

Autism

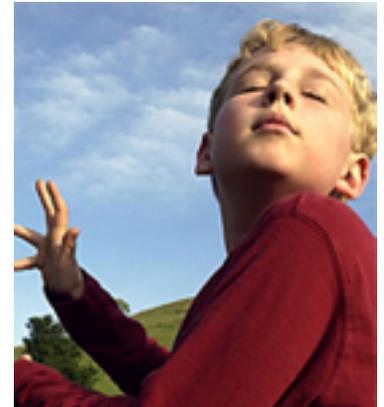


Identifying *specific challenges and their implications on design*

DESI 122-Human Factors
Midterm Review
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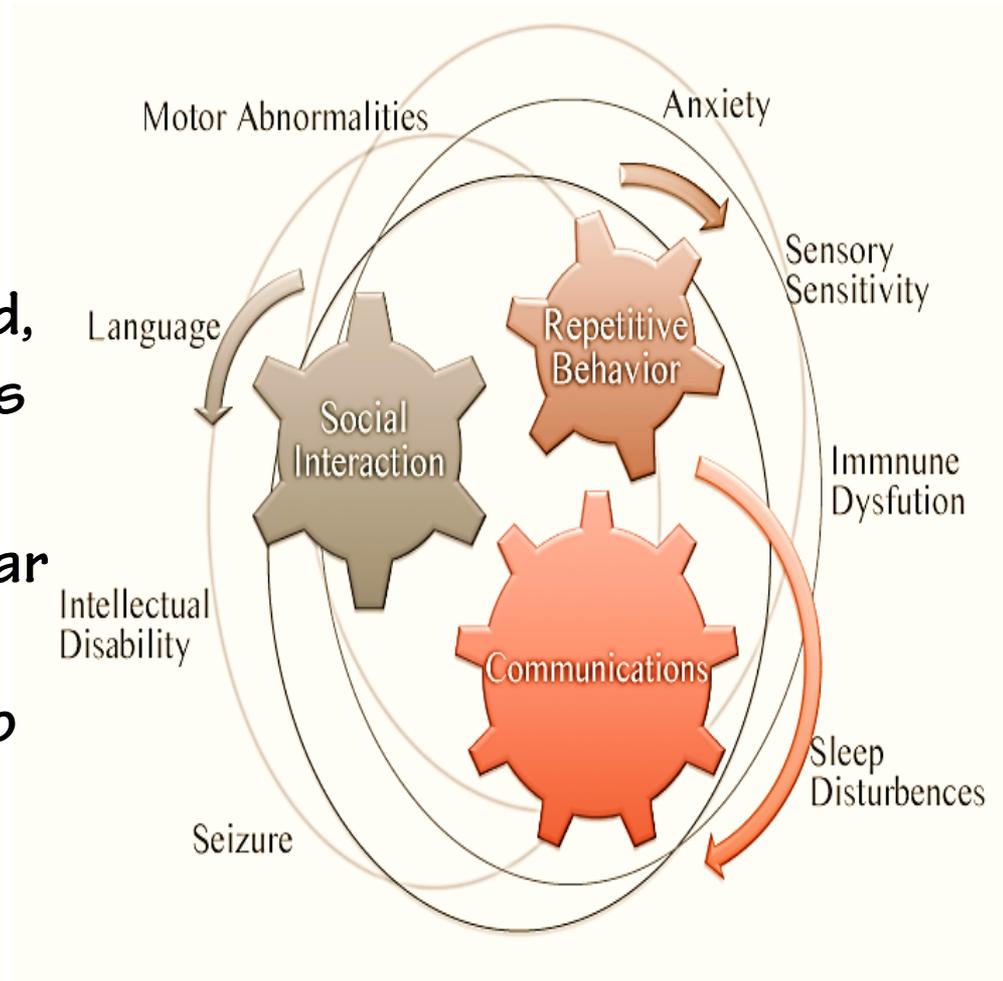
What is Autism?

- ▶ Autism is a disorder that appears in childhood and is marked by deficient communication, social interaction, and understanding of others' states of mind.
- ▶ Autism is considered a continuum of related disorders, known as **Autism Spectrum Disorder (ASD)**. At the most severe end is **Autistic Disorder**. At the least severe end is **Asperger Syndrome**.



What are its symptoms?

- ▶ Autism symptoms range in presentation and severity.
- ▶ Not all the features are present in every child. Instead, a subset of features underlies autism in each individual.
- ▶ A child with autism may appear unaware of his surroundings. He may also fail to respond to the sights and sounds of a social world.



