

Accessibility for All: Universal Design

Waterloo Region Trends Research Project

Disabilities Series

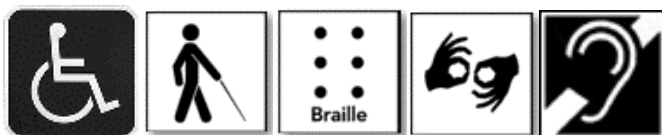
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Issue Paper 2

"[Universal design] actually assumes the idea, that everybody has a disability and I feel strongly that that's the case. We all become disabled as we age and lose ability, whether we want to admit it or not.

*It is negative in our society to say 'I am disabled' or 'I am old.' We tend to discount people who are less than what we popularly consider to be 'normal.' To be 'normal' is to be perfect, capable, competent, and independent. Unfortunately, designers in our society also mistakenly assume that everyone fits this definition of 'normal.' This just is not the case."*¹

This issue paper outlines the concept of universal design – principles "for creating a world we can all use."² Universal design is not just a disability issue but one that affects all of us and gives us all an equal opportunity to participate in a more caring community, regardless of our ability on any one day or at any one stage in our life.



What is Universal Design?

Universal design, sometimes known as barrier-free building design, "is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptation or specialized design. The intent of universal design is to simplify life for everyone by making products, communications, and the built environment more usable by as many people as possible at little or no extra cost."³ "Universal design recognizes that people have a range of

capabilities and [they] need designs [of buildings and tools] to include this range."⁴

Universal design can benefit people of all ages and abilities, including:

- a parent with a stroller
- a person in a noisy shopping mall who cannot hear instructions at a kiosk
- someone who has forgotten or misplaced their glasses
- a person who is getting older with less mobility
- a person with a disability (i.e. limited use of their hands, limited mobility, difficulty hearing or seeing, respiratory difficulties, epilepsy, etc)
- a small child
- a pregnant woman
- someone who uses a wheelchair, scooter, cane, walker, or crutches
- a person with a cognitive disability
- a person from another culture whose primary language is not English or French
- almost anyone

Traditionally, most designs have been oriented to the "average" person who is able-bodied and at least moderately capable in most areas. Much of the accommodation for people with disabilities has been in the form of specialized designs intended to assist those with a particular limitation.

Barrier-free design is "predominantly a disability-focused movement"⁵ and uses building codes, regulations and guidelines to achieve designs and features that are usable by people with disabilities. On the other hand, the idea of universal design "...grew out of recognition that, because most of the features needed by people with disabilities were useful to others, there was justification to make their inclusion common practice."⁶

This issue paper is part of the Waterloo Region Trends Research Project. This collaboration between the two Social Planning Councils in the Waterloo Region is an effort to: 1) determine and monitor indicators of progress and need, 2) inform local decision-making, and 3) support community action.

Principles of Universal Design

It may be impossible to accommodate all people, all the time, but the ultimate objective is to consider as many people in as many situations as possible. Because of this, a number of leading advocates of universal design proposed seven principles to guide decision-makers as they seek to create communities that are as inclusive as possible. These seven principles of universal design ⁷ are:

1. Equitable Use

The design is useful and marketable to people with diverse abilities [and does not disadvantage, segregate, or stigmatize any group of users.]



Automatic doors are helpful for everyone. ⁸

2. Flexibility In Use

The design accommodates a wide range of individual preferences and abilities.

3. Simple and Intuitive Use

Use of the design is easy to understand regardless of the user's experience, knowledge, language skills, or current concentration level.

4. Perceptible Information

The design communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities.

5. Tolerance for Error

The design minimizes hazards and the adverse consequences of accidental or unintended actions.

6. Low Physical Effort

The design can be used efficiently and comfortably and with minimum fatigue.



Door handles are often easier to use than doorknobs.

7. Size and Space for Approach and Use

Appropriate size and space is provided for approach, reach, manipulation, and use regardless of user's body size, posture, or mobility.

