Seated work activities

Walking in their shoes...
...teaching elder design

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How do users learn?

1. They must listen and pay attention.
2. They must correctly understand the content of the message.
3. They must process its content in a way that becomes personally meaningful.
4. They must ultimately apply their newfound knowledge to create intended change in behaviors.

The impact of age on strength

<table>
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<tr>
<th>Age Group</th>
<th>Age (years)</th>
<th>Source of data</th>
<th>Cap diameter (mm)</th>
<th>Method</th>
<th>Mean torque (Nm)</th>
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<td>27 &amp; 29</td>
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<td>Iken 89</td>
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</tbody>
</table>

Norris et al (1997) the elderly exert about the same amount of torque as children aged 5 – 9 years.

Removing a tamper proof shrink sleeve

Midterm project: Products

- Experience and evaluate the design of products of daily living (midterms) and environments (finals) used by elders aged 75+ over a full day...
  ...by simulating their physical / coordination, visual, hearing and kinesthetic limitations.
- Do not be silly. Be accurate.

Elderly simulation

Aging simulation exercises individualize the effects of physiological aging by forcing students to experience functional losses.

By doing so, it brings home the meaning of functional impairments to healthy, young undergraduate students in a much more effective way.

Wood (2002)


Department of Trade & Industry, United Kingdom
Commissioned by the Consumer Affairs Directorate, DTI. www.dti.gov.uk

March 1999

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Department of Trade & Industry, UK
March 1999

March 1999

March 1999

March 1999

March 1999

March 1999

March 1999

March 1999

March 1999
Finals: Environments

- Document how environments enable and disable elderly users - and impact their ability to function safely and effectively.
- Learn to move in ways that reflect elder experiences.
  - Do not skip stairs. Notice step sizes.
  - BOTH feet must touch EACH stair up and down stairs.
  - Notice disabled access to buildings.
  - Timing for lights to change while crossing streets.
  - Make sure you are safe at all times.
  - Especially, do not drive while visually impaired.

Default approaches

- **Vision:**
  - Simulate cataracts & visual darkening: lightly smear a thin layer of Vaseline over glasses.
  - Darkening of vision: sunglasses filter up to half of light.
  - Narrow peripheral vision with goggles.
- **Hearing loss / presbycusis:**
  - Partial sound attenuation earplugs or limited cotton.
- **Reduced kinesthetic / sensory feedback:**
  - Cover and dry Elmer’s Glue on fingertips.
- **Arthritis / reduced range motion:**
  - Place masking tape on fingers and joints.

A DAY AT THE PASEO COLORADO SHOPPING CENTER

TEAM C

ALEX ISOLL
JAMES CHUNG
STEVEN MAVOS

HUMAN FACTORS INSTRUCTOR: RANI LUEDER

PARKING GARAGE

SHOPPING MAP

HARD TO READ TEXT ON THE MAP OF THE MALL

WITH CATARACTS SIMULATION IT MADE EVERYTHING MORE DIFFICULT TO READ EVEN WHEN WE WERE LOOKING UP CLOSE AT THE MAP

SHAPED SIGNS ARE HELPFUL WHEN FINDING A DECORATIVE BUSH STREET

POOR SIGN PLACEMENT

POOR VISION MAY LEAD ELDERLY PERSONS INTO A BADEXCESS BUSY STREET
Seated work activities

PAY STATION COMPARISON

- Station inside the parking garage
- Limited view of surroundings
- Reduced mobility

PAY STATION

- Limited visibility with the kiosk
- Limited view of surroundings

Loss of Mobility

- Reduced speed
- Crossing threshold & danger
- Inpatient illnesses
- Potential for harm

