 35 decibels (dBA). There are also specific criteria for portable classrooms.

## Best practices

1. Limit ceiling heights to under 14 feet. While higher ceilings create interesting looking spaces, they are problematic in terms of noise levels.

2. Reduce background noise from both inside and outside.
3. Fit all movable furniture with rubber feet (or tennis balls)
4. Fit carpeting with waffle underlay where appropriate
5. Install ceiling tiles with a Noise Reduction Coefficient (NRC) that is not less than 0.70 over 40% of the ceiling
6. Install carpet or cork on the walls up to 35 inches from the floor (note, if cork is installed and used to display papers the noise reduction value decreases)
7. Reduce sounds traveling between spaces.
8. Fill gaps between spaces with flexible acoustic sealant (e.g., gaps where the wall meets the ceiling, the wall meets the floor; behind outlets, switches and ceiling lamps; around plumbing pipes)
9. Install resilient rubber pads and suspended ceilings between floors of the facility.
10. Install a voice amplification system so the teacher can be heard from anywhere in the room. Learn more about these and other systems from the local assistive technology program such as the Temple University's Pennsylvania's Initiative on Assistive Technology (PIAT).
11. Ensure that sound levels do not exceed 80 decibels (dB) at any time and never exceed a level of 70 dB over the teaching voice. It is suggested that the background noise level in rooms for children with hearing impairments should be 30 dB or below.
12. Create an acoustically isolated space in the room where children can go if they find the noise level too high.
13. Check local codes and reduce the noise level of alarms to the lowest dB level acceptable.

## **Lessons learned**

1. A simple sound/noise meter can be purchased for a small amount and is useful for measuring the sound/noise levels throughout the facility.
2. Although not widely studied, one program showed how reducing noise levels of a classroom reduced the amount of classroom management required of the staff and increased the amount of time for teacher-child interaction (Milbourne, 2007).
3. The application of tennis balls onto the feet of chairs greatly eliminates the scratching noise that many adults find irritating and reduces unnecessary noise!

# TOXINS

Overall, reduce toxic environmental influences that put ALL children at risk for disability/delay by eliminating toxins from the childcare facility.

## Requirements

1. Use only nontoxic indoor and outdoor plants.

## Best practices

1. Conduct a lead dust/co-op soil test on outdoor play areas.
2. Consult with your local code enforcement office to reduce the use of flame retardant materials (e.g., sleeping mats).
3. Keep humidity at appropriate level of 30%-50%.
4. Install door sweeps and avoid propping doors open.

## Lessons learned

1. Check in with the local state extension office's Better Kid Care program administered by Penn State University. They may provide training and technical assistance on how to keep children safe from toxins.
2. The U.S. Environmental Protection Agency sponsored Pediatric Environmental Health Specialty Units are a national and regional resource for training and technical assistance.
3. The use of herbs is a multi-beneficial means of bringing non-toxic plants into the classroom or into a facility garden. Most are edible, are pleasant on the human nose and can be used for cooking or other classroom activities. Consult families and eliminate herbs that may cause allergies for particular children.

# VISUAL STIMULATION

## Best practices

1. Understand that exposure to warm colors (e.g., red, orange, and yellow) has been shown to excite the body, while exposure to cooler colors (e.g., green, blue, violet) has been shown to calm.
2. Consider that color has been shown to affect the autonomic nervous system, respiration, blood pressure, muscle tension, eye blinks, cortical activity, enzymatic and hormonal secretions, and many other body functions.
3. Visualize the facility/classroom in action; imagine the color of children's clothing, toys, materials, artwork display, family photos, etc., and provide a neutral backdrop so that the colors of these items enhance stimulation rather than overstimulate.
4. Consider painting window and door frames in similar color to walls in order to minimize visual distraction or targets towards which a child may be drawn to escape.

## Lessons learned

1. Remove most of the color and let the color emerge from the children through artwork, clothes, staff clothes, equipment and materials.
2. Encourage children's eagerness to explore, inquire, and make meaning of what is around them (often misinterpreted as "negative behavior").
  - a. One strategy is to introduce visual stimulation that is changeable, for example, using objects and natural light to elicit rainbows and shadows. Another strategy is to introduce natural textures and nature, such as herbs which also add color, or a fish aquarium which adds patterns and movement.
3. Subtle hues and soothing neutral colors, e.g., soft yellow, sandstone, pale gold, etc., can enhance concentration.
4. Vivid colors encourage movement and should be preserved for spaces where children have the freedom to move about.
5. Learning carpets with games and symbols designed specifically for children are often too visually busy to be tolerable all day.
6. Too many visual targets in one space create sensory overload and results in fatigue or dulled senses.



