

# Design for All

Institute of India

## UNIVERSAL DESIGN for Learning



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## Guest Editorial

*Dr. Lee Christopher, Director of eLearning*

**Universal Design for Learning is design that strives to reach the largest number of students including students with disabilities (visible and invisible), students with varying ethnic backgrounds, students coming back to school to upgrade their skills, students who are in high school, but want to go to college at the same time to earn collect credit, students who are first in their families to go to college—in other words, all students. The principles of Universal Design for Learning (UDL) include multiple means of representation, multiple means of expression, and multiple means of engagement. Reaching all students has never been easier because of the tsunami-like advancement of technology, creative instructional designers, and innovative instructors.**

**In elementary education in the United States, Universal Design for Learning has seen some success. For example, in Kentucky, Louisiana, Ohio, Maryland and New York, schools are providing training and support to their school personnel to apply UDL principles to curriculum development, technology implementation, and instruction. In one elementary school, an instructor put students into groups and told them that they were to become experts on Mesopotamia. A deadline was given for this assignment. The outcome of the assignment was that the students produced a newspaper with articles, a puppet show, and a play that some students performed it for the class. Other students created posters and two students wrote a research paper on Mesopotamia. Grounding the assignment in Universal Design, all students were able to learn. Seeing success in elementary schools has paved the**

way for instructional designers and instructors to incorporate the principles of Universal Design for Learning in some courses. For example, Boston College created an institution wide task force to promote UDL on campus, in the Harvard Graduate School of Education a course on UDL was offered, and the University of Washington expanded UDL principles to instruction through their Project Do-IT Model. Their Do-IT website includes resources for faculty, staff, and students. In addition, in California, the EnACT project established UDL-Universe (UDL-U) which is a resource for all faculty in California as well as all faculty throughout the United States.

On a personal note, shortly after Dr. Bhatia invited me to be the Guest Editor of this issue, I attended my daughter Miriam's annual Individual Plan meeting. At the meeting were the head of Miriam's Group home, a psychologist, a physical therapist, an occupational therapist, a speech therapist, one of the staff from the Group home, a nurse, a nutritionist and one of the staff where she goes to work for *Meals on Wheels*.

Everyone focused on Miriam and what she needed and how they could help her learn and grow as a productive member of our society. I was struck by the fact that Universal Design for Learning was being implemented though there was no formal mention of UDL.

Universal Design for Learning is not static in design. It changes and grows as each student provides us with a new way to think about how to learn. The following are examples taken from student responses to the question "How do you like to learn best?"

**Student A:**

**I am a very visual learner, I have to write everything down, print everything so I can physically see it. I have to make outlines and lists so that I remember everything. It also really helps for me to have Power Points or bullet pointed things so I can organize it.**

### **Student B:**

**I am a very hands on learner. I love to be on my feet and interactive so I am a little concerned with how that will work with an online course. However, I still learn well through other methods. I am good at annotating materials and obtaining what I need to know by reading or listening to passionate lectures. I believe, out of these methods, my favorite way to learn is lecture. I have always loved the passion involved with speaking and enjoy when someone can share their knowledge in a way that gets me excited. When someone can do this properly it spreads the passion they have and will spark my interest further.**

### **Student C**

**The way that I learn best is just in a quiet environment. It can be a classroom with a group or it can be by myself on a computer. How I learn is very easy because it just needs to be a quiet place where I can focus in and get stuff done. When there's stuff going on around me I can sometimes get distracted and it makes it harder for me to gather the information that's put in front of me.**

**Technology broadens and extends the opportunities to learn in this knowledge intensive world. Many thanks go to Mace, who implemented the idea of Universal Design. He paved the highway for educators to look at how students learn in another way. Once all instructors, designers (including industrial, graphical, instructional designers—all designers) assistive technologists, accessibility**

specialists, researchers, and administrators restructured their thinking to Mace's ideas, countless doors in all fields began to open for all students.

In the Year of the Student, this issue of *Design for All*, creative and innovative writers from Arapahoe Community College and the surrounding Denver metropolitan area present for you examples of how Universal Design for Learning is being implemented to reach all students.

Dr. Brian Grewe, an Accessibility Specialist and Assistant Professor of Communication, writes about the Merging of Universal Design and Game Theory.

Cherri LaMarr, an extraordinary Instructional Designer and Quality Matters Reviewer writes about the role of Universal Design for Learning in creative, innovative and modern curriculum development.

Enrique Castro, an Assistive Technology Specialist writes about the future of student support through the advances in technology.

Valorie Sundby, an ICT Accessibility Compliance Specialist, writes about how Universal Design for Learning can prevent and dispel myths surrounding anxiety.

Universal Design is being implemented more and more throughout the world and Dr. Bhatia with *Design for All* is helping to make this happen.



***Dr. Lee Christopher is the Director of eLearning at Arapahoe Community College and also an ACC instructor.***



## **ValorieSundby**

***ValorieSundby, ICT Accessibility Compliance Specialist, is an evangelist for the inclusion of all people in the development of educational content and public websites. She has more than six years of experience as a Web Accessibility Compliance Specialist with professional certifications in Accessibility Core Competencies (CPACC) from IAAP and a Professional Certificate in Web Accessibility Compliance from the University of South Australia. Valorie has worked with the International Association of Accessibility Professionals on the Certification Committee. She worked to build a lexicon for both the CPACC and WAS certification terminology geared for international translation. Valorie's career has includes working in education and industry to develop training materials for accessibility and assists with defining policy and procedures to integrate sustainable accessibility within organizations.***

## Living Afraid:

### Impacts of Anxiety and How UDL can Prevent and Dispel Anxiety

**Valorie Sundby, CPACC, PCWA**

*The day dawns bright with a clear sky and a warm temperature. Getting out of bed is easy. The night's sleep was restful and long enough. Waking up in a good mood is the best way to begin any day. The dog pulls himself out from under the bed, his favorite place to sleep. He stretches, stumbles a bit and then limps over to say good morning. The limp is new. The endless stream of questions begins like water cascading over a cliff: What happened to him? How bad is it? Was it something I did? Did I not hear him in the night? Should I make an appointment with the vet? How can I fit a vet visit in to the day's schedule? Should I call in and take a vacation day? How much will this cost? What if it's cancer? What if he needs to be put down?*

The questions spiral down to ever-increasing depths of unfounded possibilities and settles into a full rolling boil of panic. Blood pressure rises. Heart rate soars. All this physical and mental reaction occurs before the dog even makes his way over for morning scratches. This is how the day may start for a person living with an anxiety disorder.

## Anxiety Explained

The reaction in the introduction is called a panic attack – "an intense fear response to aroused sympathetic activity is manifested

**in the absence of actual danger."(Jieun E Kim, 2012). Panic attacks can happen to anyone and are estimated to occur in about 28.3% of the people at least once during their lifetime. (Jieun E Kim, 2012)**

**What happens to the body and brain in the introductory example is called an Amygdala Hijack.(Goleman, 1995) When a threat is perceived, the amygdala triggers a flood of stress hormones that are released into the body, the physical source of the elevated heart rate and blood pressure.**

**Most people learn to recognize and evaluate perceived threats and respond in more controlled methods. In the case of the dog, before reacting, one person may watch the dog's movements for a while to see if they persist; another person may bend down to examine the dog's leg closely for injury; another may dismiss the limp temporarily and file it away as something to consider at the end of the day (wait and see).**

**People with anxiety disorders, specifically Panic Disorder, may not have the ability to react in a controlled manner. "Unlike the general belief that 'cognition rules over emotion,' there is evidence that emotion modulates cognition from perception and attention to higher domains of judgment and reasoning." (Jieun E Kim, 2012)**

**The frontal cortex in humans performs a function to sooth unwarranted fears. As children grow, they learn skills to calm anxiety. Studies of brain activity show that people who use self-talk in upsetting situations have an increased activity in the prefrontal cortex with decreased activity in the amygdala. The amygdala response does not go away completely. Even with well-practiced skills, when the cortex is otherwise occupied with other stress when**

**a perceived threat arises, the Amygdala Hijack can come back at full-force.(Cain, 2013)**

**For people living with an anxiety disorder, the incidence of panic attacks may be frequent. The person may stay in a hyper-alert state anticipating the next attack. The panic attacks and hyper vigilance both manifest in physical and mental reactions. The elevated heart rate and blood pressure may be accompanied by lowered cognitive ability, slower processing times, and slower reactions. Reading is slower. Understanding is slower. Deciding is slower. Reacting is slower. To compensate for the internal slowness, the person may speed up their physical movements. They may become clumsy, exhibit tics, or make repetitive motions.**

### **Anxiety Disorders Defined**

**Anxiety disorders include Generalized Anxiety Disorder (GAD), Post Traumatic Stress Disorder (PTSD), Obsessive Compulsive Disorder (OCD) and Panic Disorder (PD), among others. Anxiety disorders may be mild to severe. Milder cases may not disrupt daily life but may require structure, such as the rituals of those with Obsessive Compulsive Disorder needing to have a perfectly tidy bath and bed room before leaving the house, for instance. Severe cases can cause the person to withdraw from daily social activities, impair work, and create major distress.**

**GAD (Generalized Anxiety Disorder) may be diagnosed when a person is unable to evaluate perceived threats properly and stay on high alert excessively." Although the exact cause of GAD is unknown, there is evidence that biological factors, family background, and life experiences, particularly stressful ones, play a role." (Anxiety and Depression Association of America, n.d.)**

**OCD (Obsessive Compulsive Disorder) is an anxiety disorder where the person, over time, develops recurring and unwanted thoughts, ideas or sensations that cause them to do something repetitively (compulsions). These compulsions become persistent and rigid to the point that they disrupt daily life and cause great distress. (American Psychiatric Association, n.d.)**

**PTSD (Post Traumatic Stress Disorder) is an anxiety disorder caused by experiencing or witnessing a traumatic event. People with PTSD may relive the traumatic event through flashbacks or nightmares. The impact includes irritability, feelings of guilt (survivor's guilt included), lowered ability to concentrate, and social isolation. Sufferers of PTSD may also develop insomnia. (NHS Choices, n.d.)**

**Panic Disorder(PD), though also not fully understood, is emerging to be associated with dysfunction of the hypothalamic-pituitary-adrenal axis. The amygdala, it has been suggested, may play a critical role. Panic Disorder is often accompanied by anticipatory anxiety, fear of losing control or sanity and other behaviors associated with fear. (Jieun E Kim, 2012)**

## **Spectrum of Impact**

**It is easy to conceptualize sight and hearing impairment being on a spectrum from minimal impairment (hearing loss, tinnitus, presbyopia) to full impairment (deaf, blind). When it comes to anxiety and the resulting cognitive impairment, the spectrum is harder to understand. The strides in Autism Spectrum Disorder (ASD) research and publicity have helped in recent years to build public awareness of the oft-times hidden disability and the breadth of its spectrum of impact. Anxiety disorder spectrum may be like**

**that of ASD, in that the disorder is often a hidden one and the spectrum of impact is variable based on a combination of environment and personal perception.**

**With sight and hearing impairments, the impact is stable. With anxiety, the impact to cognition can change very rapidly. Someone with a sight impairment, for the most part, puts on their glasses each morning and is confident that they can see all day until they take their glasses off to go to bed at night. The individual goes to bed confident that the same pair of glasses will work tomorrow. An annual checkup may be all that is needed to accommodate change.**

**We often overlook the fact that a person who wears glasses is not considered to have an impairment because the accommodation is stable and consistent, and the impact to daily function is low. The same can be said for some people who have an anxiety disorder. Some people are able to hide their disorder by the simple fact that they are high functioning. The disorder may have only vague impacts such as irritability or forgetfulness that is easily explained by an "off day." When an Amygdala Hijack occurs, it not only catches the individual who is impacted off guard, but also people around them who may know nothing of the anxiety.**

**One parent of a child with an anxiety disorder was heard saying, "She does so good that people forget. I forget. When she has an event, it becomes a crisis." This is a very different challenge than a person with a vision impairment losing the screw to the earpiece of their glasses. It is easy to fit an earpiece on glasses with a paperclip for a few days until it is replaced. Workarounds for cognitive lapses are not so easy or obvious. The individual is often left to cope by**

**themselves, and within themselves, as they try to hide the distress. The impact may also have long-lasting effects.**

**There is little shame in losing a screw to the earpiece on glasses. It may even become a fun event where everybody searches for the screw and the finder becomes the hero. However, the person who suffers a panic attack can suffer extreme shame. Reentry to a classroom or work group can also bring on additional anxiety. Workers who once thought of the person as smart and inventive may suddenly see the person as unstable and unreliable. People may act cautiously around the person and withhold humor, assignments or forthrightness, the very things that may help the individual cope.**

### **Universal Design for Learning as a Method to Prevent and Dispel Anxiety**

**When the Universal Design for Learning (UDL) Guidelines are used to design content, there are several benefits for learners with anxiety disorders. First, UDL is about providing opportunities for all learners. Second, UDL benefits professors, instructors and teachers in reaching all students through diverse content. Third, UDL benefits students with anxiety disorders by providing multiple means of representation, assessment and engagement.**

**Providing options allows the learner with anxiety to select the method that is best in situations they do not have controls over. When anxiety is high regardless of the situation, having options may allow them to continue learning and can be instrumental in decreasing or dispelling the anxiety.**

**The following guidelines are modeled from UDLCenter.org and are meant to provide structure in linking UDL with management strategies for anxiety disorders.**

## **Guideline 1: Provide options for perception (UDL: Perception, n.d.)**

- ***Checkpoint 1.1 Offer ways of customizing the display of information***

***Being able to personalize the perceptual features can prevent the anxiety trigger of losing study time. Modifying the background color of learning materials to individualized colors can reduce eye strain and allow the learner to study for longer periods of time. When a learner must take time away from study for eye strain, this can trigger anxiety as the learner thinks about the study time that is being lost.***

- ***Checkpoint 1.2: Offer alternatives for auditory information***

***Text equivalents are used by many learners and is not limited to those with low vision and blindness. For learners with anxiety, have text alternatives provides a way to learn and review the content when they are in environments where audio would be difficult to hear and where audio is not an option such as when siblings are sleeping in a shared room.***

***For all learners, having technology fail can bring on anxiety. For those with anxiety disorders, technology failure can be derailing. Knowing that an alternative is available when the ear bud wires are cut from the family pet biting them or if the wires get accidentally closed in the car door, can mean that the learner with anxiety stays the course and continues with their learning.***