Some characteristics of an autistic child

Inappropriate playing with toys



Inability to relate to others



Hyperactivity or Passiveness



Oversensitive or undersensitive to sound

Inappropriate laughing or crying



Poor speech or lack of speech



Strange attachment to objects



Difficulty dealing with changes to routine



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Lack of awareness of danger



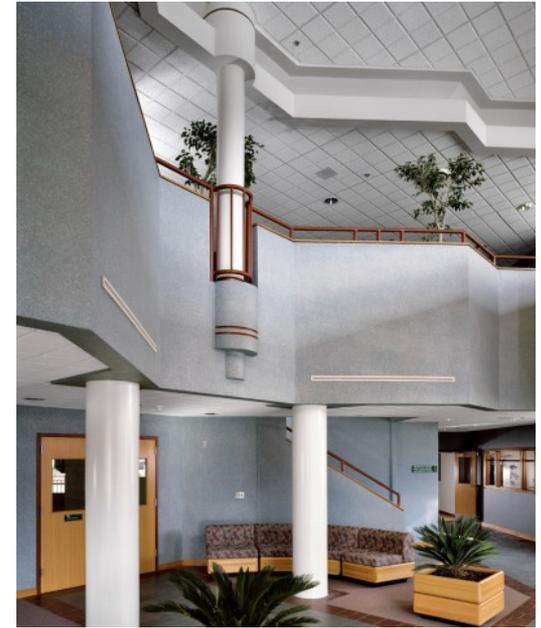
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Autism Spectrum Disorder

- ▶ Children with autism have difficulties processing normal communication signals and body language from others which can cause difficulties when navigating through public spaces and crowds.
- ▶ Hypersensitivity in the form of; hyper-vision, being disturbed by bright or flickering lights, hyper-tactility, heightened sense of touch and discomfort from physical contact, or hypersensitive hearing, where sound and noise causes are hard to handle. Such hypersensitivity can cause many obvious problems for children in public spaces or streets where noise, crowds and bright lights are part of everyday life.
- ▶ Children with autism can also suffer from hyposensitivity where their vision, hearing or sense of touch is diminished. Again those suffering from such conditions can be in danger of not perceiving typical challenges such as pedestrian stoplights, the sound of oncoming traffic, emergency sirens or public announcements. Children with hypo-tactility may also fail to notice or understand tactile paving.

Interior Design for ASD- Spatial Considerations

- ▶ Use curved walls to give a friendly appearance and circulation uncomplicated.
- ▶ Be generous with the space so the children don't feel trapped or too close to other children.
- ▶ Design small withdrawal spaces adjacent to the classrooms so children have a chance to "escape" the crowd.
- ▶ Ceiling heights must be kept low, spatial volumes small and learning spaces intimately proportioned, especially when teacher-student interaction is primarily one-on-one.



Interior Design for ASD- Furniture & Accessories

- ▶ Keep toys & books out of sight to reduce clutter and initiate verbal requests from children.
- ▶ Use a pre-finished hardwood floor overlaid with a 100% wool carpet, with a jute back for low toxicity and avoid allergies.
- ▶ Furniture should be heavy or bolted to the wall or floor.



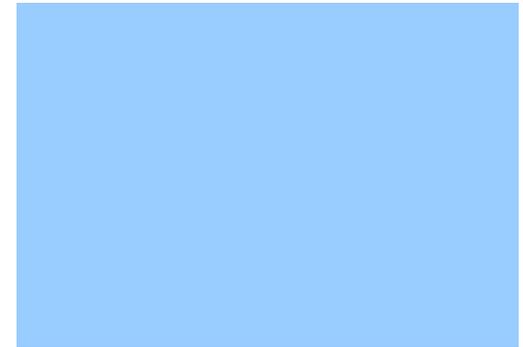
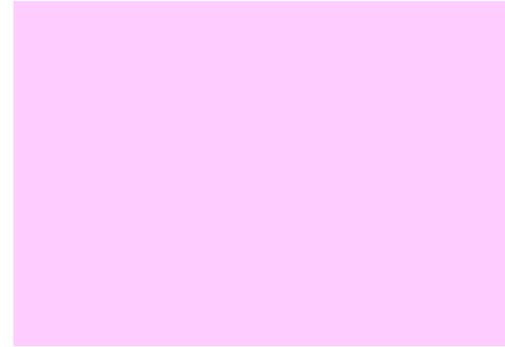
Interior Design for ASD- Lighting

- ▶ Use concealed or flushed lights and avoid use of fluorescent lights as their flickering is very sensitive to autistic children.
- ▶ Up lighting or diffused lighting is suggested to reduce glare.



Interior Design for ASD- Colours

- ▶ Muted colors have a calming effect upon children with autism. Pale pink has been demonstrated through tests to be their favorite color overall. Cool colors such as blue and green are also soothing.
- ▶ A monochromatic color scheme is preferable, designs in fabric and wall hangings should be non-linear and non-obtrusive.
- ▶ Primary colors should be limited to lightweight toys that can be put away.



References

- 1) Henry , Christopher N.. "Designing for Autism: Spatial Considerations" 26 Oct 2011. ArchDaily.
<http://www.archdaily.com/179359>
- 2) Interior Design for Children with Autism by Susan Moffitt, June 11, 2011.
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It's not just a
STATISTIC

IT'S REAL

It Speaks

to observe

HEAR IT

Include it

including it

ALWAYS **U**NDERSTAND **T**HAT **I**NCLUSIVITY **S**USTAINS **M**ILLIONS



THE ELDERLY

**IDENTIFYING SPECIFIC NEEDS AND THEIR
RELEVANT DESIGN GUIDELINES**

GENERAL CHALLENGES FACED BY OLDER PEOPLE

Weakness: Older people usually find it hard to lift things up and/or carry them around. Due to weakness, their hands shake and their feet are unstable. They need frequent resting places.

