

Design for All

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Chairman's Desk:



'Sex as driver for design' is an unusual topic and perhaps it is innate to designing itself. It is likely that designers are subliminally using this driver while designing the products but too unconscious of it to discuss freely. Man and woman have evolved from unicell and why, when at what time we have assumed two different cell identities is mystery for us. This is the reason of natural attraction for opposite sex and it drives both to utilize all possible efforts to unite again. We revolve around sex and it becomes our center of activity. Our inner energy is a major driving force to be around it.

An interesting incident motivates me to write about this topic. When I was a child and studying in a school, a number of laborers were assigned the job of erection of electric pole made of iron rail track and it was long - more than 25 feet and very heavy. In those days it was manual work and cranes were rare. In our school one of the lady teachers was young and in my opinion she was most beautiful and lovable teacher. Her usual dress code was sleeveless blouse and very light, normally transparent sari. I can say now that every young, old male of that surrounding were having craving and

interested in her. How can our laborers left out! After all they were male.

Their supervisor's job was to create rhythmical vocal shout so that the entire laborer could pull the rope tied with pole in one stroke in unified force and slowly reaching close to vertical and made to stand in deep pit. His job was to use the beauty of our teacher and create a imaginary situation as all laborers were enjoying sex with her and it made them to pull the pole with unusual artificial power and lift it with more than normal pull. The feeling of sex artificially stimulates and makes them unusual powerful than normal, binds and unites to lift the pole. Is feeling of sex not playing in design of lifting the pole? Is it not creating good relationships among the laborers? Good relationships are buffers against the damaging effects of all life's inevitable let downs and setbacks.

Another example when laborers lays the heavy duty cable and while placing in trench they also use filthy, abusive and sexiest language and shout in chorus to stimulate themselves and lift the heavy cable and lays properly. Is sex not driving force and playing significant role in design?

Look at almost any object that has been designed, in the right way, and you can see how it can be construed in a sexual manner. Sex is a theme that permeates the world of Industrial and Product design. Sex is undeniably everywhere and is one of the few things in this world that is truly universal. Evolutionary biologist may differ from my point of view. They believe majority of the species in this world simply work for vegetation and nothing to do with sex. There

may be various opinions but I am expressing designer's point of view and I may not sound good as what a good designers thinks for 'sex and design'. I am not an authority but my approach may open a new discussion.

If we look at buildings of religious place somewhere they are reflecting it is inspired either from male or female sexual parts. Does dome not remind us the shape of woman breast? Is empire building not reflecting masculinity? Is it not tall skyscraper gives sense of masculinity? Is heaviness, strength is not associated with male? Curved shape may suggest the womb .Perhaps we long to crawl inside the building and curl a fetal position. Is femininity of the building expressed in its curving forms? Is Taj Mahal androgynous building? Is Khajuraho explicitly erotic building? You name anything and sex is there. I recall a statement in a book and it is recorded conversation between Darwin and his daughter where she had stated 'Father, I find sex is everywhere in this world, in soil, water, air and each portion of the world is nothing but full of sex"

In our daily vocabulary we use unusually those words that connote or represent sex. We use often in praising and most of the time in pricking or let down others. When simple word pricks and irritates it becomes abusive language .Abusive word shows our love for sex. It is widely believed that 'squaw' is a crude word for the vagina. But Prof William Bright and many others differ and they found it is real meaning is 'young woman' and how it has changed the meaning in due course of time is a mystery. I always say "all 'ism' leads and finishes at the top political chair. Similarly man's culture, mannerism and philosophy are more vibrant and expressive till he chases the skirt and exhaust under

skirt of the woman." When it so powerful energy why not discuss for benefits of our designers.

Design is a conscious process that encompasses the traditions and aesthetics of fine arts, architecture and engineering. Everything in our world is designed, from the homes we live in, the cars we drive, the clothing we wear, down to the way our food is laid out on a plate. Elements of shape, texture and color interact with varying intensity to either take our senses by storm or quietly fuel our perceptions of erotica. Is it not satisfying our sexuality? Sexual energy is within the man and it is in purest form. In man it is beyond the concept of reproduction as in other species. This energy has both possibilities, it may help in creating beautiful world or destruction around us (if it is not channellize properly or it is misguided. For example 'rape as a sexually motivated act'. In other words, rape occurs as a result of a conscious or unconscious desire for sexual contact on the part of an often socially inept perpetrator). St Augustine who was known for chasing the every woman's petticoat of his city (he lead a wild and licentious youth) and all of sudden a divine light struck him and totally transformed him to saint and inspired to write most famous book 'Confession of St Augustine' Was aversion from sex the reason of writing such a masterpiece? Attraction as well aversion for sex has same intensity and our designers should be smart enough to utilize this pole apart latent energy for the benefits of the society.

If man and woman are enjoying and their emotion is missing these acts is not worth mentioning. It is nothing but someone kicking the scooter or motorcycle for start. If you are deeply

involve in this act and a sudden thought popup 'what rubbish am I doing? What makes me to jump to and fro over the woman?' This thought will lead us to realize 'this is worlds most nonsense act'. We must be very careful while designing that too much emotion may ruin the design or without emotion may not made us good designers. I always advocate right blend of emotions makes our association for long duration of time with product and helps in improving our thought process and refined our actions in helping in designing masterpieces. Human beings have evolved a set of positive emotions- gratitude, mirth, awe and compassion- and it is these that enable us to lead meaningful lives. Designers should first prove themselves as good human being and has concern for betterment of the society then they should practice design.

When I meditate after reading the Indian and Greek mythological stories I find lots of similarities and full of sex in it as an object or tools for either destroying or for construction of their specific goals. Gods fall in trap because of weakness and craving for sex. They come out of their problems by using the sex as war weapons. Some time they use sex as an obstruction for the person who is praying to achieve the blessing of his god for something that is not good for mankind. Reason praying devotee may misuse to meet his sinister intentions and not capable to handle the misuses of that product. Similarly as a designer we should educate the users what are the consequences if it is not handle properly. Misuses should be vital consideration for designers.

Sometime any designers have invented the solution for that problem for that mankind has struggled a lot to find for

centuries. Once the person judges pros and cons and finds it has more hidden danger than benefits and may invite havoc for mankind, he immediately dismantles and destroys his designed products. He sacrifices good fortune, name and fame for protecting the future of mankind. We must train our designers for this type of social judgment and it should be integral part of good designers.

Medical practitioners from all over the world were facing the problem of low sex drive in a few men; it made the commercial pharmaceutical company to exploit this market. They accidentally invented the blue pill to stimulate the low libido. My first question is there any uniformity in sex. What are the normal standard parameters of normal male of playing with sex? Even minor factor like season plays significant role in sex and men's eyes are appraising better when female is expressing herself in bikini in dead winter. How can they standardize it? Result is. Majority of normal males are victim of artificial notion of psychological shortfall and they come under trap of not meeting the sexual need of a normal woman.

When blue pill was designed and they created the nice brand image by correlating with blue color (color of serenity). It has changed the psychology of persons. Those living in falsehood of sex thought it is boon for them and they can now behave by swallowing this magic blue pill as normal human. I believe more perversion and violent nature of man has openly emerged post Blue pill. Earlier invention of simple condom has introduced the sense of responsibility and safety among the male and female. With the introduction of dotted condom was act of expressing the mind of perversion.

Dotted condom works as file to the most sensitive part of the woman and those wounds in due course of time turns to ulcer. Is it not act of disrespecting woman? It is my advice to the designers that they should avoid introducing the society perversion in their product and never be party in helping in enhancing the society perversion. They should use the sex for stimulation the unity and enhancing the power of person but not to hurt the individual and help in torturing.

I admire the modern automobile designers. They have introduced the power steering, power brake and more features of safety for women in vehicle. It has changed the outlook of today's woman. Their psychology has altogether changed where much power is not required. I consider old man and woman has not that much power compare to normal adult male. Gone are the days when two wheelers like scooter or motorcycle used to start with powerful kick and it was very difficult for woman to start because they lack that strength for kick. With the introduction of self starter it has revolutionized the society and changed the concept of lifestyle of woman.

When automobile designer designs while keeping female body in their mind there is a chance end user prefers in buying and it helps the company in commercial benefits. Second biggest advantage is that there is drastic fall in road accident if vehicle resembles female body. It's man's nature to provide protection to woman and he does with his vehicle. He drives cautiously even to avoid any chance of scratches.

While lecturing my students I take their attention to the cinema. It is the products where concepts of design are utilized at optimum level and their characters are designed

with costume, make-up and audio video in such a way that viewers are carried away by their characters. If the character laughs audience laughs if they cry they also cry. I have never come across any designers who have ever designed their products in such a way that it creates emotional bonding as cinema does. I specially attract their attention by mentioning the film 'Basic Instincts' where heroine of the film commits murder and as investigating officers quizzes her she shows her private part and allow him to peep that partial area as she is interested in him and she uses basic instinct to defend herself and arouses sex in him. She uses sex as a tool to save her life and it was impossible for normal human beings to ignore the call of sex. Why not our designers use this tool while designing the products? Why are they silent on this powerful subject?

Thomas Mann has written a story 'Holy sinner'. A story of man who had enjoyed the sex without knowing she was his mother. My interpretation is that when man and woman enjoys the biological system activates and governs as per its rule. We have social system where man has created his own laws to work for betterment of the society. In this story interface of two systems was not proper. King has married the wife of defeated king and in this case she happens to be her mother. As per biological law they were perfect. But social law was prohibiting them. It is the problem of improper interface of one another systems. If the interface is not proper it leads to guilty, repentances etc. The same thing happens with hero of this story. It means we should design the product and utmost care should be taken to the interface. Otherwise it will ruin the product. To be universal we must take care of abilities and challenges of man.

In a family if it is balance family (It is not case of joint family. It is about nuclear family of husband, wife and Children) the culture is all together different to those families who are either with sons or daughters. Nature also designs in such way that there should be proper balance in sexes. It is the human knowledge that intervenes and assumes it is superior to nature that destroys her by introducing there sinister knowledge of abortion, sex test and infanticide etc. Can we call ourselves educated civilized? Basically we design our life with very narrow vision and our faculties are not that knowledgeable and capable to understand the work of nature in holistic. Designers should work for helping in work of nature rather creates hurdles in her way. As designers we use the definite biological, social and even gender wise definition of man and woman while designing the products. I persistently ask the psychologist or designers from every possible platform 'how do you define the basic definition of man and woman in psychology? I am not interested in biological, social or any other definition.' If we do not know the definition of man and woman in psychology how can we introduce the concept of psychological effects in our design. Design is no more an isolated work it is constantly under the influences of developments of others areas.

Whatever the culture, background certain habits are universal. Tearing pages from library books are universal practice. Writing on the wall of urinal to vent out their sexual feelings is universal. If someone finds a beautiful woman uses elevator regularly to reach her destination, there are silent admirers fulfill their sexual ambitions by writing filthy words about her and even draws the graphic of her private parts. Is this not showing that every person has some or

more inclination toward sex? Why should not we exploit in our design? Is a urinal on a podium art? Is it not a creativity of person who draws drawing of female's private part by sheer imagination? Only thing is here he is admiring the woman and wishes to enjoy with her but fear of some kind of laws prohibits him. It may be any kind of fear of social, religious, local, moral laws etc. I call it intelligence is sign of genetic fitness and able minds often come equipped with large vocabularies. When male flaunt their linguistic peacock features as a sexual display. Simply displaying certain items it becomes fashion statement. Is it not satisfying his/her sexual hibernated desire?

If the designers think the sex as male or female, child or adult, old or young it is boring. It's one-dimensional cut from emotional connection. I always advocate have passion in design. Passion is like everything else: it ebbs and flows. If we introduce passion in our design sex has hundred dimensions to it. Play design with passion and it will lead you to secure sex ' synchrony sex' where emotional openness and responsiveness, tender touch, erotic exploration all come together and it will take you as a designer to that height where no one has ever dare to attain that height. Here designers should not ignore certain level of 'discordance' amongst the human population. Discordances between the biological and psychosocial levels, such as when the gender identity does not match the anatomic sex, or between the various psychosocial levels, such as when the gender role does not match the gender identity, are even more common, but less well understood, generally speaking. Some of the levels of discordance have enormous significance to the lives of those affected and their relationships with society. In

some cases, the causes of the discordances have acquired controversial political significance. Societies vary on the values placed on some discordances

Design has the power to shape experience; lending intensity to sexual encounters and adding a sensual thrill to everyday objects. From subtle manifestations to overt declarations, sexual imagery appeals to the universal human desire for pleasure.

Design with sex that can use in exploring the multifaceted relationship between design and positive feelings such as affection, desire, pleasure and romance, but also jealousy, distance, separation or pain.

These feelings are use in video game. Is not female figure in video game as sensual body? Is it not the player experiences sense of frustration, confidence of winning? Is it not helps in secretion of our adrenal gland?

We are extremely delighted to bring the 2nd volume of Universal Design@sfsu and entire two volumes are available in the book form also at our website www.designforall.in that is originally design for our newsletter. Click for downloading this link <http://www.designforall.in/ricardogomes.pdf>

This is sequel of our April 2009 Vol-4, No-4 issue and Guest Editor is Prof Ricardo Gomes. His serified contribution of his articles has raised our bar of standard and will make special in the eyes of our readers. We have received very high appreciation for our April 2009 issue by our readers and we

hope same affection and love will be expressed for the May 2009 issue.

Our servility for Prof Gomes and our newsletter is outcome of his high respect for his design creativity and commitments. I pray that in mass people of nature of Prof Gomes should join our social movements and contribute their articles, latest findings for our Newsletter.

The old mantra "form follows function" doesn't work anymore for design.

With regards

Dr Sunil Bhatia

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IMPORTANT ANNOUNCEMENT:

We are releasing a video film of approximately 45 minutes on concept of Universal/ Design For All/ Inclusive Design Month of May 2009(probable date) and speakers are

Prof Peter Zec of Red Dot, Germany,

Prof Jim Sandhu, Uk

Mr Mike Brucks , ICDRI

Prof Lalit Das, India

Mr John Salmen of Univesal Design Consultant Inc, USA

Mr Pete Kercher, Ambassdor EIDD (2nd Volume)

Prof Ricard Duncan, USA,(2nd Volume)

Ms Onny Eiklong, Norweign Design Council(2nd Volume)



Those who are interseted in free DVD kindly write to us along with their postal address or you can download from our website www.designforall.in but it is huge file(approx 1GB) .

Forthcoming issues of Newsletter of Design For All Institute of India

1.

We are celebrating the birth anniversary of Late Prof Ronald L. Mace of North Carolina state university who was responsible of popularizing the concept of Universal Design in United States of America. It is befitting tribute from our newsletter that we should publish work of students of North Carolina State University Universal Design Centre.

We requested Prof Sharon Joines to be Guest editor of that



special issue and she has accepted our invitation. This special issue is coming out in the month of June 2009.

Those who wish to share their thoughts, ideas or experiences of Prof Ran Mace kindly submit the contribution before 10th May 2009 to:

Sharon Joines, PhD

Assistant Professor of Industrial Design

Research in Ergonomics and Design Laboratory, Director

Center for Universal Design

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State University Raleigh, NC 27695-7701 FAX: 919-515-7330

E-Mail: Sharon_Joines@ncsu.edu

3.



For 40 years, the International Design Centre Berlin as an incorporated society has been a companion to designers and entrepreneurs. It offers great advantages to companies, design-experts and all persons, who are interested in design. The structure of its members constitutes a manifold design-oriented platform in favour of the exchange of ideas and professional networking. The IDZ is a competence centre, a consulting office and an intermediary for design in Berlin



This is great occasion that we have invited this esteem organization for publish a special issue with us and they have agreed to contribute the July 2009 Vol-4, No-7 issue and the Guest Editor will be International Design Center Berlin Deputy Chairman of the Board,

Professor Birgit Weller.

4.

Our one of the forthcoming issue of year 2009 newsletter has the theme "INNOVATION IS HOPE" This theme is suggested to us by our guest editor of that special issue who has accepted our invitation to be Guest Editor of this special issue and agreed to invite the different contributors from his organization and will write editorial for that issue. He is yet to announce the month of 2009 for this special issue on special theme.



Prof. George Teodorescu, Head of tesign design consultancy, director of IIID (International Institute of Integral design), ICSID (International Council of Societies of Industrial Design) board member.

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5.

When it comes to design, Africa is not far behind. Different



countries in Africa are taking a lead in promoting design in all its aspects and applications.

A glimpse of “Design scenario in Africa” is long overdue and it is expected to inspire global designers in order to collaborate and conduct joint programmes with African countries. A forthcoming issue will focus on ‘Design Scenario in Africa’. Professor K L Kumar, who has

pioneered the postgraduate programmes in the faculty of Engineering and Technology as also in Product Design and Architecture at the University of Botswana has agreed to edit the special issue of February 2010 Vol-5, No-2.

For further information and submission of articles,

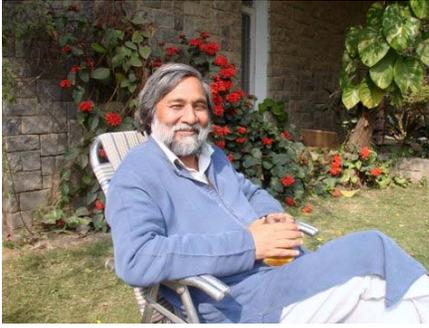
Professor Kumar may be contacted as follows:

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From the Editors Desk

In this May 2009, Vol 4, No. 5 issue, we bring you the second part of the book *Universal Design @ San Francisco State University*, very ably put together by Prof Ricardo Gomes. The entire book is also now available from our website. This will be an extremely useful compendium, free from other distractions like topical news. It will excellent as a printed copy and suitable for researchers and educationists.

The previous issue focused on landscape design and curriculum design as the two ends of Universal design in a university system. This issue expands the domain further and brings in 'Designing for Majority' in it ambit.

The first paper 'Designing to Live: The Value of Inclusive+ Universal' is by Prof Ricardo Gomes. The paper corrects and enlarges our earlier understanding built around 'Living by Design'. It explores the importance of designers working with communities, responding to constraints, and maximizing ownership of users and other stakeholders? The new paradigm shift in expanding the role of designers in the 21st Century will continue to promote exemplary projects with an emphasis on participatory design, universal design and social responsibility. It will lead to 'Designing for majority' and Designing by Majority' and ultimately to the 'Democratization of Design'. This work is an

excellent reflective research output of his design sabbatical immersed in Brazil. It is rooted and emerges from the wider reality of Latin America.

The second paper also from Ricardo "Inclusive Design in the "Majority World" Designing for the 21st Century Student Design Competition was a call to young design visionaries who appreciate the creative power of design for real people in real places. 200 student teams registered for the international student design competition from 41 countries. There were 14 jurors from across the world. The competitors were required to bring together Universal Design, Sustainable Design, Low cost and Design Excellence while addressing the practical needs of the "majority" world on an equitable scale.

The third paper by J. Rabanal, L. Magpiong and C. BloomeWater is based on one of the three winning entries at the previously mentioned design competition. A Rainwater Harvesting and Playground Design for a Community Center in Haiti . It was one of the three entries selected for presentation at the conference in Rio de Janeiro. The team's proposal is a design that integrates landscape features and a community center to harvest rainwater and promote inclusive play among children, thereby bringing an essential sense of vitality to the community.

The fourth paper covers the work of Brian Donnelly, product designer / furniture entrepreneur and professor at SFSU. He founded Lifespan Furnishings. A company, formulated to design furniture for the elderly, the pregnant and the ill. After caring for his aging father, Brian Donnelly says he recognized a need for seating products that could provide better leverage for people with limited strength and balance.

The next three papers have grown around Whirlwind Wheelchair International (WWI) developed by Marc Krizack and Peter Pfaelzer. Whirlwind Wheelchair International is a program of the Center for Civic and Community Engagement at San Francisco State University (SFSU). Whirlwind Wheelchair International works to make it possible for every person in the developing world who needs a wheelchair to obtain one that will lead to maximum personal independence and integration into society. The second paper in this series discusses the technology transfer approach at WWI. In contrast to the prescriptive design methodology conventionally adopted for mass manufacturing, WWI emphasizes the importance of a descriptive design methodology. For a product like a wheelchair, that can be prototyped quickly and inexpensively, the descriptive design process is efficient and cost-effective. For WWI, use of the descriptive design process derives naturally from the socio-economic situation in developing countries and from the complex nature of disability itself. I agree with them. That's also my experience. After all there is much more to wheel chair. That is the theme of third paper in the series.

The next paper in this issue is by Dr. Paul A. Beckman on Applying Universal Design for Learning in a Graduate Management Information Systems Course. It is a case study of a bold experiment detailing how promising UD actions were extracted from an analysis of the existing literature. From this list of specific UDL elements, three were chosen to implement in a classroom setting. The paper extends the scope of Universal Design in learning and I hope other non design academicians will take note and benefit.

Last but in no way least we have Natasha Boskic, Kirsten Bole, Kevin Kelly and Nathan Hapke with their very serious and detailed study on Web Accessibility and Universal Design. Web accessibility is especially critical in education to ensure that all students have fair and equivalent access to learning materials. They show the way Web accessibility can be truly enhanced by proper programming.

Thank you, Prof. Ricardo and your team for sharing your work with the Design for All community worldwide.

Enjoy the issue. We are known and remembered by what we share. So keep sharing and be happy.

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Guest Editor:

Ricardo Gomes



Ricardo Gomes received a BFA in Industrial Design from the Massachusetts College of Art in Boston, MA (1980), an MFA in Industrial Design: Design for Low-Income Economies (1984) and an MA in Architecture: Alternative Building Technology & Materials (1993) from the University of California, Los Angeles.

He is a Professor and Chair of the Department of Design and Industry (DAI) at the San Francisco State University (SFSU) where he has been a faculty member since 1991. Prof. Gomes is the Director of the Design Center for Global Needs, a non-profit international research and development center dedicated to promoting responsive design solutions to local, regional and global issues such as universal design, health care, the aging, community development and sustainability.

For nearly 25 years, Prof. Gomes has presented at national and international conferences and seminars and served on juries related to Inclusive Design, Universal Design, Design for Social Responsibility, Global Design and Cultural Identity. He has lectured at universities throughout the U.S., Africa, Europe, Latin America, Japan and Taiwan

Designing to Live: The Value of Inclusive + Universal Design

Introduction

Over thirty years ago the British pop artist Richard Hamilton published a text entitled, "Popular Culture and Personal Responsibility," in which he defined an ideal culture as, "one in which awareness of its condition is universal" ¹

Good design can be achieved by focusing the efforts of designers to develop products and environments that will be more inclusive - as opposed to preferential, in enhancing and facilitating the areas of urban community development.

How do designers work with communities, respond to constraints, and maximize ownership by users and other stakeholders? The new paradigm shift in expanding the role of designers in the 21st Century must continue to promote exemplary projects with an emphasis on participatory design, universal design and social responsibility.

Design expresses the economic, social, political and cultural complexion of our society. It renders an image of the conditions of our society and the communities that directly profit, or are contingent to its benefits. In this sense, it communicates a vast amount about the priorities and values of our society. Nigel Whitley's *Design for Society* (1993) critically asserts this observation in an attempt to establish a foundation for a more socially-responsive development of design.²

¹ Hamilton, Richard, "Popular Culture and Personal Responsibility,"(1960) *Material Culture and Everyday Life, Theories and Documents of Contemporary Art*, Editor, Kristine Stiles, Peter Selz, pr. 298, University of California Press, Apr 18, 1996

² Whitley, Nigel, *Design for Society*, Reaktion Books, London 1993, p. 158
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This design sabbatical research investigates the role of design and designers within various social, economic and political contexts. It explores our values and ethics as designers to better understand what, why, and for whom we are designing.

Historically, the principle role of the designer was to increase the sales and profitability of a product. However, in today's society there is a paramount need to broaden the awareness of the designer with respect to the economic livelihood and sustainability, of urban inner-city communities in Asia, Europe, and U.S, as well as the emerging nations in our global society.

Today, in the global paradigm shift that is currently in flux, we are looking at a "majority" designer and marketplace that does not design for the "majority" world. The majority of the design world largely facilitates in urban contemporary society, but the majority of the world lives outside of that urban "westernized" contemporary sphere of influence. So the question and objective of design should be how can we better design and respond to the basic well being of the majority world in an inclusive and sustainable manner, from an environmental, economic and social level?

The field research study which was conducted between November 2003 and February 2005, evaluates the various approaches and resources utilized by various universities, research centers, government and non-governmental agencies concerned with Accessibility and Universal Design issues in the U.S., Brazil and Argentina.

This study examines the objectives, resources and applications of these centers in respect to what distinguishes,

as well as characterizes, their research and practical approaches to universal design, accessibility programs, policies and implementation. The research also assesses the diverse and equitable approaches to universal and inclusive design that will be more responsive to the inherent needs and sustainable implementation of indigenous society's cultural values, resources, and economies of scale. The objectives of establishing such resources are to formulate a network of compatible linkages that are interested in sharing common interest and consonant goals.

The results of this study will be utilized to establish the Design Center for Global Needs (DCGN) at SFSU as a viable center for Universal Design Research and Inclusive Environments. The DCGN seeks to promote academic and applied research projects in this domain in the western region of the U.S. in conjunction with neighboring interest in Latin America and Pacific Rim.

During this one year research period, meetings, lectures, presentations and workshops were conducted at 17 universities and schools; 22 government and non-government agencies; and 10 professional design centers and organizations throughout the United States, Brazil and Argentina. These organizations and agencies were comprised of:

- Institutional – NGO
- Institutional/Professional – NGO
- University/Institutional – NGO
- Government Agency

The study offers visual abstracts of successful outcomes which integrate three key components of any successful, socially-sensitive design endeavor. All the solutions respect:

- (1) local context (culture & identity)
- (2) community partnerships (inclusive)
- (3) seek sustainable & universal solutions

Universal Design Centers and Agencies in Brazil

(University/Institutional – NGO's)



Center of Independent Life, Rio De Janeiro (CVI-Rio)



CVI-Brasil 6th National Meeting,
Salvador, Bahia, July 22-23, 2004

The Center of Independent Life of Rio De Janeiro (CVI - Rio), established in 1988, extremely dedicated and influential non - government organization with modest financial resources that are bolstered by an abundance of dedication, commitment and As a leader in the independent living movement, it was the first “flagship” CVI organization in Brazil. Currently, there is a nationwide network of 22 CVI organizations throughout the urban centers in Brazil³. These centers are led by outstanding UD luminaries such as Regina Atalla of CVI - Salvador and Romeu Kazumi Sasaki of CVI - AraciNallin.

Today CVI-Brasil continues to trailblaze the burgeoning

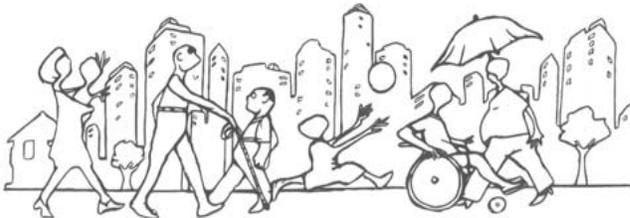
³ Centro de Vida Independents do Rio de Janeiro (CVI-Rio), <http://www.cvi-rio.org.br/cvi.asp>

independent living movement in many countries of Latin America. CVI-Rio, led by Lilia Pintos Martin and Veronica Camisao, is affiliated with the Catholic University in Rio de Janeiro (PUC-Rio) and located on the campus. It is an NGO and one of the more active and productive independent living centers in Brazil with a well experienced and professional staff and personnel. The center has a direct association with the Industrial Design Department, its faculty and students who contribute to the wide range of publications and partnerships that have been established with the city government in Rio de Janeiro.

RECONHECENDO A NOSSA DIVERSIDADE

Somos iguais em direitos e deveres. Homens ou mulheres, pessoas altas ou baixas, negras ou brancas, jovens ou idosos, todos merecemos receber a mesma atenção e respeito em nossa condição humana. Ao mesmo tempo, dentro dessa condição comum, somos indivíduos com características próprias, diferentes uns dos outros, compondo a diversidade de nossa sociedade.

Alguns trazem a marca da diferença revelada em seu corpo de um modo mais concreto e visível, como as pessoas com **deficiência física**, que têm dificuldade para se locomover pelos lugares ou para alcançar ou manusear objetos. Outros apresentam diferenças em relação aos seus sentidos, como as pessoas com **deficiência visual ou auditiva**, que têm limitações para ver ou ouvir ou para se comunicar. E, ainda, as pessoas com **deficiência mental**, com diferenças em sua capacidade de compreender e de aprender.



CVI-Rio publications for the City of Rio de Janeiro, "Manual for Accessibility Residential Homes in the City of Rio de Janeiro."

Many of the efforts that have been made in Brazil relative to accessibility and universal design have been led by organizations such as CVI-Rio through some of the publications that have initiated. These informative and educational guidelines that have focused on making the urban environment more accessible, particularly in regards to the urban commercial center in Rio de Janeiro.

In addition to the outstanding efforts that have been established as a result of the CVI organizations, there are a host of equally dedicated and prevailing NGO associations that are either have direct partnerships with academic institutions; design professional organizations, such as :

- Pro Nucleo Acesso located within the School of Architecture and Planning at the Federal University in Rio de Janeiro led by Regina Cohen

- The Universal Design Center in the School of Architecture & Design Federal University of Santa Catarina Florianopolis, Brazil, led by Professors Vera Moro Bins Ely and Marta Dischinger.

- VIDA Brasil, is an NGO organization in Salvador, Bahia whose objectives is to engage and disseminate information to design professionals, architects and engineers regarding accessible and equitable built environments. In this effort VIDA Brasil seeks to guide and raise the awareness of the public and private sectors to inclusive and universal design measures.

For this the organization executes research, training, workshops, lectures, public policy campaigns. For the past three years, they have had a partnership with the Commission of Accessibility of Salvador - COCAS.

Some agencies, such as the Comissao Permanente de Acessibilidade (CPA), which was led by Edison Passafaro, are part of the Municipal Government of Sao Paulo.

Despite the broad network of CVI organizations, university-affiliated and government agencies, communications amongst these individual organizations needs to be better facilitated and disseminated. Although the CVI groups maintain a supportive network, some groups are often so overwhelmed with their local constituencies, that they often do not have the time, or resources to look beyond their immediate locale. There is no question that the

motivation, efforts, and objectives of the independent living community in Brazil are well integrated and representative of the vibrant, and unabashed festive fabric of Brazilian life, spirit and exuberant ambiance.



CPA –
Permanent Commission on Accessibility for the Sao Paulo City Municipality
SEHAB – Secretary of Habitat and Urban Development

One of the most effective, constructive, visionary and resourceful agencies with the potential for the greatest influence in Brazil was the Comissao Permanente de Acessibilidade (CPA). The agency put together a series of very resourceful guides for public buildings, streetscapes, transportation and the overall urban built environment.

CPA employed a successful identity branding and marketing scheme through the design and application of its “A” logo, as a way to promote accessibility awareness and compliance. The bold black capital “A” in the center of a bold red circle outline was used as a symbol of certification for publicly recognizing buildings, offices, stores, restaurants and establishments that had met the CPA codes. The letter “A” symbolizes A-quality, awareness, accessibility and acceptance

for ALL!

One of the very constructive projects that CPA has conducted in Sao Paulo region under the design direction of former CPA architect Gustavo Partezani was the development of the pre-fabricated concrete ramp for the improved access of to and from the street corners of Sao Paulo metropolis. This collaborative and resourceful venture was done in partnership with the Portland Cement Association of Brazil. In order to effectively move forward the agenda and goals of universal design beyond the voice of the advocates, one must identify and promote the benefits of universal design to potential stakeholders and beneficiaries in the government, business and the manufacturing sectors. Such is the case with the partnership of a pro-active agency like CPA in aligning itself through its government affiliation in establishing profitable and beneficial municipal contracts with industry.

The megalopolis of Sao Paulo, is a city of over 18 million people, the third largest city in the world. Do you think the Portland Cement Association is not aware of how many potential cement street corners with curb cut ramps that such a mega-city of this size will yield? As one can easily see, everyone benefits from Universal Design in the improvement and upgrading of the urban streetscape and built environment.



"Rua 24 Horas" (24 Hours Avenue): 24 hour city street mall in Curitiba, Brasil. The street mall and its services is available and "accessible" to the public 24 hours, 365 days of the year. Street mall contains "accessible" public toilets, free internet service, "Inclusive Digital" for persons with disabilities, the poor and the homeless, cafes, bookstore, etc. Mall pathway and surrounding city sidewalks feature tactile "caning" surfaces to facilitate the visually-impaired

In the area of Outdoor/Public environments, the city government of Curitiba leads the way from its legendary hallmark urban transportation, city planning, streetscapes and recycling system through its Institute for Research and Urban Planning of Curitiba (IPPUC) and Urbanizacao de Curitiba S.A. (URBS). As admired as the accomplishments and revered models of equitable social democratization have been established and documented in Curitiba, the city continues to strive to improve beyond its achievements.

In many of the older, historical and tourist areas of urban centers, such as in Salvador (Pelhourino) and Rio de Janeiro (Corcovado and Sugar Loaf Mountain) the streetscape and building access problems of older buildings need to be upgraded to better facilitate general access for all users of varying physical abilities. This problem is certainly not unique to Brazil, but is a more common dilemma in older, historical centers in Europe, the U.S. and Asia. Because the tourist industry is more economically developed and established in the traditional and more popular U.S., European and Asia venues, there tends to be a more structured and regulated standard. Since many baby boomers, retirees and older persons have more leisure time and disposable income, they comprise a significant and influential segment of tourist travelers. In addition, many families travel together, which

may be comprised of small children to grandparents. Such diverse transgenerational needs must be accommodated in an inclusive and universal manner. Consequently, there is a greater need to accommodate these users if you desire to attract visitors, tourists and businesses in your city. So there's a challenge to make these cities more accessible. Barcelona and Valencia, Spain has established themselves as "accessible" tourist and business environment. Their tourist bureaus promote how the city is as a tourist attraction because of its appealing accessibility, which makes the city more inviting, attractive environment for all users.