- ***Checkpoint 1.3: Offer alternatives for visual information***

**When opportunity for additional time to study is given to a learner with anxiety, it can dispel the anxiety of not having enough time. For the learner with anxiety, having alternatives for visual information, especially text-to-speech, provides opportunities to study by listening to lessons in places where reading would not be easy. Listening to lessons from a lightweight audio player on a bumpy bus or train ride home is easier than carrying a large book and trying to focus on the content that moves with every bump.**

**The benefits of UDL also extend to the teacher of the student with an anxiety disorder or any student who may find themselves with an Amygdala Hijack. Having choices to present to students during times of high anxiety, can help the student focus on what they can handle now. Starting the student with an audio lesson with eyes closed, may help them focus when visual stimulation is disturbing them. Having a student read a lesson, when anxiety is heightened because a video is being presented at too fast a pace for them to digest, can help them continue without an anxiety attack.**

**Teachers can work with students during times when anxiety is low to develop strategies for times of high anxiety. Preparing ahead of time can help both the teacher and student to employ the strategy so that it does not bring undo focus on the student. Curriculum designed with UDL makes development of strategies much easier than curriculum designed without the choices inherent in UDL.**

## **Conclusion**

**Anxiety is often the companion of other disabilities and can take a backseat, not getting diagnosed and treated. Or, it may be treated as symptomatic relief and not diagnosed on its own**

**standing. This article does not address the process of diagnosis, treatments, and therapy. Those topics are highly individual and should be addressed with health professionals.**

**Anxiety disorders have long been ignored in many modern cultures or have been fraught with shame and humiliation as a sign of immaturity or a conscious choice. The shame and humiliation of being identified with the disorder and accepting treatment is not trivial. Anxiety is not something to "get over."It is something to accept, work with and share so that others experiencing the same, or similar, disorder will hopefully experience a smoother path to success.**

**UDL provides relief to both students and teachers through the element of choice. Having options is good for planning strategies, helping the student focus during difficult times and helps the student discover what works best for them. Students with an anxiety disorder who have the benefit of a learning career developed under UDL, may be able to succeed throughout their years in school. When the person gets into the workforce, they will have the benefit of knowing what works best for them and can work with colleagues and managers to develop strategies for a successful career. The benefits can also carry into their adult home life with strategies to building strong partnerships and raising their own children.**

**Anxiety is something most human beings experience at one time or another. It should not be difficult for people to understand how having an anxiety disorder is difficult at best. Our cultures and societies, however, have not provided an easy way for this understanding to occur. We are getting better – that is the good news. As cultures continue to adopt and strengthen the use of**

**frameworks such as UDL, the world will become an easier place for people who are different to succeed at the same levels and opportunities as those who are considered normal.**

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**ValorieSundby**

**ValorieSundby, ICT Accessibility Compliance Specialist**



***Brian Grewe, PhD, Accessibility Specialist and Assistant Professor of Communication***

***Brian is an experienced teacher with more than ten years of teaching in higher education. Brian has taught more than 180 courses in three different disciplines. Brian earned a PhD from the University of Denver in their Communication Studies Department. His expertise is in Cultural Disability Identity Construction, Research Methodologies and Accessibility. He carries a Masters of Communication with an emphasis in Critical Disability Pedagogy. Brian is also the current chair of the Disability Issues Caucus of the National Communication Association, a member of the Legacy Scholarship Committee and serves as a member of the Site Selection Committee where he audits potential convention locations for inclusivity and accessibility.***

# Merging Universal Design and Game Theory

## A Case Study

*Brian Grewe*

North Saint Paul, Minnesota, December 24<sup>th</sup>, 1988 – in a small stucco covered home, a family of four sat on the floor around a small artificial tree decorated in brightly colored plastic bulbs, silver tinsel and a myriad of handmade Christmas ornaments. The multicolored lights from the tree painted the room in a rainbow of colors, and the large bay window overlooking the highway looked like the sea reflecting a cityscape at night. The tree itself did a poor job sheltering the piles of presents wrapped in green and red from the excited hands of a small six-year-old boy. A sharp word from the father put the boy in his place, and he eagerly waited for his mother to pass him a present to open. First, his father opened a button down flannel shirt gifted ‘from the boys,’ The next gift opened by the mother contained a picture frame of the family, also gifted ‘from the boys.’ A small 16-year-old boy opened the following gift, and found that it contained a large pack of socks. His smile hid his disappointment, but there were more presents, and his hopes remained high. Finally, it was my turn. I quickly tore open the package to find a box containing a large Voltron toy constructed by five plastic lions. I jumped up in excitement, I loved the toy and I could tell that my excitement made my parents happy.

The “turn-taking” quickly changed from each person to alternating between my older brother and me. As I continued to open presents, I found that I also received socks, a new pair of pajamas and other miscellaneous articles of clothing. As we neared

**the end of the gift session, my brother was handed a gift that would forever change MY life. The present was one of the largest under the tree and definitely the biggest one left. I watched as my brother accepted the present from my mom and his hands shook with excitement. His mind raced as he tried to think through what it might be. As his hands started to tear away the paper, he jumped up. It was the new Nintendo Entertainment System, an 8-bit home 'arcade' that could play dozens of game cartridges. He clearly knew more about it than I, but his excitement spread to all of us as he gave our parents a giant hug.**

**From that day, and every day following for the next four years, the Nintendo was the most used item in the home. It served as a distraction, a reward and a bonding tool for my older brother and me. Over the course of this time, every Christmas and birthday contained game cartridges for the Nintendo and my love and commitment to gaming was formed. As I aged, the Nintendo was eventually replaced with a Super Nintendo, a Nintendo 64 and a Sony PlayStation. My love for video games spread to board games, collectible card games and roleplaying, and today, almost 30 years later, I share my passion for gaming with my own children.**

**The presence and importance of gaming permeates every aspect of my life. Professionally, I hold a number of positions within higher education. I work as an assistant professor of communication, affiliate faculty member and accessibility specialist. In all of these positions, I have found new and interesting ways to incorporate gaming into these positions. For this essay, I am going to explore how I use gaming inside my classroom as a mechanism of improving student learning and student success**

## Theoretical Foundation for Gamification

Each year, institutions of higher education are looking towards strategies in improving student success. Institutions have looked at implementing motivational approaches with the student body (Komarchuk, 2000, Copeland, 2010), structuring parental involvement alongside college student experiences (Eisenbeiser and Cosbey, 2012), targeted specific characteristics that lead to success such as: persistence (Bostic, 2013), managing stress (Kim, 2015), improving memory (Willis, 2007), And improving productivity (Jenkins and Rodriguez, 2013). Further research has suggested strategies incorporating a multi-tiered response, addressing barriers related to cost (West Virginia, 2013), and improving student support services (MLPS Center for Research, 2008). Specific institutions have also employed game theory to improve their instructional design (Varonis and Varonis, 2015), improve student motivation and cognitive success (Kim and Hanneman, 2014), and student leadership (Stull, 2004).

In recent years, two approaches have been gaining significant popularity, Universal Design for Learning (UDL) and Game Theory (GT). Universal Design for Learning stems from an approach originally designed by architect and designer, Ron Mace, who desired to design space for all persons, without having to adapt the environment to provide access. Game Theory has roots running back to the early 1700s, but has been extensively studied and used since the mid-1970s. In recent years, Game Theory has gained popularity as it has moved away from a zero-sum outcome to encourage and explore cooperative interactions to promote win-win or positive outcomes.

**These two approaches have gained significant ground in education. During the 1990s, Universal Design (UD) spawned UDL by taking the principles of access and applying it to education. This shift occurred after the passing of the Americans with Disabilities Act (ADA), people began to look at physical spaces and the barriers that exist which prevent access to various groups of people. Universal Design for Learning promotes three principles. (1) Curriculum should embrace multiple means of representation to provide learners with multiple or various ways of acquiring knowledge. (2) Curriculum assessment should be designed to allow students multiple means of expression in how they display what they have learned. (3) Classroom pedagogical choices should seek to engage students in multiple ways to create interest, motivate student learning and be appropriately challenging. These principles promote an inclusive and dynamic learning environment for students. Game Theory in education has focused on how to encourage students to use critical thinking, strategy, cooperation and logic to solve problems, learn skills and master competencies (Corridoni, Kocher and Reggiani, 2014). Further work has studied the impacts of non-cooperation/productivity (Beltadze, 2016) and the impact of rewards and incentives on learning (Richter, Raban and Rafaeli, 2015).**

**UDL as a pedagogical strategy increases student access to curricula materials, provides alternative methods for students to demonstrate learning and is dynamic and different enough for all students to stay engaged. Game Theory as a pedagogical strategy increases student critical thinking skills, productivity and ability to craft, deliver and understand messages. As an educator, I was introduced to both Universal Design and Game Theory during**

graduate school. As a student, I was intrigued by UDL and as a gamer, I understood and related to Game Theory. It was not until recently, that I decided to try and put them together.

## **Gamification and Universal Design**

I chose to use Universal Design for Learning because I believe in the power of education and the ethics of reaching every student. I intertwined UDL with Game Theory because I wanted to try something new, exciting and engaging for my students. The remainder of this essay will use the syllabus from an upper-division, writing intensive course that I have teach at a small, private Rocky Mountain institution. I will identify how it utilizes both UDL and game theory and then use student feedback from course evaluations, mid-semester feedback and other data collected.

To start, we can begin with the syllabus. The course syllabus for the “gamified,” writing course looks very similar to a traditional syllabus. It lays out learning objectives, course materials, instructor expectations, course rules, and institutional policies. The syllabus begins to differ as it explains the “game” rules, character classes, quest (assignment) availability and distribution and character levels (grade outcomes) as determined by experience points. Seven of the eleven pages of the course syllabus is dedicated to explaining the game.

### **Class Policies**

Gamifying the course has created some interesting policies that allow students freedom, while increasing their agency and investment. First, students do not have weekly or assignment based due-dates. This means that they are able to turn quests in as they

complete them, and not by any arbitrarily constructed dates. The only actual due date is the final day of class. This promotes the third principle of UDL by keeping students engaged through their own volition. Second, the grades themselves are organized by “levels” and are based on a 1,000 point grading scale. Level five through ten are associated to letter grades F through A respectively. No single quest is measured to be any more or less important than others, and students have to apply game theory to decide how and what they want to complete. Third, attendance is encouraged, but no punitive structure is formally in place for students who miss class. What they do miss are classroom daily quests that serve to assess learning and is not available to those who do not attend. Paired with attendance is participation, which is measured in classroom dialogue, group participation and in-class quests. Students are encouraged to participate by myself and other classmates. The daily town hall meetings improve familiarity and by the fourth or fifth week, most students are comfortable engaging with their classmates during discussion times.

### **Names, Character Classes and Alignment**

At the beginning of the course, students are presented with an assignment to choose a new name and a character class that they identify with. Names become important when announcing successes of various players to the class. By using a character’s preferred name, we can protect anonymity.

Each character class is designed from the course materials and the principles present within the field of Communication. Each description contains an overall explanation of who the person sees themselves as by providing strengths, weaknesses, viewpoints and

**potential career goals. Students are instructed to review all of the different classes available and choose one to identify with. Students are then asked to write a short essay on why they are the class they chose. Initially, there were seven character classes with three alignments.**

**The alignments move to connect students with research methodologies. The course offered empirical (Quantitative), experiential (Qualitative) and Critical alignments. Each alignment asks students to identify with what types of questions and information they identify most with. Students then defend their choices for class and alignment. This strategy of using self-chosen character classes and class alignments promote the third principle of UDL by providing students agency in the learning process. Further, students strategize their character class choices with their alignment to manage potential workloads for the quarter.**

### **Quests (Assignments)**

**Assignments are labeled as quests, and each carry a different level of investment for the students. The levels include daily, weekly, master, expert and legendary quests. The description of each type of quest appears below:**

#### **Daily Quests**

**Daily quests are created to be short, 10-15 minutes of activity and are worth between 15 and 25 points. The quest themselves are randomly spread out through the course, and are always tied to current events, whether they be political, social or popular culturally based. They ask students to synthesize, describe, discern, analyze or engage with the topic in a variety of ways.**

## **Weekly Quests**

**Weekly quests are designed to cover course concepts and ideas. Each week students are given a quest sheet. The document is separated into a 9-box grid. The document also contains a core reading that all students are required to look at. These core readings are generally 7-10 pages and are designed to give students information efficiently. In addition to their core reading, students are expected to complete additional information gathering in the form of video, popular culture or academic article. Videos are rated as beginner and require students to watch three, approximately 20-minute videos that relate to the week's topic. Popular Culture articles pulled from a variety of sources and biases are also offered and while three are available for students to choose from, they are only required to complete two. Finally, the students are offered three different academic articles to read but are only required to read one.**

**The different types of material are organized by difficulty and are rated as beginner, intermediate and advanced. To complete a weekly quest, students need to complete the core reading PLUS all three beginner videos OR two of the intermediate popular culture videos OR one advanced academic article. Once they have engaged with the materials, they are asked to complete one of three quests. One quest is always set to reinforce Friere's (1968) banking model of education. This is provided to allow students who may be uncomfortable with the other options to have an assignment type that is familiar to their way of learning. The other two quests available to students through the weekly quest ask students to demonstrate what they have learned through more creative means.**

**This might entail creating a spoken monologue, poem, or song. They might be asked to create a skit, video log or podcast. Additionally, they might be asked to tell a story through photographs, painted/drawn picture or sculpture. In all of the quest types, a writing component exists, but the assessment might be different. This strategy for the weekly quest materials reinforces the first principle of UDL by providing students multiple options for what types of materials they want to learn from, while completing the quests allow students to use their own strengths and utilize the second principle of UDL by measuring their learning through different means. All weekly assignments are worth the same number of points, and so students can also strategize on what method may be the most fun, while managing their time and how they want to learn. Each quest is designed to take students four hours to complete and are worth 75 points.**

## **Master Quests**

**Master quests are designed to more thoroughly engage students by asking them to conduct research. This research utilizes course concepts, theories or ideas and applies them through praxis. Writing components of this questline vary, but require students to write between five and fifteen pages. Similar to the weekly quests, students are asked to write or create something to demonstrate learning. In creative endeavors, assessment is split between a shorter writing component and their articulation through art. Master quests utilize all three principles of UDL. Representation by providing students multiple types of information, assessment through allowing them to complete the quests best fit to their comfort level and engagement by encouraging students to choose**

what is meaningful to them. Game theory also becomes clear as students have to negotiate and strategize what types of research they want to engage in, and think critically about how to best complete their tasks. Master quests appear in multiple tiers, and so risk and reward become a factor for students to negotiate.