Visual Impairment: With age, the eyes get weaker. As a result, older people are often unable to see properly. They have problems focusing on faces, reading tiny text and detecting colours.

Hearing Impairment: The elderly are unable to hear properly even if the person is very close to them. They find it hard to make out words that are spoken quickly.

Imbalance With age, the human joints become weak. This results in shaking of the limbs when the person gets up or walks. This often proves fatal for the elderly as they cannot regain their balance, like a healthy person would, if they fall.

Slow comprehension: Quite a few older adults find it difficult to understand simple things said to them. They often need more processing time than a young person.

Decreased mobility: Elderly move slowly and carefully. This is normally due to weakness, a loss of stamina and reduced vision.

Loss of memory: Older people often have a problem with recollecting past incidents, remembering names and faces and where they kept things.

GENERAL CHALLENGES & THEIR DESIGN RESPONSES

Challenge	Response
Weakness	<ul style="list-style-type: none">• Provide frequent resting places• Keep storage units with shelves accessible to all users• Provide handrails on both sides of staircases
Visual Impairment	<ul style="list-style-type: none">• Using high contrast colours on signs• Show changes in level with contrasting colours• Have letter boxes with transparent walls to avoid violating privacy• Install lights at foot level to increase illumination
Hearing Impairment	<ul style="list-style-type: none">• Have audible signals in elevators that provide information and orientation cues
Imbalance	<ul style="list-style-type: none">• Install seating on landings• Provide a third handrail in addition to the standard for additional support
Slow comprehension	<ul style="list-style-type: none">• Have shoeboxes that are colour coded and indicated by a change in floor surface• Keep shoebox doors transparent for easy identification of personal shoes
Decreased mobility	<ul style="list-style-type: none">• Provide frequent benches for rest & keep rooms at short distance• Have large glass areas to experience the nature from indoors• Have all operations within reach of a seated or standing person
Loss of memory	<ul style="list-style-type: none">• Having circular corridors that allow observation and therefore easy orientation• Have clear bold signs that indicate places of regular use

SPECIFIC NEEDS & THEIR DESIGN GUIDELINES

People using wheelchairs

Provide wide corridors and spaces for easy maneuvering

Install controls at a lower height for ease of access

Provide a handrail along ramps or wide lifts to tackle differences in height

Provide wide doorways and hand bars in restrooms

Keep changes in ground thresholds low or have none at all

People who can't read small text, recognize shapes or are colour blind

Use large fonts with contrasting foreground and background colours for signs and directions

Provide bright, easily distinguishable colours for obstacles

Provide audible signals in lifts or at signals

Provide textured flooring and guide strips

Provide a consistent colour scheme throughout and avoid using red on green and vice-versa

People with loss of balance and limited walking ability

Provide wide automatic doors for easy entry and exit

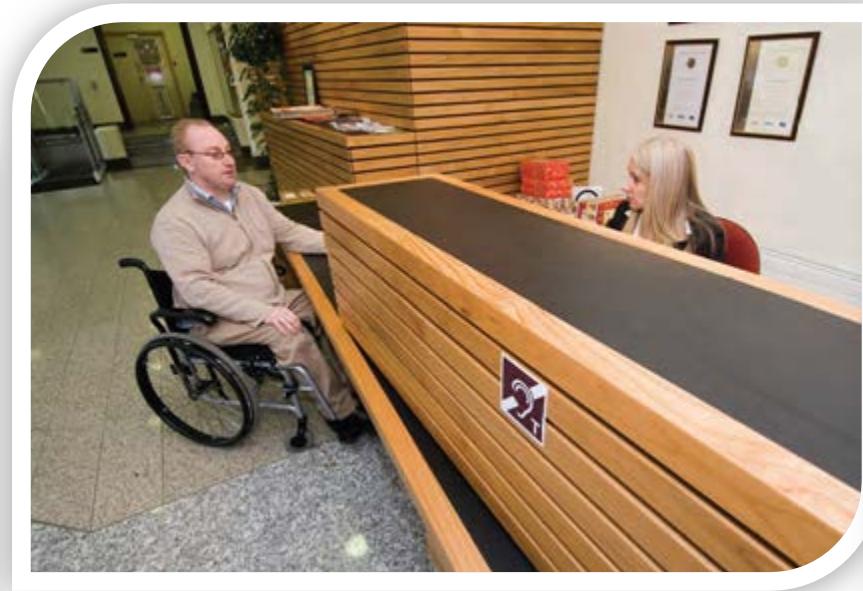
Provide elevators and ramps to cover heights and include handrails