Community Partnerships



Publication for the City of Rio for Slum improvements, Monte Azul Slum, Sao Paulo Federal University of Rio de Janeiro, School of Architecture & Planning

The physical features and aspects of inclusive design are improving the quality of life. Well-being is only the beginning: Infrastructure and facilities programming offer opportunities for earning income which, in turn, enhance the general economic health of a community. But, the most important element for success is commitment by all, resulting in a true sense of partnership. The benefits are that people obtain an improved, healthy and secure living environment without being displaced. Experience has shown that urban upgrading projects are associated with strong social and

economic benefits.

The point - of - view of the study affirms what the renowned economist - philosopher and author of *Small is Beautiful* - E.F. Schumacher - believed when he called for a reassessment of the role and status of design in society. Schumacher states:

“What is at stake is not economics, but culture; not the standard of living, but the quality of life”⁴

Urban upgrading customarily provides a package of improvements in streets, footpaths and drainage as well⁵. It is an “inclusive” approach to the overall and sustainable improvement of the environment for all. When one refers to the “sustainable” factors in a project, this reference is not only environmental, but also economic in respect to the investment, growth, supervision and maintenance of the project.

Urban Upgrading is an area which you have not customarily seen addressed in the conventional concept of Universal Design. How does Inclusive or Universal Design relate to low - income economies of the “Majority” World? How does Inclusive or Universal Design relate to the informal sector of our society; the slums, the non - industrial or rural areas? How does a conventional designer, address and unconventional basic environmental infrastructure? So when you package the basic services in respect to access, clean water supply, adequate sewage disposal, this is where you can begin to establish an inclusive, universal Design process with accessible measures.

Such an “unconventional” design process is a very distinct

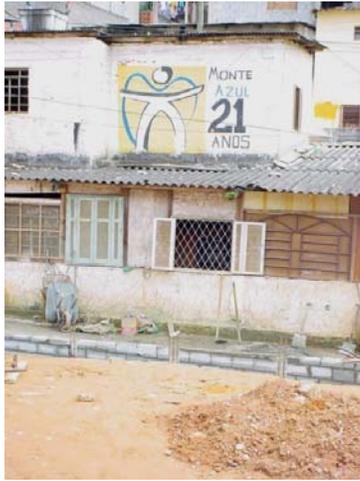
⁴ Eliaho, Rebecca, *Designer Ethics*, Creative Review (March 1984), p.44

⁵ *<http://www.thinkcycle.org/dtm>

approach that goes well beyond the conventional design process of passive brainstorming, sketching, visualizing and prototyping. It is not an esoteric, stylized design approach, but a more applied and essential approach that celebrates efficiency, comfort and environmental well - being.

It may be as simple as designing a sustainable urban pathway that can optimize the creative and feasible use of ramps. The physical improvement process is only the beginning of what must be a holistic and comprehensive process that incorporates income - generating opportunities and social incentives in terms of dealing with the economics and the health of the community. Essentially, upgrading is an inclusive and participatory design development process that embarks the end - user on a path to becoming a recognized or regularized citizen.

Some of the basic infrastructural services and developments that are taking place, in terms of urban upgrading, are both feasible and practical in respect to the improvement of the community environment and means of accessibility. So, what is needed to make upgrading work? One must first identify the stakeholders and beneficiaries of the projects, as well as the incentives that will stimulate their interest and commitment to the project. You have to keep people informed, and you have to be clearly defined the roles and responsibilities of the various agencies that are working together.



Monte Azul Favela (Slum), Sao Paulo

A classic case study that best exemplifies this development application has been conducted by the Monte Azul Community Association in the Monte Azul favela, probably one of the more well - known urban developments in Sao Paulo, or in Brazil. The Monte Azul Community Association is a NGO community development project that was established in 1979 by a German Waldorf School teacher, Ute Craemer. The mission and goals of the association is to promote equal opportunities through education, culture and health, especially to under - privileged people. The association's objective is to develop the material, social, conscience and spiritual well being of its constituents.

The association currently works on basic hygiene, environment and sanitation programs. In the favela (slum), pathways, bridges, clean water and sewage systems are built in association with the urbanization program of the City of São Paulo. One of the most positive results and indicators of the success of the community efforts in all sectors of local life is a significant decline of the rate of crime and violence. Monte Azul is not only physically visible but is also a place where people of different social levels and different cultures and countries meet to start transformation programs and

improved way of life⁶.

Some of the services and resources that the association facilitates in the Monte Azul community are:

- Education and Skill Development (Technology/Computer lab)
- Primary Health and Dental Care Facility
- Food Store and Bakery
- Children's Furniture/Toy Store, Design, Production and Facility (Community Entrepreneurship and Professional Development)
- Community Theatre and Art Center
- Cultural Exchange Program

"Inclusive Design in the "Majority World"

Progressive designers are beginning to respond to the demographic, environmental and economic realities of the 21st Century. Designers, educators and students should be encouraged to work and function outside of their "comfort zone" or sphere of influence.

In an effort to realize this dynamic, practical and participatory concept to a more "inclusive" universal design approach was implemented to the overall objectives of an international student design competition. This design competition was formulated in conjunction with Adaptive Environments in Boston, MA, the convener of the "Designing for the 21st Century III: International Conference on Universal Design" in Rio de Janeiro, Brazil, held in December 2004. This international design competition which was one of the key drivers for the D21 conference. It is a model for expanding the global perspective of universal design beyond the established mainstream convention. The objectives of this design

⁶ <http://www.southerncrossreview.org/9/monteazul.htm>, June 15, 2006

mandate was to advocate designers, educators, students and policy - makers to address the evolution of universal, inclusive and sustainable design in diverse cultures and economies - of - scale.

What's Next?

1 - How do designers work with communities, respond to constraints, and maximize ownership by users and other stakeholders?

By promoting exemplary projects with an emphasis on participatory design, universal design and social responsibility.

2 - Find ways to mobilize the resources to promote the creation of job skills training, mentoring, and capital recycling in low - income communities.

Designers can influence change and redefine the priorities and values of our society through such indirect methods.

3 - Conduct workshops and symposia that address these issues...ones that are ideally sponsored by local industry and design offices.

Additional professional design and business organizations could endorse the idea and act as an executive advisory board for the planning and development of such an event.

In 1963, the late Selby Mvusi, a prolific Black South African industrial designer, wrote:

"The truly excellent designed object is not the object that is rare or expensive... This rightness of form and function before and after the object is made is both individual and social. It is in this sense of that society and culture [form] intrinsic elements of design.

We do not therefore design for society or for that matter design in order to design society. We design because

society and ourselves are in fact design.

We do not design for living. We design to live”⁷

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⁷ *Selby Mvusi, Design for Developing Countries: selected readings, 1963, South Africa, reprinted, Dr. Nathan Shapira, University of California, Los Angeles, 1991*

**“Inclusive Design in the “Majority World”
Designing for the 21st Century III:
International Conference on
Universal Design Student Design Competition**

Ricardo Gomes

Introduction

The Designing for the 21st Century Student Design Competition was a call to design visionaries who appreciate the creative power of design for real people in real places. The purpose of this competition and exhibit was to exemplify the theme and focus of the Designing for the 21st Century III: International Conference on Universal Design that was held in Rio de Janeiro, Brazil from December 8 – 12, 2004. This extraordinary conference brought together over 400 thought leaders from more than 32 nations to exchange knowledge, best practices and the latest advances on Human-Centered/Universal Design. The event expanded bridges between the developed nations where much of the interest has been concentrated to date, and the developing nations where almost all growth will occur in this century. Within the language of sustainable development, organizers promoted the integration of universal design into the common understanding of social sustainability

As the Competition Chair, I had established an international jury of 14 members from Africa, Asia, Europe,

Latin America and North America. The overall objective of the competition was to generate innovative, resourceful and responsible design concepts and solutions to the designated sites in the "majority world" regions of Africa, Asia and Latin America/Caribbean.

In preparation for this student design competition, research was conducted through the Design Center for Global Needs at San Francisco State University to collect data profiling design programs at universities and colleges around the world. Research was conducted to identify and compile a comprehensive listing of over 600 design programs at universities and colleges around the world. All of these schools were sent information regarding registration for the student design competition. As a result over 200 student teams registered for the international student design competition from 41 countries.

The student teams had a choice of designing a designated community center for one of three in a nation within the continents of: Africa, Asia or Latin America; or designating a site of their choice in the same regions. A site specific program for each community was made available through the competition web site with details and images of the neighborhood or village culture, demographics, local norms of design and materials, economic conditions, assets, needs, and local resources.

Teams consisted of a minimum of two students that were enrolled in a degree-granting college or university. Team project proposals were encouraged to be multidisciplinary

in their consideration of more than one design discipline from the areas of: architecture, environmental design, industrial design, interior design, graphic design, landscape architecture, regional planning and design.

The entire project submissions and jury process was conducted on-line through the Adaptive Environments/D21 Competition web site. Team project submissions included the project site information, written and visual documentation. All submissions were required to meet four criteria:

1- Universal Design: the design must be usable by a wide range of people across the spectrum of ability and age in the widest variety of circumstances without separate or special features.

2- Sustainable Design: the design must incorporate practices and products that have long life and durability; that maximize the use of recyclable, reclaimed or salvaged products; that minimize the use of energy, including the energy and resources required to transport; and materials that enhance human health and well-being.

3- Low Cost: the design must be possible to construct and finish with low-cost construction materials, finishes and minimally skilled labor. Applicants should note strategies for supplementing outlays of cash with donated goods and services.

4- Design Excellence: the design must incorporate both visual and sensory (tactile, auditory, etc.) appeal

appropriate to the cultural and physical context.

The Competition Schedule began in December 2003 with On-Line Registration and concluded with the final submission of work in August of 2004. We had received nearly 200 registered projects from over 34 countries for the Designing for the 21st Century Student Design Competition. The jury review and selection process began August to October 2004. We had received over nearly 50 completed submissions from 31 universities and 16 countries from Japan to South Africa. A Preliminary selection of 14 Student Finalist were announced in September 2004.

The international panel of jurors selected a very diverse and unique international pool of 14 Finalist. In reviewing the jurors evaluation scores and comments as the competition chair, I was very pleased to see a wide range of perspectives and viewpoints. The jurors comments were well appreciated and a valued articulation and insight to their critique and overall assessment of the project submissions. After the jury process has been completed, it was wonderful to be able to oversee the formulation of what I believe was the selection of very divergent, yet inclusive concepts and approaches. The submissions that the jurors selected to be the Finalist and pool for selection of the Top Three Competition Finalists, validated the need to recognize and embrace the expanded scope and applications of universal design, particularly as it relates to the practical needs of the "majority" world on an equitable scale.

The Top Three Finalist were selected student design teams from the *Universidade de Mayor, School of Architecture*; the *University of New Mexico, USA*; and *San Francisco State University, USA*. These teams were awarded the "Premio Award Finalist" from the pool of 14 Finalists. The Premio Award Finalists submission were selected as one of three most comprehensive, responsible and creative approaches to universal design solutions for the 2004 *Designing for the 21st Century III: International Conference on Universal Design Student Design Competition*.

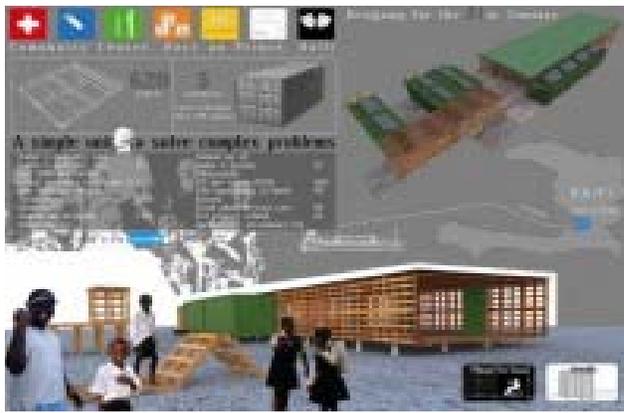
Working with these talented students has been a remarkable experience for me. The quality of their projects simply surpassed all of our expectations I am extremely proud of the outstanding commitment, efforts and contribution provided by our international jurors to the success of this competition! We are indebted to their services and professionalism in advancing the principles and applications of universal design.

Of the 50 completed entries, the jury selected three teams as the Premio Award Finalists and 11 teams as Honorable Mention Finalists.

Premio Award FINALIST (3)

Student Teams:

- Cavada Team, Universidad Mayor, Chile



- Rabanal Team, San Francisco State University, USA



- Zahed Team, University at Buffalo, USA



Honorable Mention FINALIST (11)

Student Teams:

- Chausson Team, *ecole d'architecture de toulouse, France*
- Comper Team, *Universidade Lusiada de Lisboa, Portugal*
- Edwards Team, *University of New Mexico, USA*
- Gallagher Team, *Curtin University of Technology, Australia*
- Geldenhuis Team, *University of the Free State, South Africa*
- Lynch Team, *University of Technology Sydney, Australia*
- Mescam Team, *Kyoto University, Japan*

- Nuarta Team, *Industrial Design San Francisco State University, USA*
- Stich Team, *University of New Mexico, USA*
- Teixeira Seisdodos Team, *Osaka University, Japan*
- Weaver Team, *University at Buffalo, USA*

JURORS:

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Jane Rabanal is an alumna of the graduate program in product design at the Design & Industry department at San Francisco State University (SFSU). She believes that design is inherent to human nature and society, and should embody intent for common good. Jane participated in various professional and volunteer design programs while at SFSU. Jane has worked for Knoend, a tight-knit start up whose focus is on sustainable, responsible approaches to design to enhance human experience. At Knoend, Jane collaborated on the Lite2Go, an innovative packaging/product solution that won an IDEA bronze award in 2008. She currently designs packaging and products at a small design and manufacturing company based in Emeryville whose clients include Sur la Table, Cost Plus, and Williams-Sonoma. Jane holds a Bachelor's degree in Architecture from UC Berkeley. Jane is a native of northern California and has lived in the Bay Area for over twenty years.

Water and Play: A Rainwater Harvesting and Playground Design for a Community Center in Haiti

J. Rabanal, L. Magpiong and C. Bloome

Introduction

In 2004, Adaptive Environments sponsored its third Designing for the 21st Century, an international conference on Universal Design held in Rio de Janeiro, Brazil. Adaptive Environments (which has now become the Institute for Human Centered Design) is a 30-year-old international non-profit organization, based in Boston, MA, committed to advancing the role of design in expanding opportunity and enhancing experience for people of all ages and abilities. As part of that year's scope, the program also sponsored an international student competition. The project was focused on universal and sustainable design in a multi-purpose structure to meet the needs of a real community in the "majority" or "developing" world. Chair of the competition was Ricardo Gomes, Chair, Industrial Design, and Director of the Center for Global Design.

Three students at San Francisco State University submitted a proposal for a community center in Bolosse, Port-Au-Prince, Haiti. Their proposal centered on water collection as a means for practical use, but also for juvenile play and entertainment. Their project was one of three

projects selected for presentation at the conference in Rio de Janeiro. Over 65 projects were submitted for review. The San Francisco team consisted of Cory Bloome, Larice Magpiong, and Jane Rabanal.

Design Process

Research: The project began with a thorough investigation of the physical and social conditions of Haiti, the proposed site location. Haiti has a severe water shortage. Only half of its people have access to safe drinking water and millions of people die each year from water-related disease. Abject poverty is rampant and the average life-age expectancy is 54. Thus, Haiti's youth population is very high, with 42% of Haitians under 15 years old.

Design Direction: The lack of safe domestic water and the high proportion of youth drove the project team to consider ways to combine the theme of water with the need for youth activities. Two general concepts emerged: provide a rain water harvesting system to acquire safe domestic water; and provide a children's playground/environment to augment the deteriorating school system. The children's activities can be educational, if not simply a safe alternative to street life.

Many different playground concepts were generated, driven by universal design factors, including: accessibility, age range, adventure, safety, cost, sustainability, and feasibility. Simultaneously, ideas were generated for a system for collecting rainwater, which included rooftop collection, as well an extensive landscape scheme to

maximize surface area for collection.

Design Ideation & Development: Once the general project direction and objectives were established, each team member focused on a particular part of the design. These included:

1)Site: rainwater collection (domestic use), landscape, architecture

2)Playground: Playground composition, playground objectives, playground features

3)Playground Details and Engineering: Overall playground engineering, Tower element (Turtle), playground water collection (playground use)



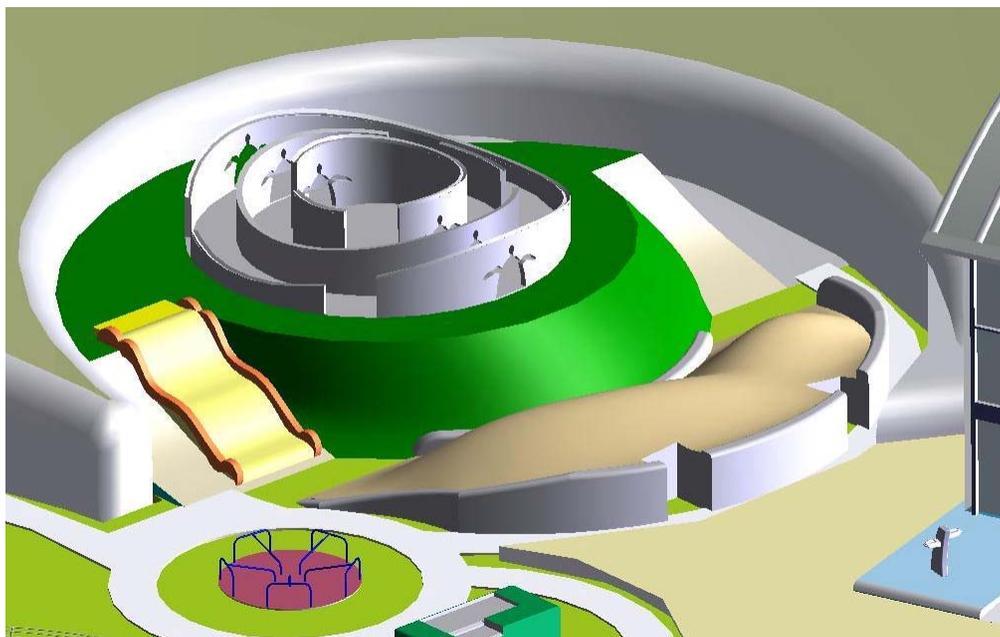
The Design - A Community Center for Port-au-Prince, Haiti: A Design for Water and Play

The team's proposal is a design that integrates landscape features and a community center to harvest rainwater and promote inclusive play among children, thereby bringing an essential sense of vitality to the community. Sustainable

rainwater harvesting addresses the community's lack of safe domestic water. Inclusion is achieved through wheelchair access at playground elements (like Turtle Tower and the Sandpit), the plaza, and the amphitheater. Patrons of varying abilities, including the blind and deaf, will enjoy the multi- sensory Sandpit, Water Table, and an auditory waterfall chime. Site pathways use texture for directional cuing, while maintaining compatibility with wheelchair use.

The Community Center Building

The building is constructed from reinforced concrete masonry blocks, an affordable material that is easy to erect. Façade fenestration patterns provide generous natural daylighting and permanent ventilation. The front façade receives sun exposure and access to the plaza, with sliding doors that open up to a collection pool and fountain.



Universal Playground: A Playground for All Children

The playground design is meant to bring children of all levels of ability together and provide a variety of activities that encourage exercise, learning, fun, and challenge. Ramps, accessible pathways, multiple entrance/exit ways, and appropriate space and visibility for adult supervision were included to create a play environment that respects and values diversity.

The Maze and Sand Pit: The fortress-like Maze provides space for interactive strategy games. Water channels along the top of the walls create a wet sensory environment. Two wheelchair accessible sand tables allow interaction among all children.

The Slide: Two to three children at a time can slide down the extra-wide bumpy slide.

The Water Table: Children can get their hands wet as they watch water trickle down from the Water Table. A shallow basin lets them float objects while learning about concepts such as is “empty and full” and “heavy and light”.

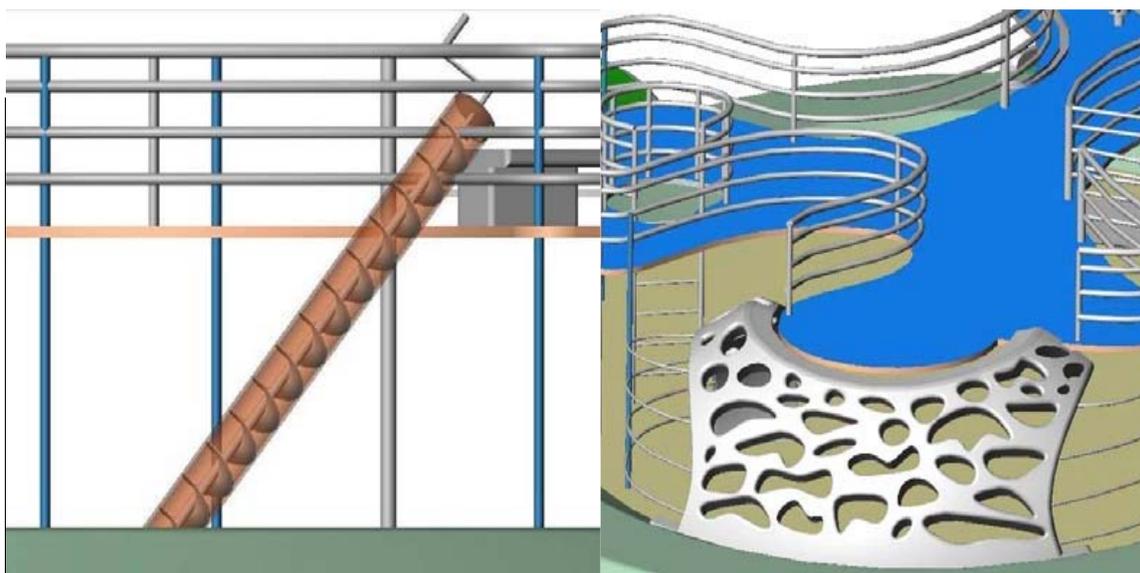
The Tunnels: Various winding accessible tunnels are enclosed within this structure that children can play in and around. This large mound-like structure provides a safe textured surface to climb on with varying levels of challenge.



Turtle Tower: An Accessible Play Feature

Turtle Tower provides an adventurous and safe environment for all children, with wheelchair access to both the elevated platform and the sand pit. The sand pit serves as a play area, as well as a filtration system for rain water as it passes through to an underground cistern.

The Archimedes Screw: The playground employs two Archimedes screw pumps, which children can crank to bring water to the surface to play with.



Climbing Wall : A concrete climbing wall serves as a challenging alternate route to the tower platform. Railings are spaced closely for safety.

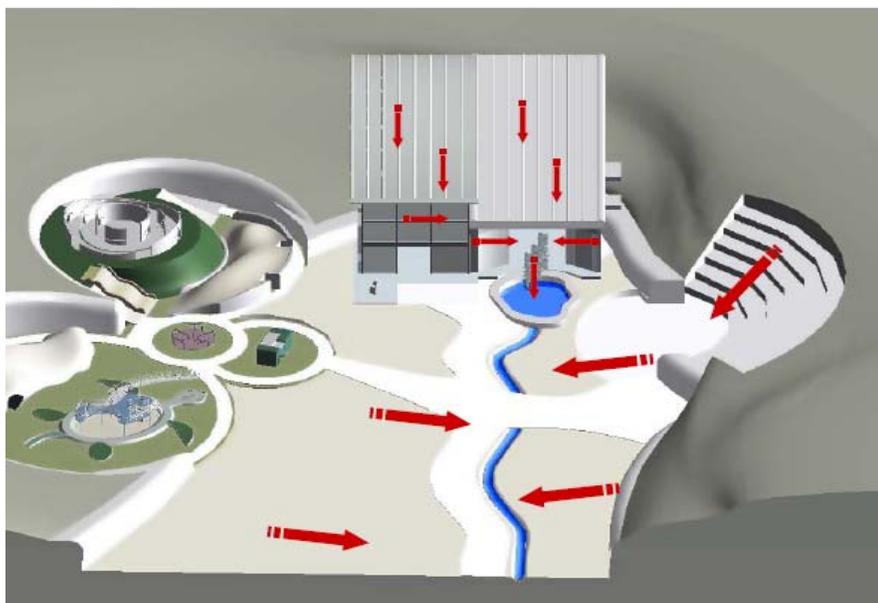
Rainwater Harvesting

Rainwater Harvesting is the activity of collecting rainwater, to be stored for direct use or recharged into the groundwater. Since the project site is located on a hill, groundwater acquisition is not feasible. This project proposes a solution incorporating rainwater collection for storage and direct use. During the non-rainy season, enough water is stored to serve the Community Center's domestic and drinking water needs for 100 people each day.

Applications include

- Drinking
- Clothes washing
- Sanitation
- Irrigation
- Toilet flushing
- Cleaning

Rainwater is collected for the Community Center's drinking and domestic water needs. Rainwater run-off from the Community Center rooftop, the paved plaza and the amphitheater are collected via the stream and collection pool. The Playground also collects rainwater for its water-play features.



Affordability and Local Economy

Wherever possible, the project employs recycled or reclaimed products. For instance, the Tunnels are made from a composite of mulch from recycled tires. When recycled materials aren't feasible, local materials and labor are used to minimize transportation costs and to provide revenue to the community.

Conclusion

Once the design proposal was completed for submission to the competition, looking back, the design team felt confident that the goals of the design competition were met by addressing the needs of the community from a Universal Design and Sustainable Design perspective. We thought the design direction was feasible and directly addressed our main objectives:

- Provide a rain water harvesting system to acquire safe domestic water;
- Provide an inclusive children's playground/environment to augment the deteriorating school system.

Clearly, this conceptual design proposed by the team is really a starting point in terms of researching a real world problem and generating solutions that could be materialized. However, the project's broad interdisciplinary approach would need further extensive research and design development to really begin to assess the feasibility and potential success of this proposal. Most importantly, it would be critical to have firsthand direct interaction with the community and landscape that this project is based on, to validate the facts and assumptions that drive this proposal. Furthermore, in order for the design to be developed successfully, direct involvement with the community would be essential to develop a community center that has meaning to its constituents.



Lifespan Furnishings: Before and After

Edited by Ricardo Gomes

Introduction

Prior to his nearly 10 year career as a faculty member Design and Industry (DAI) department at San Francisco State University (SFSU), Brian Donnelly worked for an industrial design firm in the Silicon Valley. During his active dual career as a product designer/furniture entrepreneur and professor at SFSU, Donnelly began exploring design for people with physical, visual and cognitive impairments.



As the co-founder of the Design Center for Global Needs (DCGN), which was established at SFSU in 1992, Donnelly authored many grants, which greatly assisted the initial research and development efforts embarked upon by the Center. In this capacity, Donnelly was instrumental in the initial acquisition of R & D seed grants from the Hess Foundation and Wyss Foundation which facilitated in developing many successful projects and consequent marketable universal design products. It was during this period that Brian Donnelly initiated a university research project that

focused on learning more about the needs of the aged and disabled users in respect to developing an easy-access chair that not only met the physical needs of the user, but their domestic aesthetic appeal. Some of Donnelly's initial research and development efforts that were generated through the DCGN have evolved into home and outdoor seating concepts and accessories through the formation of the company, LifeSpan Furnishings.

Lifespan Furnishings

Donnelly, who has a background as a professional furniture maker and craftsman founded Lifespan Furnishings, a company that was formulated to design furniture for the elderly, the pregnant and the ill. After caring for his aging father, Brian Donnelly says he recognized a need for seating products that could provide better leverage for people with limited strength and balance. The "lifespan" seating designs of Brian Donnelly are intended to assist people who have difficulty with sitting and rising from a seated position. Donnelly's goal was to create a design that would address this functional limitation while creating seats that can be used by anyone and would visually compliment a range of environments. The signature arms of the chair are designed to extend out beyond the edge of the seat and the legs stabilizing the base of the chair. Consequently in using the chair the user is provided with a sense and feel of a secure, solid and comfortable seating foundation.



The lightweight, stackable chair features wide arm rests to aid people when they grip them to stand up. For Donnelly, this points out how important it is for him to constantly engage the user in the product development process in regards to capitalizing on the feedback he gets from participatory design through community interaction. “Working with focus group really exposed me to the real problems people have with physical environments,” Donnelly says.

“Some of the most interesting feedback we have received has been from the care givers,” says designer Donnelly. “The chairs really reduce the physical strain that accompanies getting patients or loved ones in and out of a chair.” “Such a simple thing, as a longer chair arm that allows seniors to hold on to, push themselves up with, can provide a much better sense of security.”



Donnelly has created a style in his chairs that ranges from traditional to contemporary, in his efforts to establish selling points that appeal to the aesthetical quality and visual stimulus of the user. In this regard, the traditional style chair features upholstered floral prints that is framed in cherry wood suitable for any living room or even formal dining room. Their wood frames and upholstery are designed to cater to people who “enjoy the look of Queen Anne furniture, but not the discomfort.” In the realm of health care facilities—as well as the home – removing the stigma of furniture with a sterile, medical appearance proves very attractive to many institutions and private consumers. A lot of furniture and devices for people with disabilities is very institutional-looking, usually very plastic or with lots of metal because they need to be adjustable and strong,” says Donnelly. “No matter how old you are, no matter what condition you’re in, you want to maintain dignity, and one way you can impact dignity is through your environment,” he says. “It’s important that home feels like a home and not a hospital.”

Donnelly advocates, “For me one of the greatest challenges is creating effective designs while avoiding conveying a visual

stigma of intended use by 'old people' or 'disabled' people. The bottom line is that universally inclusive designed products have to fulfill a range of functional criteria while remaining aesthetically attractive to the entire population. The intriguing aspect of this philosophy is that if these objectives are met, you consequently create designs that have strong commercial viability."

Some of Donnelly's initial research and development efforts that were generated through the DCGN have evolved into home and outdoor seating concepts and accessories. These products have received numerous design awards from the National Endowment of the Arts (NEA) Universal Design Excellence jury, as well as the American Society on Aging (ASA) New Products and Designs for the Mature Markets.



The successful development and marketability of Donnelly's practical and appealing approach to universal design, has left an indelible mark on the contributions of products and

environments that have sustained independent living, while simultaneously enhanced the well-being of our society.

During its operation, Lifespan Furnishings had provided seating at various assisted living facilities, retirement communities and medical offices. Donnelly no longer formally runs his company, Lifespan Furnishing, although he still maintains the design patents.

Today, the current “lifespan” of Brian Donnelly is pre-occupied with multi-tasking a demanding daily program that encompasses the following broad-based educational ventures:

- Instructional coordination of the Career Technical Education program in the area of Middle School Industrial Technology and Engineering in the Davis, CA public school system.
- Design Education Consultant for the Autodesk Education Program since 2003, where, as one of the lead authors, he has developed innovative approaches to science, technology, engineering, and math education in conjunction with the Autodesk Corporation’s Student Engineering and Design Community. One can find evidence of Brian’s work in the 2008 and 2009 editions of Autodesk DesignKids.
- Completion of his Doctorate in Educational Leadership at the University of California, Davis.

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Marc Krizack

Lawyer, organizational development specialist and activist for disability rights . Currently Whirlwind Director of Operations since 2003 at San Francisco State University. Marc has worked on and off with Ralf Hotchkiss since their initial collaboration in Nicaragua in 1983. A former wheelchair mechanic at the UC Berkeley Disabled Students Program in the late 70's and early 80's, throughout the 90's he worked closely with the disabled community in the Siberian city of Novosibirsk, Russia where he helped transform a disabled sports club into Russia's first independent living center, helped set up a wheelchair factory, and helped establish the first university level disabled students program in Russia at Novosibirsk State University.

Whirlwind Wheelchair International (WWI):

Marc Krizack, J.D.



Whirlwind Wheelchair International whirlwindwheelchair.org

Mission Statement

Whirlwind Wheelchair International works to make it possible for every person in the developing world who needs a wheelchair to obtain one that will lead to maximum personal independence and integration into society. In order to fulfill this mission, WWI seeks to give wheelchair riders a central role in all of its projects and activities.

Program Description

Whirlwind Wheelchair International is a program of the Center for Civic and Community Engagement at San Francisco State University (SFSU). Founded in 1989 as the Wheeled Mobility Center by SFSU Engineering professor Peter Pfaelzer and

paraplegic engineer and wheelchair designer Ralf Hotchkiss, Whirlwind grew out of Hotchkiss's work since 1980, traveling the globe designing wheelchairs that could be built in developing countries from locally available materials.

Whirlwind technology has been taken to 45 countries. Hotchkiss's pioneering work has led to many innovations that are integral to wheelchair models produced by many workshops and NGOs around the world. All of WWI's designs are placed in the public domain in order not to add to the cost of village wheelchair shops using these designs.

From its inception, Whirlwind mostly concentrated its efforts on establishing small shop production in Africa, Asia, and Latin America. In 1998, Whirlwind formed a partnership with Physicians Against Land Mines (now Center for International Rehabilitation) in Chicago and later developed a plan to get wheelchairs to Afghanistan. The newest Whirlwind, the RoughRidertm, is now being made at the Worth Trust factory in Vellore, India, at the Kien Tuong Factory in Ho Chi Minh City (Saigon), at the Corporacion Regional de Rehabilitacion del Valle in Cali, Colombia.

In early 2003, Whirlwind formed a strategic consortium with the Arthur B. Schultz Foundation in the U.S., the HandiNor wheelchair factory in Fetsund, Norway, and the Atlas Alliance in Norway for higher volume production of high-quality Whirlwind-style wheelchairs in developing countries in Africa, Asia, and Latin America.