## **Expert Quests**

Expert quests are designed similarly but require praxis more than theory. Students are asked to take a current event and deconstruct the communicative elements to illustrate how theory emerges from every-day life. Multiple options and multiple difficulty tiers provide students a myriad of choices that fit both comfort and knowledge levels. This approach also utilizes all three principles of UDL. Representation by providing students multiple types of information to select, assessment through allowing them to complete the quests best fit to their comfort level and engagement by encouraging students to choose what is meaningful to them. Game theory in this quest line is evident in how students complete their quest. Similar to master, students are provided tiers to choose from that are based on difficulty and task type. Students are asked to plan and prepare what they want to do in advance, and intrinsically managing the relationship between reward and assessment.

## **Legendary Quests**

Legendary quests differ from the other types of quests. Similar to World of Warcraft or Dungeons and Dragons, Legendary quests cannot be done alone. These quests ask students to engage the community as a group and create a positive change using the course

**materials, theories and ideas as their basis. These quests are worth the most points, but also require 6-8 students to participate. Quests range from creating awareness or improving the community. Of all the quest types, students have unilaterally appreciated this one the most. Students report that they have the highest satisfaction as they can see the results, but also because they are able to use ideas learned and turn it into direct application. This approach also utilizes all three principles of UDL, but also forces students to engage in high amounts of Game Theory.**

## **Classroom Structure**

**The basic structure of a gamified course looks very similar to a traditional course. Daily activities within the classroom include lecture, discussion and classroom activities. The only real difference is the daily town hall meeting. Town hall is a short amount of time that starts each class. In a two-hour seminar course, town hall takes up the first 10-15 minutes of class, where students are asked to put their technology away and visit with each other. This strategy utilizes the third principle of UDL and serves to create strong interpersonal relationships within the classroom. During this time, students can discuss, plan or unpack their experiences. The first town hall of every week generally lasts longer as students are also asked to share what they have done for themselves over the week. I encourage self-care for all my students, and this activity has served as a method to keep them actively engaged both with each other and the course itself.**

**Students are encouraged to be an active participant within the classroom by promoting their own agency. Research supports that students who feel invested and empowered are more successful**

overall (Copeland, 2009). To create this effect, two major strategies are at play. The first is everything that you have read so far in this essay. By allowing choice, a student feels empowered to shape how they learn. The second is ensuring activities that promote positive mental health. Each week, students are asked to do something for themselves. To promote accountability, we use about ten minutes to report individually to the class on what they did. Activities can be small or grand but require the students to do something that makes them happy. Being in a mountainous state, many students report skiing, hiking or climbing as activities that they do for themselves. Others report spending time with friends, watching movies or sleeping-in as their activity. Regardless of depth, students report that this single event is something that has made a positive change to their learning as a whole and have helped them in the class be more successful.

### **Student Responses to the Gamification**

The final quest assigned to students is one where they are asked to reflect on what they found valuable or what they would take away from the course. Three major themes emerged from their experiences in the class. The first, course connectedness was common as students talked about how close they felt to the other students. The second is how important choice was to their own success and the third and final theme centered around self-care. Below are some of the responses pulled directly from the final quest.

The following statements are not exhaustive and only offer a brief peek into the experiences of the students.

## **Course Connectedness**

**One student shared, "I have never taken a course where I know everyone in the class and something about each person, and that, ultimately made this class more rewarding and enjoyable in the end." Another echoed their enjoyment, "The town hall meetings are great because it gives us a chance to hear how they are doing in life, and how they have interactions with other people." Another commented, "This was one of the most interesting and unique courses that I have taken. I really believed that people cared about me and I found myself thinking about my classmates outside of the classroom."**

**Students even proposed smaller group quests where they could work together more. "I think you should have a quest where we could like, partner up or create a small group with classmates we barely know and you know, get to know each other and do something positive. I don't know what that looks like yet, but it'd be a good thought." Another stated, "I liked how you made us go out onto campus and do things. It'd be cool if you made us partner up with someone we don't know well and do that. It would bring us closer."**

**Additionally, students also found insight in the experiences of others. One student stated, "When I broke up with my boyfriend, I found it really interesting to be able to talk to people in class about the topics we were covering. I saw parallels to my own experiences in theirs, and I would never have learned that without town hall." Another echoed, "It was cool to hear through others stories, the concepts we were learning."**

## **Power of Choice**

**One student reported, “[value] being flexible to learn at one’s own pace and the value of having options of projects to work on. I thought the flexibility of this class made me realize that everyone is very different and having the flexibility to choose assignments as well as due dates was a good learning in itself. Reviewing the weekly modules and selecting the options made me spend more time reading about each option. It was also a good lesson in time management by not having due dates. I really liked having a choice in what I chose to work on each week, and I found I was more committed to the assignments because I had more choices and no time constraints.”**

**Another student stated, “I loved that I could choose to read or watch what I wanted to. I was hesitant on taking a course on relationships and was worried that it would be all mushy stuff. I was surprised by the toxic friendship video and I loved that I could piece together content and still follow what was going on.” One student echoed, “This course was cool. Choice let me do things that I felt comfortable with. I loved the weekly lay out and how sometimes I could just watch some stuff and other times I could read things that made sense.”**

**Some were worried at first, and then pleasantly surprised. “When I saw the first week, I panicked. I thought I had to do all of the levels [difficulty], but after you explained it, I really enjoyed it.” Another stated, “At first, I was skeptical. I wasn’t sure how this was real work. Watch 3 Ted Talks? Easy. But it wasn’t. It actually forced me to engage the material in meaningful ways and I am so glad I did.” Another student stated, “Once I understood what I had to do**

each week, I really liked having a choice. Other classes at [omitted] make you read a bunch of boring stuff, and I liked options when I wasn't interested in that weeks content."

## **Self-Care**

One student stated, "most importantly taking time for yourself. Being assigned to take time for yourself is a really important thing to be assigned because most of the time I forget this, especially deep in the school year when assignments get crazy and being a student athlete and practicing 20 plus hours a week. Obviously you need to put in a lot of time and effort in your schooling, but your experience has really stood out to me and made me remind myself I do need me time and I need to do this so I can sleep at night."

Another student commented, "When you tell us to do something for ourselves, I believe that you really mean it. It's easy to get lost in the work each week and for myself, I am graduating so the stress was already high. I enjoyed having to something for myself each week and I am going to try and keep it up. Thanks." Additionally, another student mentioned, "Self-care is real. I always forget to do this and I found that by taking time for myself, the whole quarter went better."

Some students were skeptical. "When you first told us to do something for ourselves, I sort of blew it off. When you asked us that Monday to share, I thought, this isn't going to last. As we finished week 10, I am so thankful for this. It's helped." Another was a bit more direct, "I really thought to myself that this self-care thing was just some hippy [omitted]. Turns out, it probably changed my life. Thanks for the good quarter."

## Reflection and Moving Forward

The experience of connecting Universal Design for Learning and Game Theory has posed some interesting and unexpected challenges. The initial form of this course was run in an introductory theory course with mostly first year students. The course itself took almost four times longer to set up than any other new preparation that I have done. A lot of time was spent finding additional resources to provide students with options per week. I did not take into account where my students were knowledge-wise and initially built a much more difficult course, which took additional time to adjust. Additionally, the creation of new assignments that would be balanced in time and effort with each other was extremely time consuming. Building fair assessments was also difficult as I do not have experience measuring aesthetics or composition. Another area of the course also consumed a significant amount of time— Grading. Unlike traditional courses, the lack of due dates caused for a very time consuming finals week. This was due to more than 2/3 of the students waiting until the final week to begin turning in assignments. This occurred even through bi-weekly updates and conversations. At one point, there was 240 minutes of video and almost 700 pages to read, evaluate and grade. Overall, the administrative end of setting up and managing a gamified course is going to take longer than a traditional preparation.

A second challenge of this type of course is getting everyone on the same page. The second and third weeks of the quarter were spent answering a lot of questions during town hall, via e-mail and through the learning management system. Further instructions and screen shots were added throughout the quarter to help address questions and explain how questing, experience and character levels

**work. The method is not as intuitive as it could be, and further modifications are needed. Personally, I also believe that this type of course is not for everyone. I definitely had an advantage to teaching a course in this manner, as I have been a gamer most of my life. I recognize that others' experiences with gaming might be limited and would caution people to start by incorporating aspects of this approach slowly.**

**Moving forward, I plan to make additional changes to the course. First, I would allow myself more time setting up the course. Realistically, there was more than 40 hours of research involved in just setting up quests. The next thing I plan to change is to expand the character classes and provide deeper descriptions. Many college students see themselves very different than they are. I found that students were identifying with whimsical and relaxed personal descriptions during character creation, and many struggled and began identifying differently throughout the course.**

**My final change that I plan to make is converting the syllabus, and weekly course documents to be more aesthetically aligned with a game. Although the terminology used within the course is based in gaming, the materials still look very academic. I want to work towards designing a syllabus that looks more like an 80s, Nintendo instruction booklet, and quest sheets that appear more like a scroll or antiqued parchment.**

**These changes will help improve the experience of the course and provide a more realistic gaming experience for all students involved. I will continue to improve the course in content, structure and materials as I believe in UDL and how we can connect it with Game Theory. I would love to explore more technology in the future**

**and will likely begin adapting the rules to fit hybrid and online course structures. I hope that through this essay, you were able to see why I tried this approach and how I set it up. I wish you all the best of luck in your teaching adventures and hope that you take, adapt or use any of the items you read today in your own courses and/or training.**

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***Brian Grewe, PhD, Accessibility Specialist and Assistant Professor of Communication***



## **Enrique Castro**

***Enrique Castro has been involved with disability services in High Education for ten years. His passion is teaching and his main hobby is learning how to use new technological devices and software. Enrique is the Chair of Assistive Technologists in Higher Education (ATHES). Each semester he provides training and support in assistive technology to more than 200 students per semester. Enrique Castro will receive his Associate of Arts degree this fall.***

# **The Future of Student Support through Technology**

## **Marrying Universal Design and Assistive Technology**

***Enrique Castro***

**My approach to assistive technology was born from an opportunity that I gained by landing a clerical assistant position in the disability services office of a local community college. During my time in this position, I noticed that students were struggling with learning how to use the assistive technology that was assigned by the office specialist. With caseloads being high, students were not receiving proper training in how to use the assistive technology that was recommended to them. This negatively impacted their learning, and by mid-semester, students reported that they were failing due to lack of training.**

**After watching this pattern, I self-taught myself how to use the various pieces of assistive technology so that I could help these students learn how to use these products. With a number of successful trainings under my belt, I began to teach these students how to use the various products. A short time later, I proposed to the director of the disability services office that I should be the person whose sole responsibility was training students to use this technology. Intrigued, she gave me one week to prove my worth and I turned that trial period into a career that I have carried for almost ten years.**

**Throughout my career, I have been rewarded by seeing students grow and succeed through their use of assistive technology. One memory that stands out comes from an older professional football player who was diagnosed with Chronic**

**Traumatic Encephalopathy (CTE), a concussive disorder which greatly impacted his ability to retain information. This also negatively impacted his ability to express himself through writing. This was especially important as his career aspirations involved being a professional writer. I worked directly with this man for almost two years and indirectly for more than six. I was able to teach him how to use various pieces of assistive technology that helped him find and identify words, utilize prebuilt writing templates, and technology that allowed him to dictate information into written form. By the end of our time together, he went from being able to write one to two sentences at a time to writing seven to ten page papers for classroom work.**

**In my current position, I am blessed to be at an institution that values Universal Design for Learning (UDL), Access through Accessibility prides itself in Student Success and Achievement. These three areas support a holistic approach to serving students and help us proactively anticipate future student needs. As an assistive technology specialist, I believe that the days of integrating support to accommodate one particular student are coming to an end. The new focus includes utilizing the necessary tools students may need as they navigate learning environments.**

**This change is widely due to students seeking classroom assistance and accommodations has nearly doubled from the previous academic year. The rise in numbers can be attributed to several factors. The first factor to take into consideration is that students with disabilities are becoming more aware of the services available to them through campus Disability and Accessibility offices. Accommodations usually range from extended time on**

**quizzes and tests, to the use of assistive technology in the classroom.**

**The second contributing factor to the rise in students seeking accommodations is directly correlated with disability self-disclosure and personal empowerment. As we learn more about how disabilities impact student learning, we are seeing a rise in the acceptance of the differences and challenges between students on campus. As we embrace diversity and the challenges that students face, we create a caring environment where a student feels safe. This leads them to freely talk about their experiences, obstacles, or barriers which in turn make it easier for campus staff to identify and assist that particular student.**

**The third contributing factor stems from the rise of disclosure and increased empowerment. Students are beginning to understand and become aware of their Civil Rights in an educational setting. This shift has helped students increase their agency within their own education. The role of civil rights in education has helped students not feel like a burden or develop negative attributes that tie to their identity. Students are starting to believe that they have a right to an education and one that reasonably mirrors the education of their able-bodied classmates.**

**A fourth contributing factor to this rise stems from civil actions against institutions of higher education. With an exponential increase of civil inquiries, colleges and universities have dedicated a large number of resources to promote inclusivity. The complaints range from inaccessible college websites, to inaccessible third-party platforms used for Math, Science, or other course specific curriculum**

where the students are expected to complete the majority of their course work online.

Students with learning differences have begun to push back when it comes to accessibility compliance that negatively impacts their learning experience. The Office of Civil Rights (OCR) is there to ensure institutional compliance of ADA Laws and will mediate for students who feel discriminated upon by not having equal access to school events, course content delivery platforms, and instructional material. In the last year, more than 500 cases were investigated, with many costing institutions of higher education hundreds of thousands of dollars.

As an assistive technology specialist, my role is to support students with disabilities in their educational journey. I believe that incorporating UDL with Assistive Technology helps provide students with a diverse set of tools for academic success. These tools promote inclusive learning spaces ranging from classrooms to support settings. Inclusive classrooms tend to have a higher level of engagement from all students and allows learners with more diverse needs to be both engaged in their coursework and connected socially with their classmates. This increases their chances of completing their courses successfully.