Provide frequent seats with handle bars along the route

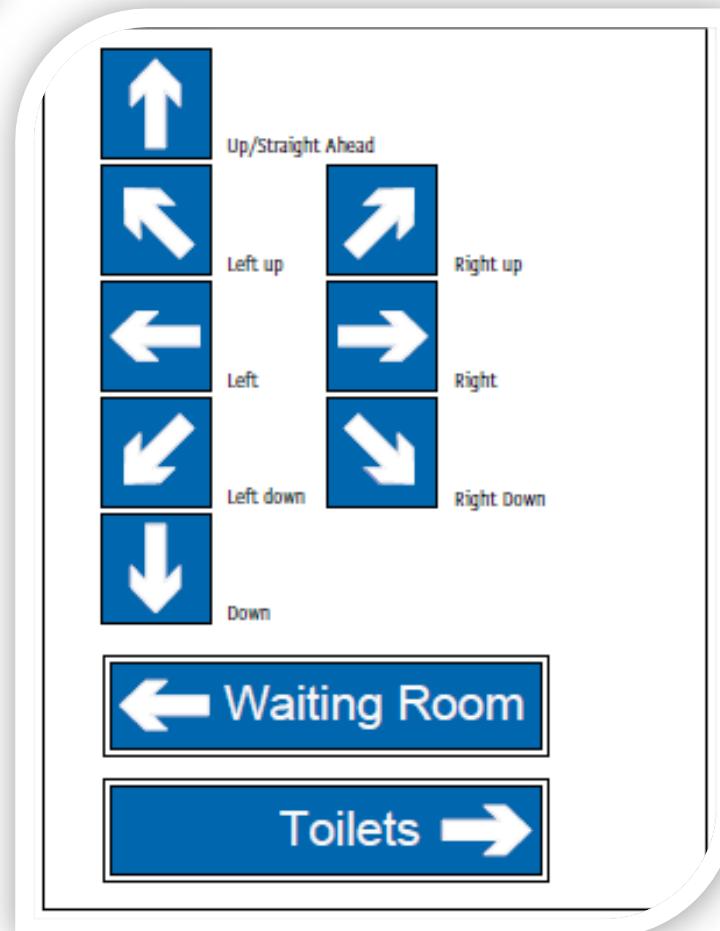
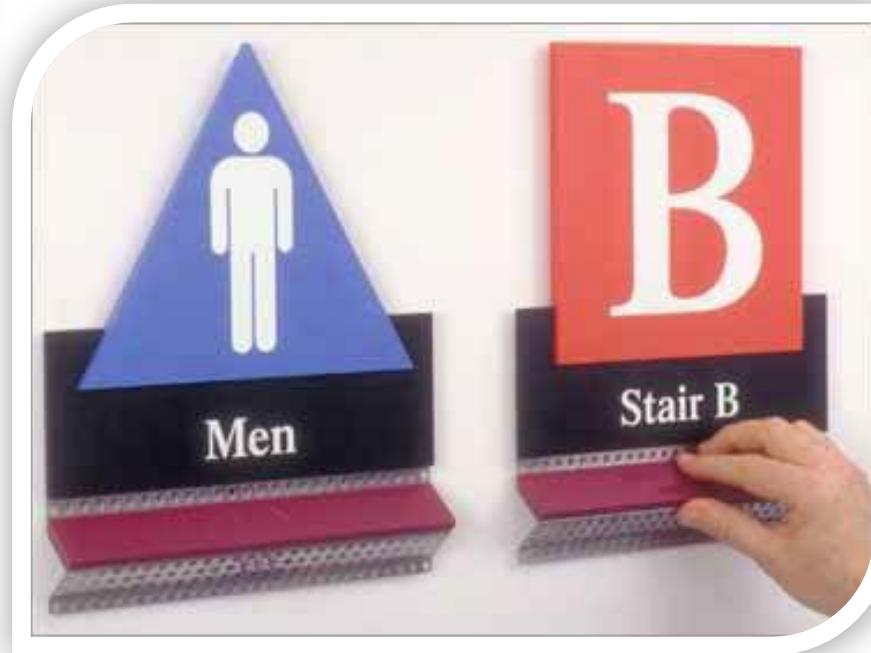
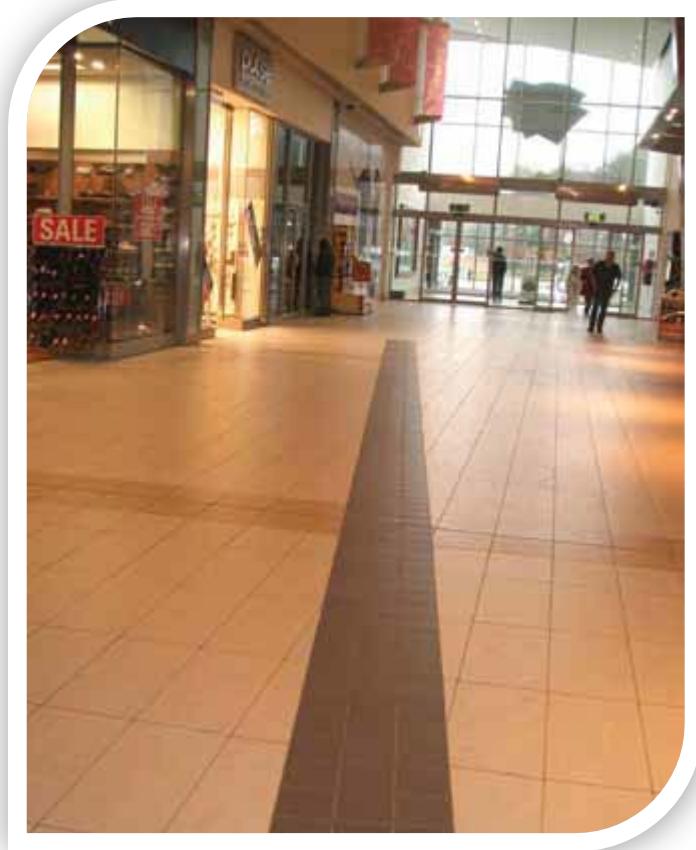
Provide enough space for cane users and make the floor anti-slip