The consortium, known as the Whirlwind Industrialization Project (WIP), starts with Whirlwind-generated designs based on years of experience as well as on continuous feedback from wheelchair riders in the field, called the Whirlwind Network. Whirlwind designers then work with HandiNor's engineers to retain the important design characteristics of the Whirlwind wheelchair while making it easier and cheaper to produce in large volumes in small to medium size shops with a capacity of up to 300 wheelchairs per month. HandiNor also uses its expertise in manufacturing wheelchairs for the European market to design and produce advanced jigs and fixtures that the project supplies to the local shops. Whirlwind provides on-site training in wheelchair assembly, production, and fitting. The Arthur B. Schultz Foundation funds startup costs, and along with the Atlas Alliance provides funds to support local wheelchair markets.

Whirlwind is committed to the development of wheelchair standards appropriate to local conditions and to the adoption of such standards by the governments of developing nations. To further that effort, Whirlwind now attempts to build a Standards and Testing component into each of its projects.

Whirlwind offers consulting services to private wheelchair manufacturers and individual designers and inventors. Each semester, Whirlwind gives a hands-on wheelchair design and construction class at San Francisco State University to students and interested members of the community.

Marc Krizack ,

Wheelchair Riders in Control: WWI's Model of Technology Transfer

Peter Pfaelzer, Ph.D. and Marc Krizack, J.D.

(This article is a summary of a more extensive article on technology transfer currently in progress. Comments and suggestions solicited; please send to: WWI Program Director Dr. Peter Pfaelzer at pfaelzer@sfsu.edu, or by fax at 415-338-1290.)

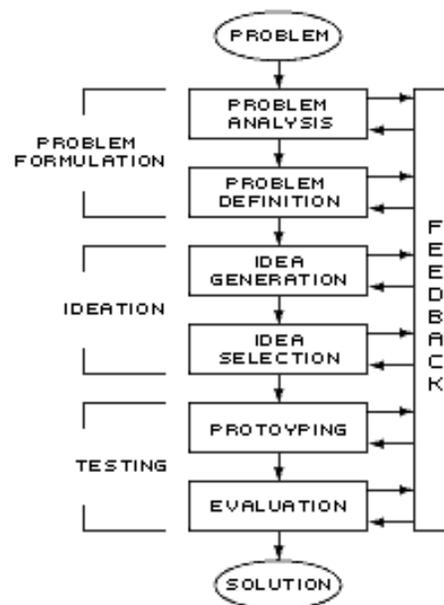
NOTE: In this article, Whirlwind's design process is described as being "Descriptive Design." Although Whirlwind continues to design and test through multiple design prototypes, we are now heavily using CAD in our design process. For an update on our design process see Whirlwind-SolidWorks-AMD. The remainder of this article retains its relevance.

When Ralf Hotchkiss began designing wheelchairs in Latin America in 1980, there was no one else designing state of the art wheelchairs at a low cost for active use in developing countries. Today, there are at least four other non-profit organizations promoting wheelchair production around the world. Yet Hotchkiss's model, since expanded and now institutionalized at Whirlwind Wheelchair International, remains unique in its approach. For unlike other organizations, WWI ascribes to the wheelchair rider -- as designer, trainer, mechanic, tester, and even marketer -- the central role in the technology transfer process. This model has made the Whirlwind Network of independent wheelchair producers the

highly productive source of new ideas in wheelchair design that it is today.

Design Methodology

The most common design methodology used in modern manufacturing today is the prescriptive design process. This methodology is characterized by a multi-step linear process of problem formulation, idea generation, and prototype production. It presumes that most significant relevant information and resulting solutions can be learned prior to production, and it relies on highly educated experts in every stage of a centralized design process. The prescriptive process is employed to minimize the risk before large amounts of capital are invested in the production of costly prototypes. The process itself requires the expenditure of significant amounts of capital.

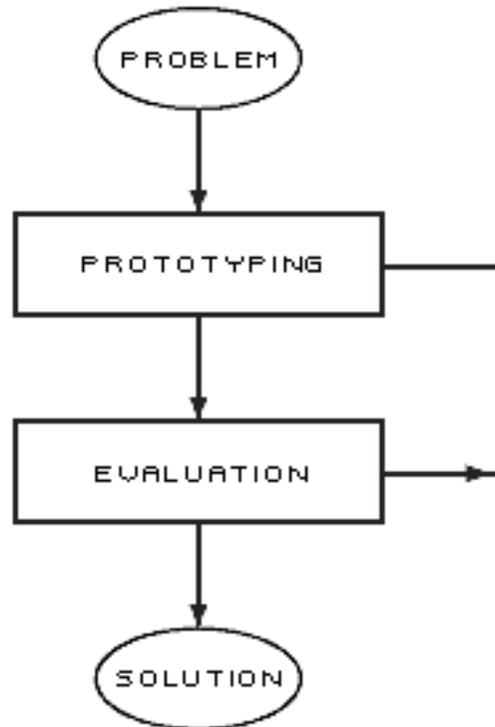


Prescriptive Design: The time and money spent on problem formulation and ideation prior to prototype construction may reduce the number of prototypes necessary to produce a successful design.

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WWI's design methodology is based on a method more common in small business known as the descriptive design process. This process was the primary design process utilized prior to the turn of the century when engineers learned their craft on the shop floor rather than at specialized technical colleges and universities. In contrast to the modern engineering prescriptive design process which requires a substantial amount of early work on paper or the computer, the descriptive process is characterized by the early production of a prototype. The design is refined through repeated prototype/evaluation/prototype cycles. The designer learns about the problem through the generation and evaluation of sequential prototypes.

The descriptive process relies to a large extent on the craftsman in a more decentralized design process and may require more prototyping cycles than the prescriptive method. However, for a product like a wheelchair, that can be prototyped quickly and inexpensively, the descriptive design process is efficient and cost-effective. For WWI, use of the descriptive design process derives naturally from the socio-economic situation in developing countries and from the complex nature of disability itself.



Descriptive Design: Numerous prototyping cycles are required to refine the design, but this method can be effective when prototypes are built quickly and inexpensively.

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Unlike general product design, which is aimed at the population at large who within a certain range can all be accommodated by a single design, product design for people with disabilities is difficult because it requires multiple solutions. A wheelchair is not merely a chair with wheels. Different wheelchair riders, even with the same nominal disability such as paraplegia, quadriplegia, multiple sclerosis, cerebral palsy, or post polio, can have widely different ways of sitting and pushing which need to be considered in the design process. The mobility equipment needs of disabled kids also change as they grow.

One only has to look at the wide range of wheelchairs available in industrialized countries to understand fully how complex designing for disabilities really is.

What Difference Does the Setting Make?

The design problem is made even more complex for designers of mobility equipment in the developing world. As a matter of course, wheelchair design must also include consideration of diverse uses and geographical conditions. Wheelchairs can be for indoor use, outdoor use, long distance travel, urban use, rural use, and quite often must function well in dirt, in mud, in fields, on gravel, through bomb craters, etc. WWI's wide rubber caster, known as the "Zimbabwe Wheel," is the result of design for the most rugged conditions.

The absence of even the most basic accessibility in the architectural infrastructure and public transportation must be considered in the design process. As an example, the extremely narrow bathroom and elevator doors in Russia gave rise to the Siberian wheelchair frame which can be narrowed by the rider while sitting in the chair.

Cultural factors can also affect wheelchair design. In many countries in the Near East and Asia, for instance, much social activity, including cooking and eating, occurs at floor level. Wheelchairs in these settings must be designed to allow the rider to participate in these activities. The newest Whirlwind allows some users to sit near the floor by incorporating a jump seat at the level of the footrests.

Wheelchair design must also take into consideration such factors as the type of toilet facilities available, which can often be little more than a hole in the ground or floor. The wheelchair

rider/builders in the Whirlwind Network wish to achieve the greatest degree of independence, mobility, and social integration possible. Thus, their wheelchair designs must be capable of responding to these multiple needs. The prescriptive design methodology, working as it does at some distance from the wheelchair riders in developing countries, is unlikely to produce the range of solutions necessary to answer these local needs.

Wheelchair design in developing countries is also limited by cost considerations. Because most people who need a wheelchair cannot afford an imported one, low price is a primary design criterion. The two main ways of keeping wheelchair prices low are through low initial capitalization of wheelchair shops and by the use of materials readily available where the wheelchair is to be built.

All plant and equipment costs must be amortized and included in a wheelchair's retail price. When initial capital funds are borrowed, the cost of repaying the loan must be included in the chair price as well. Low per shop capitalization costs make it easier to raise start-up capital and establish more production facilities. These multiple producers can form a competitive marketplace for wheelchairs keeping quality high while forcing prices down. At the same time these producers can act cooperatively, each becoming part of a design network. This is how the Whirlwind Network came to be.

The use of readily available materials is necessary to keep costs low and ensure that the chair will be locally repairable. For Third World wheelchair design this often means that a single model will have multiple design variations.

Even within a single country, political and economic factors can either limit the availability of existing materials or create a situation where previously costly materials become available and affordable. The placing or lifting of trade barriers to the importation of bearings, for example, has had a big impact on the design of wheelchairs. In Africa where bearings were too expensive, WWI designed roller bearings using steel nails or welding rod. In 1983 in Nicaragua, the price of acetylene used in welding skyrocketed as a consequence of the Reagan administration's economic embargo. Wheelchair rider Omar Talavera responded by designing a caster fork made from a single piece of bent steel rod that did not need to be welded. Although only meant as a temporary innovation, it nonetheless kept the price of caster forks affordable until the embargo ended and the cost of acetylene dropped. The lesson is that wheelchair designers must be capable of producing rapid solutions as the local availability of component materials changes.

Wheelchair Riders Integral to Design Solutions

Historically, these many needs have been best understood and dealt with by wheelchair riders involved in every aspect of a continually evolving design and production process. WWI at San Francisco State University nurtures this process by acting as the hub of a network of wheelchair builders now spanning more than 25 countries. WWI's role is to energize and extend the network, promote and coordinate activity, serve as the communications center, and stimulate and cross-fertilize the design process. The WWI design teams have always included at least one wheelchair rider. Our wheelchair rider-designers use

the chairs they design during their daily activities to understand exactly how they perform in real conditions.

Both at San Francisco State University and around the world, WWI wheelchair building courses always include a significant number of wheelchair riders among the training participants. These participants become active collaborators in the design process. They ensure that WWI is kept aware of all the factors which affect their real mobility needs and often provide the design answers themselves. We term this process "Collaborative Design."



Phillipe Mazard (Handicap International, France) discusses marketing schemes with David Mukwasa from Disacare (Zambia).

Although theoretically there is no reason why wheelchairs can't be built exclusively by non-disabled designer/mechanics relying on information supplied by wheelchair riders, the reality is that very few non-disabled persons fully believe and understand what people with disabilities say, even about matters which a disabled person can be expected to know most.

Wheelchair designs, once translated into prototypes, must be tested. WWI uses inexpensive shop floor strength tests and obstacle course performance tests to simulate real conditions. But the only way wheelchairs can be tested under the full variety of actual conditions and for every conceivable purpose is by wheelchair riders who use the chairs every day. Over time wheelchair riders provide the feedback which is essential for going to the next level in the design process. They have the added benefit of a good wheelchair during this evaluation process, and unlike the evaluation process in the prescriptive design method, the cost of testing and evaluation is minimal and design changes can be made rapidly.

The involvement of wheelchair riders in wheelchair design and production also affects the technology used in wheelchair building. Many of the wheelchair riders we train have only basic mechanical experience and little formal schooling. Production methods and training techniques must be kept simple to facilitate the training process. The practical strength tests and obstacle courses, along with the use of full-size drawings, pictures, and similar techniques facilitate the participation of people who by and large are without formal advanced educations. We have sometimes learned this the hard way. Ten years ago WWI abandoned a nicely compact footrest design whose compound angles were so difficult to bend properly that even the trainers wasted a lot of time and tubing trying to get it right.

Marketing Advocates

A critical area in which wheelchair riders can play a decisive role is wheelchair marketing. Because most wheelchairs in

developing countries are purchased by government and private charities rather than the end user, the wheelchair rider/consumer has not had the ability to influence quality and price to the same extent as purchasers of general consumer products. But wheelchair riders can play an effective role in gaining increased government funding for good quality, locally built wheelchairs. In Novosibirsk, Russia, activists from the Finist (Phoenix) Disabled Sports Club demonstrated the Whirlwind wheelchair made in Novosibirsk to government officials in charge of wheelchair purchases. They made these officials realize that wheelchair riders are the real experts when it comes to wheelchairs, and they educated the officials about the Whirlwind's advantages for active use. That effort led to a government order for 500 Whirlwind wheelchairs.

Wheelchair rider/advocates also play an important long term role in developing the wheelchair market. The removal of architectural barriers and the increase in accessible transportation open up new opportunities, especially for people with more significant disabilities. This will create a need for improved wheelchairs so that, to paraphrase Star Trek, they may go where no wheelchair rider has gone before.

Conclusion

The most efficient use of development funds for promoting the design and production of wheelchairs in developing countries is through a decentralized international network of small to medium sized production shops, coordinated through a central hub which facilitates communication and collaborative design through newsletters, wheelchair design congresses, technical exchange visits, web pages, and other means. Most

importantly, because someone has to be responsible for making the difficult choices involved in balancing design features against cost, the wheelchair rider, who knows the problems best and is most affected by the prescribed solutions, must play the leading role in wheelchair design.

Acknowledgment:

The authors wish to thank Joan Rogin for her contributions in both the conceptual and editorial phases of this article.

It's Not About Wheelchairs

Marc Krizack, J.D.

"Building an Inclusive Development Community: A Manual on Including People with Disabilities in International Development Programs", Heinicke-Motsch, Karen and Susan Sygall, editors, Mobility International, USA, 2003 Chapter 4.1. 8 pages

People wanting to provide wheelchairs to those in developing countries who need them are most often guided by their hearts. The problem, however, is vast and complex, and unfortunately, things are not always as simple as they appear.

Many well-intentioned people donate old hospital style wheelchairs that granny used before she died to one or another charitable organization which more likely than not merely stuffs them into a container paid for under U.S. Humanitarian Assistance. Many, many chairs still need to be refurbished upon arrival, and will sit collecting dust and rust in some warehouse or storage yard waiting in vain for a local volunteer to clean them up and repair them. Those in good condition are not accompanied by instructions or spare parts to keep them in working order, so even if they start out being usable, they soon end up collecting dust or rusting away like the others. Providing free wheelchairs is likely to be a waste of money without there being a system or mechanism in place (both in the U.S. and in the target country) to ensure that only good

quality wheelchairs will be sent and that they will be appropriate for each person who will use them.

Providing wheelchairs is not about wheelchairs. It is about providing people with the one thing they need to move out into their own communities – to go where the action is. It is about integrating people with disabilities into their society.

As long as wheelchair donors focus on the wheelchair and not on the end user, people with disabilities will remain dependent and unproductive, a drain on society's resources. When the needs of the end user are considered first, the most appropriate wheelchair (not merely the cheapest) can be provided, and with other targeted assistance, the wheelchair rider can go to school, get a job, and become a net contributor to society.

The underlying problem is that the usual market forces are not present in any significant way when it comes to the purchase of wheelchairs in developing countries. The end user most often cannot afford to pay for his or her wheelchair. The market for wheelchairs is made primarily by government agencies, development organizations, and charitable and religious institutions. Historically, the end user has been a mere object of charity, with unfortunate human and economic consequences. People who could be active with the right wheelchair for their situation receive an inappropriate chair that does not provide any significant improvement in their mobility, independence, or integration into society. A chair that is too wide, for example, is difficult to push and may be impossible to get through doorways. Besides the human cost, it is a waste of money.

The key player that is most often overlooked is the wheelchair rider him/herself. Or, rather, it is the local and national self-help service and advocacy organizations of people with disabilities. These organizations are in a position to advocate on behalf of those who need wheelchairs before the government agencies and charitable and development organizations which purchase wheelchairs to ensure that the recipient of a chair receives one that is appropriate for his or her situation (physical condition, age and size, geographic setting, personal goals, etc.).

With organizational development assistance, such as training in grant writing and management, the disability organizations can increase the local market for wheelchairs, which not only benefits a greater number of end users, but can also provide market stability for local wheelchair manufacturers, who are also likely to be employers of people with disabilities.

It Works in Siberia. The scenario just described has worked, and is currently working in Novosibirsk, Siberia. In 1993, with grants from U.S.AID, a disabled sports club transformed itself into an Independent Living Center, a service and advocacy center run by and for people with physical disabilities. At the same time, an Aeroflot helicopter repair facility and a newly established local small private company went into the wheelchair-building business. At the time, the government was buying wheelchairs from Russia's only then-existing wheelchair factory located near Moscow. In fact, there was no mechanism for buying wheelchairs anywhere else.

The activists from the disabled sports club convinced local rehabilitation administrators to make the case with Moscow to allow them to buy wheelchairs made locally, and they were successful. The rider-activists also convinced the local rehabilitation administrators to allow them to choose whether they wanted a chair from the Aeroflot factory or from the private company, whose wheelchairs were better built.

Today, the Novosibirsk Regional Center for Independent Living "FINIST" (Phoenix) is a sales agent for the private wheelchair company (the Aeroflot facility stopped building wheelchairs) and receives commissions. When it writes grants for job training programs, for example, it makes sure to include some amount for the purchase of appropriate wheelchairs so that each of the program participants will have a suitable wheelchair. FINIST also is involved in the annual Novosibirsk Regional budget process. In these ways, FINIST helps maintain a market for locally built wheelchairs.

Getting bang for your buck Assuming no increase in available funding, spending money on the development of an organizational infrastructure in the target country will mean less money now for wheelchairs. In the long run, however, it will prove to be a more efficient use of resources. Wheelchairs that are sent will be used, not left to collect dust or rust. The average life of a wheelchair will be prolonged through proper maintenance and repair. Wheelchair recipients will have increased mobility and independence with all the benefits that that implies. A well-supported infrastructure can mean jobs and income for those least likely to be employed. If all of this

is integrated into a comprehensive program of physical, social, and vocational rehabilitation, it can become sustainable.

Pooling resources and efforts with other international aid organizations In almost every place where there is an international aid organization, there are two or more such organizations. Often, there are a half dozen or more. These organizations can share resources, such as a warehouse and the costs of maintaining a repair shop. Each can also provide a separate, non-duplicative function, with one providing wheelchairs, others training physical therapists, others providing organizational development assistance, etc. The ideal situation would be a sharing of some resources on the one hand and the continuation of individual activities on the other, even if these would be duplicative, in order to promote a healthy "competition" and give wheelchair users a choice of service providers.

Finding a Partner The first step a donor organization must take is to secure a capable and reliable counterpart in the target country. That counterpart can either be a branch of the donating organization, another international development agency, or it can be a purely local organization. The ideal local organization is one that represents the interests of people who use wheelchairs. Preferably, this is an organization run by wheelchair users themselves because no one knows the problems wheelchair riders face better than wheelchair riders themselves. Where this is not possible, or in the case where the international development agency chooses to partner with a non-disabled run organization, such as is the case with many church-affiliated programs, wheelchair users and/or local

disability groups that represent wheelchair users should be actively involved to ensure that the needs of the end-user will be met.

The local partner needs to have the capacity to gather and relay accurate information to the US-based office. It needs to be able to handle all customs paperwork, and have a place to store the wheelchairs until they are distributed. It will need to be able to make final adjustments to the wheelchairs before they are distributed so they will best fit the recipient. Depending on the arrangement with the US-based office, the local group may also need to have the capacity to refurbish the donated chairs.

Assessing the Need The second step in any wheelchair donation program is an assessment of the actual need. It is not enough to simply send down wheelchairs with the idea that any wheelchair is better than no wheelchair. Important information to be gathered in an assessment includes:

- a) Identifying the individuals who need wheelchairs;
- b) Evaluating each prospective recipient's personal needs, including age, size, physical condition, geographic setting (rural or urban), personal goals, etc.). This is best accomplished through the services of a qualified physical or occupational therapist who can accurately measure and assess each prospective recipient and make appropriate recommendations for the type of wheelchair the individual needs. Local non-professionals, however, especially other people with disabilities, can be trained for this purpose.

c) Determining how the wheelchair rider will get his/her wheelchair repaired. Issues include 1) the availability of a person (usually a family member or a wheelchair or bicycle mechanic, but it could be the wheelchair user him or herself) who is able to maintain and repair the wheelchair; 2) the availability of spare parts, especially those parts that wear out most often, including tires, inner tubes, and bearings; and 3) the source of adequate funds to repair the wheelchair. The life expectancy of the wheelchair (usually between 2 and 5 years for active use) and the annual cost of wheelchair repairs must also be estimated.

There are currently three organizations worldwide that specialize in appropriate wheelchair design for developing countries. They are a) Whirlwind Wheelchair International, based at San Francisco State University; b) Motivation, based in Bristol, England; and Handicap International, based in Belgium. Depending on the target country, the assessment phase should include consultations with at least one of these organizations.

Setting up the program The simplest situation is one where new wheelchairs are sent to a city or region that has a parts distributor who sells parts very cheaply. Of course, the simplest situation is rarely ever the real one. This is because most donated wheelchairs are likely to be used wheelchairs. These chairs need to be cleaned and often adjusted or repaired. Because of the difficulty in acquiring replacement parts in many places around the world, it is often best to have the chairs cleaned and repaired before shipment. (On the other hand, a big advantage to repairing the chairs once they reach the target site is the creation of local job opportunities, and of

course, it will be more cost-effective to have the chair repaired in the target country where labor is considerably cheaper.)

Standardization is a good idea. The wide variety of wheelchairs, not only of different types but from different manufacturers, makes the spare parts problem all the more difficult. Rather than accept any wheelchair that is donated to it, the U.S. organization might want to concentrate on only a few types of wheelchairs from only one or two different manufacturers. This strategy has the advantage of making it easier to acquire spare parts. Chairs that cannot be repaired can be stripped of their parts, which can be sent along with the shipment of complete wheelchairs. For the wheelchair users in the target country, standardization means that a broken down old wheelchair will still be useful as a source for spare parts. Funds raised to purchase new spare parts can also take advantage of bulk pricing. Standardization should not be confused with the one-size-fits-all model. Here we are referring only to standardization of types and models of chairs. Different sizes and customization remain indispensable options.

The Problem of electric wheelchairs Extra careful attention should be paid when considering the donation of an electric wheelchair. All of the problems discussed above are multiplied many times over with an electric wheelchair. Parts are expensive, almost always unavailable, and special training is usually required to diagnose and repair problems. Although an electric wheelchair can increase a person's range of mobility and allow for independent travel, the lack of accessible architectural features such as curb ramps, building ramps, and

elevators, not to mention kneeling buses and the like, can make it more difficult for the rider with a heavy electric wheelchair.

Seat Cushions are indispensable. One area that is usually overlooked by wheelchair donors is the critical need for adequate seat cushions. Far from providing new life to a previously immobile person, a wheelchair without a proper cushion can mean death from pressure sores. Pressure sores, also known as decubiti, are breakdowns of the skin caused by continuous pressure of the underlying bones against a hard surface. People with full feeling in their buttocks and legs frequently and automatically adjust their sitting, lying and standing postures in order to relieve the pain and discomfort that can be caused by these pressures even after only a few minutes in one position. A person with a spinal cord injury, however, does not feel pain from sitting in one position, and general discomfort may arise only after a long time when the body's internal mechanisms try to cope with an injury that has already occurred. The best possible cushion, correct posture, and awareness of techniques to frequently relieve pressure and adjust weight distribution are necessary if the spinal cord injured person is to avoid pressure sores.

In a paper entitled "Coordinating Wheelchair Provision in Developing Countries, presented at the RESNA 2000 conference (Rehabilitation Engineering Society of North America – now known only by its acronym) Matt McCambridge, MSE, discussed principles of "responsible wheelchair provision."

"The rider must receive training in pressure ulcer management and the use and care of a wheelchair," writes McCambridge. "Provisions must be made to ensure that the chair can be repaired, and follow up assessment should be done to determine whether the equipment meets the person's needs."

Three basic choices are available when providing a cushion. One is to provide a standard foam or air-filled cushion with each donated chair. Another is to send a cushion that has been custom made for the recipient. The third is to have cushions made in the target country using available low-cost materials. This last alternative has been the subject of an annual international competition sponsored by RESNA beginning in 1996. "Over the years, many innovative and successful designs have been entered into the competition. The winning designs for each year of the competition from 1996 to 1999 were: (a) Bicycle inner tubes tied into individual semi-inflated segments, arranged in rectangular pattern 3 layers deep; (b) Foam rubber sheet over contoured coconut coir (scooped out under ischials and tailbone), rubberized cloth; (c) Buckwheat hulls in a bag sewn from a T-shirt; and (d) Foam block scored in checkerboard pattern to minimize shear, cavity under tailbone filled with coconut fibers, linen cover with zipper." (From RESNA 2000 Proceedings – For more information contact Beneficial Designs, Inc.

Website: <http://www.beneficialdesigns.com>

THE UNSEEN DANGERS OF DONATED WHEELCHAIRS

Unfair Competition If one of the goals of international aid organizations is to develop sustainable programs, that is, to help people to help themselves, then free imports of used wheelchairs from the U.S. defeats that purpose in an important way: it undermines the development of local wheelchair manufacture. If any foreign company, in any other industry, sold its products below cost in another country, it would be accused of unfair competition and dumping, in violation of international trade agreements. Yet we applaud the free distribution of wheelchairs that cost a lot to refurbish, ship, and distribute, even if these costs are hidden because they are paid for through donations, volunteer labor, and 100% subsidized shipping.

To avoid competition with an existing wheelchair manufacturer, it is not enough that a person who gets a free wheelchair lives far from the factory, or that his or her family could not afford to buy a wheelchair anyway. In a free market, wheelchairs, like all goods, will insinuate themselves into the marketplace. There are many, many examples of wheelchair users with perfectly good chairs who have learned that a quick buck is to be made by crawling in to the local church wheelchair giveaway site, or showing up in a decrepit old wheelchair, in order to receive a free chair, which he later sells to a trader at the flea market. And a family that lives hand to mouth will sell its donated wheelchair, trading any advantages the wheelchair might give, so it can survive for the next few months. Is this any wonder when you consider that in India

there are beggar families that maim and disfigure their children in order to make them more successful at begging?

Of course, for every wheelchair sold, there must be a buyer. But since the buyers of wheelchairs are principally government agencies and charitable and development organizations, there is pressure on these organizations to buy cheaper chairs on the open market, rather than from the local manufacturer. In at least one case, a wheelchair manufacturer himself bought the imported, donated wheelchairs at the flea market and included them in a batch of wheelchairs purchased by the international funding source. The manufacturer may not have lost money, but his employees, some of whom were wheelchair riders themselves, lost an opportunity to earn their wages.

The right tool for the right job There are many wrong, even if well-intentioned, reasons to be involved in providing wheelchairs to people with disabilities in developing countries. There is only one right reason: To provide the wheelchair user with real mobility that will improve his or her opportunities to be an active, integrated member of the local community and of society in general, by being able to leave the confines of home or hospital in order to go to school, get a job, shop for food, and engage in all those other activities independently mobile people do every day. The wrong wheelchair won't help its rider do any of that.

Note: Special Thanks to Alicia Contreras, Director, Whirlwind Women, for the ideas she contributed to this paper.

Marc Krizack



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Applying Universal Design for Learning in a Graduate Management Information Systems Course:

Introduction

The concept of Universal Design (UD) arose from the efforts of architects who tried to “design in” architectural features that would provide the easiest and widest possible use to the largest audience of users. Prior to this concept, attempts at widening the usability of an architectural feature were typically made after the final construction of, for example, a building. The results of these after-the-fact changes were often not in congruence with the original architectural design, not as usable as a similar feature that had been designed-in from the start, and more costly than a completed design that had incorporated a similar feature from the beginning. The generally-accepted founder of both the concept and the term “universal design”, Ron Mace, worked most of his life in promoting the greatest accessibility to the widest audience.

Universal Design is now a common aspect of architectural design and its use is accepted and promoted as a standard method of design and a way of allowing the largest number of users of a building to access its features most readily. The general concepts associated with universal design have made their way into other fields of architecture beyond building design and construction. One commonly cited example of universal design that has been adopted in cities around the world is the “curb cut”. A curb cut is sloped reduction in the

curb height at the edge of a street, typically at a corner or intersection. Without a curb cut, it is very difficult for individuals using wheelchairs to move from the level of the street to the level of the adjacent sidewalk. Proponents of universal design point out that curb cuts enhance the usability of the sidewalk not only for those who use wheelchairs, but also for those pushing baby strollers, those moving large appliances like refrigerators when moving into a new home, bicyclists, the blind, skateboarders, roller-skaters, and the elderly. It is possible in some cases to alter the original design of the sidewalk after-the-fact by placing some type of ramp against the curb that provides some of the features of a curb cut. However, such modifications typically protrude into the street, are not as smooth to traverse, and almost always are not as integrated aesthetically as the solution of originally designing the sidewalk with a curb cut right from the start.

Proponents of universal design argue, therefore, that it is much better for all involved to attempt from the very start to incorporate into the design process, any mechanism or feature that will most widely accommodate the largest number of users. Leaving this type of thinking to modifications after the construction is completed will not nearly accomplish the goals to the extent of understanding universal design and applying them from the start of an architectural project.

Universal Design for Learning

Universal Design for Learning (UDL) takes the general features of universal design and applies them to a learning environment. This implies that a learning module of any size

from a single assignment to an entire course should be design from the start with one goal of accommodating the widest possible audience of learners. As in the application of universal design, designing in those features from the start of the process should yield a final learning module that is more highly integrated and accessible to a wider range of learners, both of which should result in better learning for more learners.

The field of UDL was first formalized in a set of principles proposed by Arthur Chickering and Zelda Gamson (1987). They described their seven practices of UDL principles as:

1. Encourages contact between students and faculty.
2. Develops reciprocity and cooperation among students.
3. Encourages active learning.
4. Gives prompt feedback.
5. Emphasizes time on task.
6. Communicates high expectations.
7. Respects diverse talents and ways of learning.

Other individuals and groups have also played a large role in the advancement of refining appropriate actions to take to promote and implement UDL. The Center for Applied Special Technology (CAST), founded in 1984, has as a central purpose “development of innovative, technology-based educational resources and strategies”. CAST has played a leading role in the academic study of UDL, as well as in changing industry practices and governmental policies related to UDL.

Numerous academic institutions have also participated in the promotion of UDL. One of those academic organizations that has supported research into the application of UDL is Sonoma State University (Ayala, 2005). It entered the UDL domain of study through applying for and winning a U.S. federal grant called the EnACT grant, to support students with disabilities complete their post-secondary goals in the California State University system. One early result of the EnACT grant was the creation of a set of four high-level UDL principles, each of which was broken down into 3-4 "UDL Elements".

The four high-level UDL principles are and their associated elements are:

General

1. A statement or information is contained in my course syllabus that specifies campus-based student support services, including disability support services.
2. I provide a comprehensive syllabus that clearly specifies all course requirements, course expectations and due dates.
3. I offer multiple forms of contact information so students have varied ways to contact me with questions or concerns.

Representation

4. I utilize multiple methods of expressing general course content utilizing different modes (visual, graphic, verbal, auditory, etc.) so students have varied ways to access the course content.
5. I provide multiple ways of clearly identifying and explaining essential course concepts (lecture with guided notes, etc.).
6. I ensure accessibility in all course content and materials (accessible websites, captioned videos, e-textbooks, etc.).

7. I provide examples and/or illustrations of all major course assignments or activities.

Engagement

8. I offer varied instructional methods to involve students in the learning process throughout the semester (lecture, small group work, online assignments, class discussion, etc.).

9. I encourage natural support systems (study buddy, partner work, study groups, etc.) in and outside of class.

10. I provide alternatives for students on how they can participate or complete all major course assignments or activities.

Expression

11. I offer clear and specific feedback on assignments and encourage re-submission of assignments as appropriate.

12. I allow students to demonstrate their knowledge of subject matter through a variety of means (oral presentation, written report etc.).

13. I encourage the use of assistive, adaptive or other technologies to ensure that students can accurately express what they know.

14. I provide clear guidelines and/or evaluation rubrics for all major course assignments or activities.

Since Sonoma State University is part of the California State University (CSU) system, one condition of the EnACT grant was to invite other CSU campuses to participate and expand their own understanding and applications of the principles of UDL. By the end of the third year of the EnACT grant, that expansion ultimately included eight campuses of the CSU system.

San Francisco State University (SFSU), a member institution of the CSU, and a second-year participant in the EnACT grant, took several actions to increase the visibility of UDL concepts. One of these actions was to create a “Faculty Learning Community” (FLC) in which interested faculty members met once per month to talk about their own attempts at adopting UDL concepts. Another action SFSU took was to create “case stories” wherein interested faculty members told, through text and sometimes video, their own academic and personal reasons for adopting UDL principles. Those faculty members were encouraged to explore their reasons for adopting UDL and to document their UDL applications and the results of those applications.

The research project documented in this article is one outcome of SFSU’s participation in the EnACT grant, and describes one faculty member’s adoption, documentation, and qualitative analysis of applying very specific UDL concepts in the teaching of a graduate course in information systems.

Methodology

For this particular project, the first step in applying UDL concepts in a classroom required finding literature that described previous attempts at applying UDL concepts. Although there is some prior research that discusses applying UDL concepts in a classroom, almost all pertains to K-12 education, education for students with special needs, or only speaks to UDL issues at a very high level. For a college instructor trying to apply UDL concepts in a classroom, there is almost no guidance about very specific actions that one can take to broaden the accessibility of learning modules.

The results of a lengthy literature search resulted in a very inconclusive, over-lapping, and non-independent set of classroom actions. The value of this list, however is that it contains a very specific set of actions, most of which can generally be implemented quickly and will have a direct impact on expanding accessibility of education and learning. While a few elements on the list may be more effective or appropriate for some academic fields of study, none are exclusive or particular to any academic domain.