# APPENDIX

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# PRACTICAL RESOURCES—AUTHOR’S PICKS

The following publicly available resources were selected by the author as useful and practical resources related to inclusive child care facilities. The author’s picks are categorized by Laws and Regulation (links to landmark laws such the Americans with Disabilities Act), Case Examples (extended examples of, and successful applications of, inclusive facility design in child care settings), and Rating Scales and Exercises (early childhood rating scales that contain or have focus areas related to the physical environment in a child care setting).

## Laws and regulations

*United States Access Board: Advancing Full Access and Inclusion for All* website

<https://www.access-board.gov/the-board/laws>. This web site describes the Americans with Disabilities Act, the Rehabilitation Act, the Architectural Barriers Act and the Telecommunications Act and links to more details for each.

*The ABC’s of the ADA* by Wood and Youcha (2009) discusses the concepts of “reasonable modifications”, “full participation”, “physical access”, and “removing physical barriers” all concepts related to designing childcare facilities for all.

*The U.S. Department of Justice, Civil Rights Division, Disability Rights Section* website

<https://www.ada.gov/chcaflyr.htm> provides easy to understand information about child care centers and the Americans with Disabilities Act and offers additional information in supplemental material.

## Case examples

*Environment: Promoting Meaningful Access, Participation and Inclusion* published by the Division for Early Childhood in 2016, offers professionals and families multiple ways to implement the environment practices across the settings in which children grow and learn. In particular, a case example presented on pages 74–76, “Designing the Environment” and Mrs. Porterfield. Chapter 6 provides guidance on “Creating Inclusive Playground Environments” using the principles of universal design.

Jim Greenman’s 1988 book *Caring Spaces, Learning Places: Children’s Environments that Work* has a section on “Serving Children with Special Needs”. See page 150 for considerations for planning the physical environment for three children, Kelly, Leland, and Mario each with different types of disabilities. In its 2005 revised book, pages 235 – 236 provide expanded discussion that includes Mario and introduces Steven and Anjali.

Anita Olds provides a comprehensive and step-by-step explanations of interior and exterior layout and design principles taken from real world experiences. In her 2001 book *Child Care Design Guide*, Olds discussion concepts related to “differently-abled children”. A review of the book index generates 29 reference to several pages worthy of review: 98-100, 207-208, 219, 278, 282-284, 290-295, 317-218, 322, 408, 416, 421-425.

## Rating scales and exercises

Gary Moore's 2009 *Children's physical environment rating scale* is the only published early childhood rating scale that focuses specifically on the physical, designed environment. This scale focuses specifically on the quality of the physical attributes of child care for which there is evidence to show how the physical environment (the facility) relates to child development and quality of care. Although there are no specific items related to children with disabilities, the scale addresses many of the concepts discussed in the *Design for ALL* guide.

The *Early Childhood Environment Rating Scale-3* includes items specific to physical environment attributes related to children with disabilities. All of the items are found in the “Space and Furnishings” section and include Indoor space items 3.2, 5.3, 7.1, 7.2; Furnishings for care, play and learning 3.3; Room arrangement for play and learning item 5.4; Space for gross motor play 5.4; Gross motor equipment 5.4.

The *Infant Toddler Environment Rating Scale-R* includes items important for rating the physical environment for infants and toddlers with disabilities. Eight items in two of the subscales, Space and Furnishings and Program Structure include Indoor space items 3.5, 5.3, 7.1, 7.2; Furniture for routine care and play item 5.3; Room arrangement item 3.3; and Provisions for children with disabilities, 3.2 and 5.2.

Lorraine Maxwell's *Designing Child Care Settings: A Child-Centered Approach* includes “Exercise 3” to help groups think about the abilities of children of different ages including children with disabilities.

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These standards were developed utilizing information obtained from the following sources. General theories and concepts gathered from these sources have not been specifically footnoted.

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## **DISCLAIMER**

The suggestions and recommendations contained in this reference guide are provided to inform the design of a high-quality childcare center. Information related to licensing by agencies of the Commonwealth of Pennsylvania and the City of Philadelphia are developed from current documents provided by those agencies and their regulations for licensing. Changes may be put forth by these agencies and a provider should refer to the Pennsylvania Department of Human Services and the City of Philadelphia and the related agencies responsible for childcare licensing prior to starting a project. The provider should consult with professionals, including attorneys, architects, engineers, and zoning and health officials to review up-to-date promulgations that may be put forth by any and all licensing agencies. This document is not intended to be inclusive of all possible design methods and materials and should be used as a guide to developing a high-quality childcare facility.

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