

Designing
with
Sensory Needs
in Mind





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Your Presenter

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Learning Objectives

1. Explain the current concept of a multi-dimensional spectrum for typical children and those with a variety of childhood medical conditions that impact learning.
2. Incorporate design strategies that help these visitors be able to **GET** to the playground.
3. Incorporate design strategies that help these visitors be able to **PLAY** at the playground.
4. Incorporate design strategies that help these visitors be able to **STAY** at the playground.
(hollandbloorview.ca/playgroundsplaybook)

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Question

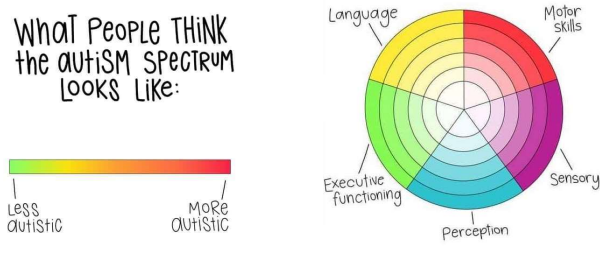
If you think of children today
What are their most common medical diagnoses?



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Reframing "The Spectrum"

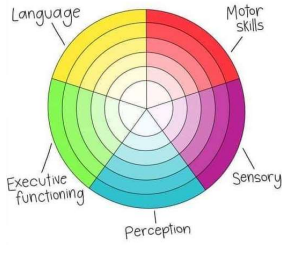
WHAT PEOPLE THINK
the autism SPECTRUM
LOOKS LIKE:



<https://www.rebeccaburgess.co.uk/contact>

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Reframing "The Spectrum"



Every person develops all of these brain functions and fluctuate between inner and outer rings throughout the day.


Each person has stronger and weaker areas within the different areas based on who they are.

<https://www.rebeccaburgess.co.uk/contact>

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Defining Language


Language
the principal method of human communication, consisting of words used in a structured and conventional way and conveyed by speech, writing, or gesture.



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Defining Motor Skills

Motor Skills
or motor skill development refers to the acquisition and refinement of basic movement patterns to allow an individual to move around and manipulate his or her environment.




This happens naturally as part of developmental activities especially through...

PLAY!

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Defining Sensory

Sensory systems make up the parts of our nervous system that bring in and process sensory information from the world around us.




While you're probably familiar with the five senses of sight, touch, hearing, taste, and smell, did you know that we actually have a total of **seven sensory systems**?

These additional senses include **vestibular**, and **proprioception**. How these seven senses are processed by the brain can impact our behavior.

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Defining Perception

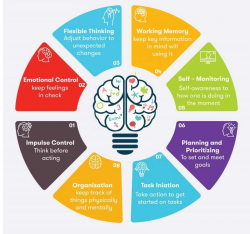
Perception
is a process (conscious and unconscious) in which sensory information is selected, received, organized and interpreted from the outside environment to make it meaningful. It is how our brain takes sensory information and combines it with existing information in our brain to help us understand the world and respond to it.



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Defining Executive Function

EXECUTIVE FUNCTIONING



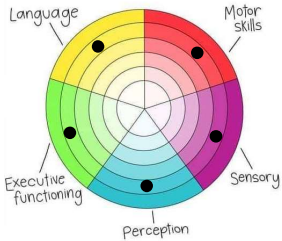
Executive Function
is the mental processes that enable us to plan, focus attention, remember, and juggle multiple tasks all day long!

www.advantagelarningcenter.com

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Reframing Typical 8 Year Old

Typical 8 year old
has developed language skills to communicate needs, motor skills to navigate their environment, sensory processing and perception to understand their world and are working hard to develop executive function skills.