Provide grab bars near wash basins, WCs and/or bath tubs

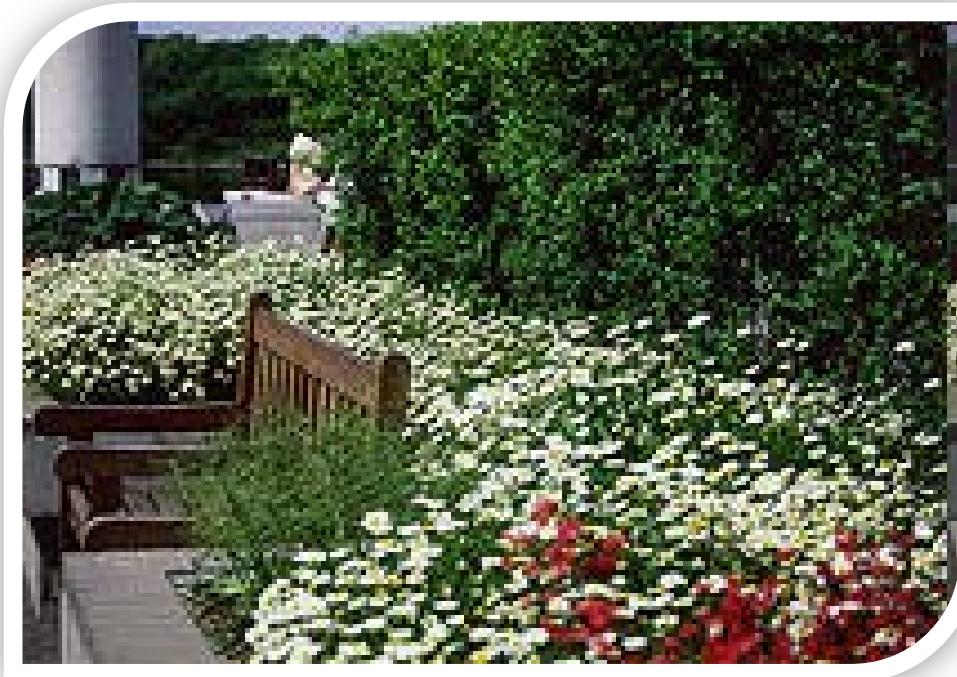
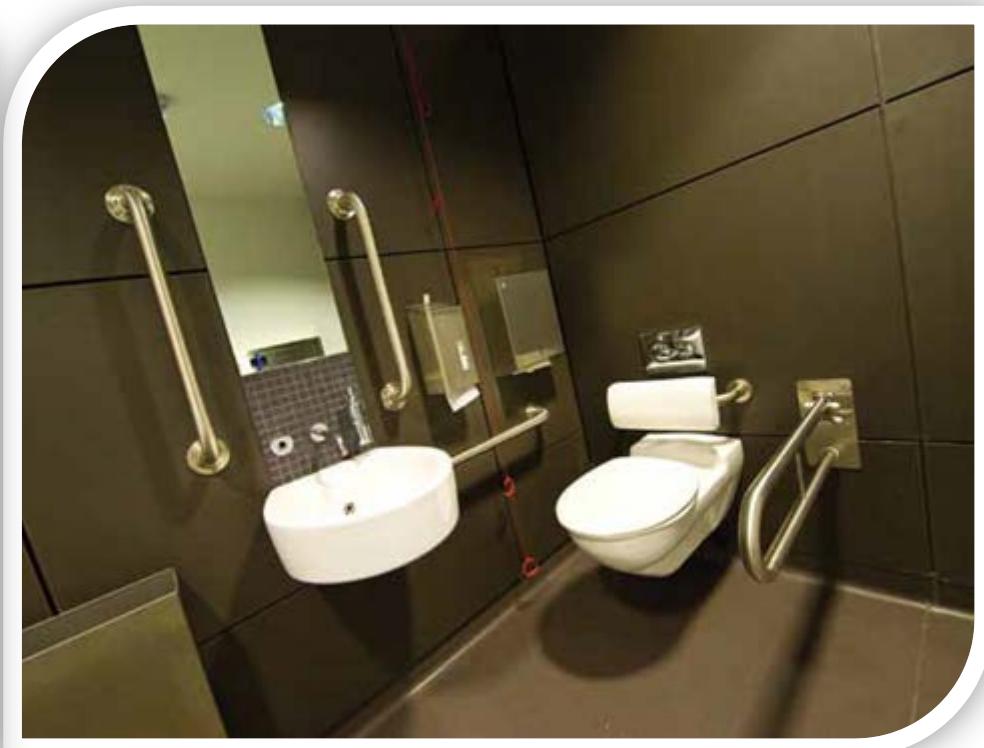
Examples-Wheelchair Users