Note also that some of the elements on the list have been practiced for years and/or may be fairly obvious. In alphabetic order, the elements of that list are:

- "Alt" tags for images
- Alternative access to teleconferences and videoconferences
- Appropriate use of color
- Audio output
- Avoid page elements that flicker
- between 2-55 Hz: seizures
- Bulletin boards
- Captioning of video
- Case studies
- Choice in appearance of content
- Choice in content
- Choice in level of support
- Choice in method of response
- Choice in speed and distractors
- Choice in type of support
- Community service
- Consistent web page layout
- Contact via email
- Contact via listserv
- Contact via online forums
- Email
- Email distribution lists
- Face students when talking
- Flexible images
- Flexible-use furniture
- Games

- Hands-on class demonstrations
- Hyperlinks to related material
- Multiple forms of distribution of course materials
- Nearby restrooms; telephones; parking
- Note-taking by several alternating students to be posted for all students
- Notes: “blanks” in notes that students fill in from class discussion
- Notes: posted online prior to class
- Possibility of one-on-one interaction with students
- Read aloud and describe text
- Real-time chat
- Small group discussions
- Speak clearly
- Supply visual outlines
- Text captioning
- Text of printed materials available online
- Text that is compatible with speech generators
- Text that has hyperlinks
- Text with accompanying background information
- Text with flexible font sizes
- Transcription
- Uncluttered web pages
- Use HTML validators
- Usenet discussion groups
- Video
- Virtual reality
- Wheelchair accessible

From this starting point of possible specific actions to take, the next step was to select those items that would be most appropriate for a graduate course in Information Systems. Also, an attempt was made to select items that would yield the greatest impact on expanding accessibility of learning. For example, adding “alt tags” to images is fairly simple to do, but if the learning module does not contain many images, this particular action will not likely have much impact on increasing the accessibility of that learning module. Conversely, posting

course notes on-line prior to the start of class can increase the accessibility of learning to every student in the class, presuming that all students have access to the Internet and the notes are posted in an accessible format.

While it would be most valuable in increasing accessibility by adopting every element on the list, resource limitations prevented that option. Also, characteristics of the section somewhat constrained selection of which list items to choose. The section was an evening graduate overview course on Management Information Systems comprised of about 30 students. Given these considerations, the elements that were chosen to adopt were:

1. **"small-group discussions:"** meaning, at points during a class session, lecture and general discussion would be halted and the class would break up into smaller groups to discuss some aspect of the topic at hand and answer some questions. After 10-15 minutes, the groups would reconvene and each group would offer their solutions and insights. The comments from all groups were then posted back to the notes that had been posted prior to that class session.

2. **"notes: blanks in notes that students fill in from class discussion:"** meaning, on some class presentation slides, words or sections of text were deleted and replaced with underlined blanks. When that point was reached in the class session, students would fill in those underlined blanks with the correct answer as determined by a discussion of that topic during class.

3. "hyperlinks to related material:" meaning, at several points during the semester, reference was made to some on-line resource that could further describe or expound on a topic that was simply too large to complete in class. Students could write down the URL of that on-line reference, or they could link directly to that reference if they were perusing the notes that were posted prior to the start of that class.

Some of the more obvious list elements for a graduate information systems course, such as "Notes: posted online prior to class"; "Multiple forms of distribution of course materials", and "E-mail" were already in place. In general, list elements were chosen to have the greatest impact on increasing learning accessibility while being possible to implement in a single semester without having to re-construct the entire course.

After the three UDL concept elements were chosen, deliberation was needed to determine at which points in the class those actions should be taken. Since the course was about management of information systems, an attempt was made to select topics in the course that most closely fit with the three chosen UDL elements.

For UDL concept #1 (small-group discussions), the specific IS topics chosen were:

- 1. Selecting Michael Porter's competitive strategies**
- 2. Identifying Marshall McLuhan's elements of communication**
- 3. Identifying data generated in each SDLC stage**
- 4. Choosing user-interface designs**
- 5. Pairing e-commerce processes with e-commerce types**

For each of these 5 topics, the class was divided into small groups of about 5-6 students. Each small group was then tasked with investigating some aspect of that topic, determining a solution for that task, and reporting their solution back to the class as a whole. Because each of the topics concerned a different area of information systems, the tasks associated with each topic was different (See Appendix for details of each topic small-group discussion task).

For UDL concept #2 (notes: blanks in notes that students fill in from class discussion), there were numerous options from which to select. In fact, almost every presentation slide discussed during the semester contained some relevant piece of information that could be removed and filled in with a blank. To make it easier for students to use this process, PowerPoint slides of the days lecture were posted several days prior to class. Also, specific relevant IS concepts had been deleted from some slides and those deleted pieces of text replaced with underlined blanks. Students could therefore print the class lecture notes before class, wait for the class discussion pertaining to a missing discussion point, and then simply “fill in the blank” on their notes after hearing the correct point. As one example, when discussing the different types of knowledge that organizations might choose to store in a knowledge management system, the following text was displayed:

Types of knowledge:

_____ knowledge: data, documents, things written down or stored on computers

_____ knowledge: the “how-tos” of knowledge, which reside in workers

When this point in the lecture was reached, there was a discussion in class about different types of knowledge, and the point made that explicit knowledge is likely much easier to capture and store but also likely of less value to the organization whereas tacit knowledge is likely much more difficult to capture and store but likely of greater value to the organization. There are, of course, numerous possibilities during any one individual class session where relevant text can be blanked out.

For UDL concept #3 (hyperlinks to related material), there were also numerous points in the semester where on-line resources could be referenced. Because of the wide-ranging nature of the study of information systems (from detailed technology to broad theories), it was possible to choose different types of on-line resources. A conscious decision was made to try not to reference materials that were similar in nature to what was presented in class. Therefore, most on-line references were to multi-media resources instead of to textual resources. For example, to illustrate the relationship between using the power of information technology to perform complex tasks and the ability to create a viable business model from such a system, students were referred to a robotic device that performs as a bartender (DeLeon, 2006). There are numerous information technologies in such a robot, but there are also numerous questions about whether such a device could sustain a viable business. Another example used in the class was a reference to an on-line resource that graphically described how relational databases function. As with UDL concept #2

described above, there are many instances during a course where references could be made to on-line resources.

Analysis and Results

Thus far, only a qualitative analysis has been made of the results of applying UDL concepts in a graduate information systems course.

With regard to UDL concept #1 (small-group discussions): Students who were reluctant to speak to the whole class would often and more comfortably make comments in the small groups. Since each small group discussed a slightly different aspect of the main topic, the class as a whole was able to delve more deeply into that topic. By re-posting notes with the small-group discussion results, students could see the fruits of their labor. Students also seem to like the break from sitting and listening to my lecture and the larger class discussions. Their level of animation also changes immensely when the class switches from whole-class discussion/lecture to small-group discussions.

With regard to UDL concept #2 (notes: blanks in notes that students fill in from class discussion): Students have a greater incentive to attend class which might help some instructors who are hesitant to post their notes beforehand for fear that students will no longer attend class. This also forces students to pay more attention in class if they want to put the correct answer into the blank space in their notes. It is simply human nature that people in general do not like gaps in a continuous series of anything, so students were more closely focused on the class discussion so they could complete their collection of notes. Students were focusing more precisely at

these points in time as evidenced by a much higher percentage of forward-facing heads, as compared to times in class where the presentation slide had no blanks.

With regard to UDL concept #3 (hyperlinks to related material): This process allowed students to get deeper descriptions or examples of the topics that were discussed in class. There is only so much time that an instructor can spend on academic topics in class; typically there are many other topics that the instructor wishes to cover but cannot due to time constraints. It is difficult to gauge the effectiveness of this particular UDL concept since students were not required to submit any graded material based on those on-line resources.

Conclusions

This experiment involved applying specific concepts of UDL in a graduate management information systems course. Many detailed actions were extracted from an analysis of the existing literature. From that list of specific UDL elements, three were chosen to implement in a classroom setting. The particular places to apply those concepts were selected based on the characteristics of the concepts, the topics covered in the class, and the resources available to the instructor. Qualitative results of the application of UDL concepts were presented.

One of the most time-consuming tasks associated with this project was collecting the very specific UDL elements that can be applied. There currently exists no such single source of detailed actions that an instructor can perform to apply UDL concepts in their classroom. After that list was created, it was a much more simple matter to select appropriate UDL elements and pair them with appropriate information systems topics.

A qualitative analysis of the results of applying UDL concepts suggests that small-group discussions give students increase engagement with the course material and a different representation of that material. Inserting blanks in place text for relevant topic concepts seems to increase student engagement of the material, and providing access to on-line resources for appropriate information systems concepts gives students a different representation of course material.

The concept of UDL is a relatively new but rapidly growing field. It is also one that post- secondary instructors in all academic areas can apply to increase the effectiveness of their teaching while also increasing the accessibility of their instruction. This research project attempts to first gather into one document very specific actions that the interested instructor can apply and secondly present some initial evidence applying those specific actions.

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Small-group discussion tasks:

APPENDIX

Task 1: Michael Porter's competitive strategies task:

Break into 5 groups each group: consider one competitive strategy

Group 1: Cost leadership

Group 2: Differentiation

Group 3: Innovation

Group 4: Growth

Group 5: Alliance

Think of two firms that use that strategy

For each of those two firms

Which competitive force (threat) is greatest (competitors, new entrants, substitute products, customers, suppliers)? Why? And is either of your firms being attacked by one of those competitive forces?

Task 2: User-interface design task:

Break into 5 groups, one for each of the operating systems functions:

- 1. Resource Management**
- 2. Task Management**
- 3. File Management**
- 4. Performance Monitoring**
- 5. Security Monitoring**

Each group answer the following question:

Which type of user interface would you propose (command-driven, menu-driven, or graphical user interface) for that operating system function? Why?

Task 3: Marshall McLuhan's elements of communication task:

Break into 5 groups, one for each of the communication elements:

1. Sender
2. Encoder
3. Channel
4. Decoder
5. Receiver

Each group answer the following question:

What are ALL of the parts of your group's element for communication in:

- A. Calling a dog to "heel"
- B. Discussing a classroom topic in BUS 782
- C. Talking to a friend via landline telephones
- D. Connecting your home computer to eBay

Task 4: E-commerce processes task

Break into 5 groups

Each group choose one of the 9 essential e-commerce processes and tell me which one

Answer the following questions:

1. What general data is created in/by that process?
2. Which e-commerce type (B2C, B2B, or C2C) is this process most relevant to? Why? (Be sure to consider the users of your chosen process.)

Task 5: SDLC stages task:

Break into 5 groups, one for each SDLC stage:

- Group 1: Stage 3 - Design
- Group 2: Stage 2 - Analysis
- Group 3: Stage 5 - Maintenance
- Group 4: Stage 1 - Investigation
- Group 5: Stage 4 – Implementation

Answer the following question:

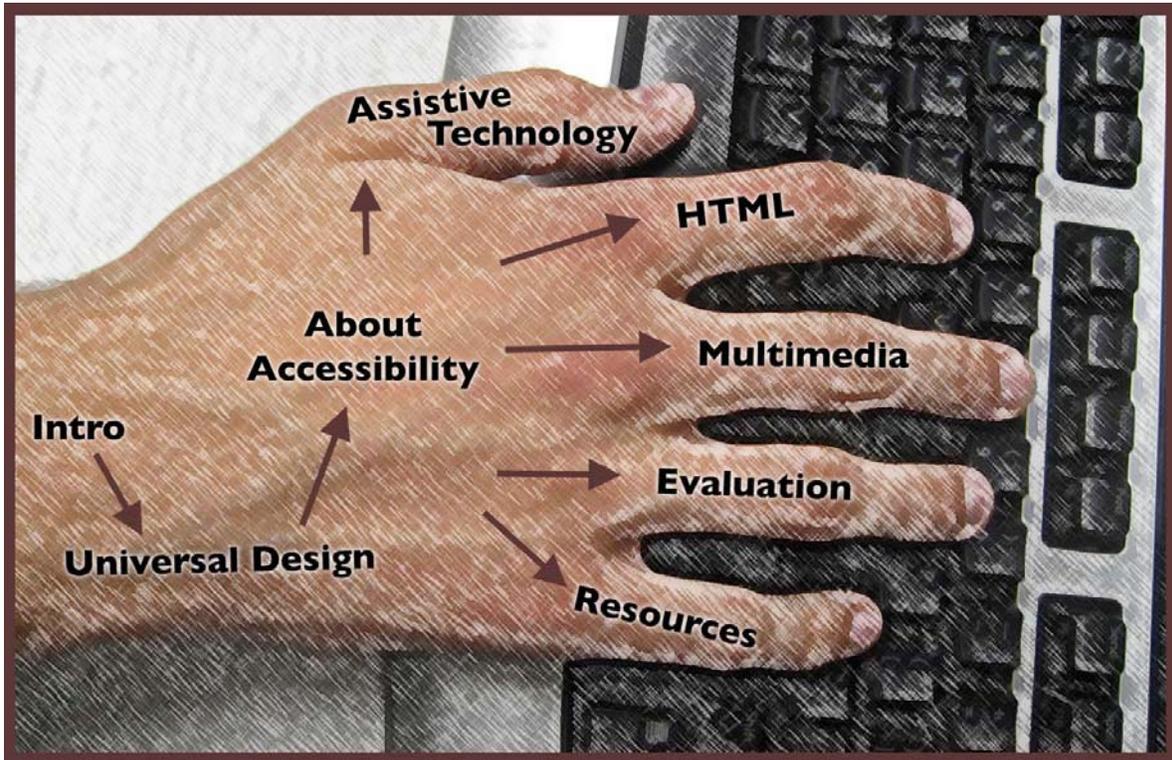
In general, what data would you pass on to the next stage?



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Accessibility and Universal Design

*Natasha Boskic, Kirsten Bole, Kevin Kelly, Nathan Hapke
(Repurposed by Kevin Kelly)*



Introduction

Most of the content written in this chapter was originally based on the work performed at the University of British Columbia (UBC) as a part of the “Web Content Accessibility” project in the period September 2005 – August 2006 (Boskic, Bole, Kelly, & Hapke, 2008). The content of this chapter has been repurposed to correspond to work performed at San Francisco State University (SF State) and in the California State University system. There are several references to chapters from *Education for a Digital World* (2008), as the original

chapter was written in conjunction with these other authors' chapters.

Great efforts have been made to give every student equal access to high-quality learning, and to remove barriers for people with disabilities. However, most of these efforts are focused on the traditional, face-to-face classroom experience. Less attention is devoted to those taking courses fully online, and their ability or inability to cope with web-based interactive content. While standards and guidelines have been developed to support and assist with accessible web design, their primary focus has been on technical specifications, assistive technologies, or legal issues. Fewer studies have been conducted to investigate how that "accessible" content is perceived from a learner's perspective, and how helpful it really is.

As distance learning adapts to new technology, instructors should be innovative in their relationship with students and in the methods for developing educational content, accommodating the diverse needs and learning styles which will be beneficial for all, regardless of their (dis)abilities.

At the beginning of this chapter you will find a brief description of the situation at post-secondary institutions, regarding adjustments of their online materials to students with disabilities, as well as legal and ethical framework for making modifications. You will find information about, and examples of, applying principles for universal design for learning in the online environment for the benefit of everyone. A description of various disabilities will follow, where we will

focus on specific student needs. Next, you will learn about legal requirements and existing standards for creating web content. We will describe practical steps and procedures and explain them with respect to different elements of online material design, together with several ways for testing and assessing accessibility. At the end of the chapter you will find a list of additional resources for further exploration.

'If the basics of usable design are ignored all users can be disabled by the inappropriate use of technology'. (P. Jeffels, 2005).

Framework

Accessibility at higher education institutions

Universities are increasingly becoming involved in technology-based education programs. The level of sophistication of such offerings (cohort organizations, electronic learning) is accelerating rapidly. However, persons with disabilities, taking courses off campus, do not always have the same rights of access and program accommodation as those on-campus. In some cases, slow Internet access is a problem, and in other cases, electronic course offerings have not been coded to support adaptive technologies such as screen readers, Braille display, enhanced print size, voice-over, and sip and puff control. The end result is an unfair imbalance in academic access.

Conformance with the World Wide Web Consortium's (W3C, an international organization for developing Web standards) and its Web Content Accessibility Guidelines 1.0 enhances the market share and audience reach of programs by increasing their general usability. Adoption of

WCAG 1.0 recommendations demonstrates a commitment to social responsibility and equity of access to education, information, and services.

These changes do not have to be substantial to be successful. Web accessibility is usually achieved by careful planning and attention to details. This all translates into **universal design for learning (UDL)**, a practice of designing web pages so that they can be navigated and read by everyone, regardless of location, experience, or the type of computer and technology used. In addition, it means providing educational material with flexible goals, instructional and assessments strategies that apply to different learning styles and practices. We will talk more about universal design in section 3.2 of this chapter.

With an increase in life-long learners, as well as those who are returning to school for their professional development or upgrade, removing barriers to web access becomes even more pressing.

Legislation

In the United States, a law called Section 508 requires federal agencies to ensure that people with disabilities have the same access to information in electronic systems as people without disabilities.

"Section 508 requires that when Federal agencies develop, procure, maintain, or use electronic and information technology, Federal employees with disabilities have access to and use of information and data that is comparable to the access and use by Federal employees who are not individuals with disabilities, unless an undue burden would be imposed on the agency. Section 508 also requires that individuals with

disabilities, who are members of the public seeking information or services from a Federal agency, have access to and use of information and data that is comparable to that provided to the public who are not individuals with disabilities, unless an undue burden would be imposed on the agency" (Section 508, 2006, Subpart A – General, para. 1).

In the United Kingdom, there is a similar law known as SENDA (Special Educational Needs and Disabilities Act) that applies specifically to students.

Canada has no such law at the moment, but the Canadian Human Rights Act and the Charter of Rights and Freedoms both deal with discrimination on the basis of disability. A failure to provide information in an accessible manner could be considered discrimination if no reasonable attempt is made to accommodate the disabled person.

The Human Rights and Equal Opportunity Commission (HREOC) in Australia published World Wide Web Access: Disability Discrimination Act Advisory Notes. All government websites are required to follow these policies and guidelines.

Around the world, accessibility and information access issues are being addressed at different levels. The Report on Developments World-Wide on National Information Policy (2001) gives a nice overview of what a number of countries are doing to support all online users, including those with special needs.

Background

The term "disability" is very broad, and can include persons with sensory impairments (blind or visually impaired, deaf or hard of hearing), learning disabilities, motor functioning

problems, or neurological impairments. The number and severity of challenges increases with the age of the population served, especially in the area of sensory impairment. For example, while the Canadian Federal government reports that the overall disability rate in the total population is about 12.4, for persons between the age of 65 and 74 it increases to 31.2% (Statistics Canada, 2001, para. 2).

The main goal is to improve usability and to provide academically qualified online learners with disabilities with full, fair, and equal access to all university services and programs. This means either redesigning the existing electronic content or developing a new one with accessibility in mind. Usually, you need to do both.

The first step is to carefully look at the courses or modules and determine their level of accessibility. Consultation and collaboration with users, advocacy groups, other university and government agencies, and various experts is very helpful. In the case of the project described here, all the procedures were tested by making adaptations and necessary changes inside WebCT. During this process, it is important that the work does not entail any modification of the academic standards of the university or elimination of the academic evaluation of students.

Making online courses accessible to students with disabilities, i.e. providing easy and consistent navigation structure, and presenting the material in a clear and organized way, benefits all students, regardless of their physical and mental condition. Every student is different; everyone has different levels of comfort with new technology, from computer-shy technophobe

to web-savvy expert. We are all in the process of adapting to new tools. In a survey conducted at Renton Technical College in Renton, Washington, in 2002, the highest number of participants (31%) reported difficulties in studying and troubles with computers (Microsoft, 2005). It will take a lot of time for computers or similar devices to become as invisible and user-friendly as books, for example. Universal design for learning principles attempt to reach that “easiness” by improving usability for non-disabled and disabled users alike, supporting persons with low literacy levels, improving search engine listings and resource discovery, repurposing content for multiple formats or devices, increasing support for internationalization of courses, and assisting access for low-bandwidth users.

An inaccessible site in a corporate world may lose clients. In an educational setting, the quality of a learning experience is much more difficult to measure, since it is not only a matter of numbers and physical access. With this awareness, content should be presented in a variety of ways to meet the online learners’ needs. Material that is inaccessible to a student with a disability can be offered in an alternative format. However, not everything can be made accessible without compromising the value of the learning experience. Teaching visual concepts and explaining different colour schemes, for example, is not fully adaptable for students who are blind. The materials should be made as accessible as possible for most groups of disabled students, but some people ultimately may still be excluded. In those cases, you will need to offer alternative exercises for the affected student, although producing such materials can be

time consuming. The choice of different delivery methods can exist, but only “in an ideal world” (Draffan & Rainger, 2006).

Every effort made to increase accessibility will help to disseminate information on accessibility issues and provide a basis for raising awareness not only in British Columbia, where this project was conducted, but in wider academic communities as well.

Accessibility at San Francisco State University

After the California State University (CSU) Board of Trustees issued Executive Order 926, Policy on Disability Support and Accommodations, all twenty-three CSU campuses began or continued existing actions to meet the requirements.

In the Fall of 2006, San Francisco State University (SF State) launched the Accessible Technology Initiative (ATI) in order to develop a work plan, guidance, and resources to assist the campus-at-large in ensuring full and equal access to electronic and information technology to individuals with disabilities. The SF State ATI is a reflection of the University's ongoing commitment to equity and social justice. (<http://www.sfsu.edu/access>)

In a separate but related activity, SF State joined Sonoma State University as part of the Ensuring Access Through Collaboration and Technology (EnACT) Grant. Led by the Center for Teaching and Faculty Development (CTFD) and the Disability Programs and Resource Center (DPRC), the grant coordinators held workshops and began creating online resources about universal design for learning, facilitated faculty learning committees, and began collecting case stories about how SF

State faculty have accommodated the needs of students with disabilities.

Universal Design

The other sections of this chapter discuss how to address accessibility issues for an online environment, along with resources, activities, and assessments used with face-to-face coursework or a fully online course. If you are just starting out, you can address these issues and numerous others from the beginning by using **Universal Design for Learning (UDL)** principles. UDL builds upon universal design concepts from other fields, such as architecture and urban planning, and applies them to learning situations.

The “curb cut” is a common urban planning example used to demonstrate the fundamental idea of UDL. Since the Americans with Disabilities Act of 1990, curb cuts—ramps extending from the street up to the sidewalk—are mandatory. Curb cuts allow people who use wheelchairs or who have low mobility to go from sidewalk to street and back again more easily. However, to add a curb cut to an existing sidewalk requires a jackhammer and a lot of extra work. Making a sidewalk that was designed with a curb cut from the beginning is much easier. Similarly, it is often easier to accommodate different learning needs by designing the course with those needs in mind.

As we will see with accessibility solutions for online learning, the curb cut accommodates everyone, not just the intended audience. Parents with strollers, children walking their bicycles, skateboarders, and more benefit from curb cuts as much as people in wheelchairs. Along the same lines, the

Center for Applied Special Technology (CAST) refers to UDL as "Teaching Every Student," stating that universal design for learning "calls for

- multiple means of representation to give learners various ways of acquiring information and knowledge,
- multiple means of expression to provide learners alternatives for demonstrating what they know, and
- multiple means of engagement to tap into learners' interests, challenge them appropriately, and motivate them to learn."

Almost every online accessibility accommodation strategy designed for students with disabilities also helps other students. For example, English second-language learners (ESL students) frequently use screen readers that were originally created for people who are blind or who have visual impairments. They benefit from hearing the text spoken out loud as they read. . Overall, UDL assists students with disabilities, certainly, but also assists students who are non-native language speakers, students with different learning styles, students with different levels of Internet connectivity and access to technology, and even students who require more assistance with self-motivation. Let's take a look at different ways to apply universal design for learning to your online course. We will use the comprehensive learning styles framework created by Richard M. Felder and Barbara A. Soloman of North Carolina State University to structure the discussion about UDL strategies

(<http://www4.ncsu.edu/unity/lockers/users/f/felder/public/ILSpage.html>).

Multiple means of representation

You probably remember teachers whom you felt gave you everything you needed to succeed when you were a student. These teachers provided handouts in the classroom, links to resources on the Internet, copies of their presentations, and more. You may also remember teachers who did not provide many resources. The resources they did provide may have been text-only documents or handouts that helped a select few students in the class. Perhaps they made one copy of an important set of materials for checkout, requiring you to wait until someone else turned it in before you could review it. This section will give you ideas about ways in which you and, in some cases, your students, can provide alternative course materials and resources that increase the number of students who succeed in reaching the objectives.

Sensory input

First, we need to consider the different ways that people get information into their heads, and the types of resources that students prefer. Later, we will discuss ways to help students encode and retain any knowledge or skills that they need to succeed in your class or beyond.

Visual-verbal, or text-based resources, help learners who prefer to read. These are usually the most common type of online learning resource, ranging from documents and presentations to web pages. However, text-based resources must be made accessible to people with visual impairments,

such as using Optical Character Recognition (OCR) to convert scanned documents to text.

Saving text-based files or documents in various formats also affects how many people can use them. Consider which technologies your students can access at home, school, or work. Some instructors conduct a short survey at the beginning of a school term to see which software applications their students use. Then they save their files in the most common format for that class. Others will save their course documents and text-based class assignments in multiple formats, such as accessible portable document format (PDF) files, rich text format (RTF) files, hypertext markup language (HTML) files, and Microsoft Word (Doc) files. Others choose a standard format for the class and inform the students that they will need certain software to read, edit, or save course documents.

Each document format listed above has its limitations, so choosing them may depend on what you want to accomplish.

- Any student can open PDF files with a free application called Adobe Reader, available for download at the Adobe website. If you choose this format, you should also provide your students with a link to the download page. However, if students are required to edit the document or to provide feedback on it, then they will require Adobe Acrobat, which is not free.

- Almost any word processing application can open RTF files, but saving as an RTF file may remove certain types of advanced formatting. Apart from this limitation, this format provides a great deal of flexibility with the types of tasks accomplished through the documents.

- Students with access to a web browser can open HTML files. If you want students to work on an HTML document, though, they will need a web-based HTML editor, an HTML editing application, or a simple text editor combined with knowledge of HTML code.

- Microsoft Wordfiles offer additional options, such as a feature called tracking that allows students to see feedback and suggested changes. Many people have a copy of Microsoft Word, but it is not universal. Student bookstores and some computer stores carry discounted educational licenses. If you are going to require students to use Microsoft Word, let them know of any labs at your school or university that make it available to those who cannot afford it.

Other text-based file types, such as spreadsheets, provide fewer options. The most common spreadsheet format is a Microsoft Excel (XLS) file. All spreadsheet applications should be able to save files as a comma separated values (CSV) file. However, this would strip out any formulas or calculations that you or the students use.

Looking at ways to spread out your workload over time, you can start with the first strategy, or saving files in one or two of the most common formats for your class, and work your way to the second strategy, or saving files in multiple formats, over time. This does not have to be done in a day, but to achieve universal design for learning it is important to consider these strategies from the beginning. The concept is not to try to accommodate all students with one strategy, but to provide alternatives. The key is to let your students know which formats you will use and provide them with avenues to get what they need to read and use the text-based resources.

Visual-nonverbal, or graphic-based resources, assist learners who prefer resources such as images, charts, graphs, flow charts, animations, or videos. Many software applications and some websites allow you to embed charts and graphs within the file itself. You can easily insert images in Microsoft Word. Microsoft Excel allows you to create different types of graphs from the data tables. If you use a complex image, such as a

political map or a diagram of the digestive system, you must still provide a text-based description for students who use screen readers.

You can use different applications, such as Inspiration, to create stand-alone flow charts or concept maps. If you want young students to be able to interact with this type of file or to create their own, there is a version called Kidspiration as well. See their website) for more details. By pushing one button, students can convert Inspiration flow chart or brainstorm files to text-based outlines. This helps students with screen readers as well as visual-verbal learners who prefer text. Other applications like Inspiration include Microsoft Visio, a free application called SmartDraw, and others. For specialized applications, such as engineering, there are even more. Let your students know if they will need to download or buy any additional software for your course, and work with lab managers to install it at your school or campus if budget permits.

Auditory resources provide alternatives to learners who prefer to hear the information, rather than read it. Screen reader software and text-to-speech applications can be used by many students, not just those students with vision impairments. Schools and universities have different ratios or formulas for how many computer lab stations must have this type of software to accommodate special needs. These ratios usually range from one in twelve to one in twenty computers per lab environment.

In addition, there are other avenues to provide auditory resources to students. For decades, students have placed their

tape recorders at the front of the classroom to capture what the instructor says for playback later. These days, the instructor can record him or herself and post the audio file online for all students. As with the other file types, it is important that the students can play and use the files you create.

Common audio file formats include the Wave (WAV) file created by Microsoft, the Audio Interchange File Format (AIFF) created by Apple, and the Moving Picture Experts Group's Audio Layer-3 (MP3) file.

A recent, popular trend for creating and distributing MP3 audio files is called "podcasting." Different aspects of podcasts and the process of creating and distributing them are described in *Education for a Digital World* (2008). For our purposes here, it is important to note that you should provide a transcript for any audio files.

Video files also provide appropriate stimuli to auditory learners. Chapter 15 in *Education for a Digital World* (2008), "Understanding Copyright: Knowing Your Rights and Knowing When You're Right," discusses when it is or is not legal to use clips of copyrighted videos as course related resources. One important factor from a UDL standpoint is that streaming video files are often easier for all students to use than downloadable video files. Despite the progress related to high-speed connectivity, not every student has a digital subscriber line (DSL) or equivalent connection at their home, school, or workplace. For students using a dial-up modem, large video files present a very frustrating challenge. Many times the student will spend hours trying to download a large file with no

success and will give up. For purposes of accessibility, caption the video or provide a transcript with timecode references to scene changes or other important points.

Tactile/kinesthetic resources create opportunities for learners who prefer to learn by doing. Resources that accommodate tactile/kinesthetic learners can take different forms. You can find or create interactive resources, such as CD-ROMs, websites, or Flash animations, and require the student to follow a linear or non-linear path through course-specific material. If you do not have time or know how to make these yourself, then you can search a variety of online clearinghouses and repositories for appropriate learning resources. The Multimedia Educational Resource for Learning and Online Teaching, (MERLOT, <http://www.merlot.org>) is a free website containing thousands of learning resources in the fields of art, business, education, humanities, math and statistics, science and technology, and social sciences. MERLOT is primarily for higher education instructors, but some materials would be appropriate for secondary school students as well.

You can ask your students to create the resource. In the online environment, this can be as simple as requiring all students to build a glossary of terms for a chapter or topic. You can ask them to send their terms by email, to post them to a threaded discussion, or to post them using a glossary tool that comes with a learning management system like Moodle. Other types of student-created resources include databases or spreadsheets containing results of experiments, student or class websites, and student videos.

More advanced resources act as a framework for student activity, described below. For example, a WebQuest (see <http://www.webquest.org>) is a web-based research activity that you can find or create for student group work. While most WebQuests are for K-12 students, it is not difficult to create one appropriate for college or university students. The WebQuest is highly interactive and collaborative, making it an ideal online resource for tactile/kinesthetic learners.

Keep in mind that not every resource for students must be stored in the online environment. Some of the most interesting and meaningful lessons require students to interact with the world and then to come back and reflect or report on what they learned. For all types of learners, this increases the number of possible resources to global proportions...literally! Structured activities might involve students performing lab experiments and then completing online lab notebooks; collecting scientific data and then entering it into a communal online database; observing master teachers at a school and then writing a reflective weblog entry; or interviewing an expert and then posting the text, audio, or video file.

Combining strategies means that you can accommodate greater numbers of learning preferences with one resource or activity. For instance, if you use an Excel spreadsheet to demonstrate how increasing and decreasing budgets affected the north and the south in the US Civil War, you can require the students to fill in the annual budget numbers themselves and then create a graph. This strategy accommodates visual-verbal (text-based) learners, visual-nonverbal (graphic-based) learners and tactile/kinesthetic learners.

Perception

Sensory learners prefer fact-based activities and resources. These resources are easier to provide, as most disciplines from the humanities to the sciences have some facts or details related to the topics within. The easiest resources to provide might be references to the textbook, or links to related websites. More in-depth resources could include optional readings, such as advanced articles that apply the concepts discussed in class.

Intuitive learners like reflective activities and resources that require imagination. If you have a topic that requires students to memorize facts to lay a foundation for later application, provide additional, optional resources that introduce the theories related to the facts. You can also encourage students to seek their own connections between theory and facts using an optional activity, such as a discussion forum devoted to a discovery learning approach.

Organization

Inductive learners prefer beginning with meaningful examples before extrapolating the main concepts or theories. In the online environment, you can accommodate inductive learners in both passive and active ways. You can provide a number of examples in a recorded lecture before describing the concept that they exemplify. In a more active learning activity, you can provide a number of examples and require the students to create a generalization from them by defining patterns. The Biology Success! Project (see Resources section for details) encourages instructors to consider that while inductive activities have been proven to help students with

learning disabilities, "it is essential that the instructor create clear guidelines for behavior, provide explicit directions from the outset of the activity, and be prepared to offer extra guidance as necessary."

Deductive learners prefer starting with more structure, deriving consequences and applications from the concepts and theories. These learners benefit from demonstrations and opportunities to practice what they have learned. Online "lab" experiences can further strengthen or confirm the learning by deductive learners.

To accommodate both inductive and deductive learners, you can provide case studies, results from previous experiments, and other inductive examples alongside descriptions of the general concepts and theories for the deductive learners. You can assign both in whichever order the students prefer, or alternate the order for different assignments whenever applicable. Another method to accommodate both types of learners is a "structured inquiry" exercise. Whichever approach and activity you choose, remember to be clear about what is expected or what students should do. Identifying the instructor's expectations is not a discovery learning exercise!