Shopping at Target

- Ray / Hall
- Car in and out
- Walk
- Powder room

Environmental Dangers:
- Materials & equipment
- Weather conditions

Michael Churchill, Ben Grider, Shaun Smith
Group F
Seated work activities

**Coming in**
- Options
- Central Location
- Easy Visual Clarity
- High Contrast Signs
- Open Space

**Pricing**
- Large type
- High contrast
- Multiple locations to sit
- Easy to Use Price Checker
- Friendly associates

**Return to Vehicle**
- Multiple Handle Heights
- High Contrast Buttons
- Poor Level Indication
- Windows

**Aging and Product Design**
- Mayu Tsukada • Mei-Hua Chen • Eunji Park

1. Loading the Laundry
   - The laundry basket is heavy; the elderly user must bend a lot to put the laundry into the machine.
   - Bending hurts the back.
   - Repetitive bending may lead to backache.

5. Using the dryer
   - The words on the button were sometimes unrecognizable.
   - The control switches were confusing. It was not easy to tell what the start button was.
   - It was extremely difficult to insert coins to the very bottom of the machine. The user had to crouch.
   - The instructions were too small to read.
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Postures: Bending to load the laundry

Leaning forward in order to see and use the control panel.

Postures: Opening the detergent

Because of the weak wrist and stiff fingers, the user had hard time opening the cap. This action might worse the elderly with the carpal tunnel.

Postures: User bending down to load the laundry

Compared to the front-load style machine, the depth of a top-load machine takes much more effort to load and unload the laundry.

Postures: User bending down to load the laundry

Repetitive finger action: Difficult for the elderly whose grip strength is weak.

Vision to Darkness

Lens flexibility goes down, so the eye can’t adjust to make images at close range appear clear. Also, changes in depth perception make it hard to use the machines.

Conclusions and Suggestions

1. The written information on the machine should be in bigger size and in high contrast color.
2. Control panel should be placed closer to the user.
3. Coin slot should be larger.
   It was easier to insert coins into the angled slot than the vertical one.
4. Reminder alarm could be helpful.
5. Small seating in front of the door would help loading and unloading laundry.
6. The buttons should be bigger and provide visual and audio feedback.
Seated work activities

Theaters
Yamchi Hung
Mun Kim
Christine Park

Environment: Second Floor

Environment: Movie Ticket Kiosk

Environment: Water Fountain
Seated work activities

Environment: Inside the Theatre

Senior Factors

Jamison Mefford
Maxim Ostapenko

Arthritis and touch

With the glove over the hand and masking tape on the joints, it was hard to do anything that required hand movement.
Opening a door was difficult because it was hard to twist the wrist to turn the knob. We ended up needing to twist the whole arm just to turn it.
Grabbing the door knob required significantly more strength.
Holding a glass was became much harder due to the reduced sense of touch.

Tying Shoes

Leaning forward with extended knee required more flexibility than we could muster.
Possible solutions would be using slip-ons or Velcro shoes.

Sitting and Getting Up

Sitting up and down is very difficult on low hard surfaces - you can’t plop down.
It is fairly easy to get up from a high hard chair with arm supports.
Seated work activities

**Getting in and out of the Car**

The space between the front door cut and the back of the chair has a crucial effect on the angle at which the knee will bend. Longer spaces increase the ease and reduce time to get into the car. Getting in and out of lower vehicles required additional support to raise and lower the body out of the seat.

**Walking on Flat Ground**

1. Slow
2. Requires small steps to walk faster
3. Faster walking causes quick fatigue
4. Increased movement to accommodate for the lack of knee joint flexibility.

**The man on the flying trapeze**

Then swiftly, neatly, with the grace of the young man on the trapeze, he was gone from his body.

For an eternal moment, he was all things at once: the bird, the fish, the rodent, the reptile, and the man...

The earth circled away, and knowing that he did so, he turned his lost face to the empty sky and became dreamless, unalive, perfect.

Henry Miller

**Handouts and student papers**

[www.humanics-es.com/elderlydesign.htm](http://www.humanics-es.com/elderlydesign.htm)

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**Thank you!**

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