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Reframing Autism

Autism is a developmental neurological disorder of variable severity that is characterized by difficulty in **social interaction** and **communication** and by restricted or **repetitive patterns of thought and behavior**. Often referred to as Autism Spectrum Disorder (ASD)

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Reframing Sensory Processing Disorder

Sensory Processing Disorder (SPD) is a developmental neurological disorder that interferes with the body's ability to **receive messages from the senses**, and **convert those messages into appropriate motor and behavioral responses**.

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Reframing ADHD

Attention deficit hyperactivity disorder (ADHD) is a brain disorder that affects how you **pay attention**, **sit still**, and **control your behavior**. It happens in children and teens and can continue into adulthood.

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Reframing Dyslexia

Dyslexia is a learning disorder that **affects your ability to read, spell, write, and speak**. Kids who have it are often smart and hardworking, but they have trouble connecting the letters they see to the sounds those letters make.

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Why consider these children?

They make up a much larger group that you would think!
7.3 million children receive services under the IDEA Act

Diagnosis Type	Percent
Specific Learning Diagnosis	33
Speech/Language Diagnosis	19
Other Health Diagnosis	15
Autism Diagnosis	11
Developmental Delay Diagnosis	7
Intellectual Diagnosis	4
Emotional Diagnosis	3
Multiple Conditions Diagnosis	2
Deaf/Blind or Hearing Diagnosis	1
Orthopedic Diagnosis	1

Over **50%** of these children have one of these four diagnoses!
That's **3.65 million** children!

May 2021 US Department of Education 2019-20 School Year

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What happens in the Real World?

The reality is that the real world can quickly become overwhelming for an individual with these different medical diagnoses

BUT

We can change this experience for them by designing spaces that provide them with supports for their areas of difficulty and allow their strengths to shine!

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Designing for Support

Getting There	Design concepts to help the family get there	
Playing There	Design concepts to help the family play there	
Staying There	Design concepts to help the family stay there	

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Getting There

Design concepts to help the family get there

Website Parking Public Transportation Access Entry Orienting Signage Wayfinding

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Getting There: Website

Provide families with basic information on:

- How to get there
- Parking options
- Hours and busy times
- How to "Play There" features
- How to "Stay There" features
- Include a map of the park and playground
- Be sure to highlight sensory friendly programs and events

The Walnut Grove, Canfield, OH

Goal is to help families make coming to the playground part of the family routine!

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Getting There: Website



Designing for users on the autistic spectrum

Do...	Don't...
Use simple icons	Use bright and flashing colors
Write in plain language	Use too many words
Use simple navigation	Use complex navigation
Use simple language	Use complex language
Use simple navigation	Use complex navigation
Use simple navigation	Use complex navigation

OpenDyslexic: A typeface for Dyslexia

OpenDyslexic is a typeface designed against some common symptoms of dyslexia. If you like the way you are able to read this page, and prefer this typeface to the rest, OpenDyslexic is free to use. The source code of OpenDyslexic is available on GitHub, giving you freedom to use it for personal use, business use, education, commerce, books, ebook readers, applications, websites, and any other project or purpose you need.

[Download Now](#)
[Get Resources](#)

A word about **identity-first** (autistic person) and **person-first** (person with autism) language: This is a very personal choice, especially for individuals in the autism community. Consider using a combination of **person-first** and **identity-first** language on your website.

Goal is to help families make coming to the playground part of the family routine!

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Getting There: Parking



Examine parking and public transportation Access:

- Close public transport access
- Clearly defined crosswalks to cross roadways and enter playground
- Close parking
- Clearly defined pathways from parking areas to playground
- Ensure plantings and trees do not block line of sight



Coes Park, Worcester, MA

Goal is to help families get safely from the parking lot/public transportation to the playground!

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Getting There: Entry





Watkins Regional Park, Kettering, MD



Preston's Hope, Beachwood, OH

Clearly defined entry points

Goal is to help families navigate to the playground safely!

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Getting There: Orienting




PACO Sanchez Park, Denver, CO

Orienting pathways Elements that provide orientation

Goal is to help families navigate around and in the playground safely!