As technology grows, so do the needs of students. Currently, there are hundreds of options when it comes to assistive technology and we are able to closely match the needs of students with the appropriate technological accommodation. The major barrier that we face often comes from budgetary constraints for both students and their institutions. For some students, accommodations may cost thousands of dollars. Students with low-vision or blindness may

**require refreshable braille displays, or materials embossed in braille. These costs are not small and for many institutions fall under the category of unreasonable accommodation requests.**

**In other cases, costs are manageable but lack the physical resources to carry out the accommodation requests. One example comes from a common accommodation of having a note taker. For years, disability services offices have relied on peer note takers, but with the rise of online, hybrid and dynamic classrooms, providing this service has been challenging. Peer note takers would not always know what they should record or would copy information that felt relevant to them, but not necessarily the student receiving those notes.**

**These challenges have forced accessibility offices to investigate new technological solutions that support the student. For example, the Livescribe Smartpen has replaced peer note takers by its ability to record live lecture and recall specific moments of the lecture through the proprietary notebook that connects the moment a word is written to the specific moment of the lecture. This has decreased accessibility office labor costs over time, as the pen is usable by multiple students over multiple semesters.**

**In my initial story, I shared the success of a former football player and his struggles with writing. I was able to train this man to use two specific and common pieces of assistive technology. First, the man was trained on Kurzweil 3000, a software that helps people with reading comprehension, research, brainstorming and writing. Second, I trained the man to use Dragon Naturally Speaking, a speech dictation software that translates speech to text, but also gives the person the ability to control their computer by voice. These**

**two pieces of technology helped change the life of someone who never thought he would be able to go back to school. In this example, we can see how assistive technology embraced UDL by providing a level of engagement for a student who otherwise would have been left behind.**

**Policies on technology and accessibility have evolved alongside with services and best practices of accessibility processes. One example comes with the development and expectations of the VPAT 2.0 (Voluntary Product Accessibility Template) or a document that software and publishing companies use to disclose the accessibility of their products. Colleges and universities now require for these companies to disclose this information before contracts or agreements are made to use these products.**

**There are a few third party assistive technologies that are staples within the accessibility market, screen readers such as JAWS and NVDA are designed to read the content of a computer screen and allow users to navigate documents using headings or other landmarks. Snap and Read Universal and Kurzweil 3000 are products that help students read inaccessible text and identify optical character recognition errors. Speech dictation software such as Dragon Naturally Speaking allow users to dictate direction and information to a computer or word processor.**

**With rising costs of assistive technology and the steep learning curves associated, companies have begun to incorporate assistive technology into their software design. Microsoft is one company that has made large strides in seamlessly integrating assistive technology into all of their products. In recent months, Microsoft released updated and functional versions of Narrator, Windows**

**Speech Recognition, and Learning Tools through OneNote. These tools have been invaluable to people with low-vision and learning disabilities. These tools can be found through the Ease of Access Center in Windows 10. Versions of these features have been present in Windows operating systems for many years. However, the features either did not function properly, or performed poorly in comparison to third party software. Due to this, people were forced to purchase third party accessibility software to accommodate their needs.**

**By creating these options, Microsoft has embraced the first and second principle of UDL. First, any time options are available, people are given the opportunity to choose what works best for them. This is the essence of multiple means of representation and assessment. Let's take a look at the new and improved accessibility features in Windows 10:**

**Narrator:**

**A text-reader and partial screen reader that is also compatible with refreshable braille displays from several different manufacturers. This opens up the possibilities of students bringing their own devices to use with the classroom computers. This does not require students to load any unnecessary or proprietary software and provides access wherever there is a Windows 10 machine. This program can be used in lieu of ZoomText.**

**Magnifier and Contrast:**

**Similar to Zoom Text features, these options allow users to modify contrast, and change screen sizes.**

## **Speech Recognition:**

**This tool was developed to function like Dragon Naturally Speaking and allows users to dictate their voice to text and also control the features of their computer through voice commands.**

## **OneNote Learning Tools and Immersive Reader**

**This product serves as an immersive reader that provides highlighting, note taking, and other read and write capabilities. This product was designed to replace Kurzweil 3000.**

## **Microsoft Edge PDF and ePub Reader**

**This product was designed to allow the Microsoft Edge browser to read PDFs and ePub documents to the end user. This was also designed to function like Kurzweil 3000 and serves as an additional tool for people with print-based disabilities.**

**All of these accessibility features and options can be located in the Ease of Access Center and are integrated into Windows 10; all freely available to use by anyone logged in to the Windows 10 machine. This has become a huge asset to all people who use assistive technology. As we continue to develop technology, the relationship between UDL and Assistive Technology grows closer. This ultimately provides a better learning experience for everyone and continues our growth to a more inclusive learning culture.**



***Enrique Castro***



### ***Cherri LaMarr, MFA – Web Design and New Media***

***Cherri is an instructional designer, graphic designer, video editor and digital media enthusiast. She has worked in higher education for over two decades as multi-media instructor and college administrator. Cherri is passionate about creativity and technology integration.***

***As an Instructional designer, Cherri enjoys working with faculty to enhance online learning with new media technologies. She applies Quality Matters (QM) philosophies and Universal Design for Learning (UDL) principles to collaboratively design creative, accessible course materials. With an MFA in Web Design & New Media from the Academy Art University of San Francisco, she also likes to delight technology users with User Experience Design (UX) from her tool belt. Partnering with faculty, she finds the best instructional technologies to bring exceptional user experience to the student while maintaining accessibility standards.***

***Cherri also loves the fine arts and creates hand-built works of art using egg tempera, oils, pastel in addition to working in ceramics and jewelry. Cherri loves her time in the studio because of the unpredictability and surprises.***

# **The role of Universal Design for Learning in creative, innovative and modern curriculum development to reach all students**

***Cherri LaMarr, MFA – Web Design and New Media***

**As an instructional designer I'm always looking for the next "wow" factor, and I want to implement visual beauty along with stunning multi-media effects. I came to the instructional design world as a graphic designer and an instructor of graphic design. In the beginning, I looked at instructional design from a marketing and graphic design perspective. I continually asked the question, "What design will catch someone's eye. What is the hook that will peak a learner's attention." I also looked at the design through my eyes and the way that I learn, which is visual.**

**Early in my career as an instructional designer, I had no mentor. I was the lone thinker in the creative realm, and no one understood the process. As I progressed in my instructional design career, I found my path to Universal Design for Learning (UDL) and I was able to interact with a team of design thinkers. It was only then that I became grounded in designing inclusively for all learners. I had read and understood this concept of inclusivity but hadn't fully integrated this knowledge.**

## **So, what changed about my design?**

**My thought on instructional design had been the more bells and whistles for learners, the more pizzazz, the better. Looking back on my manifesto I see that I was targeting students who learned like me, those who liked to learn visually while being entertained along**

**the way. I was leaving out alternative ways to learn. My focus also had been based in graphic design principles. I gleaned information from Universal Design Principles and thought it pertained to the gestalt principles of graphic design. The gestalt addresses how the human brain interprets information visually. Gestalt principles emphasize that we see the whole before we see individual parts when observing an object. By designing with gestalt principles, you connect with your audience through coherent design. As I became more seasoned as an instructional designer and learned the principles of Universal Design for Learning, I realized how one-sided my vision had been. There *are* gestalt principles within UDL, but it is only a part of the bigger picture.**

**I continued my path to learn the best design principles for reaching all students. I explored information from the Center for Applied Special Technology (CAST) and Web Accessibility in Mind (WebAIM). I asked questions of our department's accessibility specialists and attended department trainings to get up to speed on the latest accessibility policies and UDL best practices.**

**It was a conversation with my mother that solidified my interest in the process of UDL. I was taking a ceramics class at a local college, and a visiting ceramic artist used one of my cylinders I had made to demo how to attach a handle. Handles are not something I am good at so I was more than happy to have my cylinder morph into a decent looking mug. After completing this project by firing, glazing, and firing again, I brought the mug home. My mother happened to visit the very next weekend, and I had to show her my masterpiece, and, of course, I insisted she drink a cup of coffee from this new creation. After chatting for a minute she**

remarked that she liked the way the mug fit her arthritic hand, the way the ceramic warmed her achy joints.

This sparked further conversation about the design of the mug and what designs of dinnerware may be beneficial for people with arthritis or mobility issues. My mother further remarked that it is hard to lift a plate up from the table because the edge of the plates she owns was too close to the table and it was hard to get her hand underneath the lip. I started thinking of ways to make the design of dinnerware universal. Maybe it was a matter of tweaking a few things so that "everyone" would be able to use the plates. What if the edge of the plate were taller and the bowl of the plate had a deeper edge so food could be scooped easily without having to chase food around the surface. Plates could also be made of porcelain to reduce the weight but still have durability.

It occurred to me that this is the way we should think when designing course materials. Instead of asking questions after something has been developed, we should develop strategies that meet the needs of all students. To accomplish this, we need to be thoughtful of all learning styles, diverse student needs, and representing information in multiple ways. By incorporating these strategies, I have established a strong foundation for my course design.

Another epiphany I had is when I took a Coursera course on "Learning How to Learn: Powerful mental tools to help you master tough subjects," taught by Dr. Barbara Oakley and Dr. Terrence Sejnowski from the University of California, San Diego. I discovered that teaching students how to learn would significantly increase retention of course materials. Breaking learning into repetitive

segments throughout the week pushes information into long-term memory. Students report having significant recall of information even months later and find this approach valuable. It is the principle of micro-learning which is delivering course content in small, yet specific bursts. This process aligns well with the UDL principle of multiple means of representation.

UDL is based on architecture and neurosciences. A premise of UDL is to create flexible course materials from the beginning. Retrofitting course material is difficult and time-consuming. This was a significant discovery for me. Ron Mace stated that "Universal design is the design of products and environments to be usable by all people, to the greatest extent possible, without the need for adaptations or specialized design." Universal Design for Learning expands this premise.

## **Types of Learning Methods**

Traditional methods of learning require a textbook, a desk, and a good memory. It is the teacher who is the focus of the classroom. My world, as a child, included flashcards, reading, writing, and memorization of facts and events. Sitting at a desk all day was not the way to keep brain cells active in small humans or any human for that matter. Rote memorization seldom creates critical thinking. My experiences mirror what Paulo Friere labels the Banking System of Education.

Our family moved every two to three years when I was a kid, and typically in the middle of a school year. Moving from one part of the country to the complete opposite end of the country was like moving to another planet. The educational rules changed for me for every school I attended. One part of the country taught math where

**my parents could help me with my homework, the next state we lived in decided that New Math was the new “wow” and nobody in my family understood it.**

**My education was constructed of brief moments in delight to mostly feeling lost in the wilderness. I’m surprised that I made it through college let alone earning a master’s degree. I think if I had been taught to think critically, instead of single-mindedly, I would have survived this educational chaos with a higher understanding of how to learn and would have been able to think my way through problems more efficiently. It’s not about what you know but how you access your knowledge. This taps into emotional intelligence which I believe, ties into Universal Design for Learning.**

**Through this educational experience, I see how Personalized Learning and Micro Learning would have benefitted my learning style. As a shy kid, I would have been placed in-group situations that would have taught me collaboration and forced me into social situations. Maybe I would have learned to speak up for myself at an earlier age. Also, having experienced the Banking System of learning, I see the value in modern styles of teaching and learning, and as an instructional designer I guide instructors through a process that creates accessible, reachable, learning outcomes for their students.**

## **Personalized Learning**

**One of the methods that I find novel is Personalized Learning, which allows students to have the freedom to choose how they would like to accomplish curriculum competencies. The student’s educational course choices should align with their personal educational goals as well.**

**Personalized Learning is flipping the traditional method of a course—which is instructor-driven—and is putting the student in the driver’s seat with the instructor taking on the role of mentor. This type of teaching is learner-centered with students actively participating in how they learn. Performance is based on student effort and how they progress through course materials. Affective outcomes for students is not about being perfect but bringing out the best in students. This method also teaches to the student’s strengths. Personalized Learning would also work well for portfolio-based and gamification learning.**

<b>Traditional</b>	<b>Personalized Learning</b>
<b>Teacher-centered</b>	<b>Learner-centered</b>
<b>Learners follow instructions</b>	<b>Learners actively participate in learning</b>
<b>Goal is correct answer</b>	<b>Goal is for a deeper understanding</b>
<b>Whole class lesson with learners working alone</b>	<b>Learning happens individually, in pairs, threes and in groups</b>
<b>Teacher gives times to answer questions</b>	<b>Message is on improvement with a focus on effort</b>
<b>Learners focus on tests and grades</b>	<b>Performance linked to effort and progress</b>

**(Chris Watkins, 2010)**

**Chris Watkins who participates in the Campaign for Learning’s ‘Learning to Learn’ project wrote “Learning: a sense-makers guide.” Watkins writes that there are four teaching practices that can help learners make sense of their learning. These are methods that align with UDL.**

## **1. Notice learning**

**At times it's good to stop the flow of learning and ask learners to step back and notice what happened, what did they do to make it happen—that the effects were, how it felt, what helped, how were learners persistent in making it happen, and what might they do with the learning.**

## **2. Have conversations about learning**

**Listen to the conversations. Ask learners to pair or work in groups of three or four and discuss what they noticed in their learning. You can prompt them to reflect on why they were doing something.**

## **3. Reflect on learning**

**Reflection is personal and can be in a journal or shared in a blog. Reflection helps the student recognize learning because they have to think. When writing reflections, new ideas may be noticed.**

## **4. Make learning an object of learning**

**Students are learning about learning while they are learning about something else. When learners read and experiment with course materials, they notice and reflect on what and how they learned. Students can reflect on how they handled their feelings during the learning or how they engaged with others.**

**(Watkins, 2014)**

**Personalized Learning is a cultural shift, and it creates higher-order thinking when students think and reflect on what is being learned.**

## **Microlearning**

**Another alternative, or one that be used in conjunction with Personalized Learning, is Microlearning. Microlearning has focused learning sessions. In our current social structure, which seems to move at the speed of light, it is sometimes hard to engage a learner for more than a few minutes. Micro learning comes to the rescue. Micro learning delivers bite-sized content so students can learn nuggets of information. The nugget is one specific learning outcome that is easy to digest. The nuggets make up a larger concept or topic. The learner now has a choice on how they want to approach or learn the information and control how they lay out the foundation of their learning. This too aligns with the UDL framework.**

**Even though this concept has been around for years it is the demand of the user that propels this movement forward. Mobile technology, social media, and improved bandwidth speed are the driving force (Jordan 2017). Micro learning also fits into a busy lifestyle, making it easier to fit short learning sessions into the daily workflow of employees and students while encouraging lifelong learning.**

**When designing Microlearning, keep it short. Keep it focused. Keep it captivating. Pre-planning is essential because it is not always easy to create bite-sized learning that successfully works. Learning concepts, such as video and Power Points, should take no more than 3–4 minutes to consume. Keep the learning focused on one learning outcome at a time. Content should be engaging but also relevant to**

**keep the attention of your user—this can be accomplished through video, games, as well as scenarios, etc. (Jordan 2017)**