"These principles may be applied in different ways, depending on the design discipline. For example, Simple, Intuitive Use in product design may mean controls that follow common patterns, like green for go and red for stop. In architecture, Simple, Intuitive Use may mean floor plans that enable a visitor to navigate without aid of a guide or map."⁹

In most cases, applying the principles of universal design entails changes that are quite small. It might mean lowering lights switches, raising electrical outlets, or using door handles instead of door knobs. It may include simply providing some adaptable or adjustable features like closet rods or kitchen counters that can be adjusted. In other cases, universal design might mean a more comprehensive re-evaluation of a building (i.e. housing or work), environment (i.e. public space, transportation system), tool (i.e. ATMs, scissors), or system of communication (i.e. books, websites).

Examples of Universal Design

There are numerous examples of local places that are making our community more accessible to all through the principles of universal design.

The **Country Hills Community Centre** in Kitchener, which was built in 1998, is an open and bright building. With features such as wheelchair accessible washrooms, family washrooms, automated entry doors and light switches, and coat racks and counters at different heights, it is an attractive place that everyone in the neighbourhood can enjoy. The community is currently raising money to build a universally accessible outdoor playspace to be built this summer.

The **Woolwich Community Health Centre** (built in 1991) offers accessible patient examination rooms for various types of medical practitioners, a drug store, washrooms, and meeting rooms that are accessible for people using wheelchairs, strollers, crutches, or have mobility difficulties. It has some covered parking spaces to accommodate the horse and buggies of the local Mennonite population.

Victoria Park in Kitchener has an accessible playspace and hard-topped trails making it possible for many people to enjoy the majority of the park.



At **Shamrock Co-operative Homes** (1990) in Waterloo, almost one quarter of the units are wheelchair accessible and someone using a wheelchair, crutches, or with a stroller can easily get into the main floor of all other units and all common spaces. Appliance controls, counters, cupboards, and outlets have been adjusted to accommodate the needs of people using wheelchairs, walkers, children, or anyone with limited mobility. Outdoor raised garden boxes allow seniors, children, and people using wheelchairs to do gardening. The Co-op has worked with the nearby mall to install accessible doors and banking machines there.

Kitchener City Hall was built in 1993 and incorporates numerous universal design principles inconspicuously. All main public entryways and spaces are level or ramped, have automatic doors, and wide doors and hallways. Elevators have Braille, visual, and spoken indicators of floor levels and direction of travel. There are simple and clear signs (many have graphics) for washrooms, stairs, and telephones. Assistive Listening Devices are available. As well, the central staffed kiosk is useful for directions or information.

The **Cambridge Kiwanis Village Non-profit Housing** (1993) incorporates heritage elements in a multi-story apartment building where more than 20% of units are accessible for people with varying limitations. Over the years, three new units were renovated as needs and opportunities arose.

The **Family YMCA of Cambridge** (1996) was built so that people with varying levels of ability can use most of the facility. In addition to steps, one popular feature in the pool area is a ramp entry that is useful for small children, seniors, people with fear of the water, or people with mobility difficulties.

The **Solé Restaurant and Wine Bar** in Waterloo is a privately-owned heritage building that was beautifully restored in 1999. A host meets diners as they enter the largely accessible building and can offer appropriate help or direction.

There are, of course, many other examples around Waterloo Region with varying levels of accessibility. This paper focuses on physical accessibility but there may be additional issues of whether a place is accessible to all regardless of income, gender, or ethnicity. In some places, hurtful attitudes or restrictions may make a location inaccessible to some people.

There are also numerous examples of non-architectural items such as large print books or widely understandable signs or tools. The best examples, however, simply blend in and are not obvious universal design models because the projects are simply excellent designs that work well for a lot of people in our communities.

Why is Universal Design Important?

There are many ethical, practical, and economic reasons “for creating a world we can all use.”¹⁰

Inclusion & Providing Choices

Designing for everyone, without stigmatizing or excluding particular groups or individuals, is part of our ethical responsibility to create inclusive and caring communities.