Examples-Limited Vision



Examples-Limited Mobility



SOME QUALITIES OF ELDERLY HOMES

- 1) **Creating an active atmosphere:** You should design a care home that encourages social connectivity and ensure that the elderly don't feel isolated from the community.
- 2) **Creating a home-like environment:** It is important to keep in mind that residents need to feel at home and it is advisable to avoid creating a hospital-like interior/exterior.
- 3) **Creating orientation and familiarity:** Take care that when older people first move in, they should feel comfortable and at ease with the environment they are in. Don't scare them!
- 4) **Creating accessibility to nature:** During their stay, residents must have access to nature. It is healthy and a good way to pass time.

CREATING AN ACTIVE ATMOSPHERE

- Situate the care home adjacent to a children's day care center and the city center including banks, restaurants and shops, so that they don't lose contact with the rest of the young world.
- Provide elderly residents with an opportunity to watch children in a courtyard/playground on a daily basis.
- Provide a
 - ✓ Swimming pool
 - ✓ Library,
 - ✓ A television and games room,
 - ✓ A hobby room (craft, painting, woodwork),
 - ✓ An Internet cafe and coffee shop
 - ✓ A health and fitness room (physiotherapy)
 - ✓ Laughter club



HOMELIKE **ENVIRONMENT**

- Make doors and hallways wide to accommodate wheelchairs.
- Have low window ledges in bedrooms allowing a bed positioned view.
- Provide a fully equipped kitchen in each room.



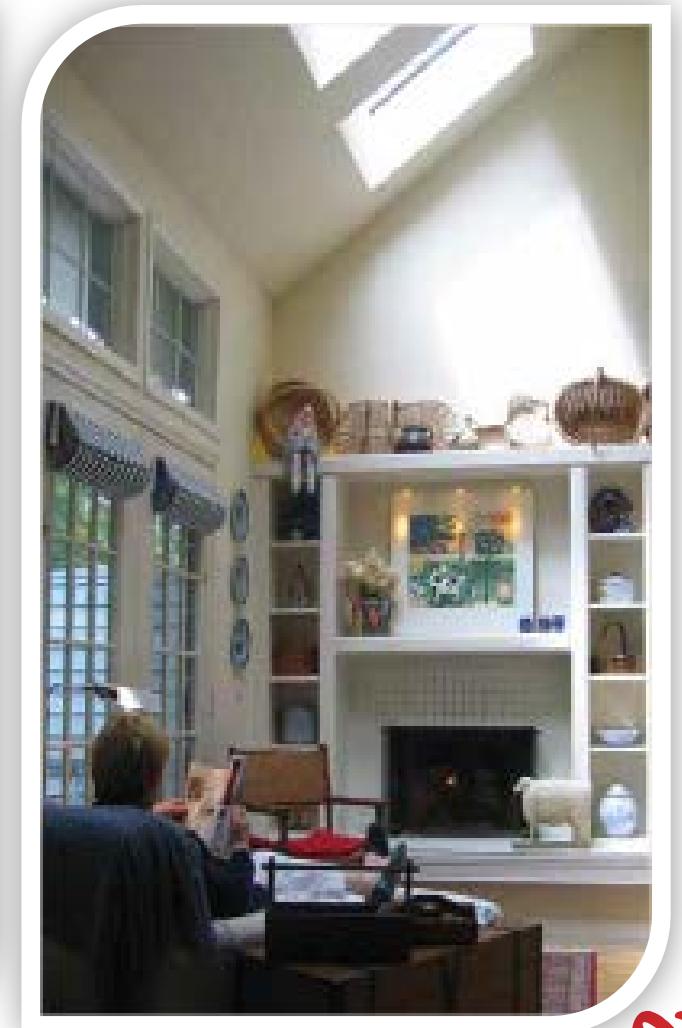
HOMELIKE ENVIRONMENT

- Make the bathroom large enough to accommodate staff, wheelchairs and lifting devices.
- Have a foldable seat in the shower that is fastened into the wall to prevent falls.
- Use a contrasting tile color behind the toilet seat and the wash basin making them easily identifiable for old people with poor sight.
- In the bathroom of each room, make a sliding door for easy wheelchair access.