**As an instructional designer, the benefit for me is mixing-and-matching Microlearning nuggets. The modularization of components allows for templating of and helps streamline further development. These are on-demand suites of training that can be accessed anywhere, anytime learners require them(Spencer, 2016).**

## **Conclusion**

**Getting caught up in the "Wow" factor is easy. Don't become mesmerized by the newest technology. It's sometimes best to use simple processes to keep learners engaged, such as using Personal Learning and Microlearning. If you're new to the instructional design arena, slowly build courses as you learn new concepts and principles. Keep Universal Design for Learning in mind as you create new course materials. Be goal oriented. Remember when vetting new technologies, use the guidelines of UDL to create inclusive course materials for diverse learners. UDL proactively adapts materials, methods, and assessments to the needs of the many and removes barriers for the sake of student achievement.**

**Design is not always about the bells and whistles as I had believed at the beginning of my career. Too much flashy technology can inhibit learning, but technology also helps instructors and designers create course materials that can be accessed anywhere. The term "Universal Design" was coined by architect Ronald L. Mace who believed the designing of products and environments should be accessible to all, regardless of age, ability or status in life.**

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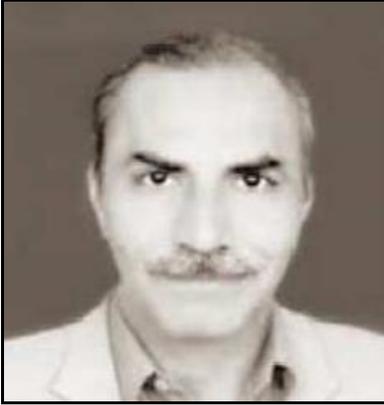
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***Cherri LaMarr, MFA – Web Design and New Media***



## **Letter from the Chairman's Desk**

### **By Sunil Bhatia PhD**

**A woman was stepping with soothing sound of agitated metallic beads attached to her anklet and it was reason of attracting everyone's attention who was standing at bus shelter. Her small child was wearing musical shoe was producing and that was sound as he was walking but his cribbing for eatable of his choice was clearly reflecting in his agitation and it was appearing as mother was refusing to meet his demand and offering other items to control his agitation. I observed their actions and found contrast to one another. One agitation was producing sound of beads were object of attraction and pleasurable and other side agitating child reminds me it is inbuilt character in us. It reminded that an infant who needed assistance while bathing in water tub to avoid any possible eventuality kept agitating when placed in water filled tub by throwing his arms randomly in the water and those actions makes him extremely happy. Agitation was responsible for many products/ services and I have never given thought for its role for human progress. Design of brooming or brushing or filing or dusting or cleaning is nothing but based on agitation.**

**Ornaments like bangles, anklets even danglers are designed for producing sound when it agitated with movement of the body parts for attractions of others. Rings or necklaces are for ornamental value**

that enhances the beauty when placed on good chest or beautiful fingers but generally works silently.

A group of people were agitating , shouting and holding the placards against the government for wrong policies and police force was for cordoning and escorting not to allow mob to turn violent. Police was up with the barricade, shields and cane in hand for the protection, water cannon, tear gas and plastic bullets for dispersing unruly agitators. Is not agitation responsible of designing such products?

It reminds me that water purifier plants with storming pump station do the purification of water by agitation for removal of physical impurities. That reminded me that some of the kitchen tools are based on agitation like manual churner or electric egg shaker or machine churner for separation of fats from the milk. While cooking of vegetables it required continuous agitation with ladle for even heating and avoid overheating close to wall or bottom of the cooking vessel may spoil or burnt the food. Sometime too much agitation of food destroys its form and avoiding turning into paste we look for techniques where agitation should be avoided for losing its form. These specific problems lead to design of heating by induction that is slow but cook well without spoiling and does not required agitation. Various agitations were responsible for designing of various kitchen tools where foundation is agitation say grinding, grating, frying and roasting. Even spoons help in generating agitation by stirring for liquid in glass or cup for mixing sugar or salt. The same principle of agitation for cleaning the clothes through washing machine where agitators never allows the dirty clothes at rest and it helps in better cleaning. Sliming machine has belt that is placed around waist and motor agitates it for vibration and it helps in dissolving the extra fat. Agitation is everywhere but its presence is not felt in daily life. I

**invariably well shake the deodorant that agitates the content for uniformity for better even spray .Similarly nurse administrating injection well shakes the vial for better results.**

**Control agitation is the reason of birth of performing arts as we know dancer wear anklet that has number of attached brass bells and its desired sound generates as he/she moves legs for striking with ground. Drum with sticks strike for agitating the air inside for producing the rhythmic sound. Similarly certain instruments produce sound when strike on end of drum covered with skin of animal made of wood. Painter generally agitates the color kept in bottle with brush for correct color output before applying on the canvass. Role of clapping or singing or whistling or movements of body parts is nothing but agitation of some sort.**

**Random jumping is agitation but its systematic approach leads to high jump, long jump or other designs of athletes is nothing but controlled agitation. Nature of games like football or tennis or basketball generates random motion by agitation that is unpredictable when applied external force and players wish to bring under their controls that control agitation creates excitement and pleasure. Design of staircase was possible because anatomy of human is that it can control the agitation of legs for climbing and a small error may invite tripping. That is the reason old people who have little control their body movements face chance of tripping and to eliminate this demands better accessibility helped in designing stair lift or elevator. Other side gymnasts are trained for generating the agitation with body energy for best performing in desired manner with optimum energy last till events ends and any slight mistake may lead losing grip over the game.**

**Massage is one kind of agitation technique to allow the blocked of vein get rid of by pressing and sliding the pressed hand in one direction. A woman takes out extra water after washing her long hairs by jerk where man generally maintains short and to take out they agitate with the hand for taking out extra water. Action of gargles by filling mouth with water is agitating for taking out unwanted food particle in mouth.**

**Rhythmic agitation of pumping of blood supply by heart and when translates for diagnose of ailment of heart we study heart beat by cardio gram. Agitation of heart reflects various emotions where it agitates in varied manner when imagine or chance encounter of beloved or hearing a bad news agitates that is opposite of emotions associated with beloved .**

**Agitation helps in limiting the damage of leaves of plants when parasite strike on it but air strikes agitates the leaves that instill fear in insects that make the movement for another leaves. Agitation helps in removal of dust from the upper layer of leaves by air strikes or rain water that gives opportunity of better photosynthesis. I have noticed in industries most of the nut bolts are fixed with clip lock where continuous agitation generates vibration that helps in losing the grip and in due course of time it comes out and defeat the intended purpose to hold. Why do we need flags and how it has acquired so much importance in our lives is still mystery and it might help the rulers to unite under one flag and disobeying would be treated as betrayal. I admire the person who had ever thought of design for flags and attach the emotion to such a level people do not hesitate in even sacrificing their lives for safeguarding its honor . They might have impressed with fluttering of leaves with agitation of air strike and idea of pole was nothing but trunk of the tree .**

**Earthquake is one kind of agitation created by earth and that's help forcing us for better technologies to meet the challenge of eventualities. Vibrator at construction site agitates the cement mixture that lowers the air gaps and gives proper strength to building. Quality testing for some electronic products is placed by conveyer belt that agitates as vibration and placed products on it shakes that amplifies the connections that is not properly fixed and slight agitation disconnect . The same vibration allowed the mobile phone in agitation mode where sound can disturb the environment.**

**Agitation of electrons in atoms is natural phenomena and it is great riddle for scientist to pin point the exact location and close relation is explained by Heisenberg Principle. Once it is agitated and jumps to another states. This concept was visible in traditional defibering of cotton by striking at string for agitation for cotton to vibrate with bow attached with rope with peg in the wall is called carding. In absence of knowledge of spring they thought to use the rope at one end tied with bow and other fixed with peg for movements where vibration generated by striking the bowstring with wooden hammer required for heap of cotton was placed and this was better arrangements than individual manual carding. In absence of vibrators farmers were aware about agitation and used extensively in separating food grains from paddy by lifting the winnowing fan at height and keep manually shaking and allowing air strike properly on falling crushed paddy to ground. Winnowing fan or mesh of any kind has basic principle of working on agitation for separation of physical impurities.**

**Same agitation helps in dissolving or preparation of mixture by well stirring. I remember when I was attending practical classes of chemistry after adding some substance in test tube I was well**

shaking. That time I could not figure out but I realized it was agitation for well mixing for proper reaction should take place. Ultrasonic agitation washer cleans with great precision not as we do agitation manually with flowing water for cleaning the vessels. Even air can generate agitation and in ancient times ironsmith were using the animal bladder for pumping more agitated air into the stove for attaining high temperature for their requirement. In modern time paint or oil or gas industries extensively use agitation for proper mixing of other gases.

Sometime agitation may produce adverse effects and demands controlling and that helped in designing anti vibratory pad or airtight base rubber socket for its proper grip with the platform. Roads cannot be smooth where moving vehicle do not experience jerk that keep agitating the sitting people, and to control they design shock absorbers. Foundation of packaging industries is to control the agitation effects of transport means not to allow the contents to collide and damage rather it should transport what for it was intended.

Agitated minds surfaced when keyboard refuse to give desired outputs and they keep pressing the keys. While elevator moves with its own speed but it appears to agitated mind taking unusually high time it is reflected by pressing the button. A person standing out of the operation theatre where his near and dear is going under knife waiting anxiously for news. Agitation in mind never allows the person to enjoy sound sleep.

Sleep is the best medicine of controlling as calming the agitated mind. Sedations are result for controlling agitation and our ancestors discovered from the nature and later scientific knowledge

helped in designing artificially. Thought of design of cage for controlling the agitated animals led to design of prison where agitated person are kept for taming. Highly agitated that has high nuances values are controlled by placing in confined cell.

It is our honor that *Dr. Lee Christopher is the Director of eLearning at Arapahoe Community College* has accepted our invitation and she did her job of Guest Editor with perfection. I would like to work with her in future for her sincerity, commitment and honoring her words.

Enjoy Reading

*With regards*

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## Forthcoming Issues

### May 2018 Vol-13 No-5

**Dr. Antika Sawadsri"** ,She is an Assistant Professor and the Director of Inclusive Designed Environment and Research (IDEaR Unit) at School of Architecture, KMITL, Thailand. As both professional and academic interested in Inclusive City, her contribution ranges from home modification to urban public space development for users with all life's spectrum."



### June 2018 Vol-13 No-6 (150th milestone issue)

**Prof Ricardo Gomes** will be the Guest Editor for our 150th special issue. Professor Ricardo Gomes has been a faculty member in the School of Design (formerly the Design and Industry (DAI) Department) at San Francisco State University for nearly 25 years. He was the Chair of the DAI Department from 2002-2012. Prof.



**Gomes** coordinates the Design Center for Global Needs and the Shapira Design Archive Project in the School of Design (DES). This non-profit international research and development center is dedicated to promoting responsive design solutions to local, regional

**and global issues such as: inclusive/universal design, health care, the aging, community development, social innovation and sustainability of the built environment.**

**Prof. Gomes is on the Board of Directors of the Institute for Human Centered Design in Boston. He is also a member of the Industrial Designers Society of America; and Epsilon Pi Tau International Honor Society for Technology.**

**Prof. Gomes received his MFA in Industrial Design for Low-Income Economies from the University of California, Los Angeles (Design of a Container System for Mobile Health Care Delivery in East Africa).**

### **July 2018 Vol-13 No-7**

**Professor Maria Luisa Rossi, Chair of MFA Integrated Design Program at CCS, has agreed to be the guest editor for the issue. Students in her program as well as other programs at CCS have developed a number of socially responsible design projects.**



**She is the Chair and Professor of MFA Integrated Design at the College for Creative Studies in Detroit where she brings an entrepreneurial culture, globally-focused and cultural empathetic approaches to the growing of the next generation of designers. Her works focus on the seamless capacity to deal with tangible and intangible aspects of user experiences, preparing “facilitators” capable to address global-glocal grand challenges. Strongly centered on the design process, the program prepare students for the practice of designing omni-channel journeys [products-strategy-services] focused to the quality of the users**

**experience with a special eye to socially relevant solutions. As an undergraduate in Florence, Italy, her wearable computer project work was featured in the prestigious Domus magazine, earning her a scholarship to attend the premiere master's program in industrial design at the Domus Academy in Milan where she got her Master of Industrial Design.**

### **August 2018 Vol-13 No-8**

**Sameera Chukkapalli (1992) is currently a fellow at the FabCity Research Laboratory, Barcelona, Spain. She founded needlab, a non-profit organization to create a model of optimized practice to deliver maximum impact with the objective of making a difference to the communities. She was the project director and tutor for the Needlab\_Kuwait Matters, India Matters, Vietnam Matters. She is working as**



**Space Designer with CARPE LA Augmented Reality project in Los Angeles, USA, funded by the LA2050 program, to eliminate gray zones in public parks and to make them user-friendly. She has represented needlab and lectured in five countries on three continents, actively initiating a conversation about Human Centered design with Policymakers.**

**Sameera graduated, with MAArch in Digital Matter and Construction, and completed Open Thesis Fabrication, on Large-Scale Natural additive construction using robots, from IAAC, Barcelona, Spain. Obtained B.Arch degree from BMSCE, Bengaluru, India, and the University of Berkeley, USA; Worked with External Reference Architects in Spain; Worked with VTN Architects in Vietnam, on the**

**Tokyo pavilion "Bamboo Forest" for Japan and "S House"(low-cost housing prototype) for Vietnam.**

## **September 2018 Vol-13 No-9**

**Dr. Bijaya K. Shrestha received Doctoral in Urban Engineering from the University of Tokyo, Japan (1995-'98) and Master in Urban Design from the University of Hong Kong, Hong Kong (1993-'95). Having professional experiences for almost three decades he had served to numerous organisations – Government of Nepal, educational institutions, private sector and United**



**Nations Centre for Regional Development (UNCRD): Disaster Management Hyogo Office, Kobe, Japan, besides consulting works for ADB, UNICEF and UN-Habitat. His contribution in establishing Post Graduate Department of Urban Design and Conservation at Khwopa Engineering College in 2007 is noteworthy, where he served as Head of Department for two years. At present, he is engaged in ADB supported projects and research works in different Architectural Schools, besides editing international journals and conference papers. He is the recipient of numerous gold medals and prizes for his excellent academic performance. He was decorated by 'Calcutta Convention National Award 2006' by Indian Society for Technical Education for his best paper at the 35<sup>th</sup> ISTE Annual convention and National Seminar on Disaster – Prediction, Prevention and Management. He has already contributed more than ten dozen of papers, published in various forms: book chapter,**

international journals, conference proceedings, local magazines and journals including in local newspapers. He is regular writer for