In an environment where people with unique needs are not considered or accounted for, they are excluded and stigmatized as different or not “normal.”

On the other hand, universal design allows everyone to participate and provides choices rather than limitations. Designs that include the needs of people who are often marginalized and excluded send the message that these people are, in fact, important members of the community.

Legislation & Regulations

Since 1981, the Ontario Human Rights Code has prohibited “handicap” as grounds of discrimination. The Human Rights Commission has recently stated that they will launch “an aggressive campaign to crack down on discrimination against the disabled.”¹¹ Since 1985, the Canadian Charter of Rights and Freedoms guarantees people with disabilities equal protection and equal benefit of the law. The Ontario Building Code also regulates some standards to promote access.

Everyone Benefits

Everyone can benefit from universally accessible places because we all have decreased ability at times.

In reality, there is no clear line between those who are, and those who are not, labeled as ‘disabled’. Ability (or level of disability) exists on a continuum where some people have exceptionally high ability, others have mid-range ability, and some have very low ability. Additionally, a person who might have low ability in one area (i.e. mobility) might have

exceptionally high ability in another (i.e. intelligence or seeing)

Not only is there no clear line between those who do or do not have a disability or limitation, but almost everyone tends to lose ability as they age or at various times during the normal course of their life. Most people, at some point, break a bone and need to use crutches or some other aid, care for a young child, carry heavy and awkward suitcases or groceries, or are simply preoccupied and not concentrating from a long day at work. The “average” person often has “non-average” needs or limitations.

In addition to supporting those who have permanent disabilities or limitations, universal design can make the transition to being older or having a temporary injury both easier and more economical, while offering the option of living independently.

How Many People Need Universal Design?

The following list is certainly not exhaustive but it provides an idea of the extent that people could be assisted by “focus[ing] attention on those characteristics of design that most impact all users - - younger and older, larger and smaller, left- and right-handed, with and without disabilities.”¹²

- 15.5% of the total population of Waterloo Region (or 70,541 individuals in 2001) is estimated to have a disability. This is expected to increase to approximately 20.8% in 2026 as the “Baby Boomers” enter their senior years where there are higher rates of disability.¹³
- 10.9% of the population of Waterloo Region (or 49,605 individuals in 2001) were older than 65.¹⁴ Some seniors may have lower levels of ability because of decreased strength, concentration, agility, or any other limitations brought on by aging. By 2026, the percentage of Canadian seniors is projected to increase to 21.4% of the total population due to the “Baby Boomers” entering their senior years. With the increasing proportion of the population that is over age 65, and that has a disability “the need for a more accessible and usable environment by a wider

variety of people will grow steadily for the foreseeable future.”¹⁵

- 16.3% of all households in Waterloo Region (24,070 households) in 1996 had one or more children under the age of five.



- 10.5% of the population of Waterloo Region (41,315 individuals) didn't speak English or French at home in 1996, and 6730 individuals didn't speak either English or French. People from another culture whose primary language is not English or French find universal design principles especially helpful to participate fully in their new culture.
- Out of an Ontario labour force of 6,059,000 people, 364,069 workplace insurance claims were made in Ontario in 1999 for on-the-job or occupational injuries and illnesses.¹⁶ Short-term injury claim benefits lasted an average of 58 days. This does not include the many people who were injured in their workplace but did not make a claim, or who were not at work when they were injured.

When some of these groups of people who could benefit from universally designed spaces are added together we realize that at any one point in time, a large portion of the population has some sort of identified permanent, long-term, medium term, or occasional limitation in some of their daily activities.

The rest of the population will at some point either have a temporary limitation such as a broken leg or other injury, or else have short term difficulties such as: carrying heavy luggage, awkward bags of groceries, or laundry; talking on a cell phone; holding onto an active child; be mentally deep in thought because of a work issue or personal problem; a sore arm from playing tennis; and any number of other things that might limit one's ability to lift, concentrate, see or focus, move, or reach.