Processing

Active learners enjoy learning by applying knowledge or by working with others. Providing areas where students can interact online, such as instant message (IM) environments, discussion forums, or wikis, will give these students a way to do this. Learning management systems usually contain several of these tools for interaction. These tools can be used to create both general course spaces for coursework-related interaction

and specific spaces for particular topics or assignments. It is important to create clear instructions and expectations for each space, so students know its purpose and whether or not participation is required.

Make sure that you test the true accessibility of any technology-based areas for interaction. While many companies state that their web-based tools are accessible or compliant, their products are sometimes difficult to use for students using adaptive technologies. You might want to work with a disability resource center to do some preliminary testing. Further, interaction tools that use Java-based applets or plug-ins do not work with some older browsers, excluding students with limited technology or limited access to technology.

Reflective learners prefer to ponder the concepts or topic before engaging with it. If you often use small groups in your course, provide opportunities for individual assignments, even if it is just a precursor to the upcoming group work.

People often see themselves as both active and reflective learners, just as they might consider themselves both sensory and intuitive. You can try to accommodate both types of learners by mixing up the types of activities. An active learner might prefer the immediacy of a chat. A reflective learner might prefer the asynchronous nature of a discussion forum, as it allows him or her to think about what they want to write before actually committing the words to print.

Understanding

Global learners prefer to see the "big picture" first. You can help these students by providing resources that summarize a concept before going into details. One of the simplest examples

entails creating a table of contents for a presentation that you post online. If you are creating an audio file, take some time to give a brief introduction to the lecture or presentation before diving into the first section.

Sequential learners prefer a step-by-step approach, understanding each piece before seeing how it fits in a larger context. One way that you can help sequential learners involves referring to a numbered outline so students can keep track of where you are. Be sure to review flow charts, presentations, and other resources to make sure that you have not skipped or glossed over any steps. If creating audio readings, avoid jumping around from topic to topic. Instead, follow the outline that students will use to keep track of their place.

A common piece of advice for people delivering a presentation for the first time is "Summarize what you are going to say, say it, and then summarize what you said." This advice accommodates both global and sequential learners.

Preparing students to use multiple means of representation

If students are not prepared to use the variety of content choices you provide, then all your work could be wasted. Let them know how important it is for them to understand the concepts of learning preferences and learning needs, how to determine what their preferences and needs are, and how to adopt strategies that accommodate them. Many instructors ask their students to complete a learning styles survey. This idea is described in more detail below. We can include the learning needs of students with disabilities in this same set of activities.

Students with various disabilities also may not know what strategies will benefit them in the online environment. Encourage them to explore how they can succeed in the online components of your course, either on their own or with the help of a disability resource center.

Multiple means of expression

When we think about asking students to demonstrate what they know, we usually think that each student will take the same test, complete the same essay assignment, or perform the same skill(s). It is not too strange, though, to think that students could use different methods to show that they know the same concept. After all, instructors often ask students to choose one of several essay questions to demonstrate understanding of a major topic. These days, instructors are asking students to submit portfolio pieces, sometimes called "assets" or "artifacts," to show particular competencies. In this process, they may even let the students choose what type of asset they would prefer to submit, or how to best show their knowledge or skills. This last idea exemplifies the principle of "multiple means of expression."

Individuals

When asking individual students to demonstrate knowledge, skills, and/or attitudes using online mechanisms, it is important to determine to what degree of difficulty you are asking the students to achieve the objectives. There are numerous websites that list the different levels of difficulty related to the three learning domains: cognitive (knowledge), psychomotor (skills), and affective (attitudes) (see description of learning domains and degrees of difficulty at

<http://www.nwlink.com/~donclark/hrd/bloom.html>). Once you determine what you want students to do, then you can determine how they will demonstrate it. Education for a Digital World (2008) contains more information about student activity and assessment.

The first step is to identify alternatives that are equivalent. Taking a multiple choice test does not usually demonstrate the same level of proficiency as writing an essay or performing a task in front of a video camera for evaluation later. Therefore, take a close look at the learning objectives, and then make a list of different ways that students could achieve those objectives. Consider the following example objective, "Students will translate Hamlet's famous 'to be or not to be' soliloquy into modern English (with or without slang)." Equivalent online assessment alternatives might include writing a translation in a discussion forum, posting a translation as an attachment, making an online presentation using Skype or other synchronous conference tool, making and posting an audio recording of the student reading their translation, or making and posting a video presentation. The same evaluation guidelines or rubric could be used to evaluate each one. Hypothetically, then, students could choose how they want to show their ability to translate the soliloquy. This accommodates students with disabilities as well as students with different learning preferences. It also creates an avenue to engage students at a higher level, which is described in depth below.

Of course, you will find that certain alternatives may be less equitable. For example, technologies like video cameras and video editing software could be equally difficult to use due to limited access, unequal proficiency levels, or physical disabilities. This does not mean that you have to immediately remove it from the list of options. However, it might require that you identify a lab that checks out cameras to students and that has computers with video editing applications. Another option might be to have students work in small groups, so they can give each other feedback, share technology resources, and help each other with the skills that are not part of your course objectives. For an assessment strategy to be universally accessible, students must be able to attempt each alternative, so you may need to limit the options to those that you know all students can try if they wish.

Even within a standardized test format, there may be ways to offer options to students. In a face-to-face environment there are ways to accommodate different needs without giving test answers to the student. For example, on a test requiring students to identify the different bones in the skull, the instructor can provide a three-dimensional model of a skull for a blind student to use instead of a flat image (see Figure below). The same option is possible for an online test, but it would still require the student to have the model skull at an online testing location.

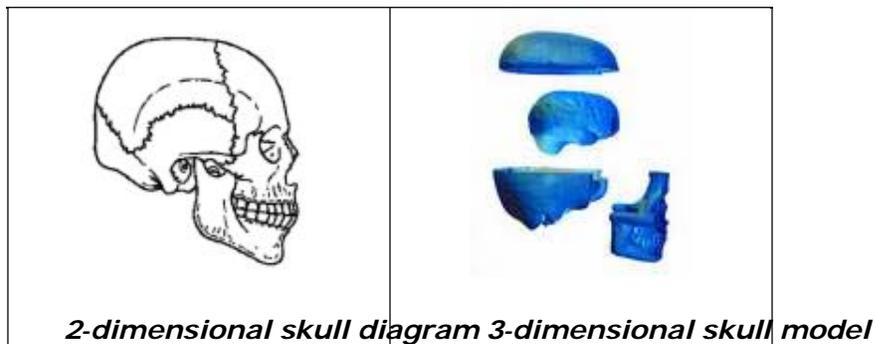


Figure 6.5 Test for
mat options

As stated earlier in this section, activities that involve specialized software or online environments should be tested for accessibility and assessed related to how many students have access to the software or environment itself. However, many of the tools go beyond the simple process of creating and automatically grading test questions. Learning management systems offer a variety of testing options, such as creating separate versions of a timed test to accommodate students who need extra time for exams. The Biology Success! Teaching Diverse Learners project (n.d.) gives us "Key Principles of Assessment as Applied to Students with Learning Disabilities" that we can use in the online environment to:

- clarify assessment criteria
- make frequent assessments
- allow for student revisions
- vary assessment methods
- allow students to self-assess.

Groups

Group work in the online environment provides some real challenges and some tangible benefits. It is sometimes hard to keep track of which student has contributed to the team effort,

but students will all gain team-related experience that will help them in research and work environments. One strategy to determine each group member's contributions is to have each student first perform each group task individually. Then each group member can share his or her work online, using a discussion forum, wiki, or other collaboration tool, to combine the best efforts from the team as a whole. Another strategy involves assigning specific roles to each group member. Most WebQuest exercises (briefly described above) require students to take a role and complete tasks accordingly. Then each student's work can be assessed individually, in addition to assessing the level of team or group success.

Entire class

The whole class can construct knowledge together in various ways. It is difficult to give the entire class multiple, simultaneous avenues to show it can achieve a certain goal. However, you can construct assignments and activities over the course of the term that gives the class different ways to achieve the desired goals. One way to do this is to assign small groups to make presentations about each week's content. As you go through a term, the entire class has an opportunity to add to a growing knowledge base of course-related material.

Multiple means of engagement

Just as students have different learning preferences and different learning needs, they have different motivations, and levels of motivation, to be successful learners. Some students may be the first member of their family to attend college, so they want to do well. Some may want to achieve financial independence, so they put in extra effort to gain high level

skills and high quality products to show potential employers. Others may just have a passion for the discipline or specific course content. The UDL principle, "multiple means of engagement," tells us that we should find out what motivates our students and to challenge them to use those motivations to be successful online learners.

Involve students in the process

To whatever extent you feel comfortable, involve the students in the process of preparing and conducting the online portion of your course or your fully online course. Just as the chemistry of each face-to-face class is different—sometimes the group is energetic or rambunctious, sometimes the group is quiet and difficult to motivate— each online cohort is different. After defining the course objectives, provide a forum for the students to state their expectations. Most times, you will find that the student expectations are very similar to your objectives, but with a different focus, such as applying the knowledge to get a job or using skills from the course to create a portfolio demonstrating their abilities. Using your syllabus, an opening statement, or other strategy, encourage students with special needs to tell you what strategies they have found helpful for their success in past experiences with online coursework. They may already have accessibility or even UDL solutions that could save you countless hours of research.

Another way to engage students is to involve them in their own learning. In the Multiple Means of Representation subsection above, we cover different ways to accommodate learning styles, learning preferences, learning needs, and so on. However, as an instructor, there is only so much you can do before the student must take responsibility for him or herself.

Ask your students to take an index of learning styles (ILS) questionnaire, such as the one created by Richard Felder and Barbara Solomon of North Carolina State University (listed in the Resources section) Then have the students report what they find about themselves and identify strategies that they will use to improve their own learning. Sometimes the questionnaire results do not match how we see ourselves. That is okay. Just let your students know that this exercise is to make them aware of different learning possibilities. They should try strategies that accommodate their perceived learning styles as well as the ones that the questionnaire results identify for them.

Determine what students find meaningful

To keep students motivated to work in the online environment, they will need to find the objectives, topics, resources, and activities meaningful. An instructor-led approach could range from "This material is a prerequisite to other courses in this program" to "These skills will help you get jobs in this field." A student-led approach could range from "This is how these theories apply to real-world events" to "Some of you will find this really cool!" Both approaches have their merits, so use them together. To determine what real-world events interest students, or to find what they feel is really cool, talk to some of the students before the term gets rolling, or ask the class to send you one idea of each.

Ask for feedback

In "Evaluating and Improving Online Teaching Effectiveness," Kelly (2008) covers a number of ways to get feedback from students. Using those strategies, you can include questions

about motivation or engagement to learn how well you are doing to get students more involved in their learning success. Go over the results with the class to come up with additional ideas or inspirations.

Bringing it all together

Looking at some of the concepts and suggestions in this section, you might be asking yourself, "This is helpful, but what does this have to do with accessibility?" For this book, remember that the term "accessibility" refers to the extent to which it is possible for all students to succeed in our collective online course environments.

About web accessibility

What makes a site accessible?

Accessibility is about making sure all the information on your website is available to all users, regardless of any disability they may have or special technology they may be using.

Accessibility involves making allowances for characteristics a person cannot readily change'. (Building Accessible Website, Joe Clark)

Why bother?

Fairness and equality

The simplest and most direct answer to this is that if your site is inaccessible to users with disabilities, you are excluding a section of the population from your content. If your students cannot access the course materials, they could be placed at a distinct disadvantage and their coursework could suffer as a result.

Accessibility benefits usability

Many site designers and developers drag their feet and grumble when asked to make their site accessible. There is a mistaken perception that "accessibility" means "dumbing down" the site - that they won't be allowed to use any graphics or any multimedia. Frequently, websites address accessibility by making a plain, text-only version of every page and labeling it "accessible". This does no one any favours - it requires the webmaster to maintain twice the number of pages, and provides an inelegant solution that lumps all disabled users into the same category.

The reality is that accessibility is a way of enhancing your web page, and it can be done seamlessly without taking away from the design. Many accessibility recommendations and guidelines actually improve the integrity of your code and the overall usability of your interface. Usability is, simply put, how easy it is for people to use your site.

Anything you can do to improve accessibility can also improve usability for people without disabilities, for online courses or any other kind of website. Consider these examples:

- you have made the menus consistent on every page - now everybody has an easier time finding their way around your site, because the buttons are always in the same place;
- you have made sure your font size can be adjusted - now older readers with poor vision can increase the size of the text to see it better;
- you have set a unique page title for each page - now search engines can more accurately display your pages in their search results;

- you have added a text description for each image - now someone browsing with images turned off can tell if they are missing an important diagram;
- you have added captioning to a video - now a student using a computer in a public lab can watch it without needing sound;
- you have added an audio reading of an important passage - now a student who learns better aurally can enjoy the reading as well.

Legal reasons

As we have already discussed in Section 1, many institutions are obligated to provide accessible content according to national laws.

Accessibility standards

There is a set of guidelines developed by the World Wide Web Consortium (W3C), a group that establishes specifications, guidelines, software and tools for various aspects of the web including file formats and scripting languages. One W3C program is the **Web Accessibility Initiative (WAI)**, whose mission is to help make the Web accessible to people with disabilities. The WAI has developed the **Web Content Accessibility Guidelines (WCAG)** to address the accessibility of information in a web site. These guidelines are what we will be using in this chapter, and should always be consulted if you are ever in any doubt of the best technique or the correct syntax of a tag. They are fairly technical, and not a quick read. However, two simplified versions of these guidelines organized by concept do exist as Appendices of WCAG 1.0 (1999a and 1999b), both as a checklist table and as a list of checkpoints. At the time of writing, the current version of the guidelines is WCAG 1.0, and WCAG 2.0 is under review.

These guidelines, relevant to online content developers, help to ensure that Web resources are accessible. However, there is a need to recognize the limitations of these guidelines as well as the available checking tools (Ivory & Chevalier, 2002). Kelly and Sloan (2005) talk about the difficulties of implementing the guidelines, summarizing the concerns in regards to ambiguity, complexity, logical flaws, and the level of understanding required to implement them.

Despite the difficulties with the guidelines' implementation and reliability, and the necessity of manual checking for accessibility, WCAG are very helpful in the initial stage of developing an online resource, as a quick checklist of obvious things that need fixing. The guidelines should not be taken as the only set of criteria that needs to be considered. A wider set of issues must be addressed, some of which could be in conflict with the guidelines.

Priority and levels of conformance

Each checkpoint has a priority level assigned by the working group based on the checkpoint's impact on accessibility.

•Priority 1: *A Web content developer must satisfy this checkpoint. Otherwise, one or more groups will find it impossible to access information in the document. Satisfying this checkpoint is a basic requirement for some groups to be able to use Web documents.*

•Priority 2: *A Web content developer should satisfy this checkpoint. Otherwise, one or more groups will find it difficult to access information in the document. Satisfying this checkpoint will remove significant barriers to accessing Web documents.*

•Priority 3: *A Web content developer may address this checkpoint. Otherwise, one or more groups will find it somewhat difficult to access information in the document. Satisfying this checkpoint will improve access to Web documents.*

Depending on which priority checkpoints a site meets, it can claim to meet a particular level of conformance.

- Conformance Level "A": *all Priority 1 checkpoints are satisfied.*
- Conformance Level "Double-A": *all Priority 1 and 2 checkpoints are satisfied.*
- Conformance Level "Triple-A": *all Priority 1, 2, and 3 checkpoints are satisfied.*

Testing for accessibility

There are a number of tools available to help you check some of the more technical aspects of your website to see if it meets accessibility standards. One of these is WebXact Watchfire (<http://webxact.watchfire.com/>), previously known as Bobby. It is a very handy tool for double-checking that all your images have alt text, or that your data tables are properly labeled.

But these tools are not the whole picture. An accessibility analyzer like Watchfire cannot tell you if the descriptions of your images make sense to a blind user, or if your page titles are meaningful. Your web site needs to be considered from a human perspective, and many of the WAI guidelines ask you to examine the context and meaning of your content more carefully.

Students with disabilities

Who is affected?

When we talk about making the web accessible for people with disabilities, who are the people we are talking about? Before

we can learn what to do with our web pages, we need to understand what we are doing and for whom we are doing it.

Tip: Simulations

To help you understand what web navigation is like for people with disabilities, some organizations have developed simulations.

Inaccessible website demonstration

<http://www.drc.gov.uk/newsroom/website1.asp>

WebAIM simulations

<http://www.webaim.org/simulations/>

Sight

The first group that most people think of when considering accessibility for the web is the blind and visually impaired.

Blind: Users have little or no usable vision. While a few users may use Braille, the majority use a screen reader - software that reads text out loud. Some people listen to the Web at speeds that sighted users find completely incomprehensible - the audio equivalent of "skimming" a page. Keep in mind that screen readers read everything that they encounter, and that they read it in the order they find it. In some cases, users with screen readers encounter online multimedia elements that start playing without warning. They must contend with two audio sources at the same time: the screen reader reading the webpage text and the multimedia audio.

Visually impaired: Users may have some sight, but difficulty focusing or distinguishing small text. They may use a screen magnifier - software that enlarges everything on the screen to a more manageable size.

Colourblind: Most colourblindness involves difficulties distinguishing red and green. A smaller percentage of people have difficulties with the blue-purple portion of the colour

spectrum. Still others are completely colourblind. There is a misconception that accessibility means using only black and white text, and that colour should be avoided. This is not true. The point is not to rely on the requirement of colour perception to reveal information. For example: asking readers (or learners) to "use only words in red to compose a paragraph", or telling readers while filling in the form, that only "blue" fields are required.

As we will find, making the web's highly visual content accessible is not as daunting a task as it might seem. There are methods in place for providing alternatives for nearly every type of web content, and for making sure your content works well with the specialized hardware and software used.

Tip:

Ever wondered what the world looks like to colour-blind people? Test out **Vischeck**, a colourblindness simulator, on your site or any image. <http://www.vischeck.com>

WebAIM simulations

<http://www.webaim.org/simulations/>

Hearing

Since the majority of content on the web is visual, students who are deaf or hard-of-hearing are not as likely to be affected. However, they often have communication and comprehension difficulties. If audio files or videos are a part of the curriculum, a text alternative should be provided. Many users will also benefit from easily understandable icons and clear terminology.

Ideally, videos should be captioned. Professional captioning can be costly, though for course materials requiring extremely high accuracy (such as math and physics equations), it may be

the best choice. Software is also available to allow you to include captions in your videos yourself. If captioning is simply not an option, a text transcript of the video would be a reasonable alternative.

Tip:

Hearing people might assume that hard-of-hearing or deaf students would be reluctant to watch a video clip. But on the contrary, many find video and multimedia material entertaining and especially valuable because of all the other non-verbal communication that they convey. Samuel, a hard-of-hearing ESL student in our focus group, greatly preferred videos or webcam interactions to text so that he could see the emotions and gestures of the other person. For students who can lip-read, video is still helpful if the speaker's face is clearly visible at all times.

Mobility

Students with physical disabilities may be affected if their impairment hinders their ability to use a mouse or keyboard. This could be due to having little or no muscle control, nerve damage, or trembling; it could be a temporary problem, a lifelong condition, or the result of aging. Fine motor movements can pose a challenge, such as clicking on a very small icon.

Some users with mobility impairments will use a typical keyboard or mouse, but may take more time to perform tasks. Others use assistive input devices instead or in addition to a keyboard or mouse.

- A standard trackball is often easier to control than a mouse. Some students use a standard graphics tablet since touching locations directly with a pen is easier for them than sliding a mouse.

- Alternative keyboards allow users to position their hands more comfortably, or to press keys more accurately.

•For people who cannot use their hands at all, headtracking allows the user to control the pointer through head movements. Mouse clicks can be replaced with a breath-controlled sip/puff switch or tappable headswitch.

Learning & cognitive

While visual, hearing and physical disabilities are the most familiar forms of disability, the majority of students you may encounter who have a registered disability may in fact be learning disabled. Learning disability or "learning difficulty" is a broad term that includes dyslexia, brain injury, and aphasia.

"Dyslexia is the most commonly registered disability within the University and always features in the most commonly asked questions on accessibility issues by staff." (Jeffels & Marston, 2003)

Students affected by learning disabilities may encounter difficulties with some of the following activities, among others:

- spelling;
- reading aloud; stuttering;
- mathematical calculations;
- comprehension of large passages of text;
- effective time management or organization;
- rote memorization;
- concentration and focus.

On one afternoon, in the middle of a thick
 forest, a small cottage. I saw the home of a
 quiet little girl. When I went to see her as little Red
 Riding Hood, because of the brightly colored
 coat she wore. One day, however, she had a
 very nice full of delicious food, and said:

"Grandma's ill. Take her this basket of cake,
 but be very careful! Don't stray from the path
 through the woods."

Figure 3.1 Dancing letters

Try to read the passage in figure 3.1. It may give you an idea of the difficulty and frustration experienced by many dyslexic readers, as seemingly normal text requires extra effort and concentration to parse.

Learning and cognitive disabilities are a challenging group to address, as there is no one approach that will suit everyone. Some students may learn just as quickly or more quickly than typical students when information is presented in a different medium. Some use the same technologies used by the visually impaired, such as screen readers and speech recognition software. Nevertheless, clear presentation and good navigation

is critical. A variety of multimedia options will apply to different auditory and learning skills

Traditional approach	Adapted
Lecture type content	chunks, include questions, statements of clarification and key points
Text-based content	alternative presentation: audio, video, hands-on interaction; scaffold for various resources (preselect them)
Reading from a textbook	offer vocabulary, issues to discuss in the forum, encourage note-taking, using graphic organizers, offer information prompts (self-tests with open-ended questions)
Assignments: written essay	offer a choice: written, oral, video, or visual presentation
Assessment	offer variety in responses: open-ended questions, oral response give clear scoring rubrics, be prompt and detailed in giving feedback

Aging Users

When considering accessibility in education, most people assume they will need to prepare for a few isolated examples of students with disabilities: one blind student in a class, or a handful of young students with learning issues. As we age, we may be affected by any of these types of disabilities to various degrees. Instructors should be aware that some of their older students may also have problems such as fading eyesight, or difficulty with fine mouse movements.

Assistive technology

We have touched briefly on the idea of assistive technology, which is essentially any software or hardware that can be used to help overcome a disability.

Tip:

A pair of glasses could be considered assistive technology, as it helps the user overcome poor vision.

Instead of thinking about assistive technology in terms of types of disabilities it assists, let's look at it from the point of view of what kind of help it offers. Assistive technology could provide:

- help with accessing a computer
- help with reading
- help with writing (composing, spelling, typing)
- help with communication
- help with learning
- help with hearing and vision.

Figure 3.2 lists many of the computing issues for users with disabilities, and suggests some of the common hardware and software solutions used to overcome these problems

Activity	Issue	Assistive Technology Examples
 Computer Access	When a student cannot access a computer with a standard keyboard and a mouse, he may need special input devices. These devices are commonly used by students with physical, visual or cognitive disabilities.	Software: OS accessibility features, word prediction, keystroke reduction, voice recognition, on-screen keyboard Hardware: Keyguard, arm support, trackball, trackpad, joystick, alternative keyboard, switch with Morse code, switch with scanning
 Communication	For many autistic people and some with learning disabilities, augmentative & alternative communication devices may be helpful. They use symbols, pictures and printed words.	Software: Symbol browser, art activities, games on the computer Hardware: Voice output devices or devices with speech synthesis for typing
 Reading	The low resolution of monitors can cause fatigue and eye strain for all users. For those with vision or learning issues, reading onscreen can be an added deterrent. Keeping track, following a line of text, understanding and remembering can be problematic.	Software: Talking electronic device/software to “pronounce” challenging words, electronic books, mindmapping, talking calculator, voice recognition Hardware: Single word scanners, scanner with OCR and talking word processor, hand-held scanners, hand-held computers
 Writing	There are two different accessibility issues when using computers for writing: 1) physical problems with typing; and 2) cognitive problems with composing and organizing ideas and converting them into written expression.	Software: Templates, word processors, voice recognition, talking dictionary, spelling & grammar checker, multimedia software for expression of ideas Hardware: Alternative keyboards and input devices used as for Computer Access (above)
 Learning	Students with learning difficulties may have problems with attention and with organizing ideas.	Software: Multimedia software for expression of ideas, mindmapping, electronic organizers Hardware: Hand-held computers
 Hearing & Vision	Assistive technologies for visually and hearing impaired students may either increase the signal or replace it with something else.	Software: Screen magnifier, screen color contrast, screen reader, captioning, computer-aided note taking Hardware: Braille/tactile labels, alternative keyboard with enlarged keys, Braille keyboard and note taker, signaling device, phone amplifier, personal amplification system/hearing aid, FM or loop system

Figure 3.2 Assistive Technologies

Designing and structuring online content

Design & structure

Don't throw away your art supplies

One of the most common misconceptions about accessible web design is that in order for a site to be accessible, it must have a simple, plain design with few or no images. Another myth is that an adequate, accessible site can be made by providing a "text- only" version of an existing website. This is a nuisance to maintain, as it requires you to keep not one but two versions of every single page.

Remember, not all disabled students are blind! People with mobility or hearing issues and even poor eyesight will certainly appreciate a well thought-out, aesthetically pleasing website as much as anyone. As you'll see, many of your accessibility changes will be tucked away in the code of your pages, where they will be a benefit to disabled users without detracting from your site in any way.

Structuring your content

Before you begin to write a single line of HTML or even start writing your course content, you should think about how your course is going to be structured. Will you have a lot of material to read, or just a little? Will there be many pages or subpages?

The easier you can make it for students to find and read your course material, the easier it will be for them to learn.

Menus and navigation

The way you plan your site's navigation will affect your site's usability for your entire audience. A good approach is to write down the different categories that apply to each of your pages,

and then group the pages into these categories. The key is to find an intuitive balance between overwhelming the user with too many options, and burying important information too deep in the site.

For example, if your site is made up of these pages:

Course Content Guidelines Syllabus Schedule Messageboard
Chat

Mail

Submit Assignments

Assignment #1

Assignment #2

Assignment #3

Assignment #4

Grading

Help

you are running the risk of creating a very cluttered and busy navigation. You could try grouping your pages into these categories, and create subcategories within this structure:

About the Course	clicking reveals Guidelines, Syllabus, Schedule
Course Content	
Assignments	clicking reveals Assignments #1-4, Grading, Submit Assignments
Communicate	clicking reveals Messageboard, Chat, Mail
Help	

Now your students only have to sort through five links instead of fourteen.

Use common sense when defining categories - there may be some links that a student might use several times a day, so you might want them to sit on the top level for quick and easy

access. Be careful when making exceptions to your rules, though - if you do this too many times, everything becomes an exception, and you have a cluttered site again!

When you are designing your site, and choosing where to place your navigation, keep these questions in mind:

- Are the links grouped together in one place, where they can be easily found?

- Are there so many links on the page that it becomes confusing?

Writing for the web

Typically, users viewing websites do not read text as thoroughly as they do when reading printed text. Monitors have a lower resolution than printed material, which makes it less comfortable to stare at for long periods of time. Most online readers develop the habit of skimming the screen looking for key points rather than studying in detail. If it is necessary to read lengthy, wordy passages or papers, many users will print out the information to read it in comfort offline.

You can make it easier for readers to find what they need by:

- keeping your paragraphs short - one idea per paragraph;
- using headers to announce and reinforce new themes;
- using bulleted lists to group ideas into a simple, easy-to-read format

Writing for learning-disabled students

Being learning disabled doesn't mean a student can't learn - it may just mean that traditional learning methods are particularly difficult for that individual. Some students with difficulty reading may learn the same material just as well upon hearing it, or after seeing a graphic that explains the

concept. For this reason, it can be helpful to explain key ideas in multiple ways: text and a graphic or video that reinforces what is being taught.

The same principle applies to how you ask your students to express their understanding. For many students, the choice of whether to write a paper or give an oral presentation can make a huge difference in their ability to communicate what they have learned.

One of the biggest difficulties encountered by learning-disabled students is in interpreting academic demands and expectations. This can often be addressed by building checkpoints into assignments, such as "Submit a plan describing how you will approach this project." This allows the instructor to assess whether the student has understood what is expected of them, before the student has invested too much time into a project that may be on the wrong track.

Clear, explicit instructions are vital, but they alone are not the solution - the student must actively engage and interpret the tasks and requirements themselves.

Additional considerations

Some students with disabilities may require additional time to complete tasks such as self-tests and quizzes. A student using an alternative keyboard may not be able to type as fast as his classmates. Extend the allotted time for that student, or remove the time requirement.

Chat rooms are often inaccessible to users reading screen readers. Make sure that chat room participation is not a course requirement, or make arrangements for a disabled student to participate using other means such as a discussion room.

Using correct code: XHTML & CSS

HTML (hypertext markup language) is the code used to describe web pages so they can be rendered in a browser. When HTML was created many years ago, no one could have predicted the sorts of dynamic, interactive pages that they would eventually be used to create. While HTML was easy to learn and fairly flexible, it had some significant limitations: for example, objects could not be placed anywhere on a page, but had to flow in a linear fashion, one item before the next. Creative designers found ways around these limitations: the TABLE tag was manipulated to allow precise placement of text and graphics.

But these clever fixes came with their own set of problems. Redesigning a website meant rewriting and rebuilding every single page of HTML on the site. Visually simple designs often required complex, bloated HTML. If code was written inaccurately, the web browser had to interpret the code as well as it could, slowing down the rendering of the page.

Tip:

Intermediate users: We recommend using Macromedia Dreamweaver to assist you in writing accessible code.

Novice users: If you're not comfortable writing HTML code at all, we suggest Course Genie, a package from Horizon Wimba, which allows you to convert a Word document into a well-coded, accessible website that can be uploaded to WebCT.

To address these issues, HTML was given a fresh start by rewriting it using another language - XML, or eXtensible markup language. The result is called XHTML. Superficially, XHTML is not terribly different from HTML: the syntax is stricter, and some tags and attributes have been removed, but

much of it is the same. The key is in the "extensible". XHTML essentially lets you define new classes of objects.

What does this mean? Suppose you need all news-related images (but no others!) to be surrounded by a five-pixel blue border. Using old-style HTML, you would do this by wrapping every news image in a table tag.

```
<table border="5" bordercolor="blue">
  <tr>
    <td>
      
    </td>
  </tr>
</table>
```

Every single image that needs a border would have to be treated this way.

Using XHTML saves you time and space. First define a class called "news" as having a five-pixel blue border.

```
.news {
  border: 5px solid blue;
}
```

Then add an attribute to any image tag that needs to be in class "news".

```

```

How does this work? The classes are defined within Cascading Stylesheets (CSS) - stylesheets, because they define the style of a page; cascading, because you can apply multiple stylesheets. You can define any style once and apply it throughout your entire site.

Tip:

A site that may help you visualize this process is CSS Zen Garden (<http://www.csszengarden.com>). Every design on the site uses the *same XHTML code* to define the different areas of the page. By swapping out only the stylesheet, the appearance of the site changes dramatically.

So with a single CSS file, you can now define the look and feel of an entire web site consisting of hundreds of pages.

Why can't I do things the old way?

Feel free to skip this section if you are new to building web pages or are already familiar with XHTML and CSS.

Tables aren't meant for layout

If you ever built a website before CSS became widely accepted, chances are you built it using tables. You probably took a large image and chopped it up in an image editing program, then placed each chunk of the image into a borderless table to lay it out exactly where you wanted.

The first reason to avoid tables is that it'll make redesigning your site much easier in the future. You won't have to chop up new designs and recreate every page of your site any more - you can do it all with one change of your CSS sheet and maybe a few changes to the HTML.

But the main reason is that it simply isn't all that accessible. Screen readers approach tables in a linear fashion; that is, they read out each column, left to right, and each row, top to bottom. If your table-based layout doesn't correspond to this model, blind users may not receive the information in the order you intended it. They may hear the menu read out in pieces, in between parts of your main content, and as you can imagine, it is very confusing to navigate a page like this.

Many old tags have been deprecated

XHTML no longer contains several tags that address the appearance of a site. The FONT tag, which used to be the only way to set the font appearance on a page, has been removed from HTML. This is because fonts can be much more efficiently defined and updated using CSS. Similarly, the CENTER tag has gone away, to be replaced by CSS formatting.

Tip:

Learning XHTML and CSS

There are many excellent resources, both online and offline, for learning XHTML and CSS. Here are some tutorials to get you started.

Introduction to CSS

<http://www.w3schools.com/css>

Introduction to XHTML

<http://www.w3schools.com/xhtml>

Accessibility in XHTML

For the rest of this section, we will use XHTML and HTML interchangeably. The basic principles are the same, and most of the differences are in the accuracy and consistency of the code.

Text

Text makes the World Wide Web go 'round. The greatest amount of content on the web is basic, plain text. Text is the most accessible media format there is – it is easy for all browsers and screen readers to handle.

You need to be particularly careful about the visibility of your text. Aging users, people with poor vision, or even people using a small monitor may not see your site's text with the same clarity that you do. They may need to enlarge the size of the text to be able to read it better.

There are a few ways to do this. A screen magnifier, such as ZoomText, will make a screen behave much as if a giant

magnifying glass has been placed between the screen and the user.. A simpler way is to use the text size settings in the browser to increase the font size on the page.

When you define the appearance of your text in CSS, you have a choice between absolute or relative font sizes.

- Absolute font sizes (pixels, points) should appear at the exact same size in every browser and every configuration. Text that is set to "12px" will appear as 12 pixels high. Designers often prefer absolute font sizes because they have greater control over the appearance of the text, and can dictate how much space a given block of text will occupy.

- Relative font sizes (percentages, "em") appear at a size relative to the user's font settings. Text that is set to "90%" will appear at 90% of the current text size. If the user changes their font size to "larger", the size of the text on the page will increase.