## **October 2018 Vol-13 No-10**

**Dr. Sugandh Malhotra has over sixteen years professional experience in industrial design and automotive styling industry. He has worked on design projects for marquee brands in the industry that include Honda R&D, Hero Global Design,**



**Hi-Tech Robotic Systemz Ltd., SETI Labs Berkley, Aprilia Motors Italy, Bombardier Canada and most of the leading automotive and consumer brands of India. He has been instrumental in design of over 18 techno-commercially successful launched products at a pan India level. He has won many International and National level design awards. Dr. Malhotra takes keen interest in teaching design and has been mentoring students from many leading institutions such as IIT Delhi, IIT Roorkee, SPA Delhi, Lady Irving College, IILM, Pearl Academy among others. Currently, he is working as an Assistant Professor and the Coordinator of MVD program in IDC School of Design at IIT Bombay. His research interest areas include design research methods, future design possibilities, trend research and design forecasting and intelligent mobility systems.**

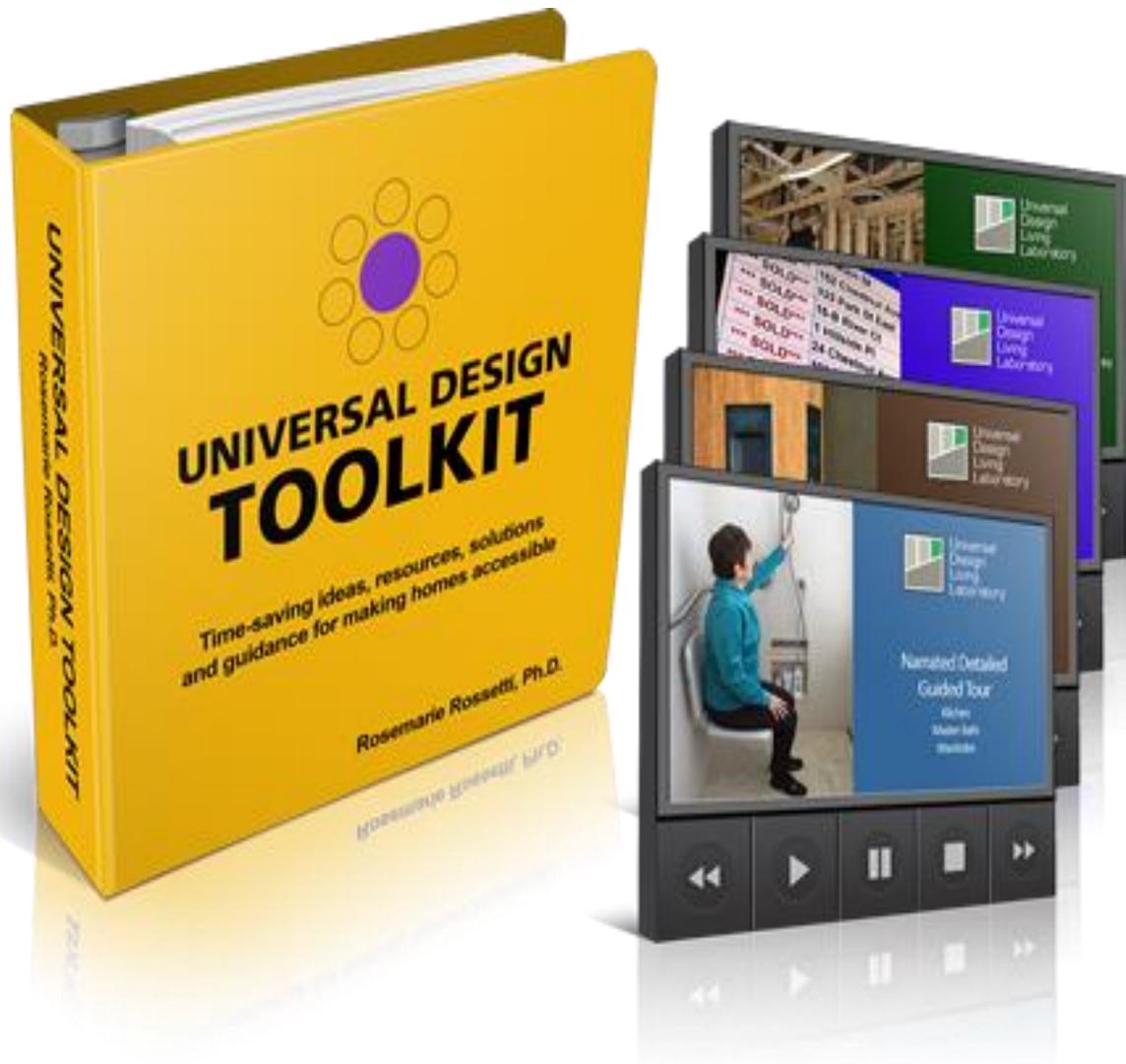
## **December 2018 Vol-13 No-12**

**Robert Nichols ,an Owner of Nichols Design Associates, Inc., Washington, DC has been extensive experience in Architectural Design and Universal Design for over 35 years. His expertise within this area of specialty includes building surveys and ADA**



**Accessibility checklist for the public and private clients. He is President and Chairman of the Board of World Deaf Architecture, Inc. (WDA), a new knowledge group of American Institute of Architects (AIA), since a non-profit organization was established in 2016. Received B.Arch.& M.Arch. degrees in Urban Design under the leadership of Prof. Colin Rowe from Cornell University will be our Guest Editor .**

# New Books



## The Ultimate Resource for Aging in Place With Dignity and Grace!

Are you looking for housing options that are safer and more accommodating for independently aging in place? Do you want to enjoy comfort, accessibility, safety and peace of mind – despite your disabilities, limitations and health challenges? The help you need is available in the **Universal Design Toolkit: Time-saving ideas, resources, solutions, and guidance for making homes accessible.**

This is the ultimate resource for individuals and professionals who want to save time, money and energy when designing, building, remodeling or downsizing a home. The Universal Design Toolkit will help you take the steps to design homes for your clients or

yourself while eliminating the costly trial and error challenges you'd inevitably encounter if faced with this learning curve on your own.

Rosemarie Rossetti, Ph.D., teamed with her husband Mark Leder in creating this unique Toolkit. They bring ten years of research, design and building expertise by serving as the general contractors for their home, the Universal Design Living Laboratory– which is the highest rated universal design home in North America.

Within the Toolkit's 200 richly illustrated pages, you'll find:

- Insights that distinguish *essential* products, services and resources from the *unnecessary*.
- Proven, realistic tips for finding the right home.
- Home features you need to look for. Nothing is assumed or left out.
- Handy home checklists and assessments.
- Interview questions to help you hire industry professionals with knowledge and experience.
- Photographs that provide a frame of reference to inspire, clarify and illuminate features and benefits.
- Valuable resources to save you time, money and energy.
- Helpful sources of funding.
- Space planning dimensions for access using assistive devices such as wheelchairs and walkers.
- And so much more!

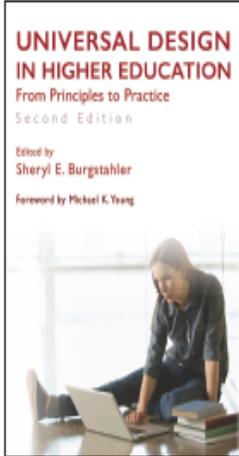
If you want useful, dependable advice and easy to implement ideas from respected experts who know the ropes, you'll love Rossetti and Leder's perspective. As a speaker, author and consultant who uses a wheelchair, Rossetti has helped hundreds of people design their ideal homes. Now her comprehensive Toolkit is available to help and support you!

Get the Universal Design Toolkit now to start your project!

**“Fresh, comprehensive, and engaging, *Universal Design in Higher Education* is expertly written, thoughtfully crafted, and a ‘must-add’ to your resource collection.”**

—STEPHAN J. SMITH, EXECUTIVE DIRECTOR, ASSOCIATION ON HIGHER EDUCATION AND DISABILITY

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## UNIVERSAL DESIGN IN HIGHER EDUCATION

### From Principles to Practice, Second Edition

EDITED BY SHERYL E. BURGSTAHLER • FOREWORD BY MICHAEL K. YOUNG

This second edition of the classic *Universal Design in Higher Education* is a comprehensive, up-to-the-minute guide for creating fully accessible college and university programs. The second edition has been thoroughly revised and expanded, and it addresses major recent changes in universities and colleges, the law, and technology.

As larger numbers of people with disabilities attend postsecondary educational institutions, there have been increased efforts to make the full array of classes, services, and programs accessible to all students. This revised edition provides both a full survey of those measures and practical guidance for schools as they work to turn the goal of universal accessibility into a reality. As such, it makes an indispensable contribution to the growing body of literature on special education and universal design. This book will be of particular value to university and college administrators, and to special education researchers, teachers, and activists.

**SHERYL E. BURGSTAHLER** is an affiliate professor in the College of Education at the University of Washington in Seattle, and founder and director of the university's Disabilities, Opportunities, Internetworking, and Technology (DO-IT) and Access Technology Centers.

**“Sheryl Burgstahler has assembled a great set of chapters and authors on universal design in higher education. It’s a must-have book for all universities, as it covers universal design of instruction, physical spaces, student services, technology, and provides examples of best practices.”**

—JONATHAN LAZAR, PROFESSOR OF COMPUTER AND INFORMATION SCIENCES, TOWSON UNIVERSITY, AND CO-AUTHOR OF *INSURING DIGITAL ACCESSIBILITY THROUGH POLICIES AND PRACTICE*

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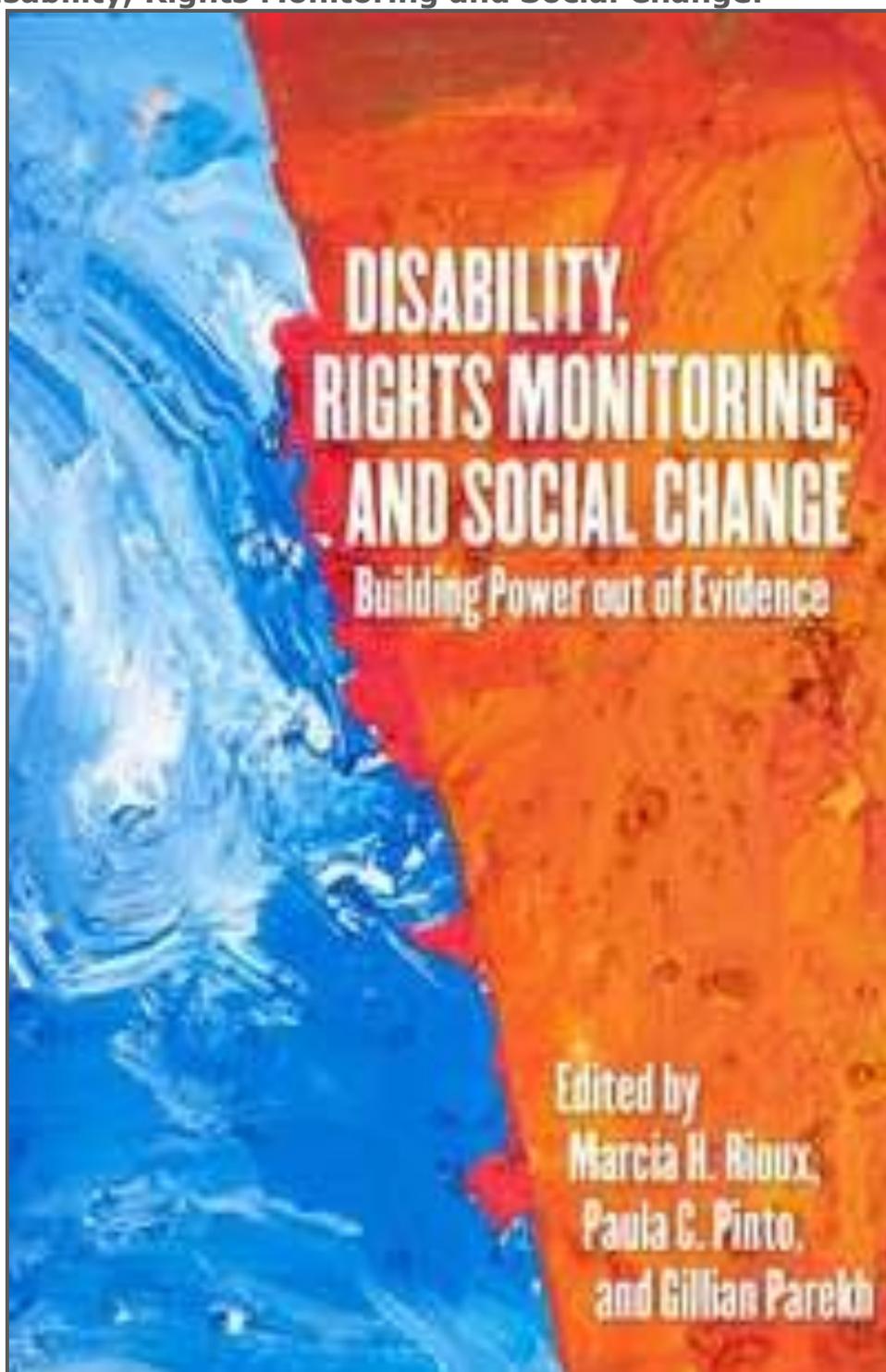
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### Product Description

In this book, Elvino Bonollo takes us on a 'learning journey' about design including a scholarly explanation of the characteristics and power of the design process. It provides valuable insights into the attitudes, knowledge and skills that underpin the design discipline at an introductory level of expertise, and has been developed to meet the needs of aspiring designers in many areas including industrial design, design and technology, art and design and architecture. Elvino uses an operational model of the design process - along with related educational strategies, learning outcomes and an ordered set of design briefs - to develop a systematic, problem-based method for learning design from a first principles viewpoint. The beauty of this approach is that it brings structured learning to aspiring designers whilst being mindful of diverse cultures and backgrounds. Each part of this book encourages self-expression, self-confidence and exploration: it is has been carefully designed to take the reader on a highly motivating journey of design thinking and creativity, supported by excellent sample solutions to design problems, lucid discussions and extensive references. These solutions, developed by design students, serve as novel examples of how to solve real problems through innovative design without restraining creative freedom and individual personality. The design learning method and strategies in this book will greatly assist design and technology teachers, students of design, aspiring designers and any individual with an interest in professional design practice.