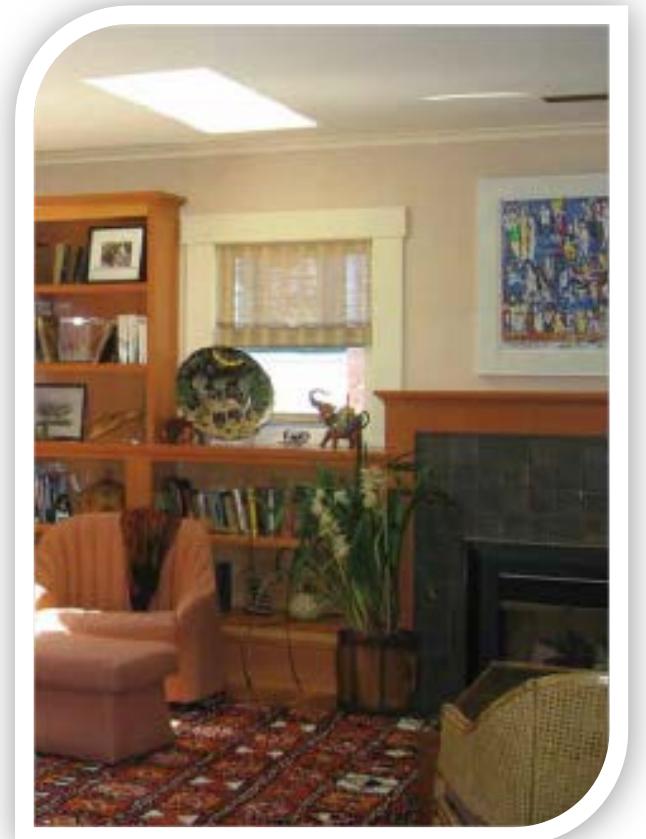
HOMELIKE ENVIRONMENT

- Keep a height adjustable bed that is equipped with wheels for convenience.
- Keep artificial lighting to the minimum, making full use of the natural light instead.
- Keep traditional reading & night lamps in appropriate places to enhance the homely experience.
- Have a bookshelf, a display unit or a television for those who wish to have one.



HOMELIKE **ENVIRONMENT**

- If possible, make a sizeable fireplace to enrich the homelike atmosphere.
- Allow for large undisturbed view of the surroundings by using wide windows.
- Use proper colour in the room to evade the feel of being in a hospital and also to avoid evoking the mental state of seclusion and loneliness.



