Universal Design for Kitchens and Bathrooms

It's Good Design

We have all heard the statistics. The percentage of senior citizens has almost doubled since 1950. The number of people with a significant disability is about 1 in 5. These are the two fastest growing population segments. Yet the design of houses and products focuses almost entirely on what might be called the 'normal' adult. Design outside this so-called norm is considered specialized. Terms like *barrier-free* and *accessible* further stereotype and stigmatize those that don't fit within the norm. But who is normal? We all know that adults come in all shapes and sizes, short and tall, large and small, very mobile and less mobile. It might be said that there is no such thing as normal, only a statistical average. Yet, it might also be said that we are all disabled, meaning that in some areas we all may be less able than the statistical norm. And certainly we all become less able as we age. It seems we would rather be in denial than face up to the stigmas. The result is our own homes become increasingly less easy to use, we become more confused with technological gadgets, and become increasingly dependent on others. In most cases, good planning and design mean we can use our homes for years longer and retain our sense of independence and dignity.

And what about children? Because we know they will eventually grow up to be adults, does that mean we have to watch them struggle for years to reach countertops and

faucets? Can we not build more flexibility into our design so that we can change and adapt the spaces and fixtures as they grow older? We have done it with basic furniture and potties? Can we not extend that into other areas of design? This is both the essence and objective of Universal Design: instead of focussing on a statistical average user, it focuses on the broadest range of possible users.

How Universal Design Differs from Barrier-Free Design

Barrier-free design is primarily about providing access to people with disabilities. Its primary application, the public building, is generally accomplished by creating 'special' features that accommodate disabilities. For example, the provision of one barrier-free washroom or a wheelchair ramp may meet barrier-free mandates. In many cases, it serves to separate and stigmatize disabilities rather than include. This has nothing to do with providing an environment whose focus is the broadest definition of user, though in some cases, it may satisfy that. A larger than normal washroom stall allows wheelchair accessibility but it also allows an adult with a stroller or an aged parent to use the stall conveniently.   Assistive Technology, those products designed to assist people with disabilities, often have a medical or technical appearance, are expensive, awkward and stigmatizing.

Good Design

It might be said that Universal Design is simply good design.   Should not design that considers and meets the needs of as many people as possible be a general goal? A room or product should be easy to understand, easy to use, and be able to be used by all

ages.   The example of a can-opener comes to mind. I am sure early can openers were nothing more than devices with a razor sharp edge that could slice open a tin lid, similar to the ones I once used for camping. They could also slice open a hand as I found out the hard way. A refined design for the household added a butterfly handle that could be rotated, meaning no force had to be exerted in the direction of the blade. But these were difficult to use for children or many elderly persons. Eventually, the butterfly handle became larger and covered in plastic so it could be turned more comfortably with less effort. The electric can opener allowed a can to be opened with less effort, but was sometimes awkward or confusing to use. Now, electric can openers can be mounted under an upper cabinet, be used with one hand, and turn on and off automatically. This is the essence of universal design. In this sense, universal design is less about rules and regulations, and more about attitude and goals. It is about changing our conception of what our design objectives should be.   It may never be achieved. Good design must also incorporate, economic and structural and other considerations. However, with a change in attitude even design decisions heavily influenced by other factors can have universal implications.

Principles of Universal Design

Seven Principles of Universal Design, developed by the Center for Universal Design in North Carolina, are generally accepted as industry guidelines today. They intend to focus on the needs of as many people as possible, with or without disabilities. They are:

Equitable Use:

Same or equivalent means of use for all users.

Flexibile Use:

Design accommodates a wide range of individual preferences and abilities.

Simple and Intuitive Use:

Design and use is easy to understand, regardless of user's knowledge and

language skills.

Perceptible Information:

Information communicated clearly to the user regardless of their sensory

limitations and ambient conditions.

Tolerance for Error:

Minimized hazards and adverse consequences of accidental or unintended use.

Low Physical Effort:

Design can be used efficiently and comfortably with a minimum of fatigue.

Size and Space for Approach and Use:

Appropriate size and space is provided for approach, reach, manipulation, and

use, regardless of the user's body size, posture, or mobility.

Universal Design in the Kitchen

Kitchens are used by people of different sizes and abilities. Increased flexibility

can make it easier to use and anticipates the time when more aged, less able users may

use it. An L-shaped kitchen works well with an open counter between the fridge and

wall oven. If this is undesirable, an adjacent room, such as a den or dining room, can be plumbed and wired so that part of it can later be converted into a temporary kitchen or alternate kitchen.