In addition, almost everyone will develop longer-term limitations that may affect what they can do as they grow older – and will benefit from universally designed places.

Universal design will benefit a wide variety of people living in our communities.

Accessible Places are Safer Places

Researchers have suggested that places that are more accessible are often safer because of elements shared with universal design, which may include increased lighting, more pedestrian traffic, and open spaces. “The Safe Cities approach [combines an awareness of social development and physical design] ...to make the community safer for everyone, with a particular focus on vulnerable, and marginalized groups (e.g. women, children, elderly, visible minorities, physically and mentally challenged).”¹⁷

Economic Costs and Benefits

In addition to the previously mentioned moral benefits, universal design can often benefit the financial bottom line. In the majority of cases, universal design elements can be added to a product's design for little or no cost. However, in some situations, designing for everyone may include features that cost more than traditional designs.

Increased Marketability

Creating more accessible designs can increase the market for many consumer products. Designs that are more accessible to people with disabilities typically benefit able-bodied users as well by reducing fatigue, increasing speed and decreasing the number of errors made. Through deliberate and informed planning, universally designed features tend to require less strength, agility, mobility, coordination, cognition, and accuracy to accomplish the same task.

Not only can universal design increase the marketability of products to people without traditional limitations, it opens up the same market

to a potentially large population of people with varying disabilities and limitations. It is obvious that if a person cannot find or maneuver within an establishment then that company has lost business. On the other hand, if a company can welcome customers regardless of their level of ability then that business will attract people who are normally excluded.

In a March 1997 poll by Omnitel¹⁸, 77% of Canadians reported that they know or regularly interact with a family member, friend, or other person who has a disability. When going out with friends or family who have a disability these consumers would also be more likely to patronize accessible locations.

The traditional, piecemeal method of designing for each small and unique group with different and specific needs is often impractical because there is such a wide variety of different needs, and people's needs change day to day or as they age. On the other hand, universal design makes good business sense.

Decreased Modification & Compensation Costs

Additionally, traditional designs that limit people's ability to work, live, or function independently in their environment can increase costs for individual employers and the broader community by requiring special modifications and accommodation.

Designing for everybody in the first place can result in significant economic benefits because future retrofits and modifications can be quite costly. There is much benefit from 'doing it right the first time'.

Universal Design Does Cost

In the short term, however, there may be some situations in which designing for everyone may cost more or may seem to constrain the design. In these cases, the rationale for using universal design is either that the short-term cost is worth the long-term return, that universal design reasonably increases the value of the design, or that there is an ethical bottom line rather than an economic one.

At the very least, it is important to *consider* if it is appropriate to make a certain design more accessible to more people by using the principles of universal design.

With careful and informed design, providing spaces that everyone can use can have a bottom financial line that is usually at least comparable to traditional designs.

How to Make Universal Design a Reality?

Although there is undoubtedly a long way to go to ensure that Waterloo Region is a place that everyone can enjoy, people who advocate locally for universal and barrier-free design sense that Waterloo Region has become more accessible over the last few years. It was noted at the International Conference on Universal Design in June 2000 that, "The universal design movement is at the tipping point."¹⁹

Universal design should be of concern to everyone although it is especially important for architects, planners, engineers, project funders and decision-makers, advocates, and others.

It is critical to involve those who will be using the design from the beginning of the planning process, whether it is designing a website or a pamphlet, an office building or a house, a telephone or a countertop.

What Funding or Help is Available?

Specific funding for implementing universal design or barrier-free accessibility is often difficult to find or qualify for, disjointed, or only temporary. However, there may be limited funding or supports available. Call Trillium Access Grants (phone 1-800-263-2887 or visit http://www.trilliumfoundation.org/English/program_access.html); Residential Rehabilitation Assistance Program for Persons with Disabilities or other Canadian Mortgage and Housing Corporation assistance (phone 1-800-704-6488 or visit <http://www.cmhc-schl.gc.ca>); Ontario March of Dimes (phone 1-877-369-4867 or visit <http://www.dimes.on.ca>); or contact the Independent

Living Centre for information about current funding sources for private and non-profit initiatives.