I cannot recommend this book highly enough, it was a complete lifesaver throughout my undergraduate studies and honours degree and now continues to serve me well as I move into industry practice. The content is easy to understand and follow, providing a practical guide to understanding design principles and every aspect of the design process. It includes great project examples and reflects the wealth of knowledge and experience possessed by this accomplished educator. I have purchased multiple copies of this book for peers and would suggest any student who is studying a design discipline to pick up their own copy as this has quickly become the most useful book in my design collection.

Comment | Was this review helpful to you?   [Report abuse](#)

★★★★★ A 'Must Have'.

By [Amazon Customer](#) on 7 April 2016

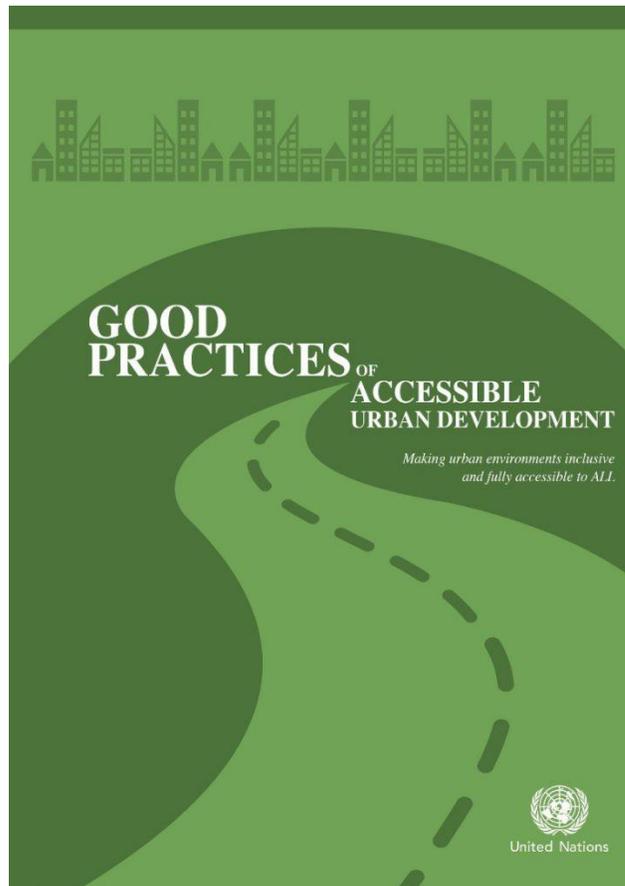
As a Design Education professional of many years standing, I endorse this book without reservation. It is comprehensive, lucid and above all, useful in a very accessible level at the coalface. Professor Bonolo has an enormous cache of experience as an engineer, designer and design educator and his experience is well demonstrated in this book. A 'must have' for anyone in the business of educating or being educated in the product design arena.

# TAPPING INTO HIDDEN HUMAN CAPITAL

How Leading Global Companies Improve their  
Bottom Line by Employing Persons with Disabilities



DEBRA RUH



**In light of the forthcoming United Nations Conference on Housing and Sustainable Urban Development (HABITAT III) and the imminent launch of the New Urban Agenda, DESA in collaboration with the Essl Foundation (Zero Project) and others have prepared a new publication entitled: "Good practices of accessible urban development".**

**The publication provides case studies of innovative practices and policies in housing and built environments, as well as transportation, public spaces and public services, including information and communication technology (ICT) based services.**

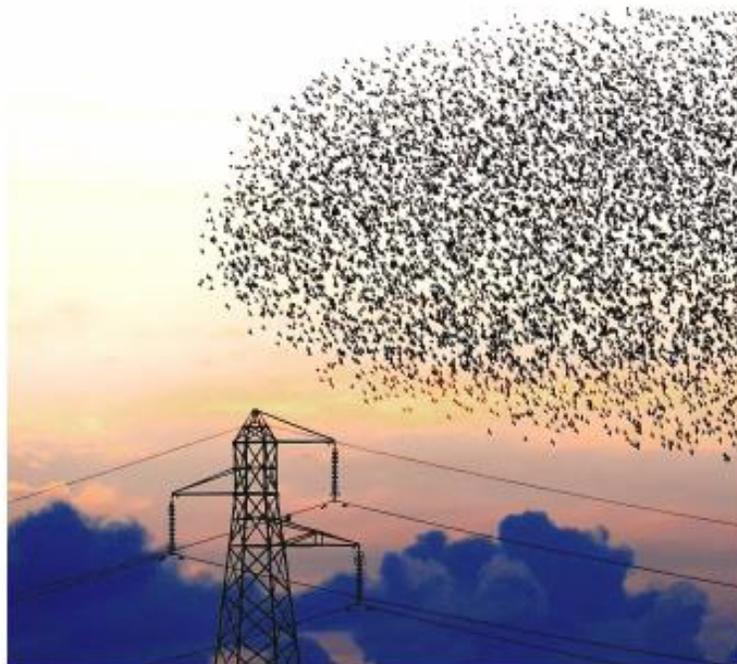
**The publication concludes with strategies and innovations for promoting accessible urban development.**

**The advance unedited text is available at:[http://www.un.org/disabilities/documents/desa/good\\_practices\\_urban\\_dev.pdf](http://www.un.org/disabilities/documents/desa/good_practices_urban_dev.pdf)**

# FROM MODULARITY TO EMERGENCE

A PRIMER ON THE DESIGN AND SCIENCE OF COMPLEX SYSTEMS

Chih-Chun Chen and Nathan Crilly



CUED/EDC/TR/166  
Engineering Design Centre  
Department of Engineering

 UNIVERSITY OF  
CAMBRIDGE

**Dr Chih-Chun Chen and Dr Nathan Crilly of the Cambridge University Engineering Design Centre Design Practice Group have released a free, downloadable book, A Primer on the Design and Science of Complex Systems.**