What is the implication here? Use relative font sizes at all times. Some browsers will allow absolute font sizes to scale up with the user settings, but not all. Your eyesight may be much better than that of some of your users, and what looks fine to you might cause problems for someone else. Make sure you give them the control of their screen.

Example

```
body, p {  
    font-family: Arial, Helvetica,  
    sans-serif;  
    font-size: 0.9em;  
    color: #333333;  
}
```

* required field

* Name

Address

Figure 6.3

This will make the text for a page 0.9 em, or 90%, of its default size.

Be careful with the contrast and colours of your text. Whether your text is light on a dark background or dark on a light background, you need to make sure there is enough contrast between the text and the background for users with weaker vision to distinguish clearly. Additionally, if any information is conveyed by colour alone, reinforce the information with another method. In the example shown in Figure 3.3, the required fields are marked not only by a change in colour, but by bold text and an asterisk.

6.5-6 Images

Alt text

There is a very simple, built-in way to make sure your images are accessible: use ALT text. Figure 6.4 would be coded as follows:

```

```



Figure 6.4

When a screen reader encounters an alt attribute, it substitutes the text for the image, reading the text out loud. In order to make this as useful as possible for your users, you should choose text that is appropriately descriptive of the image. Include any details that are necessary to make the image make sense; don't bother with trivial descriptions if they don't add useful information.

Empty descriptions

There are some cases where an image does not require a description at all, or where a description would clutter the audio reading of the page.

Spacer (or transparent) images are typically 1x1 transparent images that are used to control the layout of a table-based website by pushing elements of the site into place. If your site is entirely CSS-based, you won't really need these. If you are working on an older site, though, you may still be using them.

Decorative bullet graphics are often used in lists to illustrate a point.

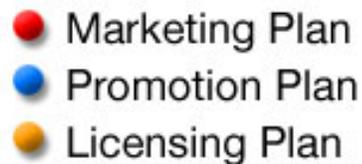


Figure 3.5 Decorative bullet graphics

Figure 3.5 shows three decorative bullets, which many people would mistakenly code as follows:

```
Marketing plan<br />  
Promotion plan<br />  
Licensing plan<br />
```

With code like this, a screen reader user will hear: "red bullet marketing plan blue bullet promotion plan yellow bullet licensing plan".

Even though you don't want screen readers to attempt to describe these images, you still need to define their alt text, or

the screen reader will read out the filename instead. The alt text on a spacer image or a decorative graphic should be empty, i.e. alt="".

Tip:

Visually impaired users aren't the only ones to benefit from ALT text - you will too! By describing your images, you'll make it easier for search engines such as Google to index your content, and it'll be easier for other users to find the content on your site.

Long descriptions

Alt text is good for a short sentence, but sometimes a complicated diagram or graph cannot be thoroughly described in one line of text. When this happens, use the ALT attribute for a quick summary, and the LONGDESC attribute:

```

```

The longdesc attribute is the URL for another web page, which should contain a complete description of the image in question.

Imagemaps

Imagemaps are just as easy to make accessible: add the alt text to the AREA tag for each clickable area within the map.

Links

We have already talked about menus and navigation and the importance of thinking about links. Here are a few additional considerations:

- *Link size: If the images are graphic links, are they big enough so that users can easily click on them, even if they have poor motor control in their hands?*
- *Descriptive link text: If your link text is taken out of context, will it make sense? Many screen readers allow the user to pop up a list of only the links from the page. This is a useful way for a blind reader to navigate - unless your link text says "Click here"! Make sure your*

link includes enough text to clearly define the link, such as "Click here for the full schedule" or even "Full schedule".

•Unique link names: Similarly, if your link text is taken out of context, will a user see the same link text multiple times? Ten links that all say "Click here", but point to different pages, would be frustrating.

•Link separators: Link in a menu should be separated by more than just whitespace, for visually impaired users to better distinguish links from each other. Additionally, some older screen readers incorrectly read adjacent links as the same link.

On the web, links are usually underlined. Most web users are accustomed to clicking on underlined links. To this end, it is best not to underline anything that is *not* a link unless conventional style requires it.

```
<a href="about.html">About</a> <a href="bio.html">Bio</a>  
<a  
href="contact.html">Contact</a>
```

This can be done by using a separator:

```
<a href="about.html">About</a> | <a  
href="bio.html">Bio</a> | <a  
href="contact.html">Contact</a>
```

Another alternative is to make each link into an item in an unordered list, and then use CSS to style the links. A screenreader will pause between list items, making the links more "listenable".

To do this, you will need this CSS:

```
ul {  
    list-style: none;  
}  
ul li {  
    display: inline;  
    padding-right: 10px;  
}
```

and this HTML:

```
<ul>  
<li><a href="about.html">About</a></li>  
<li><a href="bio.html">Bio</a></li>  
<li><a href="contact.html">Contact</a></li>  
</ul>
```

Setting list-style to "none" will remove the bullets that are displayed by default before each list item, and setting display to "inline" will place all the list items on the same line. You can continue to style the list items with margin and padding settings as needed.

The TITLE attribute

Similar to ALT text for images, the TITLE attribute can be used to make a link URL clearer. A person using a screen reader can set an option to read TITLE texts out loud instead of the link text. Most browsers display the TITLE text as a "tooltip", or small popup, that appears for a few seconds when the link is moused over.

The TITLE attribute can actually be validly applied to most HTML elements, but is best supported in the A (hyperlink) tag.

Javascript and DHTML

Many people are fond of "drop-down" or rollout menus, which appear when the user moves the cursor over a top-level category. For many users, they are a quick way to jump straight to the page they need.

Many of these menus create accessibility issues. Some are very sensitive to mouse movement and will "roll up" the instant the mouse drifts outside the box - which can be a serious problem for users whose hands cannot control the mouse precisely. In addition, some of the Javascript and Dynamic HTML (DHTML) code needed to generate these menus is not understood by screen readers, and will be ignored. This can prevent many users from using the menus at all!

This doesn't mean you can't use Javascript or DHTML, but if you are using it for important functions like navigation, be sure

that you have a fallback plan for browsers without Javascript. You can usually test this yourself by turning Javascript off in your browser.

Popup Windows

Popup windows have their purposes:

- *displaying extra information without making the user lose their place on the page,*
- *letting the user open a link to another site that they can look at later,*
- *advertising (often unwelcome).*

Consider what happens when a screen reader encounters a new window. It will first announce that the new window has opened, and then shift focus to that window, reading out the new content. A blind user cannot quickly glance at the new window and put it aside for later; they must hear the content, decide whether or not it is relevant, and choose which window to continue reading.

Unexpected popups can also be a problem for users with learning disabilities, as the sudden appearance of a new window can be distracting and make them lose their place on the previous page.

As a general rule, warn the user if a link will open a new pop-up window. Additionally, consider whether the pop-up window is absolutely necessary. Traditionally, links to external sites were opened in new browser windows. This is preferred by many, but it is better to let the user choose: nearly all browsers let you right-click (or control-click, if you are a Mac user) a link to open it in a new window.

Data tables

We have established that you shouldn't use tables for graphic layout, but that doesn't mean you can't use tables at all. Tables are indispensable for their original intended purpose: displaying tabular data in an organized and legible format.

Sighted users can easily glance at a data table, see where the row and column headers are, and find the piece of data they are seeking. But when a screen reader encounters a table, it reads it out in a linear fashion: row by row, each cell in order. If the table is very large, it is easy to lose track of which column you are listening to. And if the table is very complex, with merged cells that overlap multiple rows or columns, it may not make much sense when read out loud. Figure 3.6 gives an example.

Schedule Results

099 Schedule					
 	  Stop #2112 WESTBOUND E BROADWAY AT COMMERCIAL DR BAY1	 Stop #924 WESTBOUND E BROADWAY AT CLARK DR	 Stop #9052 WESTBOUND E BROADWAY AT MAIN ST	 Stop #9053 WESTBOUND W BROADWAY AT CAMBIE ST	 Stop #9054 WESTBOUND W BROADWAY AT WILLOW ST
 	9:10a	9:11a	9:15a	9:17a	9:19a
 	-	-	9:16a	9:18a	9:20a
 	9:12a	9:13a	9:17a	9:19a	9:21a
 	9:14a	9:15a	9:19a	9:21a	9:23a
 	9:16a	9:17a	9:21a	9:23a	9:25a
 	9:20a	9:21a	9:25a	9:27a	9:29a
 	9:22a	9:23a	9:27a	9:29a	9:31a
 	9:24a	9:25a	9:29a	9:31a	9:33a
 	-	-	9:32a	9:34a	9:36a
 	9:28a	9:29a	9:33a	9:35a	9:37a

Table headers

Every table should have clearly labeled table headers. Often developers have done this just by colouring the background of the header cells or making the text bold, but as we know, this visual information will be lost when run through a screen reader.

So how can we tell the browser itself where the table headers are? This can be done with the `<th>` tag, which works exactly like the `<td>` tag except it makes the distinction that the cell is a header. Plus, you can still style the `<th>` tag using CSS to make the headers look however you want.

Caption and summary

The `<caption>` attribute gives all users a quick definition of the table. The `<summary>` attribute provides more detail for screen readers.

```
<table summary="The schedule for the westbound 99 B-Line,
with stops at Commercial,
Clark, Main, Cambie, Willow, Granville, Macdonald, Alma,
Sasamat, and UBC.">
```

```
<caption>Schedule for the 99 B-Line</caption>
```

```
<thead>
```

```
<tr>
```

```
<th>...
```

Scope

The `<scope>` attribute goes into a table header to tell the browser which header is associated with a given row or column. This helps remove ambiguity and allows the screen reader to provide the user more information about the given table. Two of the options are `scope="row"` or `scope="col"`.

Table 1: Student graduation data

	Graduation year	GPA
<u>Bob Smith</u>	2002	3.4
Sara Miller	2004	3.8

This would be written as follows:

```
<table summary="Graduation year and GPA for each student
enrolled in the program.">
```

```
  <caption>Table 1: Student graduation data</caption>
```

```
  <tr>
```

```
    <td></td>
```

```
    <th scope="col">Graduation year</th>
```

```
    <th scope="col">GPA</th>
```

```
  </tr>
```

```
  <tr>
```

```
    <th scope="row">Bob Smith</th>
```

```
    <td>2002</td>
```

```
    <td>3.4</td>
```

```
  </tr>
```

```
  <tr>
```

```
    <th scope="row">Sara Miller</th>
```

```
    <td>2004</td>
```

```
    <td>3.8</td>
```

```
  </tr>
```

```
</table>
```

Complex tables

Tables with multiple layers of headers and categories can become quite complicated. XHTML does allow for further description of complex tables, including grouping sets of rows and associating cells with headings. These ideas may be of interest if you have many data tables. Here are some resources for complex tables:

- <http://www.usability.com.au/resources/tables.cfm>
- <http://jimthatcher.com/webcourse9.htm>.

Accessibility features

Most of the changes we have talked about will improve your site's accessibility without changing its functionality in any way. Now we are going to discuss a few things you can add to your site that will be of extra benefit to disabled users.

Skip to content

While many experienced screen reader users listen to web sites at very high speeds, there is still no audio equivalent to skimming the page. Sighted users can easily ignore any part of a website that is of no interest to them, or something they have seen before, such as the navigation.

One feature that will improve your website's usability is a skip to content option. This is a link, coded to appear invisible to sighted users, that screen reader users can click to skip any navigation menus that they have already encountered and don't need right now.

There are three steps to creating a skip navigation option.

1. Add an anchor link just before your main content starts:

```
<a name="maincontent"></a>
```

2. Add a new class in your CSS:

```
.skiplink {display:none}
```

Now, anything that you assign to class "skiplink" will not be displayed in the browser.

3. Add this link right after the <body> declaration of your page:

```
<a class="skiplink" href="#startcontent">Skip over navigation</a>
```

Keyboard shortcuts

The accesskey attribute allows you to predefine keyboard shortcuts to specific pages or form fields on your website. This is especially beneficial to anyone who navigates your site using

only a keyboard, or whose use of a mouse is limited. Accesskeys are triggered by the user holding down ALT and pressing the specified key.

Simply define the key within an existing link to that page:

```
<a href="about.html" accesskey="1">About This Site</a>
```

Be careful not to override existing browser keyboard shortcuts that appear in the browser toolbar, such as F (File), E (Edit), V (View). To be certain, use only numbers as access keys; you are less likely to conflict with existing shortcut definitions. There is no automatic listing of what access keys are defined on a site, so you will have to list the keys that you have defined either on a separate page of your site or next to the appropriate links.

There are a few conventional shortcuts:

ALT-1: Home page

ALT-2: Skip to main content

ALT-9: Feedback

Not all browsers support accesskey yet, but those that don't will simply ignore the attribute.

Multimedia

We use the term "multimedia" to refer to audio, video, PDF and Flash: any content on the web that is not text, HTML, or a graphic.

Tip:

Different people have different learning styles; every time you present your content in a different medium, you *increase* the accessibility of your site. Developing accessible sites does not mean making every type of media usable, it means making all the *information* available to everyone.

Multimedia can create some of the richest and most engaging experiences on the web. For this very reason, it is also the

most challenging aspect of web accessibility. The simplest rule to follow for rich media is: provide an alternative.

Audio

For audio, the accessibility alternative may be relatively simple; if the audio file in question is spoken word, it is sufficient to provide a text transcript. For music, provide lyrics and, if appropriate, a description of the piece and an explanation of its significance.

Audio can be used to benefit learning-disabled users. Consider offering a reading of key passages or especially difficult text. In returning to our original point that improvements made with accessibility in mind will help non-disabled users as well, consider how an audio reading will assist someone who is not fluent in the language. There are parts of language that are not well conveyed by text, such as correct pronunciation, and language flow.

Video

Video files are a great way to present information. These can be short video clips that you create yourself, or links to web-based videos that a peer has made. A chemistry professor at San Francisco State University has created a captioned video showing each step of his lab experiments. He reports fewer questions about the procedures and positive feedback from students. If you use a video file that has no audio track, let your students know that there is no audio right in the link to the file (e.g., "Video of amoeba movement via temporary projections called pseudopods – no audio"). That way the students will know that they do not need speakers and deaf

and hard of hearing students will know that they do not need captions.

When adding video to your site, accommodations need to be made for both vision and hearing-impaired users. For visually impaired users, **audio description (AD)** of the contents of a scene is important. In twenty-five words or less, an audio description is a narrator providing a spoken context for anything that the viewer cannot understand by listening to the soundtrack. For hearing impaired users, any key information provided in the video should be represented in the text equivalent. Perhaps in the picture there is a sign placed prominently that the viewer is expected to read, or people in the video are reacting to a sound heard off-camera. These details affect the viewer's understanding of the material, and you need to ensure that all visitors to your site are able to get this information.

Transcripts vs. captions/subtitles

A transcript is one way that you can provide your audience with a second format for your content. Transcripts are easy, and can be created by anyone. If you are the creator of the video, chances are you have a script that you can provide. In some cases, a script may not need any modifications to be a full transcript. If you need to write a transcript from scratch, it isn't hard, but it is time-consuming. Load up the video, and your word processor and get typing. Before long you will have a transcript to publish.

A transcript usually consists of one file with the whole content of the video. On the other hand, captions and subtitles are

synchronized with the video stream, and as such require more effort, and time to create.

Tip:

You may want to consider using speech recognition software such as Dragon NaturallySpeaking. The authors of this chapter have had very good results with NaturallySpeaking. One of the big advantages of using speech recognition is that it keeps your hands free to do other things while transcribing, such as control the playback rate, and replay a section of the video. In some cases, you will find that transcription using speech recognition can actually be faster than manual input via the keyboard!

Captioning vs. subtitling

Subtitles are a textual representation of the speech in a video clip. The focus of subtitles is to state what is said, not what is audible. Subtitling does not attempt to provide information about other aural cues, such as a ringing doorbell.

Tip:

If you wish to show a clip, which has dialogue in another language, consider captioning in your audience's primary language! By doing this, you can aid language comprehension, for students that understand some of the primary language. Students who don't speak the clip's primary language will be able to understand what is said in the video.

Captions attempt to provide a textual representation of all the audio in a video clip. This may include speech as well as sound effects (for example, a ringing doorbell) and background music. Writing video captions can come down to a matter of style. As with everything else in accessibility, you need to use common sense when making decisions about how much has to be captioned. Be thorough without overwhelming the user with unnecessary details.

If you are looking to provide a base level of enhancement, start with a transcript of the video. For a more interactive approach, subtitling or captioning can greatly increase the video's comprehensibility for people who struggle with the language spoken. Reading the text while hearing the dialogue can be very helpful when learning a language.

Tip:

Open vs closed captioning: Closed captioning is a technology that an individual user enables to see the captioning for a given video. Common applications of this include news broadcasts and on VHS/DVD movies. With open captioning, the video's picture has the textual representation directly ingrained into it. Users cannot choose whether they see the captions or not; they are always enabled. A common application of open captioning is for videos in another language.

Captioning is something that you can do yourself though it is time-consuming. It may be more practical to hire a professional captioning company. This can be expensive, but in the end you may find the price worthwhile. Video alternatives should be considered part of the cost of building and maintaining your site.

Flash

Tip:

Caution: Avoid building your entire website in flash. Yes, you can make some visually impressive pages doing so. Yes, Flash sites can have a certain cool-factor, unachievable with HTML. However, most Flash sites are not as accessible as HTML sites.

Like all other forms of multimedia, Flash can improve accessibility for some users and degrade it for others. It can be easier to demonstrate concepts with interactivity and

animation than with text and images. A well-designed Flash demonstration can have enormous benefits for students, especially those with learning disabilities. Yet it can be a problem for users with visual or physical handicaps. Some problem areas include:

- *representing information only as graphics - see the discussion regarding images without alternative text;*

- *small buttons, or buttons that cannot be navigated using the keyboard - users with physical disabilities may have trouble using the interface.*

Flash and screen readers

Since Flash generally does not present text in a linear fashion, often screen readers cannot synthesize speech in a manner that makes sense to the user. Blocks of text can change over time, be randomized, and appear at differing locations of the screen. Users must also have an up-to-date screen reader that works with the current version of Flash.

When creating content in Flash for screen readers, keep the following questions in mind:

- *Does the reading order make sense? Flash objects are read in the order in which they were created, rather than the order in which they appear visually on the screen.*

- *When an event occurs on the screen, does the screen reader start reading again from the start? You don't want to bombard the user with repeated information (recall the discussion on navigation in the XHTML/CSS section).*

- *Do you need to display your content in Flash, or will a standard webpage do just as nicely?*

(Note: This doesn't mean you should never use Flash. It means that if your entire site consists of three buttons and a block of text, Flash is probably overkill. If you want some special animations, consider

making them in a JavaScript-enabled HTML webpage. A screen reader will ignore the animations but can read any text-based information.)

Adobe offers suggestions and best practices for accessibility in Flash and other products on their web site at <http://www.adobe.com/accessibility/>.

Portable Document Format (PDF)

The primary challenge of PDF files is to make sure that the text of your document is encoded as text, not as a graphic. If you scan a document onto your computer and directly output it to a PDF file, the contents of the file will be encoded graphically. If you want to create a PDF file from a text document you have scanned, be sure to use Optical Character Recognition (OCR) software. OCR software converts graphical lettering to text. PDF viewers (such as Adobe Reader) cannot analyze graphics for text, so this must be done when creating the PDF file.

The PDF format is used frequently online, but often unnecessarily. In many cases it is used to avoid creating a webpage, or to ensure that the layout of the information is exactly as the designer wants it. In these cases, the information could be better conveyed in simple HTML, without forcing the user to download and view an extra file.

Of course, there are valid reasons to use the PDF format, which we will consider here.

Footnoting

HTML does not provide support for footnoting, or referencing. If you only need to cite one reference, including that information at the bottom of the webpage may be sufficient.

But if you are working on a document that requires extensive footnoting, the PDF format may be a better solution.

Annotating forms

If you require that other people fill out and return a form online, the PDF format has some extra features that may be useful. However, you should consider whether a web form with submission would accomplish your task.

Printing

The PDF format makes considerations for documents that are designed for reading on paper. HTML doesn't, as it was designed to be a web/online format. As a result, HTML has no concept of print margins, page sizes, etc. Even the most savvy web designers will tell you that multi-column web pages can be quirky at the best of times.

Uneditable content

For official documents, journal articles and copyright-sensitive materials, PDF is often preferred as the end user is unable to make any edits or changes to the document.

There is a difference between wanting and needing to format your document using multiple columns. If you just want to use multiple columns, but it is not crucial to the information in the document, go brush up on your XHTML/CSS skills, and stay away from PDF. However, there are situations where the columnar layout and print format of the document is crucial, (e.g.: academic articles, order forms) and in these cases the PDF format is fine.

Specialized notation

If you need to share a document with some specific notation (e.g., mathematics, or another language), there are some

specific technologies you should consider before jumping to PDF.

In the case of mathematics, if you are working on a file with fairly standard math notation in it, you may not need to use PDF: MathML might be enough. MathML is a specialized markup language developed by the W3C for displaying mathematics. The downside of MathML, is that your target audience must install the MathML fonts on their computer.

In the case of other languages, the Unicode character-encoding format may provide the characters you need. Fortunately, modern operating systems (Windows XP, Mac OS X) have support for Unicode built in.

If you need to display some other notation, PDF is probably a suitable choice, since it has roots as a graphical file format. The primary advantage of these other technologies is that the user does not have to launch a different piece of software to view your document. MathML and Unicode can be drawn natively in your audience's web browser.

PDF and screen readers

Adobe Acrobat has been able to function as a screen reader since version 6. So for the purposes of testing your PDF files, checking what Acrobat says (literally) is the first point to test.

Tagging PDF files

Tags are extra information about the content of a document. Tags allow the document creator to specify alternative text or images, and to denote specific pieces of text as headings. Tags are similar to attributes in HTML - they provide extra information about an item in the document.

Quick Tip!

Google for the URL of your PDF files. The HTML output that Google outputs is usually a fairly good indication of the accessibility of your PDF files. You should also try using the search function in your PDF viewer. If the search function works, chances are good that a screen reader will be able to interpret the text of the document. As with all other methods of validation, use it to check for technical problems only, then rethink the problem areas.

Adding tags in Microsoft Word (2000 or newer)

To add alternative text to a graphic:

1.Right click on your image.

2.Format picture.

3.Go to the Web tab.

4.Type your text under "Alternative Text".

Specifying headings is also easy; just use the Word text style for headings. The added benefit for you, the document maintainer, is that now should you want to change the formatting of headers, you only have to change the formatting once. Using Word's styles is akin to using cascading style sheets (CSS) to format HTML pages.

When you are working on a document that requires multiple column formatting, use Word's column function. Acrobat will automatically recognize the columnar arrangement, and correctly generate the reading order for software such as screen readers.

Full procedures for tagging are beyond the scope of this manual. For more information, Adobe provides a how-to guide on creating accessible PDF files (both from your initial source, and retrofitting) on their website

(http://www.adobe.com/enterprise/accessibility/pdfs/acro7_pg_ue.pdf).

As with many other forms of accessibility, spending the time to increase the ease of use for disabled people improves the accessibility for other users as well. By adding tags to your PDF documents, now your documents are viewable on other devices, such as PDAs. Joe Clark wrote a very solid article on PDF accessibility, which discusses the appropriate usage of PDF files at:

http://www.alistapart.com/articles/pdf_accessibility/).

Testing your site

Accessibility checkers and the human factor

There are some useful tools available for testing the accessibility of your site. They will examine your code and look for items like missing alternative (ALT) text or table headers, and make recommendations on improvements that will help your site meet each priority level. Accessibility checkers, such as Watchfire WebXact or UsableNet LIFT Machine, can be an invaluable help in identifying accessibility gaps in your web pages. Products or application plug-ins, such as UsableNet LIFT for Dreamweaver, allow you to check the accessibility before you even post the final page to the Web. You may notice that they will also issue a list of warnings, regardless of your website's actual accessibility results. Why is this?

There are simply too many accessibility standards that only humans can test. No software can tell you if your site's menu navigation is intuitive, or if the ALT text you have included is sufficient to describe the image. Use an accessibility checker first to make sure you have covered everything you can, and then work through the warnings it provides, looking at your site critically.

Tip:**XHTML/CSS Validators**

If you are building your site from scratch as described in Chapter 4, you should test the validity of your code using an XHTML and CSS validator. This will help ensure that your site works well with all browsers, including screen readers.

XHTML: <http://validator.w3.org/>

CSS: <http://jigsaw.w3.org/css-validator/>

The best way to test your site for accessibility is to ask a user with disabilities to try it. Only a human, examining both the context and the content of a page, can fully assess your site's accessibility. It is hard for a sighted user to imagine navigating a website only by voice; as a user with full mobility, it is hard to imagine the frustration of trying to click on a link that is too small. If you truly want to know if your site is accessible, bring it to the people who experience the problems you are trying to address.

Evaluation chart

We have included a checklist of the most common and significant accessibility issues that you should look for when evaluating your site. Some of these guidelines can be tested using an accessibility checker as mentioned above; others you will have to look at objectively and decide for yourself whether they are adequately met.

You can use this chart to evaluate an existing website before making accessibility changes, or to see how well you have done after "accessifying" your existing site or building a new one.

Category	Description	Vision (V) Hearing (H) Motor (M) Cognitive (C)	Notes	Rating (1-5)*
Structure & appearance	Navigation links and placement consistent on each page.	M,C		
	Text good contrast to the background	V,C		
	Each page has a unique descriptive title	V,C		
	Valid XHTML/CSS used throughout the site	V,M,C		
Images	All images have ALT text that either clearly describes the image, or in the case of decorative images, contains a space (alt=" ") to prevent the screen reader from describing the image.	V		
	Images that cannot be adequately described in ALT text (charts, graphs) are further described on a LONGDESC page.	V		
	Links in imagemaps also have ALT text	V		
Text & links	Fonts use a relative font size (em, %), not absolute (px, pt)	V,M,C		
	Heading tags (H1, H2) used correctly as headers, not to format font	V,M,C		
	Ability to skip navigation	V		

	If alert sounds are used, reinforce the sound using visual notification	H		
Javascript				
	Site navigation still works with Javascript turned off.	V,C		
	Drop-down menus do not require difficult, precise mouse movement.	M, C		
General				
	Passes automated accessibility validator such as Watchfire WebXact	V,H,M,C		
	Site can be navigated by keyboard only	V,M		
	User notified if pop-up windows are to be used	V,M,C		
	External windows do not open pop-up windows	V,M,C		
	No autoplay of music, or ability to turn off music easily	V		
	If frames must be used, they are clearly titled	V		
	Page still usable with stylesheets turned off	V,C		
	Site includes search engine	V,M,C		
	Distracting animations avoided	V,C		
	Pages do not automatically refresh	V,M,C		
General Notes				

Table 3.2 Accessibility evaluation chart

Rating scale

5. Excellent. Meets or exceeds the relevant accessibility guideline.

4. **Good.** Meets the guideline, but could be further improved for better accessibility.
3. **Incomplete.** Some effort has been made to meet the guideline, but not all instances of this item have been addressed.
2. **Poor.** Guideline has been inconsistently or incorrectly applied.
1. **Failed.** Completely ignored or unimplemented.

Resources

Further Resources

During our research, we have collected a great number of online resources as guides and references. We hope that you will find them to be a valuable aid to your exploration of accessible course design.

Tip:

- * Accessibility is vital for educational materials.
- * Accessibility aids usability for all.
- * Making your site accessible isn't all that difficult, and can be done in stages.
- * Redundant media is a good thing.

Fundamentals

These sites are good general starting points when studying accessibility.

W3C Web Accessibility Initiative (WAI)

<http://www.w3.org/WAI/>

The Web Accessibility Initiative (WAI) works with organizations around the world to develop strategies, guidelines, and resources to help make the Web accessible to people with disabilities. They developed:

WCAG Guidelines 1.0

<http://www.w3.org/TR/WAI-WEBCONTENT/>

Accessify

<http://www.accessify.com>

News & articles, tutorials, discussion forum.

Dive Into Accessibility

<http://www.diveintoaccessibility.org>

Easy step-by-step guide to improving the accessibility of your site or blog. Center for Applied Special Technology (CAST):

Universal Design for Learning

<http://cast.org/research/udl/index.html>

"Founded in 1984 as the Center for Applied Special Technology, CAST has earned international recognition for its development of innovative, technology-based educational resources and strategies based on the principles of Universal Design for Learning (UDL)."

Technical

Introductions to creating valid XHTML and CSS, and how to use it in the process of creating valid, accessible websites.

XHTML Tutorial

<http://www.w3schools.com/xhtml/default.asp>

CSS Tutorial <http://www.w3schools.com/css/default.asp>

Zen Garden

<http://www.csszengarden.com/>

Creating Accessible Page Layouts

<http://www.utoronto.ca/atrc/tutorials/actable/index.html>

How and why to avoid using tables for layout.

PDF Accessibility

http://www.alistapart.com/articles/pdf_accessibility

Editorial about specific purposes for which you should use PDF files, and reasons why you should leave it alone for everything else.

Flash Accessibility

<http://www.webaim.org/techniques/flash/>

IMS Guidelines for Developing Accessible Learning Applications

<http://ncam.wgbh.org/salt/guidelines/>

<http://www.macromedia.com/resources/accessibility/>

Tools & Validators

These handy assistants can be very useful for accessifying your site.

Watchfire WebXACT (previously known as Bobby)

<http://webxact.watchfire.com/>

"WebXACT is a free online service that lets you test single pages of web content for quality, accessibility, and privacy issues."

CSS Validator <http://jigsaw.w3.org/css-validator/> **XHTML**

Validator <http://validator.w3.org/>

Vischeck

<http://www.vischeck.com/vischeck/>

See what images and web pages look like to people with different types of colour blindness.

Lynx Viewer

http://www.yellowpipe.com/yis/tools/lynx/lynx_viewer.php

See what your webpage would look like in a text only web browser

Other

Developing sites for users with cognitive/learning disabilities

<http://juicystudio.com/article/cognitive-impairment.php>

Richard Felder – Index of Learning Styles

<http://www.ncsu.edu/felder-public/ILSpage.html>

"The Index of Learning Styles is an online instrument used to assess preferences on four dimensions (active/reflective, sensing/intuitive, visual/verbal, and sequential/global) of a learning style model formulated by Richard M. Felder and Linda K. Silverman. The instrument was developed by Richard M. Felder and Barbara A. Soloman of North Carolina State University."

Biology Success! Teaching Diverse Learners

<http://www.landmarkcollege.org/institute/grants%5Fresearch/biology%5Fsuccess/book.html>

"Biology Success! is an innovative project based at Landmark College in Putney, VT and funded by the National Science Foundation's Research in Disabilities Education program (HRD No. - 0004264). Biology Success! asserts that students with learning differences can succeed in high school and college introductory biology courses when the curriculum has been designed to respond to their learning needs."

Summary

Web accessibility is especially critical in education to ensure that all students have fair and equivalent access to learning materials. Government institutions in the US and UK are required by law to make their web content accessible. Standards and practices for accessibility are agreed upon by the W3C and implemented by the WAI.

Sight, hearing, mobility, and learning disabilities can affect how your students access and interpret information on the Web. Assistive technologies can help with some of the difficulties faced; some must be addressed by your website itself. When making an accessible site, start by thinking about its design, structure, and content.

It is neither quick nor easy to create multiple pathways to reach learning objectives in the online environment. It will take time to build up a set of online materials, activities, and assessment strategies that accommodates the wide variety of learning needs of students with disabilities, and learning preferences of all students. Your efforts will create an inclusive

space for everyone, including students traditionally marginalized by their needs in the online environment.

As the old saying goes, "You cannot please all of the people, all of the time." In our case here, we are just trying to increase the probability that each student will succeed in our online course area, regardless of his or her disabilities, learning preferences, or life situation. We do this by increasing the number of methods by which students get and use the content. We do this, whenever possible, by giving options to students regarding how we will evaluate their performance. We do this by taking the time to engage students in different ways and at different levels. We do this by applying UDL principles to online teaching and learning.

Once you have taken UDL principles into consideration when developing your course materials, use correct XHTML and CSS – or a program that can generate this for you – to build or modify the site according to the guidelines provided by the WCAG. This will help to ensure that the technology does not create barriers for students with disabilities.

Glossary

Accessibility. *The practice of making web pages and other computer-based media accessible to all users, ensuring that those with disabilities have equivalent access to those without.*

ADA. *Americans with Disabilities Act.*

Alt text. *Alternative text, displayed in place of an image.*

Assistive technology (or adaptive technology). *Software or hardware that enables people with disabilities to perform tasks that would be difficult or impossible without the assistance of technology.*

Audio description. *An additional narration track for the visually impaired, accompanying television and movies. A narrator describes the action in the scene during pauses in the audio.*

Caption. *1. On-screen description of all significant audio content in a video. 2. HTML attribute to describe a table, displayed with the table.*

Cascading style sheets (CSS). *Code used to define the presentation of a document written in HTML or XHTML.*

CMS. *Content management system, used to more easily maintain pages on a website.*

Deductive learners. *Students who prefer starting with more structure, deriving consequences and applications from the concepts and theories.*

Dynamic HTML (DHTML). *A collection of technologies, such as HTML and Javascript, used to create interactive or animated websites.*

Headtracking. *Controlling the mouse pointer by use of head motion.*

Headswitch. *A button that can be activated with light pressure from the head or any body part that can be moved accurately and reliably.*

Hypertext markup language (HTML). *A markup language used to create documents on the Web containing text, graphics, sound, video, and/or hyperlinks.*

Inductive learners. *Students who prefer beginning with meaningful examples before extrapolating the main concepts or theories.*

Intuitive learners. *Students who prefer reflective activities and resources that require imagination.*

JavaScript. *Web scripting language that can be used to create interactive content on a web page.*

Learning disability. *A psychological or neurological condition that affects a person's ability to communicate and/or learn effectively. Includes conditions such as dyslexia (reading difficulty), dysgraphia*

(writing difficulty), dyscalculia (difficulty with mathematics), and aphasia (problems comprehending language).