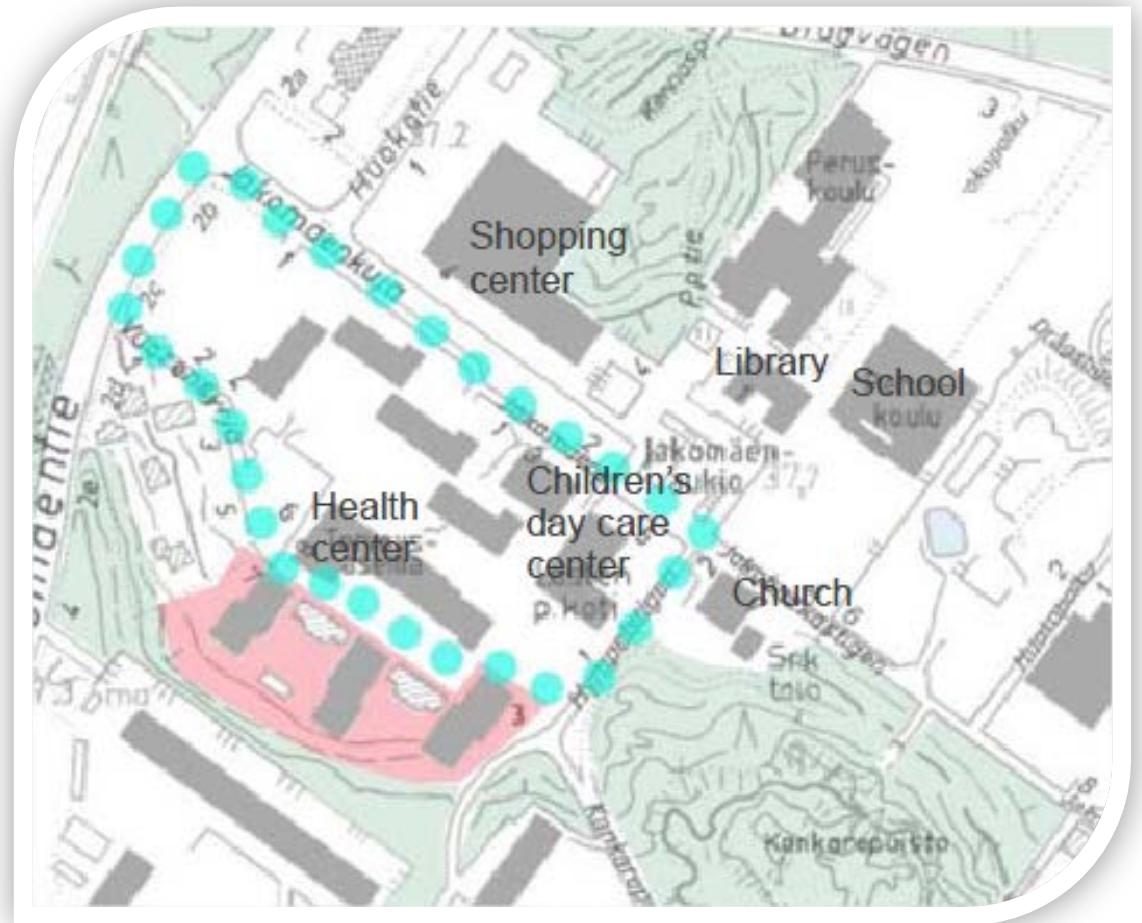
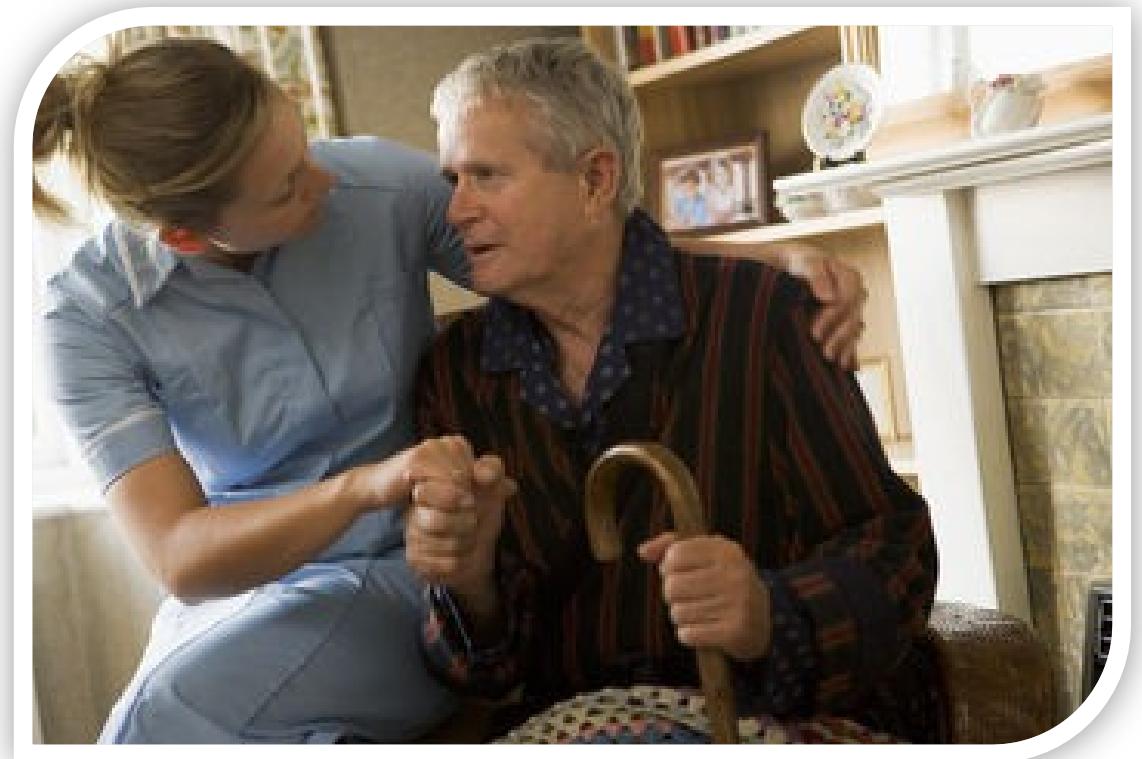
ORIENTATION AND FAMILIARITY

- Choose exterior building materials and the building scale such that the house clearly blends in with surrounding areas.
- Have an open shared kitchen, dining room, and living room that allows a home-like atmosphere, where old people can watch staff preparing a meal and relish the aroma of food.
- Keep the public area in the center of the facility and surround it by private rooms, so that the residents can easily access the shared space from their room.



ORIENTATION AND FAMILIARITY

- Assign staff members to new residents. This will make the elderly feel welcomed and at ease.
- Allocate apartments for the elderly on the lower floors in multiple level and high-rise apartments. This improves accessibility to community services by limiting or elimination the use of stairs, elevators and doorways which are often perceived and experienced as environmental obstacles.
- Locate community services such as daycare centers and public spaces adjacent to elderly facilities so they may enhance community integration.



ACCESSIBILITY

TO NATURE

- Have a highly accessible courtyard surrounding nature.
- Divide the courtyard into separate 'rooms' by green hedges that create privacy for each unit.
- Assign a place in the courtyard for growing vegetables and planting flowers, etc. and encourage the activity.



ACCESSIBILITY TO NATURE

- Accessibility to nature is well developed through wheelchair ramps, handrails, and other supportive devices, eliminating possible difficulties.
- Use landscape plantings, safe roof gardens, closed-loop paths, or replace solid doors and small windows.
- Window sizes and placement should allow for as much contact with nature as possible.
- Have frequent benches with hand supports alongside the path.



REFERENCES

- 1) Health Supportive Design in Elderly Care Homes: Sookyoung Lee, Alan Dilani, Agneta Morelli and Hearyung Byun, *architectural research*, vol. 9, no. 1 (june 2007), pp. 9-18
- 2) DSD Design standards for nursing homes, version 1.0
- 3) Illuminating Engineering Society of North America, Lighting your way to better vision
- 4) SAGE: Creating Home in the Nursing Home: Fantasy or Reality?