**This project is funded by the UK Engineering and Physical Sciences Research Council (EP/K008196/1).**

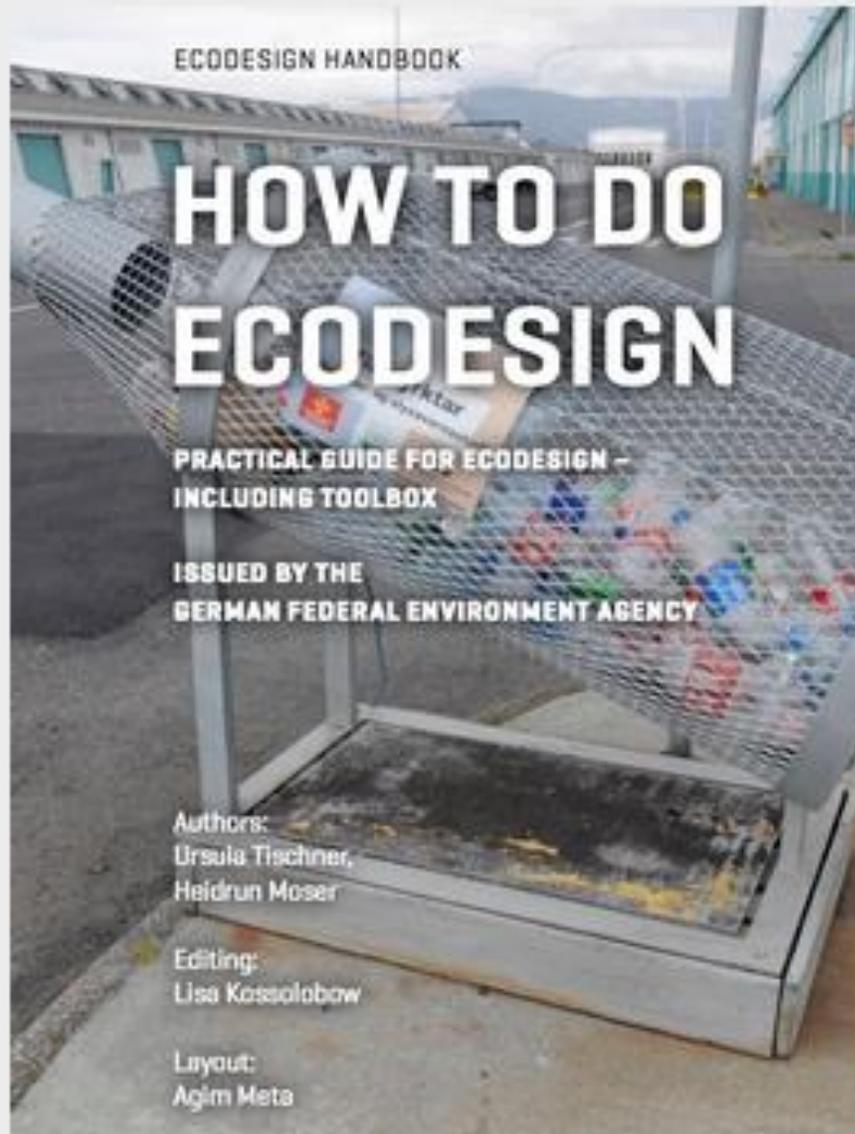
**The book is available at URL:**

**<http://complexityprimer.eng.cam.ac.uk>**

# Changing Paradigms: Designing for a Sustainable Future

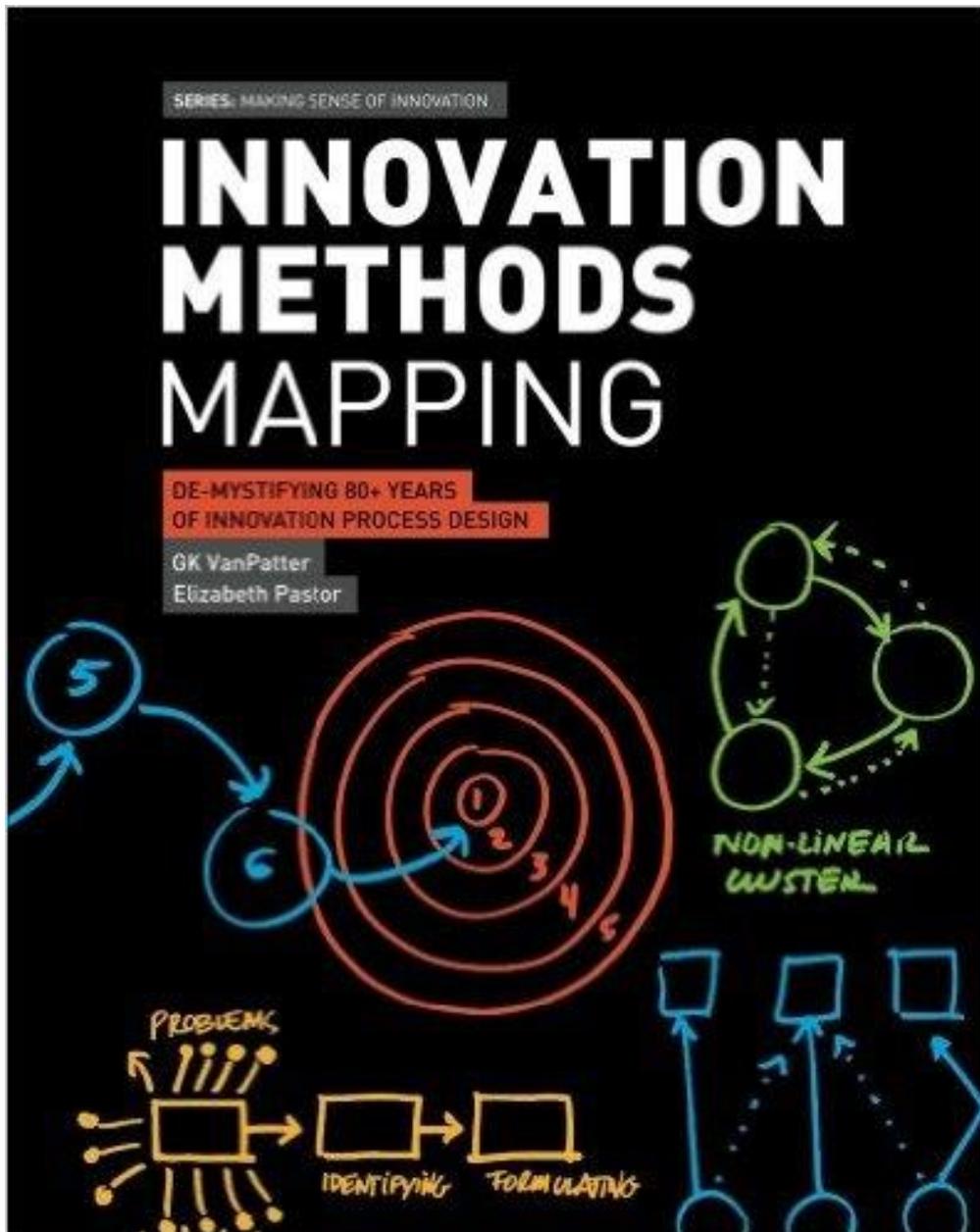


# **New iBook / ebook: HOW TO DO ECODESIGN**



Practical Guide for Ecodesign – Including a  
Toolbox

Author: Ursula Tischner

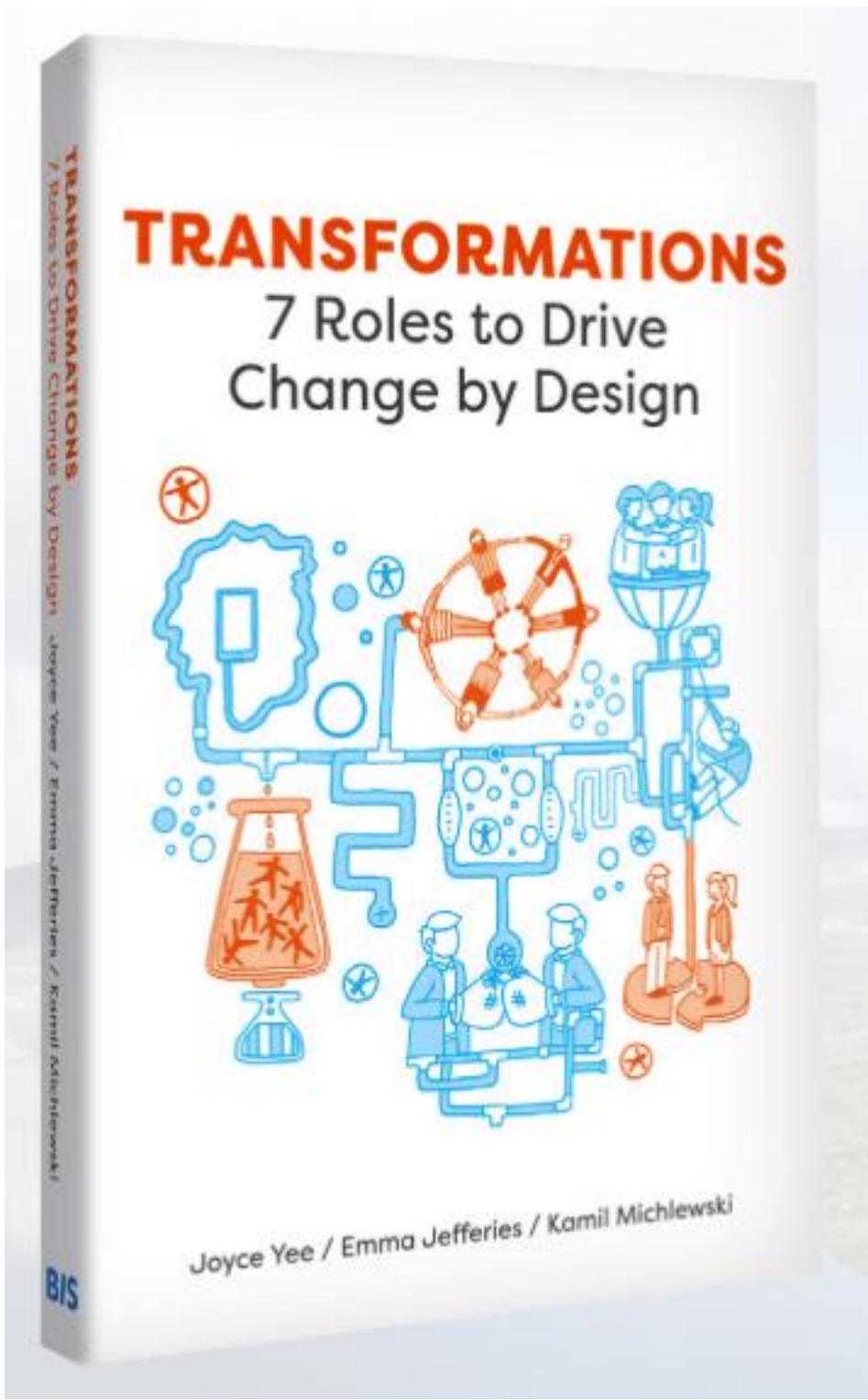


Humantific's new book: Innovation Methods Mapping has just been published and is now available on Amazon.

[https://www.amazon.com/dp/1540788849/ref=sr\\_1\\_1?ie=UTF8&qid=1482329576&sr=8-1&keywords=Humantific](https://www.amazon.com/dp/1540788849/ref=sr_1_1?ie=UTF8&qid=1482329576&sr=8-1&keywords=Humantific)

You can see the preview here:

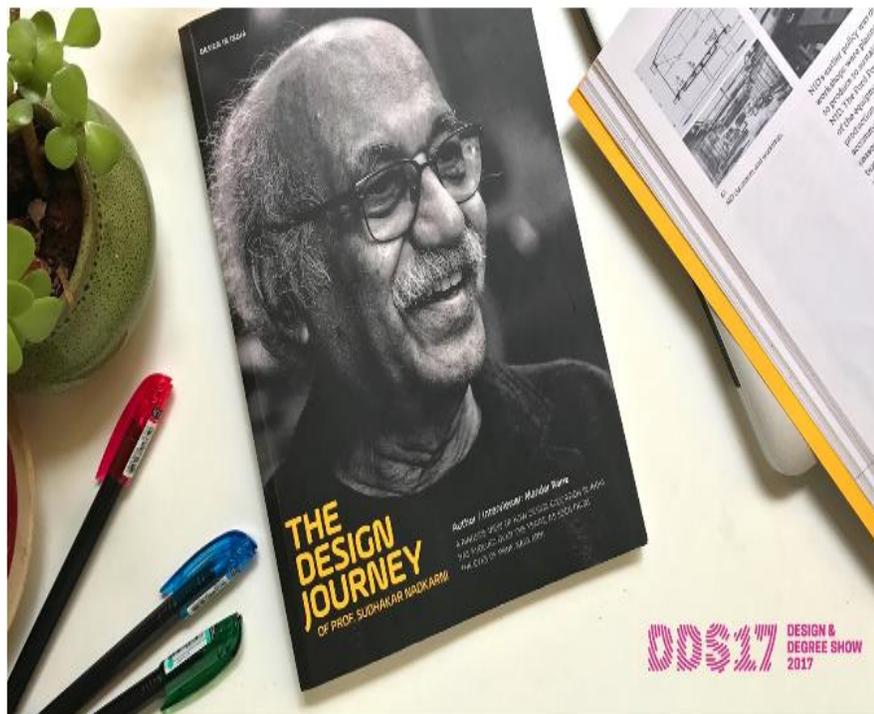
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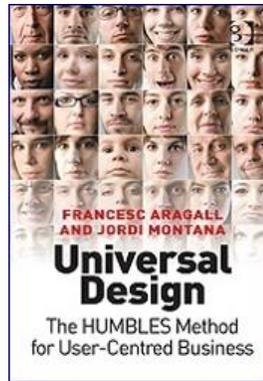
## Pre-book form

Thank you for your interest in the book, 'The Design Journey of Prof. Sudhakar Nadkarni'. Few limited copies will be available for purchase on the day of IDC Alumni Meet, on June 11th, Sunday, 5:30 to 6:30 pm. Rest of the book orders will start shipping June 25th, 2017 onward.

\* Required



How many copies of the book do you wish to buy? \*



**“Universal Design: The HUMBLE Method for User-Centred Business”, written by Francesc Aragall and Jordi Montaña and published by Gower, provides an innovative method to support businesses wishing to increase the number of satisfied users and clients and enhance their reputation by adapting their products and services to the diversity of their actual and potential customers, taking into account their needs, wishes and expectations.**

**The HUMBLE method (© Aragall) consists of a progressive, seven-phase approach for implementing Design for All within a business. By incorporating the user’s point of view, it enables companies to evaluate their business strategies in order to improve provide an improved, more customer-oriented experience, and thereby gain a competitive advantage in the marketplace. As well as a comprehensive guide to the method, the book provides case studies of multinational business which have successfully incorporated Design for All into their working practices.**

**According to Sandro Rossell, President of FC Barcelona, who in company with other leading business professionals endorsed the publication, it is “required reading for those who wish to understand how universal design is the only way to connect a brand to the widest possible public, increasing client loyalty and enhancing company prestige”.**

**To purchase the book, visit either the [Design for All Foundation website](#)**

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# Engineering for Industrial Designers & Inventors

FUNDAMENTALS FOR DESIGNERS OF WONDERFUL THINGS

Thomas Ask

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**I have a new book that presents fundamental engineering concepts to industrial designers that might be of interest to you. This is the link:**

**[https://www.amazon.com/Engineering-Industrial-Designers-Inventors-Fundamentals/dp/1491932619/ref=sr\\_1\\_1?ie=UTF8&qid=1506958137&sr=8-1&keywords=engineering+for+industrial+designers+and+inventors](https://www.amazon.com/Engineering-Industrial-Designers-Inventors-Fundamentals/dp/1491932619/ref=sr_1_1?ie=UTF8&qid=1506958137&sr=8-1&keywords=engineering+for+industrial+designers+and+inventors)**



# Appeals

1.

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## 60th ANNIVERSARY GOOD DESIGN AWARDS CEREMONY, SYDNEY OPERA HOUSE 17 MAY 2018

The 60th Anniversary of Australia's Good Design Awards promises to be one of the biggest celebrations of design in Australian history. Join us for a night of design inspiration, entertainment and celebration as we announce the winners of this year's Good Design Awards and celebrate 60 years of good design.

[BOOK TICKETS HERE](#)



# News

## **1. Askersund City Council receives its tenth "Flag of Cities and Destinations for All"**

**The city of Askersund was awarded for the tenth consecutive year with the "Flag of Cities and Destinations for All" 2017. The investment in actions and projects of Design for All in 2016 was staggering 76 % of the investment budget.**

**The biggest investment in Askersund ever is Sjöängen, a new center for culture and education, with Primary school, library and the Big Hall, a venue for over 500 sitting visitors functioning as concert hall, cinema and theater. Sjöängen was inaugurated in November 2016 and is the main reason why Askersund reached 76 %.**

**The Flag of Cities and Destinations for All 2017 was handed over to Askersund at an event for local entrepreneurs October 24th, held in the Big Hall at Sjöängen.**

**"The concept of Design for all is a good method in creating a society without barriers, a society for all of us. I am very proud to accept The Flag of Cities and Destinations for All for the tenth consecutive time", said Per Eriksson, Head of the Askersund Municipality Executive Board.**

**(Source: Design For All Foundation, Spain)**

2.

## Students design solutions to combat malnutrition



### The participants of the competition

Last weekend, the finale for a Behaviour Change Strategy Competition was held at Mithibai College's campus. The aim of the competition was to understand the complex nature of the problem of malnutrition and bring into focus the importance of a multi-stakeholder approach to finding solutions and effective responses. The challenge was to build a comprehensive communication strategy that can influence children's food choices, a campaign that can make low-income households more conscious about their children's health. Using the method of 'Design thinking' - a problem-solving approach to generate solutions for a range of complex issues like health, education, citizen engagement etc - several students from across the country participated in the event.



While the team from Lady Irwin College, Delhi, was announced as the winners, **NL Dalmia Institute** of Management Studies & Research from Mumbai were announced as the first runner-up. Students from the University of Burdwan, Kolkata, secured the second runner-up's position.

**The competition kicked off with a series of design thinking and problem-solving workshops in Delhi, Kolkata, Bangalore, Pune, Nashik and Mumbai. Students from across the country paired up with NGOs to participate in the competition. Each team included three to five students and 10 teams were shortlisted and mentored as they developed their strategies. Finally, five finalists presented their strategies to the jury panel.**

**(Source Times of India)**



## Programme and Events

Access Israel's 6th Annual  
International Conference on  
**Innovation & The Future  
of Accessibility**  
**29 April 2018 - Israel**  
Avenue Conference Center - Airport City

The DesignEuropa Awards celebrate excellence in design and design management among [Registered Community Design \(RCD\)](#) holders, whether they are individual right holders, small businesses or large enterprises. The Awards seek to recognise companies and designers that have brought outstanding design to the market with the support and protection of the RCD.

DESIGNEUROPA  
awards 2018

**APPLY  
UNTIL  
15 MAY!**

Submit your  
application or  
nomination  
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2018.

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### Voices of Good Design - What is Good Design?

Australia's only international design award program is open for entries, across 10 design disciplines and over 25 sub-categories.



Join us for the **2018 EDRA49 Annual Conference** in the **Oklahoma City, Oklahoma!** Walk along the streets of Oklahoma City, home to an attractive variety of historic buildings. Eye-catching religious buildings, and magnificent structures of great architectural and historic significance. **Stay tuned for registration to open in late Fall.** Check out what OKC has to offer, [click here](#).



# Universal Design & Higher Education in Transformation Congress

30<sup>th</sup> October – 2<sup>nd</sup> November 2018, Dublin Castle

*Transforming our World through Diversity, Design and Education*

€30 billion  
investment

under Horizon 2020 For Research & Innovation 2018-2020

CALLS LAUNCHED 27 OCTOBER

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www.ec.europa.eu/research

On 27 October 2017, the European Commission presented the final Work Programme for Horizon 2020, covering the budgetary years 2018, 2019 and 2020 and representing an investment of around €30 billion.

Horizon 2020: The EU's biggest research and innovation...

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# **Human-Work Interaction Design (HWID'18) - Designing Engaging Automation 5th IFIP WG 13.6 Working Conference August 20-21, 2018 Aalto University, Espoo, Finland**

In continuation with the series of the Human Work Interaction Design working conferences, the fifth edition will take place in Espoo, Finland, on the 20th and 21<sup>st</sup> of August, 2018. The venue is the brand new building of School of Arts, Design and Architecture in Aalto University, Otaniemi campus.

## **Important dates:**

Full paper submission deadline:	April	2nd
Poster submission deadline:	April	30th
Acceptance notifications:	May	11th
Early bird registration deadline:	May	31st

Conference: August 20-21, 2018

## **Theme, Scope and Focus:**

This year's theme is Designing Engaging Automation. While we do not exclude other aspects of work analysis and designing interactions for work contexts, we encourage authors to share especially their research on human aspects in workplace automation in the 2018 edition of HWID conference.

Interaction design for work engagement has lately started to gather more attention, especially in designing tools for employees. Work engagement takes usability of interactive systems to the next level by providing employees pleasurable and meaningful experiences via the tools used at work. The theme of HWID'18 emphasizes the need for providing these experiences also when parts of the work are automated.

## **Examples of relevant questions include:**

- **Is automation making work less interesting or more engaging?**
- **How to improve work engagement by automation?**
- **How to share work optimally between humans and automation?**

- How to maintain operator vigilance in highly automated environments?
- How to support situation and/or automation awareness?
- How to evaluate the impact of automation on work engagement?

This working conference aims to answer these questions to support professionals, academia, national labs, and industry engaged in human work analysis and interaction design for the workplace. We will discuss the tools, procedures, and professional competences needed for designing for and evaluating engaging automation in workplace contexts.

We invite two types of submissions:

1. Full papers (max 15 pages, excluding references) and
2. Poster submissions (max 4 pages, excluding references).

For both types of submissions, the authors must use the LNCS templates available from [Springer](#). Please submit your work in PDF format to [EasyChair](#).

All accepted papers will be published in the working conference proceedings in the form of an electronic copy with ISBN and made available to the participants. During the review process, the reviewers are asked to evaluate whether the paper is suitable for a HWID's Springer book (Springer-Verlag) that will be made available after the conference. We aim at most accepted full research papers to be included here, but also the possibility to have a very interesting perspective from industry or similar represented.

Conference web site: <https://blogs.aalto.fi/hwid2018>





  
**universal design**  
CONFERENCE

**4-5 September 2018**  
Brisbane  
Convention and  
Exhibition Centre

**2<sup>nd</sup> World Summit  
on Accessible Tourism**  
Brussels  
1-2 October 2018



**Destinations  
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The Accessible Tourism Chain

The second World Summit on Accessible Tourism will present latest innovations and best practices for the development of destinations for all.  
In parallel to the summit, an exhibition will allow you to discover accessible tourist destinations, products and services from all over the world.

[www.destinationsforall2018.eu](http://www.destinationsforall2018.eu)



# Job Openings

## 1. Job Opening



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## **Forthcoming Events and Programs:**

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