Longdesc (long description). *A separate HTML document containing the description of an image or media when the description is too long to be contained in the alternative text.*

Macromedia Flash. *A multimedia authoring program used primarily for web content.*

Portable Document Format (PDF). *A platform-independent file format developed by Adobe Systems.*

Predictive typing. *Software that offers the user a choice of words at each point in a sentence, according to what words are statistically most likely to appear in a given context.*

Screen reader. *Text-to-speech software that reads aloud what is being displayed on the screen.*

Screen magnifier. *Software that displays an enlarged view of the current screen on a standard monitor.*

Section 508. *An amendment to the Rehabilitation Act of 1973, which states that electronic and information technology developed or maintained by any agency or department of the United States Federal Government must be accessible to people with disabilities.*

Sensory learners. *Students who prefer fact-based activities and resources.*

Sip/puff switch. *A two-position switching device that can be activated by sipping or puffing and allows the user to control electronic devices.*

Subtitles. *On-screen translation of dialogue. On-screen text.*

Tablet: *An alternative pointing device where the user uses a stylus on a pointing surface, like a pen on paper.*

Trackball. *An alternative pointing device where the user rolls a ball in a holder.*

Transcript. *A textual version of audio- or video-based material, including speeches, conversations, television and movies.*

Usability. *The ease of interaction between a human and a computer interface.*

UDL. *Universal design for learning.*

World-wide Web Consortium (W3C). *A group that establishes specifications, guidelines, software and tools for various aspects of the web, including file formats and scripting languages.*

WAI. *Web accessibility initiative.*

WCAG. *Web content accessibility guidelines - developed by the W3C.*

XHTML: *Extensible hypertext markup language.*

Appendix

The following is a short ten-point checklist that you can use to help guide your site towards better accessibility. This is not a complete list, but draws ideas from Priority 1 and Priority 2 checkpoints.

Examine each of the elements of your site as described in the chart. Decide for yourself how well they meet the criteria, then give each item a rating. Low rated elements should be revisited and improved in order for your site to be considered accessible.

Rating scale

- 5. Excellent.** Meets or exceeds the relevant accessibility guideline.
- 4. Good.** Meets the guideline, but could be further improved for better accessibility.
- 3. Incomplete.** Some effort has been made to meet the guideline, but not all instances of this item have been addressed.
- 2. Poor.** Guideline has been inconsistently or incorrectly applied.
- 1. Failed.** Completely ignored or unimplemented.

	Description	Rating details	Rating (1-5)	Notes
1.	<p><u>Text alternatives</u></p> <p>Text equivalent provided for every non-text element, including: images, graphical representations of text and symbols, imagemaps, animations, applets and programmatic objects, frames, scripts, graphical buttons, audio and video.</p>	<p>5: Complete and correct alternative text provided for all elements.</p> <p>3: Alternative text available for some but not all elements.</p> <p>1: Alternative text is missing, incomplete, or incorrect.</p>		
	<p><u>Assists</u></p> <p>Vision, Cognitive</p>			
2.	<p><u>Text</u></p> <p>Fonts can be resized using the browser. Text is high-contrast.</p>	<p>5: Text is easy to read and resize</p> <p>3: Text can be resized, but may cause problems in layout when enlarged; some text may be hard to read</p> <p>1: Text cannot be resized, and/or is hard to read due to size, colour or contrast</p>		
	<p><u>Assists:</u></p> <p>Vision, Cognitive</p>			
3.	<p><u>Links</u></p> <p>Link text makes sense out of context and does not repeat</p>	<p>5: Each link has clear and unique link text</p> <p>3: Some link text repeats or is vague (e.g., "click here")</p> <p>1: Links cannot be understood when taken out of context</p>		
	<p><u>Assists:</u></p> <p>Vision, Cognitive</p>			
4.	<p><u>Colour</u></p> <p>All information conveyed with colour is also available without colour, for example from context or markup.</p>	<p>5: Colour used appropriately</p> <p>3: Colour used to convey information, but the content has alternative explanation/description. (e.g., a pie-chart with the colour and the percentage).</p> <p>1: Colour used to convey information (eg., "click the red link")</p>		
	<p><u>Assists:</u></p> <p>Vision (colour blindness)</p>			

5.	<p><u>Distraction</u></p> <p>No screen flickering, refreshing or distracting animations. If pop-up windows must be used, user is notified in advance.</p>	<p>5: No flickering or distractions 3: Some animations may be distracting 1: Unexpected pop-ups; screen is distracting and chaotic</p>		
	<p><u>Assists:</u></p> <p>Vision, Cognitive</p>			
6.	<p><u>Clarity & consistency</u></p> <p>Clear and simple language used, as appropriate for site content. Navigation stays consistent across the site.</p>	<p>5: Content is written at the appropriate level for site visitors. Site is easy to navigate. 3: Some content or menus may be confusing 1: Language too difficult for site visitors to understand; menus change from page to page</p>		
	<p><u>Assists:</u></p> <p>Vision, Cognitive</p>			
7.	<p><u>Data Tables</u></p> <p>Row and column headers identified. For complex tables, data cells are associated with header cells.</p>	<p>5: Headers complete and complex cells associated with headers 3: Incomplete or incorrect headers 1: No headers provided</p>		
	<p><u>Assists:</u></p> <p>Vision, Cognitive</p>			
8.	<p><u>Frames</u></p> <p>If frames must be used, all frames clearly titled.</p>	<p>5: Frames correctly titled 3: Some frames titled, or ambiguously titled 1: Frames used without titles</p>		
	<p><u>Assists:</u></p> <p>Vision, Cognitive</p>			
9.	<p>Plugins, applets & scripts</p> <p>Pages are usable when scripts, applets, or other programmatic objects are turned off or not supported.</p>	<p>5: Turning off plugin/script leads to fallback alternative 3: Turning off plugin/script loses functionality, but site is still otherwise usable 1: Site cannot be used without plugin/script</p>		
	<p>Assists:</p> <p>Vision, Cognitive, Motion, Hearing</p>			

<p>10.</p>	<p><u>“Last resort”</u></p> <p>If, after best efforts, the material cannot be made accessible, a link is provided to an alternative, accessible page that has equivalent information (or functionality), and is updated as often as the inaccessible (original) page.</p>	<p>5: Original pages adequate, or alternative pages provided when necessary</p> <p>3: Alternative page provided, but not equivalent</p> <p>1: No alternative pages provided when needed, or alternative pages provided when original pages could be made accessible</p>		
	<p><u>Assists:</u></p> <p>Vision, Cognitive, Motion, Hearing</p>			

Table 3.3 Accessibility evaluation chart – detailed

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Appeal:

1.

I am looking for someone who can help make prototypes/products in wood. This is for a range of accessories that will have to be made by hand. Good quality finish is important and someone who can take small orders at a time would be great.

Any leads (preferably in Ahmedabad or Bangalore) will help.

Swati Santani

Furniture Design, Swati" swatisantani@yahoo.co.in

News:

1.

“IFIP on HCI” – Newsletter 1/2009

1. Editorial

This is the second issue of a newsletter planned to be published twice a year to keep the international HCI community informed about ongoing HCI activities in IFIP, the International Federation for Information Processing. It is distributed by the Technical Committee 13 on “Human-Computer Interaction” (IFIP TC 13).

TC 13 has as by now 35 representatives from IFIP member countries, 7 working groups (WGs) and 2 special interest groups (SIGs).

Details about all aspects of IFIP TC 13 can be found on the website:

<http://ifip-hci.org>

General information on IFIP is available at

<http://www.ifip.org/>



2.

Eleven outstanding developments have been selected as finalists in the Urban Land Institute's (ULI) Awards for Excellence: A competition, widely recognized as the land use industry's most prestigious recognition program.

The competition is part of the Institute's Awards for Excellence program, established in 1979, which is based on ULI's guiding principle of recognizing best practice through the awards to promote better land use and development.

ULI's Awards for Excellence recognize the full development process of a project, not just its architecture or design.

The criteria for the awards include leadership, contribution to the community, innovations, public/private partnership, environmental protection and enhancement, response to societal needs, and financial viability.

Over the years, the Awards for Excellence program has evolved from recognition of one development in North America to an international competition with multiple winners.

The ULI Awards for Excellence: Europe (now EMEA) was added in 2004, followed by the ULI Awards for Excellence:

Asia Pacific and the Global Awards in 2005. Throughout the program's history, all types of projects have been recognized for their excellence, including office, residential, recreational, urban/mixed-use, industrial/office park, commercial/retail, new community, rehabilitation, and public projects and programs.

The 2009 Asia Pacific finalists were selected from 35 entries from 10 countries.

The winners of the competition will be announced on June 24 at 8th Real Estate Investment World (REIW) Asia 2009 Leadership Dinner in Singapore. The finalists (developers in parentheses) are:

The Central, Singapore (Far East Organization) Located next to the Singapore River, The Central is a mixed-use development comprised of 227 live/work units, a 25-story office tower, and a retail podium with riverside shops and restaurants.

China Central Place, Beijing, China (Beijing Guohua Real Estate Co.Ltd.) Built on a former brownfield site, China Central Place—one of the largest developments in Beijing's burgeoning central business district—integrates 3 high-rise office towers, two hotels, a shopping center, and over 1,000 multifamily units with gardens, canals, and a new public park.

Crowne Plaza Changi Airport, Singapore (LaSalle Investment Management; L.C. Development Ltd.) Crowne Plaza Changi Airport is a 320-room business-class hotel built atop a leftover parcel comprising four lanes of busy roads and a circular car park ramp.

Daegu City Centre, Daegu, Korea (Doran Capital Partners; Triseas Korea Property Fund LP) Daegu City Centre has repositioned a failed discount retail and low-cost office building into bustling lifestyle destination with a 203-room luxury hotel

and an upscale retail mall, returning activity to the downtown core.

Guangzhou Children's Activity Center, Guangzhou, China (City of Guangzhou) The Guangzhou Children's Activity Center, a civic facility with 43,200 square meters of educational, performance, and exhibition space where children learn about science, art, and technology, is visited by over 20,000 students daily and provides an iconic gathering place in the heart of the city.

Namba Parks, Osaka, Japan (Nankai Electric Railway Co. Ltd.; Takashimaya Company Ltd.) A 1.15-hectare park sits atop an eight-level retail center and in the shadow of a 30-story residential and office tower at Namba Parks, reducing the heat island effect and infusing a natural amenity into Osaka's dense urban core.

Newton Suites, Singapore (UOL Group Ltd.) A climate-conscious residential tower, 118-unit Newton Suites utilizes a number of green design techniques, including sun shading, rooftop plantings, cross-ventilation, and a vertical green wall that climbs the height of the building.

'Portico' Scots Church Redevelopment, Sydney, Australia (Westpoint Corporation) The 'Portico' Scots Church Redevelopment is the conversion of the historic 1920s-era Scots Church and its airspace into a modern, 148-unit cooperative-style apartment building with commercial uses at the lower levels.

Seismically-Resistant Sustainable Housing, Bagh and Jareed, Pakistan (Article 25) Following the devastation of the October 2005 earthquake in Pakistan, this international relief program constructed 70 sustainable and seismically-resistant homes in remote Northern Pakistan, using local materials, labor, and resources, instilling appropriate construction techniques for this earthquake-prone area.

Visitor Centre at HortPark, Singapore (National Parks Board, Singapore) An orientation point for visitors to the HortPark in Singapore, the Visitor Centre is an important node in the 23-

hectare park, acting as a popular event space due to its airy and flexible design.

The Zhongshan Shipyard Park, Zhongshan, China (City of Zhongshan) Built on a dilapidated shipyard, the Zhongshan Shipyard Park is eleven hectares of reclaimed wetlands, restored shoreline, and landscaped park space that references its industrial past with salvaged docks and machinery.

The 2009 ULI Awards for Excellence: Asia Pacific finalists were selected by a jury of renowned land use development and design experts: Raj Menda, Managing Director, RMZ Corp, INDIA; Nicholas Brooke, Chairman, Professional Property Services Ltd., HONG KONG; Fun Siew Leng, Group Director, Urban Planning and Design, Urban Redevelopment Authority, SINGAPORE; Fanny W.L. Lee, Managing Director, China, Aedas, HONG KONG; Tomohisa Miyauchi, Director, ISSHO Architects, JAPAN; Ross Holt, Chief Executive Officer, LandCorp, AUSTRALIA.

The jury was overwhelmed by the large number of applications and the high quality of the projects, which struck the judges as particularly significant in the current economic environment.

According to Jury Chairman Raj Menda, the awards finalists illustrate that well-designed, well-built projects, with sustainable economic values will hold on in society for decades. "These are great examples of success that showcase creativity, innovation, and long-term thinking," Raj Menda said.

"Perhaps now more than ever, the ULI Awards for Excellence program reminds us of the key difference that responsible land use development can make, in terms of longevity and overall community sustainability."

3.

Australian designer blends art, science in clothing with therapeutic functions

MELBOURNE, Australia — Designer Leah Heiss doesn't just want to make you look good. She wants you to feel good at the same time.

Heiss has been working with scientists and engineers to blend art and science into collections of therapeutic clothing and jewelry that - in theory, if not yet practice - could personalize and beautify objects that may be daily necessities.

Her recent designs include a necklace-ring combo for storing and applying insulin patches, a stylized water bottle that filters arsenic for travellers, and electronically enhanced clothing that can transmit your heartbeat to a loved one.

"My interest is how you can augment things you love and cherish to do something else, give them extra functionalities," said Heiss, who is also a lecturer in interior design at the Royal Melbourne Institute of Technology.

Much of her work is experimental prototypes for future or developing technologies, and Heiss hopes her designs will inspire scientists to think creatively and help the general public learn more about the possibilities of science.

Her designs have been exhibited in Australia and Europe in both technology and art forums.

Last year she won a residency with Nanotechnology Victoria, a research and development foundation for the commercialization of nanotechnology - the use of structures as small as molecules, or 1,000 times smaller than the width of a human hair.

Nanotechnology Victoria has access to dozens of projects that are being worked on around the country and Heiss reviewed those with the aim of creating a design that could help the scientists deliver their sometimes obscure or enigmatic products to consumers.

"Their scope needed to be focused on human well-being and they needed to be tangible, not particles that you couldn't do anything with," Heiss said.

She settled on two projects - tiny insulin patches for diabetics and a chemical that negates the effect of arsenic - and set about to design user-friendly and esthetically appealing structures rather than clunky medical devices to convey the science to the public.

And the result?

Heiss created a two-piece jewelry set for the transdermal insulin patches, which are in development in Australia, the United States and other countries. A silver vial - which can be worn as a necklace or attached to a keychain - carries a supply of the tiny patches and acts as an applicator to press them into the skin of the finger. A matching ring with a movable panel holds the patch in place.

"An insulin device doesn't have to be a big, ugly medical device," Heiss said. "With this system, users don't have to carry around needles. They can have something they actually like to wear that is also useful. It's very subtle. It looks like a slightly strange piece of jewelry."

The patch is not a reality yet. It is still in clinical trials in Australia and a few other companies around the world are testing similar ideas. When placed on the skin, the patch would provide a continuous low dose of insulin and negate the need for injecting the insulin by needles.

Heiss' jewelry, if it is to be used for medical purposes, would also have to undergo an official trial, but neither Heiss nor Nanotechnology Victoria had immediate plans to market her work because it is still years before the patch could be in use.

Michelle Critchley, manager of therapeutic delivery at NanoVentures Australia, said the jewelry put a friendly face on how medications were administered.

"You can essentially wear your medication all day in a way that an outside person would not be able to identify that you were having any medical treatment," Critchley said.

She said working with Heiss brought a completely different perspective to the scientists.

"We have a large focus on research or technology, rather than making prototypes and thinking outside the square on how things will be used and how people will view that technology when it comes out to the market," Critchley said.

Heiss' second project focused on very small iron particles that have been proven to absorb and remove contaminants, such as arsenic, in water. Heiss and NanoVic developed a storage-filter package that could be used by travellers going to countries with high arsenic levels in their groundwater, such as Bangladesh or India.

A necklace holds the particles of mesoporous iron oxide and includes built-in tweezers to transfer it into a kidney bean-shaped, translucent water bottle that has a lid for drinking, a membrane system to filter out the arsenic and an electroluminescent cable that provides light at night.

As with the insulin jewelry, there are no immediate practical uses for the arsenic-water device as the iron particles are not available to the general public.

But Heiss said exploring nanotechnologies and new materials could "revolutionize the way we live."

Heiss has long been interested in bringing science into practical but esthetically appealing uses to the layperson. Two years ago she developed "enabled apparel" - electronically enhanced garments that responded to the wearer's moods or actions.

One garment senses a nervous habit - touching your chest or folding your arms, for example - and alerts the wearer to their actions. Another blouse is equipped with sensors that detected the wearer's heartbeat and transmitted it via radio waves to another person.

"If you're separated by distance from someone you love, you could actually physically wear their heartbeat," Heiss said of the blouse.

Heiss is energized by the challenge of working with new materials and exploring how to deliver technological advances to the public.

"I think it's really important for artists and designers to push those boundaries and work with these materials," she said. "From a therapeutic point of view, it really humanizes these sorts of technologies," she said.

"I think that's my role, humanizing technologies and bringing it into something like an art gallery context where the layperson can say, 'Oh wow, I've got it.'"

4.

INDEX

DESIGN TO IMPROVE LIFE



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BROWSE STORIES OF DESIGN TO IMPROVE LIFE IN OUR FIVE CATEGORIES :

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FINALISTS 2009

The finalists for INDEX:Award 2009 have been selected by the international INDEX: jury as the best of the best from the a total record-setting number of nominations from 54 countries.

Among the finalist-designs to be presented in the touring INDEX:Exhibition 2009 are the winners of the INDEX:Award 2009, which will be announced August 28 2009. The finalists, taken as a group, offer unique proof of the wide reach of Design to Improve Life, in terms of geography, challenges addressed, users and innovation.

INDEX:award > 2009 > DISPOSABLE MUG

DISPOSABLE MUG

Community category

In India, people prefer water to toilet paper and use plastic cups and empty bottles to hold water.

This foldable mug is meant for washing after using the public lavatories in train compartments. It is inexpensive, holds 1.2 liters of water, and disintegrates within 15 minutes after use, solving problems concerning price-sensitive consumers, hygiene maintenance, and waste disposal.

Designed by: Sandip Paul, Noida, India.
Additional credits: Bhushan Bawankule; Indian Railway Authority.
www.corollot.com/paulsandip

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Organized by innovation

GEORG JENSEN

5.

Students win challenge to bring clean water to slums of Mumbai, India



University of Minnesota team will travel to India later this month to implement their business plan

A team of University of Minnesota-Twin Cities students from a civil engineering class will head to India later this month to share their ideas and plans for helping bring clean water to thousands of residents living in the slums of Mumbai—the same impoverished area that provided the backdrop for the 2009 Oscar-winning movie, “Slumdog Millionaire.”

The University of Minnesota students, who collaborated with students from the Indian Institute of Technology-Bombay, are winners of the first-ever Acara Challenge sponsored by the Minnesota-based Acara Institute, a non-profit institute that tackles global problems through sustainable business solutions.

The winning team, named ReachOut Water Solutions, includes: Brian Bell, a civil engineering undergraduate student in the University’s Institute of Technology; Karthikeyan Bharath Kumar, a landscape architecture graduate student in the University’s College of Design; Mark Lundgren, a civil engineering graduate student in the University’s Institute of Technology; Tony Schrempp, a civil engineering undergraduate student in the University’s Institute of Technology.

The University of Minnesota students were joined by four teammates at Indian Institute of Technology-Bombay: Vivek Sharma, Bholu Ram Yadav, Shikha Pandey, and Jayendra Jadhav.

"We are proud to represent the University of Minnesota as the winners of this challenge," said Brian Bell, a member of the ReachOut Water Solutions team. "With help from mentors and professors, we were able to combine engineering and business in developing our plan. We are all very excited to have the opportunity to travel to India to begin the process of putting the plan into action."

Seven teams of university and high school students from Minnesota, Illinois and India participated in the Acara Challenge. The teams were assisted by mentors from Honeywell, 3M, Cargill, Medtronic, Siemens, Goodrich and many others United States and Indian organizations. The teams' plans were presented earlier this week before a panel of judges comprised of leading technology and business leaders from the United States, Mexico, and India. Judges evaluated the business plans for sustainability, technology feasibility and societal impact.



"It's exciting for students when they can immediately apply what they learn in class, and the competition motivated them to exceed expectations," said Civil Engineering Professor John Gulliver, who taught the class Engineering Design for Sustainable Development in which the University of Minnesota teams developed their plans. "They could make a real difference in people's lives."

With support from Cargill and the Acara Institute, the winning University of Minnesota team is planning to leave on May 26 for a two-week trip to Mumbai where the team will assess the situation, talk with local customers, and begin transforming their winning concept into reality.



Their plan addresses issues of water quality and availability for potentially hundreds of thousands of Mumbai residents. When implemented, their program will be housed in the Mumbai's existing Slum Sanitation Program buildings, and use a pre-existing customer base and infrastructure. Their business will combine source water storage with ultraviolet water treatment and a novel distribution system that will supply 50 liters per day of clean, low-cost water to community participants, as well as 10 liters of potable water to pay-per-use customers at a reasonable rate.

"We congratulate the ReachOut team on their outstanding effort," said H.S. Murali, Cargill vice president of corporate plant operations/process technology and one of the Acara Challenge judges. "The team articulated a clear, long-term plan

and implementation strategy that made good use of existing infrastructure.”

For the students, winning the Acara Challenge is just the first step in the process, said Erin Binder, executive director for the Acara Institute and a business manager at 3M. “The next step is to turn this business plan into a reality,” she said.



For more information about the Acara Challenge, visit www.acarainstitute.org

Program & Events:

1.

The Open Usability Season of Usability will be supporting 10 students to work on 10 open source projects during the June 1 - August 31 2009 season. The Season of Usability is a series of sponsored student projects to encourage students of usability, user-interface design, and interaction design to get involved with Free/Libre/Open- Source Software (FLOSS) projects.

The student application period is open until May 20 2009. The Season of Usability runs from June 1 to August 31 2009.

Student Requirements

- * You must be an undergraduate or graduate level student enrolled at a College or University as of January 1 2009. (Recent graduates are eligible to apply)
- * You must be a student of design, usability, human factors or other HCI-related major. Computer science and information systems students who are interested in applying must have had at least one course in human factors, user interface design, or human-computer interaction.
- * Students from any country are eligible to apply; however, some English skills are necessary.
- * You must be able to dedicate 10-15 hours a week to work on your project. This time requirement may vary from week to week depending on your project activities and responsibilities.
- * After successful completion of your project and a satisfactory rating from your mentors, you will receive a \$1000 USD stipend for your work.
- * You are not required to have knowledge of a programming language, nor will there be programming requirements to the internship.

How to apply:

- * Review the available projects and decide which project you would like to apply to. If you have any questions, please send them to students@openusability.org.
- * Prepare a résumé or curriculum vitae with relevant education, work, and open source experience.
- * Prepare a single page cover explaining why you would like to work with your chosen project.
- * All materials must be submitted in Open Document Format (ODF) or Adobe's Portable Document Format (PDF).

* Send your documents to students@openusability.org by May 20 2009. Please include the name of the project you are applying to in the email Subject.

* If you would like to apply to more than one project, please send separate application packages.

2009 Projects

- * Amarok
- * Drupal
- * Gallery
- * GeneMANIA
- * GNOME
- * Kadu
- * KOrganizer
- * OLM
- * SemNotes
- * Ubuntu

See the <http://season.openusability.org/index.php/projects> for more information on the projects and how to apply.

Applications are due May 20 2009.

Questions about the projects or application process may be directed to students@openusability.org.

We would like to thank our sponsors, Google and Canonical, as well as our many mentoring organizations for making this Season of Usability possible.

Season of Usability Organisation

<http://season.openusability.org>

www.openusability.org

2.

This year's DDS is themed as 'SWARNA' and will be hosted on June 8th to 10th at IDC, IIT Bombay

June 12th to 14th at Nehru Centre, Mumbai

Here is the website that displays the creative vibrancy of the 47 young minds passing out in 2009.

www.dds2009.org

Placements-2009 also will run parallel to DDS at IDC.

Interaction Design,

IDC, IIT Bombay

+91 9892 41 8656

Vijay PAVAN,

Interaction Design,

IDC, IIT BOMBAY.

pH: +91 9892 41 8656

3.



<http://www.daishow.com/stream/Home.html>

Ricardo Gomes, IDSA Chair/Professor

Design & Industry Department College of Creative Arts

San Francisco State University <http://design.sfsu.edu/node/362>

25-29 May, 2009



Basic Calligraphy (Express by writing)



INTRODUCTION

Anchor Faculty: Mr. Amit Kharsani

Calligraphy the word originated from the Greek words *kallos*, which means beauty, and *graphian* which means to write. Every one writes, and every one is beautiful so anyone can be calligrapher with potential and aesthetical perception.

Expressive writing of good quality is, more than anything else, a matter of premeditation. All that is required is supple wrist movement, a keen eye for detail and an open mind. In this workshop the participants will learn about the hidden rules of creative writing, he/she will make persistent exercises (with pencils and a red pen as tools) to develop controlled rapidity, to motivate creativity (regarding letterforms, joins, spacing and scripts) and to obtain consistency in form. Various aspects of spacing, pen angle, pressure, variation, retouching... will be discussed and demonstrated. In this workshop we will deal with the Roman (English) script, but the approach can be transferred to Indian scripts as well.

Calligraphy is an art –and design. This workshop evokes participant's design sense and enthusiasm through their strokes.

OBJECTIVE

- ❖ Provide an overview towards letter forms and fonts
- ❖ Develop tools from easily available materials in local market
- ❖ Develop the skills of exploration and application
- ❖ Provide visual awareness towards calligraphy-typography

COURSE CONTENT

- Introduction to strokes
- Roman Capital / lower case
- Roman Italics
- Practice Indian scripts
- Application
- Integration of strokes
- Flourish strokes
- Traditional to contemporary styles
- Calligraphy as compugraphy
- Playing with black and white Experiment with tools

COURSE METHODOLOGY

- ❖ Hands on training/ Theory lectures/ Demonstrations/ Slide shows
- ❖ Individual / Team assignments during class hours and non – class hours
- ❖ Discussion and Open Forum
- ❖ Final display of the work done

Design & Creativity with Paper Craft

25-29 May,09

Anchor Faculty N. N. Patel



Introduction



Papercraft is a form of crafting in which paper is used to create three dimensional objects such as models or sculptures. When a designer speaks of paper craft he refers to Shapes made by cutting, scoring, rolling, folding and fastening paper. It is easy to learn, and is incredibly varied. It can be large or small, humble or ambitious. Some people refer to papercraft as pepakura, in homage to the large Japanese papercrafting community.

Unlike origami, papercraft involves cutting up paper or cardboard and gluing it back together, although some folding and bending may be involved. Simple papercraft does not require extensive math skills, but it can be used to illustrate basic math, or to get people excited about mathematics. Freehand papercraft is challenging, though enjoyable, and it requires a good eye for design. The tools for basic papercraft designs and patterns are simple and affordable.



Paper sculptures can get quite elaborate, running the gamut from replicas of sculptures made from other materials like marble to models of things like trains, boats, and planes. Really dedicated crafters will sometimes devise papercraft objects with moving parts, which requires a very fine eye and a lot of patience. The structure of the three dimensional object may be supported with stiff paper, cardboard, or even wood, to ensure that it will not collapse, and it may be painted, dyed, or textured with applied materials as well. Another way of preserving and taking paper craft to the next level is by making animation films out of them. Caria and John B Kanny said, "We are concerned with making more lasting things out of paper".

On philosophical note, by paper craft, one learns how one can derive pleasure out of simple things in life. Also with the right attitude, how simple things can be made more beautiful, functional and meaningful.

Objective

- Learn the art of Papercraft
- Technique to inspire creativity and opening up of mind
- To know the design process
- Use paper craft as an important tool to educate



Methodology

Lectures, discussions, analysis and interpretation of elements with the help of films. Models and demonstration, studio work for practice of the techniques, skill and design of paper sculpture. Materials for the workshop India ivory paper, hand made paper, cutter, scissors, thread, cello tape, white bond paper, fevicol, pencil and common pens.

Outline

Session1: Introduction

1. The aim and objective of the workshop, the workshop schedule, the materials of the workshop.
2. Ideas for the selection of a subject for the paper sculpture.
3. Film 'Sonal Grasini'- an animation film produced by NID using cut outs by N. N. Patel.

Session 2: The Media

- a) The importance of 'Drawing' in paper sculpture
- b) The drawings for the paper sculpture
- c) Demonstration and exploration exercises
 - Cutting
 - Folding
 - Fastening
 - Scoring
 - Rolling



Session 3: Approach to make 3D models

- a) Geometrical forms: Origin
- b) Sculpture Character
- c) How to bring out characters of the subject in 3D paper model by appropriate ways and means
- d) The types of papers used for paper sculpture.

Session 4: Colours- the painting of paper sculpture

- a) Possibility of colouring and detailing
- b) Kinds of colours in this media

Session 5: Selection of a subject for paper sculpture

- a) Forms in nature
- b) Human forms: specific characteristics
- c) Other forms

Anchor Faculty : Narayan N Patel, Visual Communicator

Professional experience of over 35 years. Did his Fine Arts from MSU Baroda and PG Diploma in Graphic Design and Animation Film Making from NID. Some of his Corporate Identity Designs are NABARD, Footwear Design and Development Institute, New Delhi, NIF, National Innovation Foundation (GIAN, IIM-Ahmedabad). He has also designed some publications. Has taken workshops at National Bal Bhavan, ZICA Hyderabad, NIFT etc. And has done numerous projects with the government and other corporate clients.

INTAKE: Maximum of 20 participants

FEE & REGISTRATION: Rs 5,500/- [Non-residential, includes Workshop Registration fee, Lunch and one set of material only, Including Service Tax], to be paid by Demand Draft / Pay Order in the favor of NATIONAL INSTITUTE OF DESIGN, payable at Ahmedabad. Kindly send in your nominations on your company letterhead indicating Name/s, Designation, Address, Phone No, Fax No, and Email Id of the nominees along with the fee to:

For further Details contact,

Marketing Manager

NUPUR GUPTA
Design Centre Manager
(NID) ITPO Hall No 19, First Floor
Pragati Maidan New Delhi
(011), 23379645, 23379646

National Institute of Design
Core 6 A- 3rd Floor
India Habitat Centre
Lodhi Road, New Delhi
(011) 24692846, 24647487

CERTIFICATION: A certificate of participation will be presented to the participants.

CERTIFICATION: A certificate of participation will be presented to the participants



National Institute of Design
 Summer Workshop on
Design & Creativity with Paper Craft
 REGISTRATION FORM

(You can photocopy for more registrations)

25-29 May 09

Please affix Passport size
 Photograph here

Name of the Participant: Mr. / Ms. _____

Designation/ Student _____

Organization/ Institute _____ City _____

Address (Residence) _____

Telephone No. _____ Mobile _____ Fax _____

Male / Female _____ DOB _____ AGE _____

E-mail: _____

How did you come to know of the Workshops: Website ___ Poster ___ Newspaper ___ Via Friend ___, Via Email ___

Registration Fee: Rs 5500/- for the 5 days workshop (Non-residential)

Mode of payment : Registration Fee to be paid by Demand Draft / Pay Order in favour of

"NATIONAL INSTITUTE OF DESIGN" payable at Ahmedabad.

Signature: _____

Kindly send the demand draft / pay order/ cheque along with the filled in registration form to,

Nupur Gupta
 Design Centre Manager
 NID-ITPO, Hall No.19
 First Floor Pragati Maidan
 New Delhi

NID reserves the right to cancel the programme. The registration fee of the candidate however will be refunded in such an eventuality.

The income of the institute is exempted under Section 10 (23C) iiiab of the Income Tax Act 1961, being an institution solely for educational purpose and not for profit and financed substantially by the Government. Therefore, you are requested Not to deduct tax at source.

For Office Use only:

Regi. Fee Received through:

Cash

DD / PO No.

Bank:

Stamped Receipt No./ Dt.:

Participant No.

5.