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Getting There: Signage/Wayfinding




PACO Sanchez Park, Denver, CO

Visual aerial maps Wayfinding

Goal is to help families navigate around and in the playground safely!

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Getting There: Signage/Wayfinding




Luke's Place Playground, New South Wales, AU Walkins Regional Park, Kettering, MD

Visual tactile maps Playful directions

Goal is to help families navigate around and in the playground safely!

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Playing There



Design concepts to help the family play there

Self Regulation
"is the ability to manage your own energy states, emotions, behaviours and attention, in ways that are socially acceptable and help achieve positive goals, such as maintaining good relationships, learning and maintaining well being"
- Stuart Shanker



Sensory Diversity Surfacing Tactile Proprioceptive Vestibular Visual Auditory Smell Taste

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Playing There: Sensory Diversity



Sensory Diversity Designing : Designing to engage specific sensory systems during play to allow children to maintain self-regulation resulting in positive play experiences!

This is
NOT
about having
Sensory RICH Play Opportunities
but about having a
Balance of Diverse Sensory Play Opportunities
that allow children to pick their "just right" play experience for where their body is in any given moment.

Goal is to help each child find the sensory supports to self-regulate so they can thrive!

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Playing There: Sensory Diversity




Assiniboine Park Nature Playground, Winnipeg, MB

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Playing There: Sensory Diversity



Self-Regulation
 "is the ability to manage your own energy states, emotions, behaviours and attention, in ways that are socially acceptable and help achieve positive goals, such as maintaining good relationships, learning and maintaining well-being"
 ~ Stuart Shanker

Self-Regulation:
Using play elements by myself to help me get back to play

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Playing There: Sensory Diversity




Co-Regulation
 "is defined as warm and responsive interactions that provide support, coaching, and modeling children need to 'understand, express, and modulate their thoughts, feelings and behaviors'."
 ~ Murray et al. 2015, 14



Co-Regulation:
When a friend or caregiver joins me to help me get back to play

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Playing There: Surfacing Texture

Simple seamless surfacing Avoid loose fill or bonded rubber mulch

Goal is to have play surfacing that allows access to all.

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Playing There: Surfacing Colour




Carrollwood Village Park, Tampa, FL






Palisades Recreation Center, Washington, DC

Color choices that make sense as part of the story of the park/playground

Goal is to have play surfacing that allows access to all.

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Playing There: Tactile

Touch is a whole body experience

Goal is to have play elements that allow all to explore tactile play at their own rate.

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Playing There: Tactile





Finger Play

Goal is to have play elements that allow all to explore tactile play at their own rate.

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Playing There: Tactile





Textures



Temperature




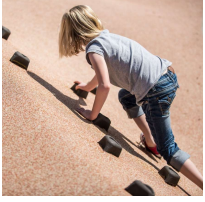
Water Play

Goal is to have play elements that allow all to explore tactile play at their own rate.


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Playing There: Proprioceptive






Ground Play



Solid



Movement

Goal is to have play elements that allow all to explore proprioceptive play at their own rate.

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Playing There: Proprioceptive





Multi-directional Climbing



Lateral Movement

Goal is to have play elements that allow all to explore proprioceptive play at their own rate.

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Playing There: Proprioceptive




Multi-height Overhead Reciprocal

Goal is to have play elements that allow all to explore proprioceptive play at their own rate.

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Playing There: Vestibular



Joy of Swinging!

Goal is to have play elements that allow all to explore vestibular play at their own rate.

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Playing There: Vestibular




Co-regulation Swinging Self-regulation Swinging

Goal is to have play elements that allow all to explore vestibular play at their own rate.

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Playing There: Vestibular




Self-Rotation Co-Rotation Social Play Rotation

Goal is to have play elements that allow all to explore vestibular play at their own rate.