Policy Issues

- Is accessibility consistent across Waterloo Region?

Some anecdotal evidence suggests that the cities are significantly ahead of the rural townships in accessibility and accessibility services because the townships do not have a large enough population base. (i.e. it is difficult to advocate for rural parallel transit.)

- Do the Federal or Provincial governments have strong accessibility regulations or guidelines to encourage universal design?

The United States has the Fair Housing Act and the Americans with Disabilities Act, which provide strong minimum accessibility regulations and enforcement, among other purposes.

In May 1995, the Ontario Progressive Conservative government promised to enact an "Ontarians with Disabilities Act" within their first term in office. Six years later, an act has not been passed although there is clear public support for a strong Ontarians with Disabilities Act to be created. Waterloo Regional Council passed a resolution in September 2000 supporting Ontarians with Disabilities legislation.

- Few of the cities and townships in our region have strong accessibility requirements or guidelines in their official plans that go beyond building code guidelines.

Universal design is a powerful concept with both strong ethical and financial justification. "[It] requires an understanding and consideration of the broad range of human abilities throughout the lifespan. Creative application of that knowledge results in products, buildings, and facilities that are usable by most people regardless of their level of ability or disability. By incorporating the characteristics necessary for people with physical limitations into the design of common products and building

spaces, we can make them easier and safer for everyone to use and more widely marketable and profitable." ²⁰

Local Groups and Resources

- **The Independent Living Centre of Waterloo Region** facilitates individual growth towards greater independence, creates opportunities to make informed choices, and assists in the removal of barriers to full participation (phone 519-894-8350, TDD/TTY 519-894-8377, or visit the website <http://www.ilcwr.org>)
- **KW Barrier Free Advisory Committee** works cooperatively with municipal governments, agencies, and members of the community to address issues of accessibility, inclusion, and disability awareness in order to enhance access (phone 519-741-2229, TDD/TTY 519-741-2385)
- **Cambridge Access Awareness Committee** works to raise awareness about access and acceptance issues for everyone in our community (phone 740-4681x4384)
- **KW Access-Ability** is an information and resource centre pursuing equal access and equal opportunity for all (phone 519-885-6640, TDD/TTY 519-885-4526 or visit the website <http://www.kwa.on.ca>)
- **Universal Design Institute** is a Canadian research institute located at the University of Manitoba (phone 204-474-6450, or visit the website <http://www.arch.umanitoba.ca/cibfd>)

Literature & Internet Resources

- **Center for Universal Design**
<http://www.design.ncsu.edu:8120/cud>
- **Product Design Ideas Browser**
<http://www.trace.wisc.edu/docs/browser>
- **"Universal Design in Housing"**, by Ron Mace, in *Assistive Technology*, Vol. 10, No. 1 (1998), <http://www.adaptenv.org/examples/article3.asp>

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For more information about universal design or disability issues and local resources, help with individual difficulties, or peer support, please contact:



**Independent Living Centre
of Waterloo Region**

3400 King St E, Kitchener, N2A 4B2
519-894-8350
info@ilcwr.org
<http://www.ilcwr.org>

For more information about social policy issues and data, for a list of other issue papers in the Waterloo Region Trends Research Project, or other work of the Social Planning Councils in the Waterloo Region, contact either Social Planning Council:



**Social Planning Council
of Cambridge and North Dumfries**

24 Queen's Sq, Cambridge, N1S 1H6
519-623-1713
spccam@sentex.net
<http://www.sentex.net/~spcplan>



**Social Planning Council
of Kitchener-Waterloo**

68 Queen St, Kitchener, N2H 2H2
519-579-3800
spckw@waterlooregion.org
<http://www.waterlooregion.org/spc/kw>

Endnotes:

- ¹ By Ron Mace, "A Perspective on Universal Design" at "Designing for the 21st Century: An International Conference on Universal Design" on June 19, 1998. [online] Access: <<http://www.adaptenv.org/examples/ronmaceplenary98.asp>>
- ² Trace Research & Development Center, "General Concepts, Universal Design Principles and Guidelines" [online] Access: <http://www.trace.wisc.edu/world/gen_ud.html>.
- ³ "What is Universal Design: Definition". [online]. Centre for Universal Design. Access: <http://www.design.ncsu.edu/cud/univ_design/ud.htm>
- ⁴ Institute for Universal Design, "Universal Design", for Manitoba Committee of the Active Living Alliance for Canadians with a Disability.
- ⁵ Ron Mace, "A Perspective on Universal Design". *op cit*.
- ⁶ Ron Mace, "Universal Design in Housing". *Assistive Technology*. Vol. 10, No. 1, (1998). Ron Mace, an advocate for accessibility for all, and the late founder of the Center for Universal Design is widely recognized as formally developing the concept of Universal Design.
- ⁷ The principles are quoted verbatim. They were compiled by Bettye Rose Connell, Mike Jones, Ron Mace, Jim Mueller, Abir Mullick, Elaine Ostroff, Jon Sanford, Ed Steinfeld, Molly Story, & Gregg Vanderheiden, for The Center for Universal Design, "The Principles of Universal Design", Ver. 2.0 - Revised April 1, 1997.
- ⁸ The images on page 2 and 5 are from the Centre for Universal Design website <<http://www.design.ncsu.edu/cud>>. The image on page 3 is from the KW Barrier-Free Advisory Committee. All images are used with permission.
- ⁹ Adaptive Environments "Universal Design Principles". Access: <<http://www.adaptenv.org/universal/imagesofud.asp>>.
- ¹⁰ Trace Research & Development Center, "General Concepts, Universal Design Principles and Guidelines". *op cit*.
- ¹¹ Theresa Boyle. "Disabled Win Pledge on Rights". *Toronto Star*, March 23, 2001, A1.
- ¹² Adaptive Environments "Universal Design Principles" Access: <<http://www.adaptenv.org/universal/imagesofud.asp>>
- ¹³ Noted in the first issue paper in this series, "Disabilities: Demographics" (March 2001) and uses Statistics Canada data. Projections are based on the assumption that the rate of disability for each age group will not increase.
- ¹⁴ The most reliable figures of population demographics for Waterloo Region are 1996 Statistics Canada figures. These were applied to 2001 population projections from the Regional Municipality of Waterloo Planning Department (March 7, 2000).
- ¹⁵ Universal Design Institute, "Why Universal Design" [online] Access: <<http://www.arch.umanitoba.ca/cibfd>>.
- ¹⁶ Provincial labour force data is for December 1999 and is from the *Labour Market Report (January 2000)*, by the Ontario Ministry of Training, Colleges, and Universities. Insurance claims data is from "Statistical Supplement to the 1999 Annual Report" by the Workplace Safety and Insurance Board.
- ¹⁷ James Edward Austin, "Planning for a Reduction of Fear and Crime in an Urban Neighbourhood". University of Waterloo, Thesis Master of Arts in Planning. Waterloo, Canada, 1999.
- ¹⁸ For the Ontarians with Disabilities Act Committee [online] Access: <<http://www.odacommittee.net/survey.html>>.
- ¹⁹ By Marc Mercer, "21st Century II: An International Conference Brings Universal Design Movement to Its Tipping Point" *Newsline*, Vol 3. No. 2. (Fall 2000), Centre for Universal Design.
- ²⁰ Ron Mace, "Definitions: Accessible, Adaptable, and Universal Design" [online], Fact Sheet #6 (1990), The Center for Universal Design. Access: <http://www.design.ncsu.edu:8120/cud/pubs/center/fact_sheets/housdef.htm>