<p>Application Form QIP Short-Term course on Learnings on Sustainability for Engineering Education (July 09-15, 2009)</p> <p>Name:</p> <p>Designation:</p> <p>Organization:</p> <p>Address for Correspondence:</p> <p>..... Pin</p> <p>Telephone:</p> <p>Mobile: Landline:</p> <p>E-mail:</p> <p>Details of DD</p> <p>Amount:</p> <p>No. Drawn on:</p> <p>.....</p> <p>Signature of the sponsoring authority</p> <p>Name:</p> <p>Designation:</p> <p>Date: Place</p> <p>Seal of sponsoring authority</p>	 <p style="text-align: right;">QIP SHORT TERM COURSE ON LEARNINGS ON SUSTAINABILITY FOR ENGINEERING EDUCATION</p> <p style="text-align: right;">JULY 09-15, 2009</p> <p style="text-align: right;"> IDD CENTRE INDIAN INSTITUTE OF TECHNOLOGY, DELHI HAUZ KHAS NEW DELHI -110016, INDIA</p>
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<p>Short term course on Learnings on Sustainability for Engineering Education July 09th- July 15th, 2009</p> <p>A week long course on Learnings on Sustainability for Engineering Education will be conducted from 09th- 15th July 2009 at IDD Centre in the Indian Institute of Technology, New Delhi.</p> <p>Engineering Education and Issues of Sustainability</p> <p>The current patterns of consumption and production are becoming highly wasteful and unsustainable. This issue will be of concern to engineers of tomorrow. The future of engineering education and industry lies in taking up the challenges of development and sustainable best practices in design of engineering products, services and systems of the future.</p> <p>Learning Objectives</p> <ul style="list-style-type: none"> • Understanding sustainability • Teaching sustainability • Developing solutions for sustainability <p>Contents of the Course</p> <ul style="list-style-type: none"> • Challenge of development and sustainability • Sustainable Product, Services and Systems • Designing for Sustainability • Designing for Human needs and Sustainable Consumption • Social Entrepreneurship • Methods for Sustainability assessment 	<p>Course Venue IDD Centre IIT Delhi Hauz Khaz New Delhi 110016</p> <p>Course Coordinators</p> <p>Amitoj Singh Assistant Professor Industrial Design Programme IDD Centre IIT Delhi New Delhi 110016 Phone: 011-26596723, 26596770 Mobile: 09868101027 Email: amitoj_design@yahoo.com, amitoj@iddc.iitd.ac.in</p> <p>Lalit Kumar Das Senior Faculty Industrial Design Programme IDD Centre IIT Delhi New Delhi 110016 Mobile: 09891941433 Email: lalitdas@gmail.com</p> <p>Guest Faculty (expected)</p> <p>Prof. Amrit Srinivasan Dept. of Humanities and Social Sciences IIT Delhi</p> <p>Prof. Carlo Vezzoli Faculty of Design Politecnico di Milano University Italy</p> <p>and others.....</p>	<p>Participation</p> <p>QIP course is open to full time regular/permanent teachers of AICTE recognized degree level engineering colleges and technical universities/deemed universities. The candidates are required to attach a demand draft (refundable) of Rs 500/- in favour "Registrar IIT Delhi" of along with application form and should sent to course coordinator at the earliest but not later than 10th June 2009. This demand draft will not be refunded in case a selected participant does not attend the programme. The selected candidate will be paid return rail fair (maximum by AC-3 tier) by the shortest route as per the rules and accommodation at IIT hostels will be made available to them. But they are required to bring their beddings, etc.</p> <p>Who should attend</p> <p>Faculty members of the Engineering Institutes who are interested in curriculum changes to meet the needs of the future.</p> 
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6.



Design for All

il design per la diversità umana,
l'inclusione sociale e l'uguaglianza

Conferenza Annuale Design for All Italia
Casa dell'Architettura, Piazza Manfredo Fanti 47,
Roma
19 maggio 2009

www.dfaitalia.it





Design for All: il design per la diversità umana, l'inclusione sociale e l'uguaglianza

Conferenza Annuale
Design For All Italia

PROGRAMMA

14.30-15.00 Apertura e saluti

Modera: Marcella Gabbiani, Presidente DfA Italia

Saluti:

- Stefano Salvi, Presidente ADI Centro
- Amedeo Schiattarella, Presidente, Ordine degli Architetti di Roma
- Umberto Croppi, Assessore alla Cultura del Comune di Roma
- Massimo Arlechino, Presidente, Fondazione Valore Italia, Roma

15.00-16.30 Design for All è design per la diversità umana, l'inclusione sociale e l'uguaglianza

Modera: Paolo Favaretto, Presidente ADI Nord Est e past President DfA Italia

- Design for All: una breve storia tematica: Pete Kercher, Ambasciatore, EIDD – Design for All Europe
- DfA in pratica: dal product al packaging: Avril Accolla, Vicepresidente, EIDD – Design for All Europe, Vicepresidente DfA Italia
- DfA in pratica: cinque anni di patrocinio al Premio Dedalo Minosse per la Committenza in Architettura: Marcella Gabbiani, Presidente, DfA Italia

16.30-18.00 Lancio del Marchio di Qualità DfA

Modera: Stefano Salvi, Presidente, ADI Centro

- Cosa può fare il marketing per il Design for All? Daniela Gilardelli, responsabile marchi DfA
- Il Marchio di Qualità DfA, il Registro dei Soci Professionisti e il Codice Etico: una struttura di garanzie per il committente: Luigi Bandini Buti, Politecnico di Milano, Segretario DfA Italia
- Comunicare il DfA: Carlo Branzaglia, Responsabile Design Center Bologna, Responsabile Comunicazioni DfA Italia

18.00-18.30 Panel di chiusura

Modera: Pete Kercher, Ambasciatore EIDD – Design for All Europe

- Partecipano: On. Antonio Guidi, Fabrizio Vescovo (Università La Sapienza), Dino Angelaccio (Università di Siena), Maurizio Capelli (Borghi Autentici)

www.dfa.it



Design Incubator's Professional Training Courses User Experience Design, Pune-July 2009

Design Incubator will conduct two training course in July 2009, in Pune, India.
Course 1: Introduction to User Experience Design
 A one day course on Saturday, 4th July 2009.
Course 2: Advanced Course on User Interface Design
 A fourteen day, part-time and weekend course, between 18th and 31st of July 2009.



Terms and Conditions

- › Please note that video recording and photography of Design Incubator's trainings is strictly prohibited.
- › Participants should avoid bringing their laptop, cameras, recorders, hard disks, storage devices and other portable media due to security concerns. Participants will have to deposit their media belongings outside the secured perimeter of the Facilities at their own risk.
- › The copyrights of materials used and created during the training belong to Design Incubator. Circulation, redistribution and copying of any such materials is strictly prohibited.
- › Design Incubator shall try their best to ensure that the training sessions are conducted at the predefined time and venue with the necessary facilities, however, Design Incubator does not guarantee it.
- › In the unlikely event of cancellation / postponement / change of time / change of venue initiated by Design Incubator, participants shall be contacted by email or at phone numbers provided by them to inform them of the respective changes.
- › In case, Design Incubator initiates a cancellation of the training, full payments for the cancelled workshops shall be refunded to the participants.
- › Participants wishing to cancel their reservation shall get a 50% refund, provided cancellations are made by them 10 days prior to the first day of the training. No refunds shall be issued if a participant cancels reservations less than 10 days before the first day of the training.

Contact Design Incubator

- › Mail: training@designincubator.com
- › Tel: +91 22 6552 9069
- › Add: A-401, Gokul Horizon,
Behind Gokul Concorde,
Thakur Village, Kandivali East,
Mumbai 400101, India.
- › URL: www.designincubator.com

8.

Workshop
on
**Interactive (Human-Computer) Technologies
for the End-user**

25th May, 2009

at



IIT Delhi

**A program under UKINIT
Sponsored by EPSRC**

SUPPORTED BY HP LABS INDIA

Under the aegis of
Foundation for Innovation and Technology Transfer (FITT), IIT Delhi
&
The Bharti School of Telecommunication Technology and Management,
IIT Delhi

Registration Details

Registration Fees

1. Participants from Industry: Rs. 2,500/- per participant
2. Participants from academic/research organization/network members:
Rs. 1500.00/- per participant
3. Students: Rs.500.00

Payable by cheque/DD in favour of "FITT, IIT Delhi".

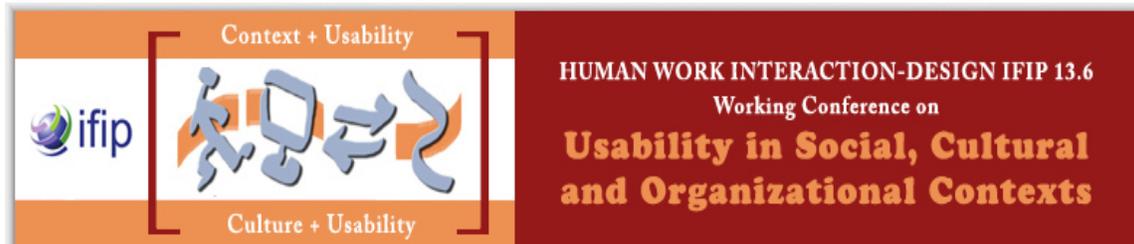
Those interested to attend the workshop may simply complete the registration form and send for enrolment with the demand draft (preferably). The registration will be strictly on first-cum first served basis.

The deadline for registration is **Friday, 15th May 2009**

For further information contact:

Dr. Sumantra Dutta Roy
Department of Electrical Engineering
Indian Institute of Technology (IIT)
Hauz Khas, New Delhi – 110016
Ph: 2659 1084
e-mail: sumantra@ee.iitd.ac.in

10.



Call for Papers:

Theme and focus:

The HUMAN WORK INTERACTION DESIGN 2009 working conference analyzes the concept of usability in social, cultural and organizational contexts. Analyzing usability in context is important for connecting empirical work analysis and interaction design. In industry, a wealth of usability evaluation methods is used to evaluate computer software user interfaces and other interactive products: Inspection methods, Workplace observation, Think-Aloud Usability Test, etc. These techniques often give - seemingly - similar results when applied in diverse social, cultural and organizational settings, but experience shows that we need a deep understanding of the cultural, social and organizational context to interpret the results, and to transform it into interaction design.

The working conference will present current research into and industrial experiences with usability as a way of connecting empirical work analysis and interaction design, with a special focus on contexts in India. Cultural usability is a comprehensive concept, which adheres to all kinds of contexts in which humans are involved (private family, work, public and private organizations, nature and climate, technological, etc.).

The purpose of the working conference is to enable practitioners and researchers to analyze the concept of usability and how it can be used to connect empirical work analyses and interaction designs in different contexts. After the conference, a limited number of selected papers will be published in an IFIP Springer book.

We expect the participants will be people from industry and academia with an interest on usability, work and design in different social, cultural and organizational contexts. The working conference will be conducted in a good social atmosphere that invites to openness and provides time to reflection and discussion about each of the accepted papers and cases.

Social, cultural and organizational dimensions of usability

- Usability and social context
- Usability and cultural context
- Usability and organizational context
- Work style modeling in different cultural, social and organizational contexts
- Usability assurance and assessment in outsourced developments
- Usability and technological application areas such as groupware, mobile, social computing, web based and software applications

Usability techniques and methods applied for design research

- The concept of Usability as a mean to connect empirical work studies and interaction design
- Application of usability design and research methods like think aloud, ethnography, contextual inquiry, GOMS, cognitive walkthrough, other empirical research methods applied for ICT applications design
- Usability engineering and process management
- Case studies of usability in an Indian context
- The use of ethnographic methods to generate scenarios and use cases in a foreign country
- Empirical studies of culture-specific or culture-aware usability evaluation methods



Job openings:

1.

We need a Web Developer to join our growing team at "iff Interactive" and Online Interactive firm. Our website is under development.

You could look at our group company CXI Design (www.cxidesign.com) to get a feel of the work we have done in the User Experience Space.

We are looking at someone with proficiency in PHP, MySQL, Access, HTML, DHTML, CSS, Javascript, CMS (Drupal, Joomla,etc).

Years of Expertize - You could be a 10 year old or a 60 year old. We do not have a problem with this as long as you are good!!

Academic Background - Honestly do not care as long as you have fire in the belly and a willingness to work in a start-up kind of environment.

If interested then do drop me a mail and we will get back.

"abhijit bam" abhijit.bam@gmail.com

2.

New Delhi based Event Management Company is looking to hire Assistant Event Manager. The company produces high-end social and corporate functions.

CANDIDATE REQUIREMENTS

Must have a minimum experience of 4 years within the field of Event Management in the Delhi area.

Candidate would be required to be the point person at events to coordinate the design concepts and insure its proper installation and execution.

Candidate must have to ability to work under pressure

Candidate will be required to work with the lead designer in creating concepts for events.

Candidate must have basic knowledge of regional cultural details pertaining to Indian Weddings.

Candidate must have strong organizational skills and be able to manage vendors to complete tasks on time.

Candidate must be fluent in both English and Hindi.

Please send your Resume to
Johnconnolly1@mac.com

3.

The Indian Institute of Crafts and Design (IICD) is an autonomous institute of excellence, set up by the Government of Rajasthan in 1995, to act as a catalyst for the crafts sector. The Government entered into a unique 'public private partnership' with Ambuja Educational Institute in October 2007 with the central idea that the Institute evolve a sustained program of efficient growth and development of both, crafts persons and the craft sector in an integrated manner. The Major Education programs at IICD are mandated to develop high quality, motivated human resource and change agents – young craft designers and design managers – who would work in a vibrant climate of experimentation and innovation. IICD is currently offering Under Graduate programs in Soft Material Application (textiles, leather, paper) and Hard Material Application (wood, metal, stone). In the Post Graduate program the specializations offered are Furniture Design and Interior Products and Home Textiles (floor covering & furnishings) .

As a part of our second level Capacity Building initiative, the Institute is looking for dynamic professionals, who want to be part of the 'Craft Development Story' of India. Design professionals and Design academics with a strong emotive and cultural association with the Craft wisdom of this country are invited to participate with missionary zeal on the task at hand – to train students, do craft development work and research along with curriculum development – at the foremost Institute focused on Craft Design in India.

We invite design professionals and the positions on offer are:

FURNITURE/PRODUCT/ ACCESSORY DESIGNERS:

Profile 1: Senior Academic, with prior experience in professional design practice and design academics with skills in Course and Syllabus design, pedagogies, ability to network with Industry, Govt. and Non - Govt. organizations. The person should have scholastic / research capabilities. The Position of offer is for Professor/Associate Professor

Profile 2: Dynamic young designer with a body of professional work, preferably in Craft design and a keen interest in practice as well as academics. The person should be strong on form as well as keenly interested in materials & technology.

The Position of offer is for Associate Professor/Assistant Professor

TEXTILE DESIGNERS:

Profile 1: Senior Academic, with prior experience in professional design practice and design academics with skills in Course and Syllabus design, pedagogies, ability to network with Industry, Govt. and Non - Govt. organizations. The person should have scholastic / research capabilities. The Position of offer is for Professor/Associate Professor

Profile 2: A designer with a body of professional work in Print, Weave, Embroidery Design, ability to work hands on, with a keen interest in color and traditional textile repertoire. S/he should be willing to travel and work in rural craft clusters.

The Position of offer is for Associate Professor/Assistant Professor

The above positions are for :

Assistant Professor (work experience of 3 to 7 years)

Associate Professors (work experience of 8 to 12 years)
Professors (13 years and more).
Commensurate package would be on offer.

Applications may be sent by 15th May 2009 to Director IICD at
director@iicd.ac.in

INDIAN INSTITUTE OF CRAFTS AND DESIGN
J 8, Jhalana Institutional Area, Near RTO, JAIPUR: 302004
Tel: 0141 2703105
Fax: 0141 2700160
www.iicd.ac.in

4.

A Graphic Designer who can infuse fashion into design with flair. You have a refined design sensibility, strong on-time delivery, and implementation skills. You will be in charge of all Print communication and Advertising for Hidesign and Hidesign group of companies – The Promenade, Le Duplex, Casablanca and Titanic.

Responsibilities

- * Concept and Design of Advertisements, In-store promotions and offers for Hidesign, the Hotels, Casablanca, and Titanic.
- * Menu designs, Stationery Design, VM props (involving print media), Catalogues, Booklets, Brochures etc for Hidesign, the Hotels, Casablanca, and Titanic.
- * E-mailers, and Web pages for Offers online for Hidesign
- * Communicate and coordinate with the Media for artworks, advertising in new magazines/newspapers which involves booking ads, negotiating rates, deciding issue dates, and maintaining the Ad schedule
- * Oversee and guide the assistant Graphic Designer to make artworks for Advertisements in Newspapers and Magazines.
- * Implementation and design of In- Store Posters and Signages

Qualification / Requirement

- * You are a practical, hands on experienced person with 1-2 years experience in management and Designing
- * Experience of Graphic Designing, Creative illustrations and ability to meet the business objective.
- * Excellent organizational and communication skills.
- * Proficient in English, Tamil and Hindi (optional)
- * Technical Knowledge of Printing and Colour management
- * Proficient in Corel Draw, Illustrator, Photoshop; (Indesign and Flash preferred)
- * Will be based in Pondicherry.

Please send in your CV and Portfolio / Few examples of relevant work to
dipen@hidesign.com <mailto:dipen@hidesign.com> , koushiki@hidesign.com
<mailto:koushiki@hidesign.com> & cc to sabna@hidesign.com
<mailto:sabna@hidesign.com>

5.

IDEA Product Design (based in Ahmedabad) is looking for both Graphic Designers & Industrial Designers.

If any of your friends is interested ask her/him to send the updated resume with portfolio link/pdf at

smitas@ideaproductdesign.com or abinashm@ideaproductdesign.com

Graphic Design

+91 98980 29813

6.

We have a great Freelance/Consultant opportunity for you with our company named VERSATA (www.versata.com) .We are looking for someone who can dedicate 8hrs/day or 40hrs per week on our Versata projects and we will be hiring you as Freelancer through oDesk (www.odesk.com) ,its a freelance portal .Its a work from home kind of option or where ever you are and you will be paid in dollars. Below is the requirement:

Position: HCI

Versata (a subsidiary of Trilogy Inc.) is rapidly expanding in Bangalore, India, and are seeking Visual / Interaction designers for our HCI Practice. You will be involved from concept to completion in designing new internet and intranet applications. This is a diverse position with many different design challenges.

This position will include designing new and existing Internet applications that accurately reflect our client's goals, objectives and identities. The position also includes working with a distributed development network to ensure development of these properties, managing timelines and providing quality assurance for completed design work.

Creative Skills

§ A proven history (4+ years) of strong visual design and web development.

§ The ability to produce designs and prototypes on a tight timeline.

§ Experience creating interface specifications and defining user-based workflows.

Concept / User Understanding / Usability Skills

§ Experience with concept generation, needs analysis, and user-centric design.

§ An understanding of design principals and basic usability guidelines.

Tool / Technology Skills

§ Expertise with industry standard design tools (such as the Adobe suite of tools: Photoshop, Illustrator and Flash).

§ An understanding of basic web technologies such as HTML, JavaScript, and CSS.

Project Management / Requirements Documentation Skills

§ Must be able to work in a team setting, taking responsibility for basic project management tasks as it relates to design and development.

§ Experience defining & documenting project and design requirements; and working with remote teams to ensure work is completed.

§ Experience providing quality assurance on design and web development projects.

§ Ability to manage and mentor junior-grade design and development resources.

Interested candidates can send their resume to ashwitha.naik@versata.com

7.

PhD Position: Using optical devices to enhance user interactions on an interactive surface

Closing date: June 1st, 2009.

Late applications received before June 10 may be considered.

In cooperation with Microsoft Research Cambridge, the Interaction and Graphics group of the University of Bristol invites applications (from India, China, Hong Kong, South Africa, Brazil, Russia and the developing world.) for an open PhD position that is supported by the Dorothy Hodgkin Postgraduate award (<http://www.rcuk.ac.uk/hodgkin/default.htm>).

About the Project

Today's touch-screen technology potentially allows multiple users to simultaneously interact with one another and with digital content by using their whole hand to engage in the interaction but it's limited in the sense that all users have to share the same visible content. However, most of today's touch-based systems only support single views for their interaction. In other words, these systems do not allow multiple users to view information that is customized to their view on the same interactive surfaces. There is limited systematic study of combining multi-touch with multi-visibility. There have been a few one-off point-designs (proof of concept systems to show that its possible to build such systems) but no systematic investigation into the benefits and limitations of combining multi-touch with multi-visibility has been performed. Here we propose to systematically investigate the design of interactive surfaces that use optical devices (like lenticular lenses and polarizers) to support multi-touch and multi-visibility.

Funding

The advertised position is offered through a special arrangement with Microsoft Research and is part of the Dorothy Hodgkin Postgraduate Awards ('DHPA') (<http://www.rcuk.ac.uk/hodgkin/default.htm>)

- The position is open to students from India, China, Hong Kong, South Africa, Brazil, Russia and the developing world.
- The studentship includes a maintenance stipend and tuition fees at international level.
- The student will also get a laptop loaded with software applications from Microsoft Corporation.

Ideal Candidate

The ideal candidate for this position will have a

- First degree in Computer Science or related discipline
- Experience in Human-Computer interaction
- Basic Hardware skills (multi-touch, 3D user interfaces)
- Basic knowledge of Physics (particularly optics)

How to apply

For further details about the position and on how to apply please visit <http://www.cs.bris.ac.uk/admissions/phd/news-item.jsp?nid=14>

Dr. Sriram Subramanian
Senior Lecturer sriram@cs.bris.ac.uk
Department of Computer Science Tel: (44 or 0)117-3315235
University of Bristol FAX: (44 or 0)117-9545208
Woodland Road, BS8 1UB UK

8.

Looking for 2 absolute graphic design fresher, to join us asap.
Interested may mail only to mobile@designintervention.biz
job will be in Mumbai.

pay scale will be absolute beginners scale, apprx 12-15 thousand (all inclusive, lump sum), depending on capability, would be revised as and when direct contribution towards earnings grows (not according to time intervals)

job profile: continuous "product-range branding and marketing collaterals" for jewelry industry. Other more exciting things can be explored as the office is into numerous varied things, but the prime responsibility for work is the one mentioned above.

Director,
Design Intervention (I) Pvt. Ltd.

9.

Ikian Furnitures Pvt Ltd, Bangalore - a well known lifestyle furniture & accessories company has showrooms based in Bangalore, Chennai & Hyderabad. Under the 2 brands Friuli & Ikian, it sources furniture from high end Italian manufacturers and South East Asian suppliers. With a working manufacturing facility in Bangalore and large scale contract projects, we require designers for the following profiles:

1_ Designer - Furniture & Interior Design - Graduates with a strong technical understanding of the manufacturing process and an eye for detailing. Required to be able to visualise and propose spatial concepts to the clients in 3d.

2_ Design Management - Graduates with good understanding of brand communications and an eye for aesthetics, to interact with Italian suppliers, architects and clients. The candidate would be expected to promote brands & projects and understand the emerging market trends.

The above positions are available both for the Bangalore and Hyderabad offices.

Interested candidates are requested to contact with their resume and work portfolio at the following email ids:

Awanish - awanish.friuli@gmail.com

Veronica - veronica@kianindia.com

Looking forward to a positive response.

Designer - Furniture + Interiors

Ikian Furnitures Pvt Ltd.,

Bangalore

10.

Part time/ Freelance: There is a requirement for a drupal project..

Need to create a website on Drupal including creating the templates based on the design and setting up of modules for certain functionality.

People with experience in building entire website from creating the templates (with PHP knowledge) could be a good fit.

and - Full time: Web Developer

This position is based in Bangalore, India.

contact:

Harish Reddy , harish@ojoin.com

9731600078

11.

Experience: 1 to 5 years experience

Skills: Flex, Action Script, Java experience, Interaction design/UX design

Send resume to darshan@wengerwatson.com with work samples/portfolio, current compensation details.

Darshan | Wenger & Watson Inc | Bangalore | +91-0-9972091101 | darshan@wengerwatson.com

12.

Please find below a description of the company and the work profile.

- If the job interests you, please send *both* your resume and portfolio to suvikas.bhandari@pubmatic.com with a cc to krishna.depura@pubmatic.com
- Please do not reply to this email. Do not reply to all.
- Compose a fresh email with the subject line as " application for UX designer – PubMatic"

About PubMatic:

<http://www.pubmatic.com/about/>

PubMatic is focused on serving the needs of publishers by providing an industry leading platform that allows publishers to maximize their revenue while simultaneously reducing complexity PubMatic is an early stage startup developing a range of exciting products for digital media. PubMatic is run by a small team of highly-qualified, dynamic individuals with work experience at companies such as Microsoft, McKinsey and Symantec. PubMatic's leadership studied at some top universities including Harvard and IIT, and has raised over US\$40 million in venture capital for some of their past ventures. Our offices are in New York, Mumbai, California and Pune.

Position : UX designer for PubMatic

Location: Pune

* The User Experience designer conceptualizes and evaluates web application design ideas, and then builds aesthetically pleasing graphics and layouts.

* The designer is capable of determining when and how to expose complexity to a user.

* This position requires both visual design and interaction design skills. We don't draw a strict line between visuals and interaction.

Responsibilities:

* Design interactive user interfaces for our web sites and web-based applications including visual look & feel, graphics, styles, navigation, and layout

* Maintain a consistent user experience through strict attention to detail

* Develop detailed storyboards, mockups and prototypes to effectively communicate interaction and design ideas to product managers and engineers

* Articulate and champion innovative design approaches

* Formulate ideas on how we can improve customer adaptation by enhancing our user interface designs

Requirements:

We are looking for individuals with strong creative skills and a keen interest to design for the new web paradigm

- * Passionate about user experience and demonstrated expertise building simple yet effective interfaces. Strong sense of clean visual design.
- * Ability to present design ideas, choose between multiple ideas and give a solid rationale to each idea.
- * Ability to make trade-offs between the best possible user experience and time to ship.
- * Ability to build consensus by visualizing ideas quickly and asking questions that help product managers think through the business specifications.
- * Ability to work in a fast paced iterative environment; this includes that the designer be willing to shorten stages by just sketching and help get it build by working closely with developers.
- * The candidate should be able to ship features; this includes shepherding your design through reviews and working closely with developers to iron out any UI issues that crop up during development.
- * Should have experience in working on the product through out the life cycle. Should be able to own the user experience of the web product; will be responsible for overall look and feel and workflow of the UI.

The deliverables

- * Should be adept at building use-cases, scenarios and task flows.
- * Ability to conceptualize and present design ideas & concepts through mock-ups/ wire frames/ or product walk-through
- * Ability to understand user patterns through web analytics, user surveys and interviews
- * Ability to hand-off the design to the development team in the form of behavior specifications, click through prototypes (visio / ppt or any other tool) , visual UI specs and other collaterals such as backgrounds, images etc.
- * Strong experience with prototyping, visual and wireframing tools such as Visio, Photoshop, Illustrator, Corel Draw
- * Understanding of HTML, XHTML, CSS a huge plus however, this position doesn't require you to write code. Experience designing for and troubleshooting cross browser compatibility issues

Qualifications

- * 4+ years experience designing web-based interfaces.
- * Academic background in human-computer interaction or related field is preferred.

PubMatic - Company Culture

We value innovation, creativity, customer service, and integrity. We focus on results and having fun. We also try to do things a little differently at work, so people can be successful in their professional and personal lives. For example, if you need to go running at 3pm, go run! If you need to start work at 10am because you're not a morning person, start work at 10am. We offer unlimited vacation (you know when you're ready for a break) and every employee in our company receives a full benefits package. We have snacks and drinks for everyone (we'll get whatever you want, just let us know). We have a totally open door policy (actually, there are no offices) and encourage everyone to come up with and follow through on any "bright" ideas to push the company forward! We expect the best from our team so come to work charged and ready to dive in each day!

At PubMatic we are trying to build a great place to work and with your input can make it better. For example, PubMatic offers unlimited vacation (you know when you are ready to take a break, just get your work done). We also have a completely open door policy allowing anyone to interact with anyone in the company, and encourage suggestions from everyone to make us more productive, efficient, and fun. We expect every member of the team to help us go in new directions and do new things!

Salary and Benefits:

- * Salary commensurate with experience
- * Cash bonus at the end of the year based on performance
- * Stock options
- * Free snacks in the office
- * Medical insurance

13.

Visual designers are required at the Mumbai based SaaS company , iDuple Solutions[www.iduple.com] . Send resumes at contact@iduple.com

14.

A freelance visual designer, based in Mumbai, is needed on a project-based involvement for visual redesign of a proprietary software product for Thinklabs ([know more](#)).

The product, a Visual Programming Language, meant to be used by children/students for programming robots, is a unique desktop-based application and will offer a lot of creative freedom to the individual to experiment and innovate on a variety of elements and concepts.

The individual should be proficient in conceptualizing and creating high-quality visual concepts, layouts, widgets, icons and other visual elements. Having worked on a similar product or any kids-specific software would be a plus.

Interested individuals could send across their portfolios to me at nikhil@thinklabs.in/nikhil_karwall@yahoo.co.in, or get in touch for more information.

9819229839

Design Lead

Thinklabs

Powai, Mumbai

15.

Designing Software Products interfaces

- Improvement / Redesign of User interface for fully web centric Software Products
- Design documentation of software
- Graphic designs for advertisement for marketing
- Design graphics for Product Distribution
- Product branding
- Improve design of Kiosks presently used
- Conceptualize and value engineering for new contemporary Kiosks development considering market trends
- Detailed Design of Kiosks including material selection
- Design documentation
- Fabrication note - Help in locating Fabricators for special components
- Quality control/assurance

Interested professionals can send their profile to manish@libsys.co.in or

hrd@libsys.co.in

Contact Information: 09212610295

CORPORATE Profile

Brief History

Info-Tek Consultants Pvt. Ltd. is a Gurgaon (India) based software company established in 1984. Having focus on packaged software for Indian as well as Overseas markets, Info-Tek has developed products in the areas of General Insurance, Reinsurance, Traveller's Cheque Issuance and Library Management. To effectively meet library automation requirements, LibSys ILMS was developed in 1988 and is now being maintained by LibSys Corporation (a unit of Info-Tek).

Taking a spur by the maiden installation of LibSys at National Informatics Centre (which was playing a major role in driving usage of I.T. in various Departments of the Government of India) in 1988 at New Delhi, it has been commissioned in more than 1300 libraries in India and Overseas. The elite and varied clientele of LibSys includes many National Level Laboratories, Academic Institutions, Universities, Government Departments, Corporates, etc. LibSys was adopted by British Council in India and other South Asian countries in 1995 and since then there are more than 12 libraries of council running it of which two viz. BCL Colombo and BCL Kandy are in Sri Lanka. A large number of Universities and colleges are using LibSys system. LibSys has been involved in working on latest technologies (such as RFID, Dublin Core etc.) and incorporating these judiciously in their all products that makes LibSys ILMS a highly advanced and futuristic Web based System for libraries.

Scope of Operations

The company specializes in Library Automation and its main operations are around 'LibSys' system. The range of associated services to the libraries includes the following:

(i) Integrated Automation Software

(a) Acquisition

(b) Cataloguing

(c) Circulation

(d) Serials Control

(e) Article Indexing

(f) OPAC

(ii) Multiple Locations

LibsysX

(iii) Job Work

(a) Digitization

(b) Retrospective Conversion

(iv) Turn-key Projects

(a) System Integration + LAN

(b) Consultancy

v) LSmart Solutions

(a) RFID Tags

(b) Electronic Article Surveillance Gates

(c) Self Lending Stations

(d) Shelf Management

(vi) BPO

(a) Facility Management

(b) Technical Processing

(vii) Education and Training

(a) Training Programs Research

(viii) Co-operative Services

(a) Users Group

(b) LSNet

Sr HR Executive

LibSys Corporation

633 A Phase V, Udyog Vihar, Gurgaon

Mob.:- 09212610295 / 09958296055

Tel: 91-124-2451119/ 1120/0202/ 0203

Fax: 91-124-2397299

www.libsys.co.in

16.

Fair Isaac Corporation (NYSE:FIC) combines trusted advice, world-class

analytics and innovative applications to help businesses make smarter decisions. Fair Isaac s solutions and technologies for Enterprise Decision Management turn strategy into action and elevate business performance by giving organizations the power to automate more decisions, improve the quality of their decisions, and connect decisions across their business. Clients in 80 countries work with Fair Isaac to increase customer loyalty and profitability, cut fraud losses, manage credit risk, meet regulatory and competitive demands, and rapidly build market share.

Skills requirement:

Responsibilities

Develop interactive prototypes to facilitate usability evaluations with end-users

Assist in the execution of usability evaluations when necessary

Establish design patterns working with common interface components to promote consistency and reuse across applications

Create UX Specification documentation for Developers and QA

May need to assist in the development of wireframes and screen flow diagrams

Requirements

§ BS in Human-Computer Interaction, Cognitive Science or related field

§ UI design and UCD experience with web-based applications

§ Expertise with XHTML, CSS, JavaScript is mandatory

§ Familiar with WAI-ARIA Accessibility Practices and Liquid Layout Design is a must

§ Familiarity with Java Server Faces technology is preferred

§ Proficiency with Dreamweaver, Photoshop, Visio is essential

§ Proven communication skills and ability to excel in a global team-oriented environment

§ Self-motivation and attention to detail

§ The Experience range would be around 1 - 5 Years.

If you are interested in pursuing this opportunity please send across your updated resume to darshanagoswami@fico.com.

Our office address is:

Fair Isaac India, Titanium Building, 3rd Floor, 135 Airport Road, Kodihalli, Bangalore

Landmark: Opp. to Hotel Leela Palace, Next to Intel Building
For more details, visit our website: <http://www.FICO.com>
Business Phone – 080 – 41371747

17.

Maya organic in Bangalore is looking for toy designers for freelance projects. pl get in touch with Ms Hyma, on hyma@mayaorganic.com

18.

Village craft , a design store in surat for craft based products, looking for designer product for their store. Please get in touch with "sweta bansal" on this email id <villagecraft01@yahoo.com >

19.

Fair Isaac Corporation (NYSE:FIC) combines trusted advice, world-class analytics and innovative applications to help businesses make smarter decisions. Fair Isaac s solutions and technologies for Enterprise Decision Management turn strategy into action and elevate business performance by giving organizations the power to automate more decisions, improve the quality of their decisions, and connect decisions across their business. Clients in 80 countries work with Fair Isaac to increase customer loyalty and profitability, cut fraud losses, manage credit risk, meet regulatory and competitive demands, and rapidly build market share.

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Our office address is:

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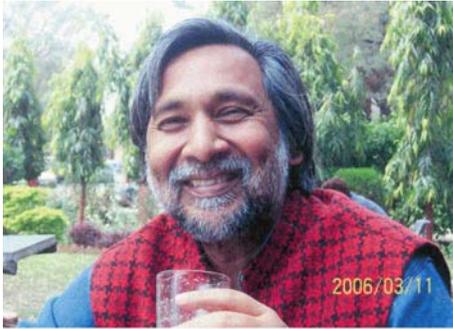
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For more details, visit our website: <http://www.FICO.com>

Business Phone – 080 - 41371747

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for the advancement of the society and their own as well.

An education system where gurus are owners and enjoy
the autonomy to build tomorrow's India

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visionaries

Write in confidence or meet

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RCA London

IDD Centre
IIT Delhi, New Delhi 110016
Phone: 09891941433 E. Mail: lalitdas@gmail.com

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3



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