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Playing There: Vestibular

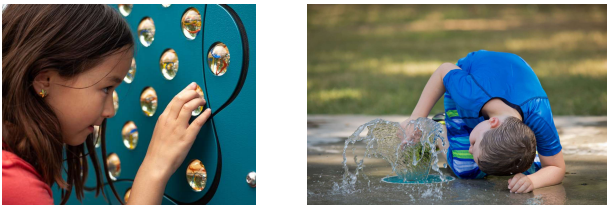


Co-Regulation Spinning Self-Regulation Spinning

Goal is to have play elements that allow all to explore vestibular play at their own rate.

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Playing There: Visual




Visual Play for Exploration

Goal is to have play elements that allow all to explore visual play at their own rate.

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Playing There: Visual



Visual Play for Self-Regulation

Goal is to have play elements that allow all to explore visual play at their own rate.

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Playing There: Visual




Visual Play for Self-Regulation

Goal is to have play elements that allow all to explore visual play at their own rate.

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Playing There: Auditory



Co-Regulation Auditory Play Self-Regulation Auditory Play

Goal is to have play elements that allow all to explore auditory play at their own rate.

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Playing There: Taste & Smell




Opportunities for children to plant, care for plants to engage smell and taste.
Goal is to have play elements that allow all to explore taste and smell at their own rate.

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Staying There

Design concepts to help the family stay there




Containment Amenities Shade Communication Quiet Spaces Case Study

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Staying There: Containment

Nearly half of those with autism **wander or bolt** from safety.



Drowning remains a leading cause of death for children with autism and **accounts for approximately 90%** of deaths associated with wandering or bolting by those age 14 and younger.

Lakefront Park, Fox Lake, IL

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Staying There: Amenities-Restroom





Think access for ALL Universal Changing Table

Goal is to have amenities that can be safely used by all visitors.

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Staying There: Natural Shade



Kate's Place, Elmira, ON

Goal is to have natural places in and around the playground with cooling benefits for all.

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Staying There: Man-made Shade




Monterey Park, Mesa, AZ

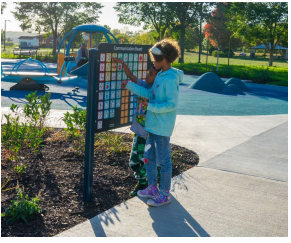
Goal is to have additional places in and around the playground with cooling benefits for all.

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Staying There: Communication



An estimated **40%** of people with **autism** are **nonverbal**.



Goal is to have ways for all visitors to be able to communicate with each other during play.

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Staying There: Quiet Spaces




Natural quiet spaces for self-regulation and connecting with nature



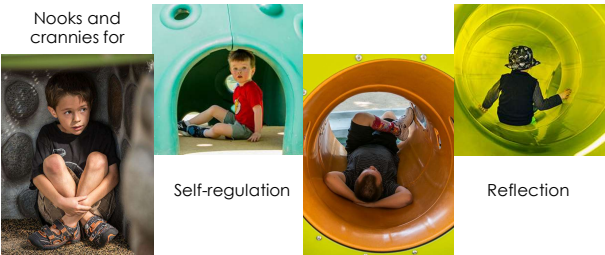
Goal is to have natural places in and around the playground with self-regulating benefits for all.

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Staying There: Quiet Spaces



Nooks and crannies for



Self-regulation Reflection

Goal is to have places in and around the playground with self-regulating benefits for all.

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Case Study **HOWARD SCHOOL**
OF ARTS & SCIENCE

The Project:

- Overhaul the courtyard and all pathways to be ADA compliant
- Cover all courtyard pathways to provide weather protection for children going from class to class
- Completely overhaul play areas to provide better play activities for all children.
- Create multiple play areas so several classes can be out playing at once without being overcrowded.
- Maximum budget for play environments \$200,000



Ability Demographics:

- Charter School campus with 1,200 students in grades K-12
- 60% African American, 35% Hispanic, 5% Other
- Many children with ADHD, Sensory Processing Disorders, some with Autism, very few using wheelchairs but want all elements to be as accessible as possible.