Cabinets and Storage

Design some cabinets so that the front and base or even the entire unit can be removed at a later date. Have some cabinets on casters so they can be rolled out when necessary and the counter used by someone who is seated or in a wheelchair. Maintain a minimum of 27" clearance to the underside of counters and make sure kick spaces are at least 6" deep and 8 ¾" high.

Upper cabinets can be mounted so they can be raised and lowered with a switch. Or place an open shelf between the upper and lower cabinets. In general, keep primary items between 9" and 54" in height. Provide well-organized extra storage. Drawers and shelving should have pull-out full-extension slides. Keep pantries shallow and hang storage units on the backs of doors or use removable bins on casters. Doors should have touch latches and extra-long C-pulls.

Counters

Place the sink between the refrigerator and stove and keep the sink and stove on one level. One counter may be adjustable in height (e.g. from 30" to 42") or different heights may be used in different areas.   If you have only one adjustable counter, place it next to the refrigerator and finish the sides of the adjacent cabinet. An open 30" high counter may be perfect for someone in a wheelchair or a child on a stool, but it is also great for kneading dough. A 42" counter may be more comfortable for someone who is very tall, but can also serve as a conversation counter. Maintain at least 40" clear

between opposing counters, or 60" if the kitchen is "U"-shaped. Angle corners wherever possible. Use heat resistant surfaces with sloped edges. Pull-out or fold-down work surfaces may be helpful.

Fixtures and Appliances

In general, use convenient appliances such as frost-free refrigerators, self-cleaning ovens, and microwaves. Make sure controls are convenient and easy to understand. Switches should have indicator lights indicating when the item is in use. Consider a wall oven with a side-hinged door and a shelf below. Magnetic Induction cooktops are probably the safest. Locate all controls toward the front including any hood van controls. Refrigerator shelving should be shallow. If possible, use a greater number of smaller shelves. A side-by-side unit may be more convenient or place the freezer at the bottom. Dishwashers should have porcelain or plastic liners and have a lit display to indicate the cycle.

Sinks and Faucets

Consider having two sinks at different heights; children can use one for vegetable preparation. Stainless steel sinks allow more under-counter clearance and chip less easily. Some models allow for height adjustment. Single lever faucets are recommended. Some allow controls to be placed to the side instead of the rear. Anti-scald devices are available, as well as infrared sensors for turning the flow on and off.

Universal Design in the Bathroom

The best way to introduce universal design in the bathroom is at the beginning. For example, use generous blocking between the studs during construction or entire walls

with plywood. In the future grab bars or specialized fixtures can be added later with little

problem. Surfaces should be slip-resistant and have a matte rather than shiny finish. Use

contrasting colors and textures and good general and task lighting.

Tubs and Showers

One bathroom might be designed with a roll-in shower. Slope the entire

bathroom floor towards the drain. Place a seat in the shower. Fold-up models are

available. This will be appreciated by users of 'normal' ability. Install a handheld shower

system with an adjustable slide. Controls should be single-handed and pressure balanced.

You may wish to include preset temperature controls or an anti-scald device. Tubs

should have slip-resistant flat bottoms and grab handles. The bottom of the tub should

never be below the level of the adjacent floor or step. Use single lever faucets and drain

controls.

Toilets and Bidets

Low elongated toilets with low-pressure cisterns are better for most users.

Alternatively, consider wall-mount toilets. Allow clearance to at least one side. In the

short term, this may consist of removable shelving or towel bars. Easy to use flush

controls should be on the approach side.

Lavatories and Faucets

Pedestal sinks or wall-mount sinks have the most flexibility. Alternatively, you

can use an adjustable lavatory or have one sink to accommodate a seated user and

another to serve someone that is standing. If you install only one, set it at 32" high.

Install single lever controls to the front or side, if possible.   Storage should be kept low,

and perhaps be removable on wheels. It should not interfere with wheelchairs. Drawers

should have C-pulls and be subdivided.

Sources of Additional Information

Center for Universal Design, University of North Carolina, www.design.ncsu.edu/cud

Adaptive Environments Center, Boston, www.adaptenv.org

TRACE, Wisconsin, www.trace.wisc.edu

Center for Inclusive Design and Environmental Access, University of New York

at Buffalo, www.ap.buffalo.edu/~idea