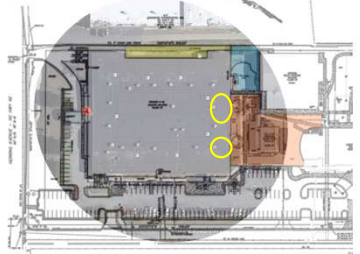
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Case Study **HOWARD SCHOOL**
OF ARTS & SCIENCE

Yellow Area:
Swing/Movement Area
Max 5,500 sq ft

Blue Area:
5-12 Climber
Max 6,000 sq ft

Circles in Orange Area:
Circle 1
Max 1,200 sq ft
Circle 2
Max 650 sq ft



The Play Area Possibilities


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Case Study **HOWARD SCHOOL**
OF ARTS & SCIENCE

Play Area Possibilities:

- Currently children just run up and down this area without any purpose activity.
- Question: Could this become a swing and motion area?

Yellow Area:
Swing/Movement Area
Max 5,500 sq ft




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Case Study **HOWARD SCHOOL**
OF ARTS & SCIENCE

Play Area Possibilities:

- Currently, the structure is failing and lacks challenge for elementary school age children and there are not enough swings.
- Question: Could this area just have a larger, more challenging structure for elementary school age children?

Blue Area:
5-12 Climber
Max 6,000 sq ft




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Case Study **HOWARD SCHOOL**
OF ARTS & SCIENCE

Play Area Possibilities:

- Currently children play 4 square in these area or teachers use the circles for class activities.
- Question: Could these be used for different types of group play that will keep children engaged for longer periods of time while still maintaining some sort of seating walls for class activities?



Circles in Orange Area:
Circle 1
Max 1,200 sq ft



Circles in Orange Area:
Circle 2
Max 650 sq ft

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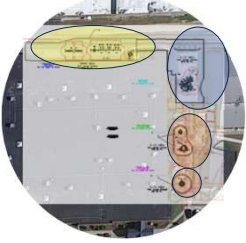
Case Study **HOWARD SCHOOL**
OF ARTS & SCIENCE

Swing/Movement Area:
Double Oodle Swing, Friendship Swing, 6 Belt swings, & OmniSpin Spinner
Max 5,400 sq ft

5-12 Climber:
TreeTops with Alpine Slide
Max 5,619 sq ft

Circle 1:
Cozy Dome & Quantis A.2
Max 1,012 sq ft

Circle 2:
Global Motion
Max 623 sq ft



Proposed Play Areas

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Case Study **HOWARD SCHOOL**
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Play Area Cost:

- OmniSpin Spinner: \$10,000
- Double Cradle Swings: \$15,000
- Swing Collection: \$15,000
 - *6 belt swings
 - *1 friendship swing
 - *4 bay arch swing system

Total Cost \$40,000



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Case Study **HOWARD SCHOOL**
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Case Study **HOWARD SCHOOL**
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Play Area Cost:

- TreeTops Smart Play Structure \$55,000

Total Cost \$55,000



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Case Study **HOWARD SCHOOL**
OF ARTS & SCIENCE

End Result:

- The design was able to maximize the space available to create nodes of play allowing multiple classes of children to play at one time without overcrowding.
- The playground was installed on budget.
- The school children love their new play areas!



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Conclusion: Designing for Support

Getting There	Design concepts to help the family get there	
Playing There	Design concepts to help the family play there	
Staying There	Design concepts to help the family stay there	

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Resource

Creating Inclusive Playgrounds:
A Playbook of Considerations and Strategies



July 2022

Tim Bass
Kelly-Anne Michopoulos
Ingrid M. Kanics
Jocelyn Lee

Best Practices in Inclusive Playground Design from around the world.

Free download at:
<https://www.inclusiveplaybydesign.com/design>

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